EXAMINING THE EFFECTS OF PARTICIPATION IN LEISURE AND SOCIAL ACTIVITIES ON GENERAL HEALTH AND LIFE SATISFACTION OF OLDER CANADIAN ADULTS WITH DISABILITY

by

Hanieh Chizari

A thesis submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfillment of the requirements of the degree

MASTER OF SCIENCE

Department of Family Social Sciences

University of Manitoba

Winnipeg, Manitoba

ABSTRACT

Introduction The Canadian population is aging and the population of older adults is the fastest growing segment of the population. As the prevalence of disability increases with age, the population of older Canadians with disability is on the rise. In 2012, almost 3.8 million Canadians, or 13.7% of the total population, were living with some type of disability. One of the most important goals of any society is to promote health, well-being and quality of life of its members. Although health, well-being and quality of life of older Canadian adults in general have been extensively studied, and the underlying determinants were explored, less is known about factors that promote, or impede healthy and active aging in older Canadian adults with disability. In particular, very little is known about participation in leisure and social activities of older Canadian adults with disability and how that might affect their overall health, well-being and life satisfaction.

Study Objectives The main objectives of the proposed study are to: 1) describe social participation patterns of older Canadian adults with disability; 2) determine the most commonly reported barriers for participation in leisure and social activities in older Canadian adults with disability as reported by the survey respondents themselves; and 3) examine the independent effect of participation in leisure and social activities on general health and life satisfaction of older Canadian adults with disability controlling for the effects of their disability-related, socio-demographic, and health-related characteristics.

Methods A secondary analysis of cross-sectional data from the 2006 Participation and Activity Limitation Surveys (PALS) was performed. Descriptive analyses and multivariate regression modeling were employed to address the stated objectives. The study population comprised of PALS respondents who: (a) were at least 65 years of age at the time of the survey and (b)

reported to have some type of disability. A total of 1,755,870 Canadians with disability aged 65 years old and older were included in the study. Given the complex design of the survey, bootstrapped weights were applied using SUDDAN program. Adjusted odds ratios and 99% CIs were used to identify factors that were significantly associated with increased or decreased odds of reporting positive general health and positive life satisfaction.

Results 42% of the population were 65-74 year old, 42% aged 75-84 and 15% were 85 and higher. The proportion of women was greater than men (57.67% vs. 42.33%). More than 60% of the population was living with someone else such as a spouse, a partner or children. 51.41% of the population had 3 to 10 close reliable friends who could help when needed while 11.2% had no close friends. Controlling for the effects of all other factors, the study confirmed a significant independent effect of participation in leisure and social activities on the positive general health [OR = 2.02; (95% CI = 1.27-3.20); $p = 0.003$] and positive life satisfaction [OR = 1.65; (95% CI = 1.08-2.54); $p = 0.02$] of older Canadians with disability. The results were significant for both men and women. The most commonly reported barriers for participation in social and leisure activities of older Canadian with disability were their condition.

Conclusions The results of the study can help to identify venues for promoting participation in leisure and social activities of older Canadians with disability to enhance their health, quality of life and their life satisfaction.

Keywords: aging, disability, participation, leisure and social activities, general health, life satisfaction, national survey

ACKNOWLEDGEMENTS

I would like to thank my advisor, Dr. Shahin Shooshtari, for her support and guidance throughout the process of this research. She has been a great mentor for me. I am grateful for everything she has done for me. I would also like to thank my thesis committee members, Dr. Karen Duncan and Dr. Verena Menec who provided guidance and supported me with my thesis research project. I also thank Dr. Ian Clara at Manitoba Research Data Centre for his guidance regarding the survey data used and the methods of analysis. Last but not the least, my love and appreciation goes to my husband for his unimaginable support and help, my sons and my parents.

DEDICATION

For my dear husband, Mohammad.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1: INTRODUCTION

Population Aging and Disability

The Canadian population is aging and the population of older adults is the fastest growing segment of the population. In 2011, five million Canadians were aged 65 years and older (Public Health Agency of Canada, 2014). It is anticipated that within the next 25 years, the population of older Canadian adults will exceed 10.4 million (Public Health Agency of Canada, 2014). As the prevalence of disability increases with age, the population of older Canadians with disability is on the rise (Heikkinen, 2003; Statistics Canada, 2009). In 2012, almost 3.8 million Canadians, or 13.7% of the adult population, reported being limited in their daily activities due to a disability (Statistical Canada, 2012).

Social Participation of Older Canadian Adults with Disability

One of the most important goals of any society is to promote the health, well-being and quality of life of the members. Although health, well-being, and quality of life of older Canadian adults in general have been studied extensively, and the underlying determinants were explored (Gilmour, 2012; Lee, Jang, Lee, Cho, & Park, 2008), less is known about the factors that promote, or impede health and active aging in older Canadian adults with disability. In particular, very little is known about participation in leisure and social activities of older Canadian adults with disability and how that might affect their overall health, well-being, and life satisfaction. Social participation is a significant factor associated with overall health, life satisfaction, and quality of life of older adults (Gilmour, 2012; Ho, 1991; Riddick & Daniel, 1984; Riddik & Stewart, 1985; 1994). Compared to younger adults, a significantly higher effect of social participation on overall health in older adults was found (Lee et al, 2008). Leisure social participation was the most predictive factor for life satisfaction and overall health among

seniors (Gilmour, 2012; Riddik & Stewart, 1985; 1994; Ho, 1991). To clarify, participation in leisure can be considered a positive influence for all human beings; however, as elaborated by Hawkins et al. (1996), leisure participation can be very different from country to country according to their special culture and geographical factors. For older adults, social participation is associated with: reduced risk of mortality (Syme, 1979; Wilkins, 2003), reduced risk of disability such as task-specific disability (Escobar-Bravo, Puga-Gonzàlez, & Martín-Baranera, 2011; Lund, Nilsson, & Avlund , 2010; Mendes de Leon, et al., 2003), reduced risk of poor self-rated health (Fiori, Antonucci, & Cortina,2006; Glass, Mendes de Leon, Bassuk, & Berkman, 2006), improved cognitive functioning (Barnes, et al., 2004; Wang, Karp, Winblad, & Fratiglioni , 2002) and improved health-related behaviors and life style (Betts Adams, Leibrandt, & Moon, 2011). Disability is a major barrier for social participation (Kaye, 1998). Compared to those with no disability, persons with disabilities have a lower level of social participation (Seeman, 2000), and poorer perception of their overall health and well-being (Freedman et al., 2012).

Philips (1967) used data from a survey of 600 adults in Chicago, and reported a direct relationship between volunteer work and life satisfaction. Meier and Strutzer (2008) investigated the effects of different types of social activities on individuals' life satisfaction in Germany among approximately 22,000 individuals with or without a disability. They found people with intrinsic voluntary social activities – those where volunteers received an internal reward as a direct result of their activity – had higher levels of life satisfaction than those with extrinsic activities when people may also receive utility from helping others in life. None of these studies examined the effect of social participation by type or severity of disability, or sex. There does not appear to be any studies in Canada that have examined the effects of participation in leisure and social activities on general health and life satisfaction of older Canadian adults with

disability. This study aimed to fill this gap in knowledge determine if high participation in leisure and social activities has a significant effect on the overall health and life satisfaction of older Canadian adults with disability, controlling for the effects of several contributing factors. The knowledge gained can be utilized to educate people involved in planning and providing health and social support services to older adults, and in particular those with disability, on the level of leisure social participation of older Canadians with disability and the barriers they face. This information must then be translated into practice and policy, providing older Canadians with disability with the diverse opportunities for leisure social participation to not only maintain, but also promote their overall health and well-being.

Objectives of the Present Study

The main objectives of this study were to: (1) describe participation in leisure and social activity patterns of older Canadian adults with disabilities; (2) determine the most commonly reported barriers for participation in leisure and social activities in older Canadian adults with disabilities as reported by survey respondents; and (3) examine the independent effect of participation in leisure and social activities on general health and life satisfaction of older Canadian adults with disability controlling for the effects of their disability-related (type, and severity of disability), socio-demographic (age, sex, marital status, income, social network), and health-related (reported unmet needs)characteristics.

Research Hypotheses

Null hypothesis 1: There is no significant independent effect of participation in leisure and social activities on general health of older Canadian adults with disability.

Alternative hypothesis 1: Participation in leisure and social activities has significant independent effect on general health of older Canadian adults with disability.

Null hypothesis 2: There is no significant independent effect of participation in leisure and social activities on life satisfaction of older Canadian adults with disability.

Alternative hypothesis 2: Participation in leisure and social activities has significant independent effect on life satisfaction of older Canadian adults with disability.

CHAPTER 2: LITERATURE REVIEW

This chapter provides an overview of the literature in nine sections: population aging, disability, active aging, national disability surveys in Canada, social network, participation on leisure and social actibities of older adults, general health, life satisfaction, association between participation in leisure and social activities among older adults with disability.

Population Aging

It is expected that by 2036, the Canadian population aged 65 years and older will exceed 10.4 million, which will be approximately a quarter (24.5%) of the entire population (Statistics Canada, 2012). Thus, special attention should be paid to this growing segment of the population to support their health and active aging and enhance their quality of life. With aging, defined as "the process of becoming older" (Crandall, 1980), body and cognitive functions, including memory, intelligence, language, and decision-making, gradually decline and deteriorate.

There have been a broad range of studies on older adults and their quality of life which is usually referred to gerontology and covers psychological, socioeconomic and physiological aspects of aging (Crandall, 1980). In research on aging, different types of age grouping have been used; most of the studies used the following classification, which was proposed by Given and Given (1989): Young old (65-74), Middle old (75-84) and oldest old (85+). The current study employed the same classification as it was aimed at exploring differences in participation in leisure and social activities among the young, middle, and oldest old Canadians with disability.

Disability: Conceptual Models and Definitions

There are approximately 650 million people who live with some type of disability around the globe (United Nations, 2006). In Canada, the proportion of Canadians with disability

increased from 14.6% in 2001 to 16.5% in 2006 (MacKenzie et al. 2009). Although population aging is one of the factors leading to this increase, it is not the only reason (Statistics Canada, 2006). As MacKenzie et al. (2009) have stated one third of this increase is due to population aging and two-third of it is due to the period effect which is a combination of social and medical changes overtime.

It is important to note that although there are estimates of disability around the globe, there is no consistent definition of disability (Bigby, 2002). A clear definition of disability can have a great impact on people's understanding of the scope of the problem and related issues. Different definitions could lead to variable estimates of disability in a population. The United Nations defines disability as "description of disturbances in function at the level of the person" (United Nations, 1990). World Health Organization (WHO) defines disability as "a restriction or lack of ability resulted from an impairment to perform an activity in the manner or within the range considered for human being" (WHO, 1992).

The concept of disability has changed considerably overtime. Gradually, the western culture got away from religious concepts and more scientific approaches emerged (MacKenzieet al. 2009). Two of the most influential theories of disability are the medical model of disability and social model of disability (Oliver, 1996). The medical model of disability considers people with disability as problems that need to get well and become normal (Cole, 2006). This approach considers everyone in society as able-bodied and puts people with disability aside, which can have harmful consequences on their physical, psychological and social health. In fact, people with disability encounter problems and barriers in their daily activities that are not due to their impairment but due to the lack of appropriate environmental conditions. For example, we can have buildings with no ramps for people using wheelchairs, a conference with no sign

language interpretation or a physician who does not explain the method of usage of new medications for his/her patient with cognitive problems in a way that patient can understand (MacKenzie, Hurst, & Crompton, 2009). In this model, disability is a phenomenon that should be prevented in first place. If prevention is impossible, curing and rehabilitation will be the next necessary actions (Michalko, 2002).

The social model of disability was first proposed in the United Kingdom in 1970 with the creation of the Union of the Physically Impaired Against Segregation (UPIAS) (Barnes & Mercer, 2004). As pointed out by Oliver in 1980's, the social model of disability has been instrumental in the development of disability studies. This model considers the disability as a social state caused by society and not the result of personal restrictions (Stellman, 1983). According to this approach, medical care is not the right response towards the person's disability. In fact, this model does not deny the presence of individual's physical and mental problems, but considers them as the result of barriers, which occur within society, and the lack of sufficient support for these individuals (Bowe, 1978).

There is a dominant framework for disability: Nagi's disablement model (1965). There is also another model developed based on Nagi's model known as the disablement model of Verbrugge and Jette (1994). These two models are not consistent with either the medical, or social model of disability, but rather provide other perspectives of disability.

Nagi's Model. This model explains how active pathologies and physical impairments would result in disability (Nagi, 1965). According to this model, disability is defined to be the limitation in performance of socially defined tasks in a sociocultural environment. According to this model, a functional limitation is defined as restrictions in the basic physical or cognitive performance, while impairment is defined as anatomical, intellectual, physiological and

emotional loss or abnormality at the tissue, organ or body system. Pathology is also defined as the interruption of normal cellular processes and the effort of the organism to regain a normal state.

Verbrugge and Jette's disablement model (1994). This model was specifically designed as a conceptual framework for research on disability of older adults and is, as mentioned before, based on the Nagi's model (WHO, 1999). Verbrugge and Jette involved the sociomedical perspective in their model to consider the personal and environmental factors affecting the person's disability. This model describes the "disablement process" by: (1) describing how chronic and acute conditions affect functioning in specific body systems, generic physical and mental actions, and activities of daily life, and (2) describing the personal and environmental factors that speed or slow disablement, namely, risk factors, interventions, and exacerbators. According to this model, disability is difficulty doing activities in any domain of life due to a health or physical problem.

There are also some conceptual models that combine medical and social models of disability, which consider the combined effects of physical environment, social, political and economic factors and also functional limitations and personal characteristics which all contribute to the disability that a person experiences (Human Resources and Social Development Canada, 2006). The very first combined model to study disability is explained in the following section.

International Classification of Impairments, Disabilities and Handicaps (ICIDH) Model. International Classification of Impairments, Disabilities and Handicaps (ICIDH) was originally established by the World Health Organization in 1980 through which an appropriate relation between medical and social models of disability is considered (Reynolds & Fletcher-Janzen, 2006). ICIDH could also be used to study disability and persons with disability from

community living perspective rather than only from clinical perspective (Hahn, 2002). One of the contributions of this model is that it helps to distinguish, impairment, disability and handicap from each other. Impairment is defined as any loss or abnormality of psychological, physiological or anatomical structures or functions. Disability is defined as any limitation or loss of ability in doing a task due to impairment. Handicap is defined as a disadvantage imposed to an individual due to impairment or disability which stops him/her from having opportunities related to age, sex and other sociocultural factors (WHO, 1980). Thus the term handicap is used to assess individuals' life experience. One of the limitations of the ICIDH conceptual framework was that it did not consider the role of environment (Badley, 1995). Given this limitation, the ICIDH model was not successful in providing a clear and robust definition of disability that truly could reflect the combined medical and social perspectives of disability by including not only the personal characteristics, but also social and environmental characteristics that are important for individuals' function. To improve the conceptual framework of disability, in 2001, WHO introduced a modified version of ICIDH, which is called International Classification of Functioning, Disability and Health (ICF). This model aimed at providing a unified and standard language and conceptual framework for disability (WHO, 2001). ICF was formed based on an interactive model concentrating on not only impairment, but also on activity limitation and social participation.

International Classification of Functioning, Disability and Health (ICF). One of the most recent conceptual models, which provided a comprehensive view of disability, is called International Classification of Functioning, Disability and Health (ICF) (WHO, 2001). The ICF classifies problems at the level of the body or mind as "impairment", problems in the performance of activities as "activity limitation ", and problems an individual may experience in

a life situation as “participation restriction” (WHO, 2001). In contrast to the uni-directional approach of the ICIDH, in ICF, disability is considered as an outcome of several influencing factors which prevent the individual from having an effective function. These factors might be personal, environmental (such as social, financial and political elements), or attributed to everyday activities (activities) and individual’s involvement in social and community relationships and events (participation), As such, according to the definition of the ICF model, impairment is not the only criterion for considering an individual to have disability. As Figure 1 shows it is the combined effects of health conditions, individuals’ impairments, and contextual factors (i.e., personal factors and environmental factors), which determines the disability outcomes in terms of level of activity and social participation (WHO, 2002).

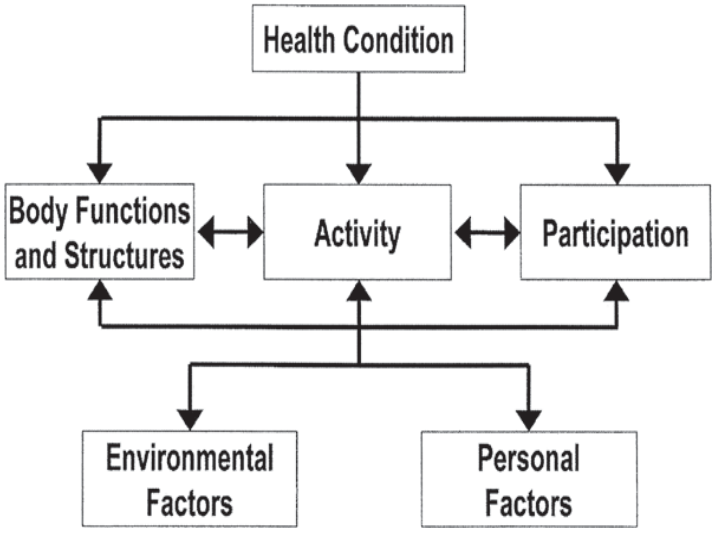

Figure 1. International Classification of Functioning, Disability and Health (ICF). Source: WHO 200

In the ICF model, health condition refers to any medical disorder, or disease, or any type of wound. Contextual factors refer to any personal and environmental characteristics that could potentially have an impact on the individuals’ health, or their level of functioning.

Body functions are physiological functions of body systems that also include psychological functions. Activity is defined as the execution of a task or action by an individual. Personal factors are the particular background of an individual‘s life and living, and comprised of individuals’ characteristics that are not their health conditions, but could potentially affect their health states. These factors may include gender, race, age, level of physical activity, other health-related behaviors, coping styles, social background, education, profession, past and current experiences, individual psychological assets and other characteristics. These characteristics play an important role in disability or adjustment to disability at different stages in life (WHO, 2001).

The term “environmental factors” is very broad and entails factors related to physical and social environments both. There is no validated measure to analyze the concept of environment and its effect on the person’s behavior (Kendig, 2003; Friedman and Wachs, 1999). There are several theories developed to conceptualize, or measure how the environment can influence people’s performance (e.g., Whiteneck & Dijkers, 2009).

The ICF model has conceptualized the term participation as involvement in a life situation. However, measurement of participation is a difficult task based on ICF model since people may have different levels of disability and have variable resources for participation in different types of activities (Whiteneck & Dijkers, 2009).

WHO has defined health as a state of complete physical, mental and social well-being (WHO, 1986). This should reflect a continuous flow between personal factors and functioning within health and/or health state (Huber, et al., 2010). As such, ICF can be considered as a comprehensive model which combines the major models of disability, recognizing the role of environmental factors in the creation of disability and the importance of participation as a desired

outcome, as well as the underlying health conditions (WHO, 2001). Thus, it is advantageous, compared to other models, which may only consider disability as a purely medical or social condition. The use of a universally accepted model of disability such as ICF can effectively increase the consistency and comparability of research studies on disability (Freedman, 2009; Jette, 2009).

The ICF framework was used as the conceptual framework in operationalizing the concept of disability in the Participation and Activity Limitation Survey (PALS) conducted by Statistics Canada in 2001 and 2006 (Mackenzie, 2001). Disability was conceptualized as "the relationship between body structures and functions, daily activities and social participation, while recognizing the role of personal and environmental factors" (statistics Canada, 2001).

Active Aging. The term "active ageing" was adopted by the WHO in the late 1990s and it meant to convey a more inclusive message than healthy aging (Kalache & Kickbusch, 1997). As shown in Figure 2, participation, health, and security are three main components for active aging. According to the WHO definition, people who are actively aging, realize their potential for physical, social, and mental well-being throughout the life course and participate in society, while they are provided with adequate protection, security and care when needed. The security can be achieved through medical, financial and social protections, which facilitate older adults' participation and help them to be socially active. Thus, active aging conveys the concept of health, participation, and security that can enhance quality of life of people as they age. Thus, retired older people who may be ill or live with disabilities can remain active contributors to their families, peers, communities and nations (Wang, 2008; WHO, 2001). In active aging, two important concepts of independence and intergenerational solidarity (i.e., two-way giving and receiving between individuals as well as older and younger generations) have to be considered

by policy makers and planners (WHO, 2001). Although chronic conditions and disabilities are common in later years of life, the notion of active aging is to ensure that older people with chronic conditions and disabilities can remain active and independent, delaying further health decline and institutionalisation.

Figure 2. Determinants of Active Aging. Source: WHO, 2001.

More recently, the WHO model of active aging and the ICF conceptual framework of disability are used to inform research and policy in Canada, The following section is focused on the development of disability surveys in Canada and how they were informed by the models previously described.

National Disability Surveys in Canada

In 1980, the Canadian federal government formed a special committee whose main objective was to review the needs and requirements of Canadians with disability for the House of Commons (Statistics Canada, 2001). One year later, this committee published the report known as the "obstacles", which reflected 130 different recommendations for improving the status of people with disability in Canada (Canadian House of Commons, 1981). One of the most important recommendations was to create a national database on Canadians with disability.

Based on this recommendation, Statistics Canada was tasked to create the required database with high priority using population-based survey. Thus, four comprehensive surveys specifically for Canadians with disability were conducted in the period of 1986-2006 (Statistics Canada, 2006).

With respect to the mentioned recommendations, in 1986, the first series of activity limitation questions were introduced in Census (Statistics Canada, 2006). This set of questions was then used in a post-censual survey, called Health, and Activity Limitation Survey (HALS). HALS 1986 was the first comprehensive survey in Canada focused on people with disability. In HALS 1986, the target population consisted of all people with physical, sensory or psychological disability living in Canada (based on the 1986 census). In a follow up survey, HALS 1991, similar questions were used to measure disability. Both cycles of the HALS focused on the life experience of Canadians with disability and the influence of disability on their daily activities using a national representation sample of Canadian children and adults with disability (Statistics Canada, 1989; Statistics Canada, 1991). Ten years later in 2001, Human Resources and Social Development Canada (HRSDC) provided the required fund to Statistics Canada to conduct the PALS. Both HALS and PALS collected demographic and socio-economic information about people with disability and also information on their type and severity of disability.

According to Statistics Canada, the Participation and Activity Limitation Survey (PALS) as a national survey was designed to collect information on adults and children who have a disability. In this survey, consistent with the ICF conceptual framework, people with disability were defined as those whose everyday activities are limited because of a condition or health problem. Data from the PALS provides information on the prevalence of various disabilities, the supports for persons with disabilities, their employment profile, income and their participation in society

The first cycle of the PALS was conducted in 2001; the second cycle was conducted in 2006. It is important to note that the estimated rates of disability from the 2001 and 2006 PALS may not be compared due to the differences in the sampling strategies and their target populations. In addition, in PALS 2006, some new contents were introduced into the survey to reflect changing technology and emerging policy and program needs.

More recently in 2012, Statistics Canada conducted the Canadian Survey on Disability (CSD) that collected information on the Canadians over 15 years of age whose daily activities were limited due to a long-term condition or health-related problem (Statistics Canada, 2013). The data collected was mainly on type and severity of disability, use of aids and assistive devices, help received or helps required, educational attainment, labor force status, experiences and accommodations at school or work, and ability to get around the community (Statistics Canada, 2002). However, the CSD did not collect data on participation in leisure and social activities, or general health or life satisfaction. As this thesis aimed at investigating the effects of participation in leisure and social activities of older Canadian adults with disability on their life satisfaction and overall health, data from the PALS 2006 were used.

This research is guided by the ICF conceptual framework of disability (WHO 2001) and the WHO active aging conceptual model (WHO 2001).

Given the stated research goal, there are other important concepts that I reviewed and summarized in the following section including concepts of social network, Participation in Leisure and Social Activities, self-rated health and health satisfaction. I also reviewed the original research studies that examined the association between participation in leisure and social activities and health or life satisfaction among older adults with disability.

Social Network

Social network is defined as "network of family, friends, neighbors, and community members" that is an important aspect for studying social support (National Cancer Institute, n.d.). In general, social network has a direct relationship with social support (Emmonset al. 2007; Spanier & Allison, 2001).

Epidemiological studies in Australia have shown that there is a strong relationship between individual's social network and their health and disability outcomes (Giles et al. 2004). A study by Castro et al. (1999) showed that people with chronic disease had lower social network compared to people without any chronic disease. Also, a negative relationship between social network and depression is found (Fiori et al. 2006; Today's Research on Aging, 2009). This is especially significant for an individual with a disability (Mendes de Leon et al. 2003), because maintaining high levels of social participation can provide psychological resources for an individual such as sense of purpose and control over his or her life which is essential to cope with disability (Diehl, 1998; Mendes de Leon et al. 2003; Mendes de Leon et al. 1996; Peat et al. 2004).

Participation in Leisure and Social Activities of Older Adults

Social participation is a determinant of active aging (WHO, 2002; Fernández-Ballesteros et al. 2013). Since many older adults are retired and do not have the commitment to a full-time job, the meaning of participation in leisure and social activities for them could be different than that for the other age groups who usually have commitment to work a number of hours each week (such as 40 hours per week for full-time jobs) (Levasseur et al. 2010). The literature on participation in leisure and social activities, with emphasis on older population is reviewed in the following section.

A large number of studies focused on the topic of participation in leisure and social activities for older adults (Centers for Disease Control and Prevention, 1997; Del Bono et al. 2007; Lindstrom et al. 2001; Utz et al. 2002; Pohjolainen, 1991; Lariviere, 2008; Thompson & Whearty, 2004). However, a careful review of the literature showed that different terms were used in different disciplines to measure the same concepts. For example, in some of the reviewed studies, the concepts of social participation, social engagement, social connectedness, social integration and community involvement were used interchangeably. Some researchers, however, have convincingly argued that these concepts are different, measuring different aspects of individuals' social environment (Levasseur et al., 2010).

According to the available literature used to deconstruct the definitions about social participation, among seven interrogative pronouns, four of them (e.g., who, how, what and where) are most commonly used in the definition of social participation. In 40% of the definitions, dimensions related to "others" (whom and why) are used and in only 23% of definitions, "when" is used. In general, definitions have focused on "person's (who) involvement (how) in activities that provided interactions (what) with others (whom) in society or community (where)" (Levasseur et al., 2010). "Who" is related to a population-based perspective, "how" shows whether the person is involved or engaged in the activity, "what" mostly reflects the social activities and interactions in which community activities and productivity are often used in the definitions and "where" shows the physical or social environment which can be interpreted as home, society or community.

According to the same source, there are different levels of involvement in social activities. At the first level, normal daily activities are considered which are mainly primitive and survival activities such as eating, wearing or cooking. At the second level, people may be in

proximity of each other but they do not have any direct relation or communication. For example, we can consider a person who is walking and passing by his or her neighbor or buys an online ticket and goes to the cinema to watch a movie. At the third level, people can be in relation with each other (face to face or through internet), but they do not pursue any specific task. At level four, people have collaboration with each other and pursue a common goal such as playing tennis or football. At the fifth level, people may help each other such as being a caregiver or volunteer. Finally, at level six, people have extensive collaboration with each other such as civic activities or political parties. Using this classification, social participation is defined as levels of involvement of individuals with others in performing different social activities (levels three through six). Social engagement is defined as levels five and six within the classification described above (Levasseur et al., 2010).

General Health

General health is a subjective summary measure, reflecting the perception that an individual has of his or her overall health (Bjorner et al., 1996). Prior research shows that factors such as existing health conditions, severity of diseases and disabilities, social support, personal resources, and health-related behaviours are all taken into account when people assess their overall health and well-being (e.g., Shooshtari et al., 2007; Fylkesnes & Forde, 1991; Ostergren, 1991; Moum, 1992; Manderbacka et al., 1999). In epidemiological studies, most often a single question is used to measure individual's general health. Sometimes individuals are asked to assess their health in general and without referencing to a specific group, and sometimes they are asked to assess their health compared to that of their peers of similar age. Self-ratings of health are found to be effective, inexpensive and highly reliable measure of health for use in population health surveys (Lundberg & Manderbacka, 1996; Martikainen et al., 1999). For

example it is shown that poor self-rated health is an independent predictor of mortality, even when more objective measures of health are considered (Shapiro et al., 1982; Benyamini et al., 2000; Benyamini et al., 2003). Also, it is shown that poor self-rated health is a significant predictor of functional decline, and recovery from illnesses (Wilcox et al., 1996; Ferraro et al., 1997; Shadbolt, 1997; Idler et al., 2000).

Life Satisfaction

Life satisfaction measures how people evaluate their life as a whole (OECD Better Life Index, n.d.). This concept is closely related to the concept of "quality of life" (QoL). World Health Organization defines QoL as "individuals' perceptions of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns" (WHO, 1998). Life satisfaction is one of the indicators which may represent the quality of life and indicates how well people thrive. According to Fisher (2001), life satisfaction is the fulfillment of basic human need and a precursor to successful aging.

The concept of life satisfaction has been used in different social studies with different applications (Veenhoven et al., 1996). In some studies, life satisfaction is used to measure quality of life (George & Bearon, 1980; Sherwood et al., 1997). In other studies, life satisfaction is used to monitor social progress, and policy evaluation (Dolan et al., 2011).

Association between Participation in Leisure and Social Activities, General Health, and Life Satisfaction among Older Adults with Disability

In 2001, 14% of all Canadians aged 65 years and older living in private households in the ten provinces reported have some degree of disability (Statistical Canada, 2001). According to the same source, there was a direct relationship between individuals' age and prevalence of

disability. For example, among those aged 65+, an estimated 43.4% reported have a disability. This proportion was much higher at 53.3% among those aged 75 years or older. The most common types of disabilities were agility, mobility, hearing, pain and vision problems (statistics Canada, 2001). Mobility-related disability was the most common type of disability reported by Canadians (statistics Canada, 2001).

Prior research shows that the level of social participation significantly decreases with age (Lee et al., 2008). It is also found that social participation has a much more significant positive effect on health of older adults compared to younger adults (e.g., Lee et al, 2008; Riddik & Stewart, 1985). Social participation is now known as a powerful determinant of active/healthy aging (World Health Organization, 2002). For example, Riddick and Daniel (1984) conducted a study, where over 698 retired women and 403 housewives participated. Results of the study showed that leisure participation was the most significant determinant of study participants' life satisfaction. In a follow-up study, Riddik and Stewart (1985) examined data for over 1559 men and women, and similarly found that leisure participation had a significant positive effect on the overall health of the study subjects.

Later, Riddik and Stewart (1994) compared determinants of life satisfaction between African American and Caucasian seniors, and found that for both groups, participation in leisure and social activities, which were measured based on questions from participants on their involvements in recreational, social, reading and exercise activities, was the most significant predictor of life satisfaction. Similar results were reported by Ho (1991).

Several epidemiological studies concluded that social activities can be particularly important for older adults with possible health benefits including reduced risk of mortality, disability, and depression, better cognitive health, self-rated health and health-related behaviors

(Cornwell et al. 2008; Betts et al. 2011; Berkman, Syme, 1979; Wilkins, 2003; Lund, Nilsson, Avlund , 2010; Escobar-Bravo, Puga-Gonzàlez, Martín-Baranera ,2011; Glass, Mendes de Leon, Bassuk, Berkman ,2006; Fiori, Antonucci, Cortina,2006; Wang, Karp , Winblad , Fratiglioni ,2002; Barnes, et al., 2004; Engelhardt, Buber , Skirbekkk , Prskawetz 2010; Zunzunegui et al., 2004; Sirven, Debrand, 2008).

In 2012, Gilmour reported that frequent social participation could be crucially important for improving the quality of life of older adults. He found that activities related to interpersonal relationships and leisure are required for individuals' well-being (Desrosiers et al. 2004). Mendes de Leon, et al. (2003) found a significant negative association between social engagement and risk of task-specific disability in persons aged 65 years and older. They reported that those with frequent social engagement were less likely to report physical disabilities. Gilmour (2012) found a significant positive association between self-perceived health and social participation. More specifically he found that the risk of loneliness and low life satisfaction decreased as level of social participation increased.

It is important to note that social participation cannot prevent disability. However, it has been proposed that individuals' psychological resources from social participation can mitigate the negative effects of disability and lead to individuals' successful aging (Kaye, 1998). Depp and Jeste (2006) reported that in spite of the general believe that successful aging is associated with a lack of disability, the older adults themselves consider their social engagement rather than their physical health and functioning to be a more important factor when assessing if they have aged successfully.

Disability is reported as a major obstacle for social participation (e.g., Kaye, 1998; Seeman, 2000; Freedman et al. 2012). For example, in 1998 Kaye conductd a study based on

data from a national survey and reported that people who had some type of disability were more likely to live alone. Based on a review study focusing on published research on social relationship, social support and health in the period of 1970-1988, it was found that persons with disability had lower level of social participation, which contributed to a lower level of income, lower level of physical activity, and poor diet (Seeman, 2000). Although some individuals are satisfied with their lives even in the presence of severe illness and disability, in most instances, disability can negatively affect individuals' life satisfaction (Freedman, 2012; Menhert et al., 1990). For example, Freedman et al. (2012) found negative effects of disability on subjective well-being. Similar results were reported by Menhert et al. (1990) that there is a negative relationship between disability and life satisfaction.

The existing evidence from the literature suggests that participation in leisure and social activities is important for promoting health and well-being and sense of satisfaction with life among older adults and those with disability. However, the existing evidence is based on studies conducted in other countries (Cornwell et al. 2008; Lund, Nilsson, Avlund , 2010), based on non-representative samples of populations (Zunzunegui et al., 2004). There is also lack of information on type of disability and severity of disability when the association between participation in leisure and social activities and health or life satisfaction was examined in older adults with disability.

The study presented in this thesis aimed at filling this gap in knowledge by examining the independent effect of participation in social and leisure activities and overall health and life satisfaction among older Canadian adults with disability using population-based national-level data. The sex and age differences in the association between participation in social and leisure activities and overall health and life satisfaction were also explored.

CHAPTER 3: METHODS

Data Source

The proposed study involved secondary analysis of cross-sectional data from the master file, which provides responses to all survey questions as collected for all individuals who participated in the Participation and Activity Limitation Survey (PALS) in 2006. This data file was accessed at Manitoba Research Data Center in Winnipeg upon approval of the project by Statistics Canada PALS 2006 had two questionnaires: one survey questionnaire for children (under the age of 15 years) and the second survey questionnaire for adults (aged 15+ years). The goal of PALS 2006 was to collect information regarding Canadians aged 15 years and older who were experiencing limitations in their daily activities due to a long-term condition or health-related problem (Statistics Canada, 2007). The PALS 2006 aimed to collect important information on prevalence of different types of disability, social situation of people with disability and their employment statues, and their participation in social activities. The collected data were primarily used for social policy development at different parts of government, and was also used for evaluation of plans and services for people with disability (Statistics Canada, 2007).

PALS Data Collection Method and Target Population

The PALS 2006 data were collected between October 30, 2006 and February 28, 2007; and participation in the survey was voluntary (Statistics Canada, 2007). Data from the PALS adult survey were used for the purpose of this study. The target population of the PALS 2006 adult survey were adults aged 15+ who were living in private dwellings across 10 Canadian provinces and 3 territories who reported an activity limitation in the Census. Those living on First Nations reserves and those who were clientele of institution, as well as people living on military bases, Canadian Armed Forces vessels, merchant vessels, guard vessels, campgrounds

and parks were excluded (Statistics Canada, 2007). The total sample size was 38,839. The overall response rate to the survey was 73.9%. The PALS 2006 sample was selected using a two-stage stratified sampling design. The Census was used as a sampling framework for the PALS 2006 target population (Statistics Canada, 2007). In Census 2006, two trigger questions were used to filter the people for PALS: (1) Do you have any difficulty hearing, seeing, communicating, walking, climbing stairs, bending, learning or doing any similar activities? 1 = "Yes, sometimes", 2 = "Yes, often", 3 = "No" (2a) Does a physical condition or mental condition or health problem reduce the amount or the kind of activity you can do at home? 1 = "Yes, sometimes", 2 = "Yes, often", 3 = "No" (2b) Does a physical condition or mental condition or health problem reduce the amount or the kind of activity you can do at work or at school? 1 = "Yes, sometimes", 2 = "Yes, often", 3 = "No" (2c) Does a physical condition or mental condition or health problem reduce the amount or the kind of activity you can do in other activities, for example, transportation or leisure? 1 = "Yes, sometimes", 2 = "Yes, often", 3 = "No" (Statistics Canada, 2007). Thus, the PALS 2006 is a sample of people who answered "Yes" to one of the above questions, identified as experiencing an activity limitation, living with a disability (Statistics Canada, 2007).

Study Design

This is a cross-sectional study based on data from the PALS 2006 adult survey.

Study Sample

For the purpose of this study, only PALS respondents who reported disability and were at least 65 years of age at the time of the survey in 2006 were included. The total sample size was approximately 7,500.

Study Measures

Several measures based on the PALS 2006 adult survey were used in the study. The study measures were classified into two groups of independent and dependent variables. The operational definitions of these variables are provided in the following section. For all variables, those with missing values were excluded if they were less than five percent. For those variables with more than five percent missing values, a separate category was defined and included as "missing".

Dependent Variables

Two dependent variables were used to address the stated research objectives.

General Health. Self-rated health was used to measure individuals' general health based on a single question in the "Leisure and Recreation Module". Survey participants were asked a single question to assess their own general health on a five-point scale from excellent to poor (1 = "excellent", 2 = "very good", 3 = "good", 4 = "fair", and 5 = "poor". Those who did not respond, or answered "do not know", or"refused" to answer were considered as missing (0 = "missing". For the purpose of this study, self-rated health response categories were collapsed to classify the survey respondents into one of the following two groups: (1) those who rated their overall health as either excellent, very good, or good, coded as "1" and defined as those who rated their overall health as positive; and (2) those who rated their overall health as either fair, or poor, coded as "0" and were defined as those who rated their overall health as negative. Prior research has assessed Self-Rated Health in a similar manner (e.g., Azarkeivan et al., 2009; Jammom, et al., 2008; Roychowdhury et al., 2003; Shooshtari et al., 2007).

Life satisfaction. In the PALS 2006, life satisfaction was measured based on five questions. Respondents were asked to rate their feelings about certain areas of their life on a

scale from 1 to 10, where 1 = "Very dissatisfied" and 10 = "Very satisfied". The five questions were: (a) Are you satisfied with your relationships with family members?; (b) Are you satisfied with your relationships with friends?; (c) Are you satisfied with your health?; (d) Are you satisfied with your job or main activity?; (e) Are you satisfied with the way you spend your time? Responses to these five questions were averaged. The average score of general life satisfaction on all five items was 7.74 (*Md* = 8). I used the average score and classified the survey respondents into one of the following two categories: (1) those who were unsatisfied with their life, with an average score between one and seven; and (2) those who were satisfied with their life, with an average score between eight and ten.

Independent variables.

Socio-demographic variables.

Age. Survey respondents who were at least 65 years of age at the time of PALS 2006 were selected and classified into one of the following three age groups: 1) those who were between 65 and 74 years of age (young old); 2) those who were between 75 and 84 years of age (old old); and 3) those who were 85 years of age or older (the oldest old).

Sex. Self-reported sex was defined as a dichotomous variable male, coded as "0" and female, coded as "1".

Individuals' Annual Income. Individuals' annual income was measured as a continuous variable on the PALS survey. Based on the frequency distribution of this variable, the survey respondents were classified into one of the following four groups: (1) Low income group, which consisted of those with an annual total income of less than $14,520; (2) Lower middle income group, which consisted of those with an annual income between $14,521 and $19,278; (3) Middle income group, which consisted of those with an annual income between $19,279 and

$30,670; and (3) high income group which consisted of those with an annual income of at least $30,671.

Living Arrangement. All survey respondents were classified into one of the following five groups based on their family status: (1) living with a spouse, (2) living with a common-law partner, (3) lone parents, 4) living with their children, (5) not living with family (who are alone). As I was interested in comparing those who were living alone vs. those who were living with others, I further defined family status as a dichotomous variable with two response categories: (1) living alone including those with non-family person coded as "1"; and (2) those living with someone else including those living with a spouse, common-law partner, lone parents, and children coded as "2".

*Social Network***.** The PALS survey respondents reported the number of close friends they had not including relatives with whom they felt they could speak to at ease about what was on their mind or call for help. The responses included: "none", "1 to 2", "3 to 5", "6 to 10", "11 to 20", "more than 21", "refusal", "don't know", "not stated", and "not asked". A categorical variable with all potential six response categories was defined and classified the survey respondents into one of the following six groups: (1) 1 = "none"; (2) 2 = "1 to 2"; (3) 3 = "3 to 5"; (4) 4 = "6 to 10"; (5) 5 = "11 to 20", (6) 6 = "more than 21", and (7) those who responded"refusal", "don't know", "not stated", and "not asked" were considered "missing".

Disability-related variables.

Type of disability. For the purpose of the PALS 2006, disability was defined based on the activity limitation, which is in accordance with the ICF conceptual framework of disability. People who reported having an activity limitation on the Census 2006 were subsequently asked questions on the PALS about the specific type of disability that have affected their everyday

activities (Statistics Canada, 2007). The PALS 2006 respondents were asked about 10 different types of disability, including: agility, development, hearing, learning, memory, mobility, pain, psychological, seeing, speech, and unknown (See Appendix A). For the purpose of this study, a new categorical variable was defined to classify the survey respondents into one of the following three groups based on their type of disability: (1) movement disability, which included those with any mobility, or agility type disability; (2) sensory disability, which included those with seeing, or hearing disability; and (3) less visible disability which included those with emotional, developmental, memory, learning, communication, or pain disability. Those who reported "unknown" disability were less than five percent of the study sample and were excluded from the analyses.

Degree of disability severity. A categorical variable is used to classify the PALS survey respondents into the following five groups based on their reported degree of disability severity: (1) those with no severe disability coded as "0"; (2) those who reported mild disability coded as "1"; (3) those who reported moderated disability coded as "2"; (4) those who reported severe disability coded as "3"; and (5) those who reported very severe disability coded as "4".

Health-related characteristics.

Reported unmet needs for participation in leisure and social activities. The PALS survey respondents were asked "Would you like to do more activities during your spare time?" Based on the response to this question, the survey respondents were classified into one of the following two groups: (1) those who responded "yes" were classified as those with unmet needs, coded as '1"; and (2) those who responded "no" were classified as those without unmet needs, coded as "0".

Participation in leisure and social activities. *Participation in leisure and social activities* was the key independent variable in this study. Disability affects participation in leisure and social activities outside home more than activities inside home (Raymond, Grenier, & Hanley, 2014). For this reason, this study focused on participation in four different types of leisure and social activities outside of the home based on the following questions: In the past 12 months, did you participate in any of the following activities outside your home? A) visit family or friends, B) do physical activities such as exercise, walk or play sports, C) attend sporting or cultural events, such as plays or movies, D) visit museums, libraries or national or provincial parks. Responses to these questions were either "yes" = 1, or "no" = 0. A "yes" response to any of the above four questions would imply participation in social and leisure activity by the individual. Subsequently the PALS survey respondents who reported participation in any of above four activities, were asked to report how often they participated in each activity. The response options were: (1) everyday; (2) at least once a week; (3) at least once a month; (4) less than once a month; (5) never; (6) refusal; and (7) don't know.

To measure the level of individuals' participation in leisure and social activities, a new variable was derived with four response categories: (1) "everyday" = 4; (2) "at least once a week" = 3; (3) "at least once a month" = 2; (4) "less than once a month" = 1;and (5) "never" = 9. Those who refused to answer these questions or responded "don't know" were also coded as "9", and were excluded from the analyses. The level of individuals' participation in leisure and social activities individually was measured based on the average score on these four questions. The average score on of the level of the individuals' participation in leisure and social activities on all four items was six (*Md* = 6). I used this score as the cut-off point and classified the survey respondents into one of the following groups: (1) average score between 1 and 6, defined as

those with “low participation in leisure and social activities”; and (2) those with an average sum score between 7 and 16, defined as those with “high participation in leisure and social activities”. Those who responded “no” to all of the four questions were considered as the third group with “no participation in leisure and social activities”.

Barriers for participation in leisure and social activity. In the PALS 2006 survey, there is a question, which asks survey respondents to specify any obstacle, which may prevent them from active participation in the society. The question is: What prevents you from doing more leisure activities? The potential responses are: (1) condition, (2) need special aids/equipment, (3) need someone's assistance, (4) transportation services inadequate, (5) no facilities or programs, (6) facilities/equipment not accessible, (7) too expensive, (8) other, (9) do not know, (10) not stated, and (11) not applicable. For the purpose of this study, a categorical variable was defined to classify the survey respondents into one of the following groups: (1) those who reported the condition as the barrier, (2) those who reported the need for special aids/equipment as the barrier, (3) those who reported the need for someone's assistance as the barrier, (4) those who reported inadequacy of transportation services as the barrier, (5) those who reported no facilities or programs as the barrier, (6) those who reported inaccessibility of facilities, or equipment as the barrier, (7) those who reported expense as the barrier, and (8) those missing a valid response.

Data Analysis

Weighted frequencies and cross-tabulations were used to describe the socio-demographic disability-related and health-related characteristics of the target population, their level of participation in leisure and social activities, general health and life satisfaction. Chi-square was used to test the association between participation in social and leisure activities and the two study outcomes of interest.

For multivariate analyses, two sets of multivariate logistic regression analyses were conducted. In the first set, six different models were developed to examine the independent effect of participation in leisure and social activities (the key independent variable) on life satisfaction, controlling for the effects of all the other potential contributing factors: the first model was developed based on the total sample (older Canadian adults with disability aged 65+ years); the second model included those between 65 and 74 years of age only; the third model included only those between 75 and 84 years of age; the fourth model included only those 85 years of age and older. The fifth model was developed based on the data for females 65+ and the sixth model was developed based on the data for males 65+. In the second set, six different models were also developed to examine the independent effect of participation in leisure and social activities (the key independent variable) on life satisfaction, controlling for the effects of all the other potential contributing factors. The same process as the one described above was used to develop one model for the total sample (65+), three different models for each age group (65-74, 75-84, 85+), and two models for the two sexes (males, females).

Because the two outcomes of interest were binary variables, logistic regression was the appropriate method of analysis to use. Logistic regression was used to determine the variables that were significantly associated with the probability of the outcome. Logistic regression output provides us with the "odds ratio", a measure of association, which indicates how strongly the presence or absence of a factor is associated with the occurrence of the outcome of interest. An odds ratio of 1 means that there is no association between the two variables. An odds ratio of less than 1 indicates that the presence of a factor decreases the likelihood of the outcome of interest happening. In this case, the study factor will be known as a protective factor. An odds ratio of higher than 1 indicates that the presence of a factor increases the likelihood of the

outcome of the interest happening. In this case, the study factor will be known as a risk factor. I reported odds ratios and their 95% confidence intervals (CIs) to determine the significant factors. I considered results at the 0.05 level to be statistically significant.

Due to the complex design of the PALS 2006 survey, bootstrap weights were applied to the data when conducting statistical testing. Bootstrapping is a resampling method, where a total of 1,000 subsamples (with replacement) are selected from the main survey sample and there is a set of weights for each subsample, calculated by Statistics Canada. In the case of PALS, there is a set of 1,000 bootstrapped weight variables in the master data file, which when used allow researchers to make use of complex survey design information and provide more accurate estimates of variance and confidence intervals (Wehrens et al., 2000). The data were analyzed with SPSS version 14 (SPSS Inc, Chicago, IL, USA), and STATA version 8 software packages.

Ethical Approval

The study was approved by the Statistics Canada to access the micro-level confidential mater data file at the Research Data Center (RDC) at the University of Manitoba. The Statistics Act was strictly followed during this research. Statistics Canada prohibits researchers using Statistics Canada‘s data from releasing any data, which could be used to determine the identity of a business, individuals, and organization without their prior knowledge or written consent (Statistics Canada 2007). Following this requirement, no output was released if it could be used to direct or lead to residual disclosure of identifiable information. Frequency tables had to represent a cell count of 10 or greater un-weighted, and only weighted and rounded (to base 10) output was released for the purpose of this study. The study was approved by the Health Research Ethics Board (HREB) of the University of Manitoba (see Appendix B).

CHAPTER 4: RESULTS

In the first section of this chapter, the descriptive results are presented to describe the study population including their socio-demographic, disability-related and health-related characteristics. In the second section of this chapter, the analytical results are presented in addressing the stated research objectives.

Description of the Study Population: Older Canadian Adults with Disability

According to PALS 2006, an estimated 1,757,590 Canadians 65 years of age and older had some type of disability. Approximately 42% of the population was aged 65-74 years, 42% were aged 75-84 years and 15% were 85 years of age or older. There were more women than men in the target population (57.67% versus 42.33%). At the time of the survey, more than 60% of the population was living with someone else such as spouse, partner, or children. About 51.41% of the population had 3 to 10 close friends to whom they can rely in the time of need while 11.20% had no close friend.

Table 1. *Distribution of the Study Population by Demographic and Socio-economic Characteristics*

Variables	**Estimated Population**	
	n	**%**
Total	1,757,590	100%
Age		
65 to 74	739,500	42.07
75 to 85	749,020	42.62
85+	269,070	15.31
Sex		
Female	1,013,630	57.67
Male	743,960	42.33
Living Arrangement		
Living Alone	495,140	39.83
Living with Someone	748,090	60.17
Social Network		
None	138,900	11.20
1 to 2 Friends	253,440	20.44
3 to 5 Friends	388,860	31.36
6 to 10 Friends	248,550	20.04
11 to 20 Friends	115,770	9.34
21+ Friends	94,580	7.63
Individuals' Total Income (Individual's Annual Income)		
Less than $14,520	438,900	24.98
$14,521 - $ 19,278	439,280	25.01
$19,279 - $30,670	440,080	25.05
$30,671 or more	438,450	24.96

Disability-Related Measures

Among older Canadians with a disability, 99% reported having a movement disability (mobility disability, agility disability), 89% reported having a sensory disability (hearing disability or seeing disability), and 62% reported having less visible disability (emotional disability, learning disability, memory disability, developmental disability, communication disability or pain disability) (Table 2). Of those with a movement disability, a considerable proportion reported having a mobility disability (96.14%), and a large proportion of Canadians with a sensory disability (87%) reported having a seeing disability. An estimated 51.64% of Canadians with a less visible disability, reported having a pain disability, and only 0.42% reported having a developmental disability. As estimated, 36.24% of the study population reported mild disability, and an estimated 13.88% reported very severe disability.

Table 2. *Distribution of the Study Population by Type and Severity of Disability*

Variables	**Estimated Population**	
	n	**%**
Total	1,755,870	100
Movement Disability		
Yes	1,740,040	99.03
No	17,110	0.97
Mobility Disability		
Yes	1,689,270	96.14
No	67,870	3.86
Agility Disability		
Yes	853,700	48.7
No	899,420	51.3
Sensory Disability		

Yes	1,571,130	89.48
No	184,730	10.52
Seeing Disability		
Yes	1,533,320	87.33
No	222,550	12.67
Hearing Disability		
Yes	372,380	21.2
No	1,384,340	78.8
Less Visible Disability		
Yes	1,085,670	62.47
No	652,360	37.53
Emotional Disability		
Yes	133,720	7.67
No	1,610,370	92.33
Learning Disability		
Yes	91,020	5.27
No	1,634,650	94.73
Memory Disability		
Yes	291,460	16.69
No	1,454,800	83.31
Developmental Disability		
Yes	7,260	0.42
No	1,733,670	99.58
Communication Disability		
Yes	90,680	5.16
No	1,665,870	94.84
Pain Disability		
Yes	902,940	51.64
No	845,580	48.36

Severity of Disability		
Mild	636,980	36.24
Moderate	420,240	23.91
Severe	456,400	25.97
Very Severe	243,960	13.88

Participation in Leisure and Social Activities

More than half of the study population reported low levels of participation in leisure and social activities [(54.9%); *n* = 872,270]. Visiting family or friends was the most frequently reported social activity by the target population. More specifically, 82.25% of the target population reported that they had visited their family or friends in the past 12 months and 30.58% (the smallest group) of the target population reported that they visited museums or libraries. A large portion of the target population (approximately 42%) reported no physical activity.

Table 3. Distribution of the Study Population by Type of Leisure and Social Activities

Variables	**Estimated Population**	
	n	**%**
Total	1,755,870	100
Visit Family or Friends		
Yes	1,315,520	82.25
No	283,920	17.75
Physical Activities		

Yes	928,080	58.02
No	671,370	41.98
Attend Sporting or Cultural Events		
Yes	539,050	33.7
No	1,060,390	66.3
Visit Museums, Libraries		
Yes	493,450	30.85
No	1,105,990	69.15
Level of Participation in Leisure and Social Activities		
No Participation	177,450	11.7
Low Participation	872,270	54.9
High Participation	539,200	33.93

Unmet Needs and Barriers to Participation in Leisure and Social Activity

A large proportion of the study population (36.73%) reported unmet needs for leisure and social activities. About two thirds of those with unmet needs reported their disability condition as a barrier for their participation in leisure and social activities (73.66%). The next most commonly reported barrier to participation in leisure and social activities was the “need for someone’s assistance”, followed by “inadequate transportation services”.

Table 4. *Reported Unmet Needs*

Variables	**Estimated Population**	
	n	**%**
Total	1,755,870	100
Reported Unmet Needs		
Yes	568,930	36.73
No	979,960	63.27

Table 5. *Barriers for Participation in Leisure and Social Activity*

Variables	**Estimated Population**	
	n	**%**
Total	1,755,870	100
Disability Condition		
Yes	418,240	73.66
No	149,550	26.34
Need Special Aids/Equipment		
Yes	35,280	6.21
No	532,510	93.79
Need Someone's Assistance		
Yes	94,090	16.57
No	473,700	83.43
Transportation Services Inadequate		
Yes	73,120	12.88
No	494,670	87.12
No Facilities or Programs		

Yes	43,010	7.57
No	524,780	92.43
Facilities/Equipment not Accessible		
Yes	36,830	6.49
No	530,950	93.51
Too Expensive		
Yes	90,770	6.49
No	477,020	93.51

General Health and Life Satisfaction

Examination of general health revealed that the majority (57%) of older Canadians with disability reported positive health. It was also observed that slightly more than half of the population reported positive life satisfaction.

Table 6. *Distribution of the Study Population by General Health and Life Satisfaction*

Variables	**Estimated Population**	
	n	**%**
Total	1,755,870	100
General Health		
Positive	930,720	57.27
Negative	694,370	42.73
Life Satisfaction		
Positive	637,760	51.3
Negative	605,470	48.7

Association between Individual's Demographic, Social, and Disability-related Characteristics and Their General Health

Results of bi-variate analyses examining the association between individuals' demographic and social characteristics with their general health are summarized in Table 7. The results of bi-variate analyses examining the association between individuals' disability-related characteristics with their general health are summarized in Table 8. There was a statistically significant association between general health and all of the study factors, except for sensory disability. There was a statistically significant association between the severity of disability and general health, with a much larger proportion of those who had very severe disability reporting negative general health compared to those who reported having mild disability (79.86% versus 20.11%).

Table 7. *General Health by Demographic and Social Characteristics, Canadians with Disability Aged 65+, 2006*

Variables	**Negative General Health**		**Positive General Health**		**Total**	**X^2**	**P Value**
	Count	**%**	**Count**	**%**			
Age							.000
65 to 74	287,620	42.05	396,320	57.95	683,940	3,640.24	
75 to 85	313,280	44.99	383,100	55.01	696,380		
85+	93,470	38.19	151,300	61.81	244,770		
Sex							
Female	398,590	42.53	538,680	57.47	937,270	36.69	.000
Male	295,780	43	392,040	57	687,820		
Living Arrangement							
Living Alone	290,680	44.83	357,680	55.17	648,360	1,959.78	.000

Living with Someone else	403,600	41.32	573,050	58.68	976,650		
Social Network							
None	72,750	53.42	63,440	46.58	136,190	26,261.52	.000
1 to 2 Friends	115,780	46.6	132,700	53.4	248,480		
3 to 5 Friends	143,650	37.14	243,130	62.86	386,780		
6 to 10 Friends	91,480	36.97	155,980	63.03	247,460		
11 to 20 Friends	30,190	26.33	84,490	73.67	114,680		
21+ Friends	35,080	37.13	59,290	62.83	94,370		
Individuals' Total Income (Individual's Annual Income)							
Less than $14,520							
$14,521 - $	185,900	51.39	175,840	48.61	361,740	32,063.32	.000
19,278	199,290	46.64	228,030	53.36	427,320		
$19,279 - $30,670							
$30,671 or more	167,640	41.76	233,800	58.24	401,440		
	141,450	32.61	292,330	67.39	433,780		
Level of Participation in Leisure and Social Activities							
No Participation	99,160	59.16	68,460	40.84	167,620	89,789.87	.000
Low Participation	419,890	48.68	442,720	51.32	862,610		
High Participation	142,220	26.4	396,560	73.6	538,780		

Table 8. *General Health by Type and Severity of Disability, Canadians with Disability Aged 65+, 2006*

Variables	Negative General Health		Positive General Health		Total	X^2	P Value
	Count	%	Count	%			
Movement Disability							
Yes	689,000	42.82	920,180	57.18	1,609,180	751.536	.000
No	8,930	45.84	10,550	54.16	19,480		
Sensory Disability	619,650	42.7	831,430	57.3	1451,080	.656	.44
Yes	742,990	42.82	992,280	57.18	1,735,270		
No							
Less Visible Disability							
Yes	542,190	54.03	461,270	45.97	1,003,460	492.05	.000
No	146,670	24.12	461,310	75.88	607,980		
Severity Disability	120,590	20.11	479,180	79.89	599770	277,425.4	.000
Mild	165,470	42.62	222,770	57.38	388240	8	
Moderate	235,930	56.01	185,310	43.99	421240		
Severe	172,380	79.86	43,460	20.14	215840		
Very Severe							

Association between Individual's Demographic, Social, and Disability-related Characteristics with Their Life Satisfaction

Results of bi-variate analyses examining the association between individuals' demographic and social characteristics with their life satisfaction are summarized in Table 9.

Results of bi-variate analyses examining the association between individuals' disability-related characteristics with their life satisfaction are summarized in Table 10. As displayed in Table 9, as age increases, individuals are more likely report to be satisfied with life. There was also a significant association between life satisfaction and sex, with women being more likely than men s to report being satisfied with their life (54.33 % vs. 47.13%). There was also a statistically significant association between life satisfaction and social network, with those having higher number of friends being more likely to report being satisfied with their life. Life satisfaction was also statistically significantly associated with individual's annual income, movement disability, sensory disability, less visible disability and severity of disability. Individuals' level of participation in leisure and social activities was also associated with individuals' life satisfaction. Those who reported higher levels of participation were more likely to report that they are satisfied with their life.

Table 9. *Life Satisfaction by Demographic and Social Characteristics, Canadians with Disability Aged 65+, 2006.*

Variables	**Negative Life Satisfaction**		**Positive Life Satisfaction**		**Total**	**X^2**	**P Value**
	Count	**%**	**Count**	**%**			
Age							
65 to 74	301,070	52.51	272,280	47.49	573,350	6,503.82	.000
75 to 85	238,750	46.03	279,920	53.97	518,670		
85+	65,650	43.41	85,570	56.59	151,220		
Sex							
Female	327,790	45.65	390,270	54.35	718,060	6,337.60	.000
Male	277,680	52.87	247,490	47.13	525,170		
Social Network							

None	86,120	66.02	44,330	33.98	130,450	45,855.3	.000
1 to 2 Friends	145,260	59.28	99,770	40.72	245,030	8	
3 to 5 Friends	179,400	47.37	199,310	52.63	378,710		
6 to 10 Friends	105,320	43.53	136,650	56.47	241,970		
11 to 20 Friends	41,130	35.95	73,280	64.05	114,410		
21+ Friends	30,640	33.16	61,750	66.84	92,390		
Individuals' Total Income							
Less than $14,520	139,530	50.23	138,240	49.77	277,770	477.62	.000
$14,521 - $ 19,278	135,820	47.76	148,550	52.24	284,370		
$19,279 - $30,670	161,030	49.04	167,340	50.96	328,370		
$30,671 or more	168,420	47.85	183,560	52.15	351,980		
Level of Participation in Leisure and Social Activities	69,070	62.46	41,520	37.54	11,059	40,393.8	.000
No Participation	352,670	54.4	295,620	45.6	64,829	4	
Low Participation	179,650	37.59	298,210	62.41	477,860		
High Participation							

Table 10. *Life Satisfaction by Type and Severity of Disability, Canadians with Disability Aged 65+, 2006*

Variables	Negative Life Satisfaction		Positive Life Satisfaction		Total	X^2	P Value
	Count	%	Count	%			
Severity of Disability							
Mild	176,130	34.11	340,210	65.89	516,340	117,698.	.000
Moderate	145,640	47.21	162,880	52.79	308,520	18	
Severe	192,630	62.67	114740	37.33	307,370		
Very Severe	91,080	82.05	19,920	17.95	111,000		
Movement Disability							
Yes	600,510	48.78	630,430	51.22	1,230,940	134.89	.000
No	4,620	38.99	7,230	61.01	11,850		
Sensory Disability							
Yes	548,680	48.86	574,310	51.14	1,122,990	122.198	.000
No	56,680	47.18	63,450	52.82	120,130		
Less Visible Disability							
Yes	419,620	57.11	315,190	42.89	734,810	51,994.4	.000
No	181,750	36.21	320,150	63.79	501,900	3	

Next, I examined the association between individual's demographic, social and disability-related characteristics and participation in leisure and social activities. Results are summarized in Tables 11 and 12. As shown in these tables, statistically significant associations were found between individuals' age, sex, living arrangement, social network, individual annual income, sensory disability, less visible disability, movement disability, severity of disability and their

level of participation in leisure and social activities. Reported unmet needs were also associated with participation in leisure and social activities.

Table 11. *Participation in Leisure and Social Activities by Demographic and Social Characteristics, Canadians with Disability Aged 65+, 2006.*

Variables	**No Participation**		**Low Participation**		**High Participation**		**Total**	X^2	**P Value**
	Count	%	Count	%	Count	%			
Age									
65 to 74	52,230	15.08	346,430	50.76	283,800	41.58	682,460	7,729	.000
75 to 85	68,710	10.14	397,650	58.69	211,150	31.17	677,510	2.26	
85+	56,520	24.68	128,190	55.99	44,260	19.33	228,970		
Sex									
Female	106,180	11.63	5198,90	56.95	286,800	31.42	912,870	6,069	.000
Male	71,270	10.54	352,380	52.12	252,400	37.33	676,050	.41	
Living Arrangement									
Living Alone	82,440	13.1	354,850	56.41	191,800	30.49	629,090	1,420	.000
Living with Someone	94,930	9.89	517,420	53.91	347,410	36.2	959,760	6.99	
Social Network									
None	28,850	21.01	85,700	62.42	22,740	16.56	137,290	1,167	
1 to 2 Friends	43,490	17.29	141,250	56.17	66,750	26.54	251,490	31.32	.000
3 to 5 Friends	24,770	6.36	214,050	55.14	149,350	38.48	388,170		
6 to 10 Friends	7,630	3.07	119,830	48.26	120,840	48.67	248,300		
11 to 20 Friends	3,990	0.78	4,415,05	86.1	67,310	13.13	512,805		
21+ Friends	5,500	5.82	40,770	43.15	48,220	51.03	94,490		
Individuals' Total Income (Individual's Annual Income)									

Less than $14,520	54,350	13.62	231,620	58.06	112,970	28.32	398,940	3,868	
$14,521 - $19,278	45,700	11.64	240,300	61.21	106,570	27.15	392,570	6.94	.000
$19,279 - $30,670	41,280	10.4	217,580	54.83	137,980	34.77	396,840		
$30,671 or more	36,030	9.01	182,130	46.56	181,570	45.52	399,730		
Unmet Needs									
Yes	60,990	10.78	333,790	59	170,920	30.21	565,700	8127.	.000
No	101,280	10.39	510,110	52.33	363,480	37.28	974,870	32	

Those who reported having less visible disability had higher levels of no participation in comparison with those who did not have less visible disability (13.18% vs. 7.58%) (Table 12). In addition, the degree of severity of disability was inversely association with participation in leisure and social activities.

Table 12. *Participation Leisure and Social Activities by Type and Severity of Disability, Canadians with Disability Aged 65+, 2006*

Variables	**No Participation**		**Low Participation**		**High Participation**		**Total**	**X^2**	**P Value**
	Count	**%**	**Count**	**%**	**Count**	**%**			
Sensory Disability									
Yes	150,330	10.57	687,020	48.31	584,730	41.12	1,422,08	6,396.	.000
No	27,120	16.3	82,970	49.86	56,320	33.84	0	58	
							166,410		
Less									

Visible									
Disability									
Yes	128,940	13.18	500,300	51.13	349,250	35.69	978,490	2,686.	.000
No	46,980	7.85	264,650	44.22	286,850	47.93	598,480	29	
Movement									
Disability									
Yes	172,920	10.99	763,040	48.48	638,100	40.54	1,574,06	6,556.	.000
No	4,530	31.39	6,720	46.57	3,180	22.04	14,430	31	
Severity									
Disability									
Mild	29,690	5.08	262,290	44.9	292,220	50.02	584,200	20771	.000
Moderate	28,720	7.46	2,186,20	56.81	137,490	35.73	384,830	9.867	
Severe	58,470	14.16	262,590	63.58	91,920	22.26	412,980		
Very Severe	60,570	29.27	128,770	62.23	17,570	8.49	206,910		

Results from the Logistic Regression Modeling

General Health. Results from the logistic regression analyses are presented in Tables 13 to 18. In tables 13 to 15 the results for the predictors of reporting positive general health are summarized. In tables 16-18, summarize the results for the predictors of reporting positive life satisfaction are summarized.

Individuals who were 85 years and older had greater odds of reporting positive general health compared to those who were 65 to 74 years of age (Tables 13). The odds of reporting positive general health were significantly greater for those with the highest total household income compared to those with $14,520 or less income. Those who reported having 11 to 20 friends had greater odds of reporting positive general health compared to those who reported having no friends. Those who reported a high level of participation in leisure and social

activities had greater odds of reporting positive general health compared to the reference group (i.e., those with no participation in leisure and social activities). Men had a lower odds ratio for their positive general health than women (0.64). Those who were living with someone had a higher of reporting positive general health compared to those who were living alone (1.3 versus 1.0). Those who reported a movement disability had a lower odds ratio for positive general health compared to those who did not have that type of disability. The same relationship was observed for those who had less visible disability. Also, as the level of disability increased from mild to very severe disability, the odds ratio of positive general health reduced.

Table 13. *Predictors of positive General Health for Older Canadian Adults with Disability Aged 65+, 2006 (n= 1,215,350)*

Predictors	**AOR**	**P Value**	**95% CI**
Age			
65 to 74 (Ref. Group)			
75 to 85	1.09	0.46	(0.87-1.36)
85+	2.47	0.000	(1.67-3.64)
Sex			
Female (Ref Group)			
Male	0.64	0.000	(0.50-0.81)
Living Arrangement			
Living alone (Ref Group)			(1.11-1.74)
Living with Someone Else	1.39	0.000	
Social Network			
None (Ref. Group)			

1 to 2 Friends	1.43	0.073	(0.97-2.10)
3 to 5 Friends	1.52	0.028	(1.05-2.21)
6 to 10 Friends	1.28	0.219	(0.86-1.92)
11 to 20 Friends	2.09	0.002	(1.30-3.35)
21+ Friends	1.39	0.180	(0.86-23)
Individuals' Total Income			
Less than $14,520 (Ref. Group)			
$14,521 - $ 19,278	1.22	0.210	(0.89-1.68)
$19,279 - $30,670	1.37	0.038	(1.02-1.85)
$30,671 or more	2.10	0.000	(1.57-2.83)
Movement Disability			
No (Ref. Group)			
Yes	0.31	0.040	(0.10-0.94)
Sensory Disability			
No (Ref. Group)			
Yes	0.80	0.249	(0.55-1.16)
Less Visible Disability			
No (Ref. Group)	0.55	0.000	(0.43-0.70)
Yes			
Severity Disability			
Mild (Ref. Group)			
Moderate	0.39	0.000	(0.30-0.51)
Severe	0.25	0.000	(0.19-0.33)
Very Severe	0.12	0.000	(0.72-0.19)
Level of Participation in Leisure and Social Activities			

No Participation (Ref. Group)			
Low Participation	1.00	0.968	(0.65-1.55)
High Participation	2.02	0.003	(1.27-3.20)

As shown in Table 14, living with someone was associated with significantly increased odds of positive health among the 65-74 years old age group, but not the other two age groups. For the age groups 65-74 and 75-84, having 11 to 20 close friends significantly increased odds of reporting positive general health. This was not the case for those who were at least 85 years of age. High level of income was also significantly associated with higher odds of reporting positive general health among the two younger age groups, but not the oldest age group.

Table 14. *Predictors of Positive General Health for Older Canadian Adults with Disability by Age Group, 2006*

	Aged 65-74		**Aged 75-84**		**Aged 85+**	
Predictors Variables	**AOR 95% CI**	**P Value**	**AOR 95% CI**	**P Value**	**AOR 95% CI**	**P Value**
Sex						
Female (Ref Group)						
Male	0.70 (0.52-0.95)	0.021	0.54 (0.36-0.82)	0.003	0.70 (0.29-1.68)	0.42
Living Arrangement						
Living alone (Ref Group)	1.47	0.013	1.37	0.093	1.10	0.81
Living with	(1.08-1.99)		(0.95-1.97)		(0.50-2.42)	

Someone Else						
Social Network						
None (Ref. Group)						
1 to 2 Friends	1.52 (0.84-2.72)	0.163	1.29 (0.72-2.29)	0.394	1.62 (0.50-5.44)	0.409
3 to 5 Friends	1.57 (0.90-2.74)	0.111	1.41 (0.82-2.43)	0.216	2.42 (0.80-7.36)	0.119
6 to 10 Friends	1.59 (0.92-2.76)	0.095	1.22 (0.66-2.27)	0.525	0.93 (0.28-3.12)	0.912
11 to 20 Friends	2.07 (1.10-3.90)	0.023	2.35 (1.04-5.27)	0.039	1.79 (3.12-10.25)	0.514
21+ Friends	1.09 (0.53-2.22)	0.810	1.65 (0.81-3.38)	0.170	2.37 (0.45-12.45)	0.306
Individuals' Total Income						
Less than $14,520 (Ref. Group)	1.16 (0.76-1.77)	0.50	1.14 (0.69-1.89)	0.60	2.01 (0.73-5.54)	0.176
$14,521 - $ 19,278	1.43 (0.97-2.11)	0.071	1.32 (0.80-2.16)	0.27	1.47 (0.47-4.60)	0.511
$19,279 - $30,670	1.94 (1.30-2.88)	0.001	2.30 (1.36-3.87)	0.002	2.15 (0.74-6.31)	0.161
$30,671 or more						
Movement Disability						
No (Ref. Group)	0.05 (0.00-0.40)	0.005	0.81 (0.17-3.95)	0.80	2.13 (0.00-0.40)	0.523
Yes						
Sensory Disability						
No (Ref. Group)						
Yes	0.99 (0.62-1.59)	0.98	0.74 (0.40-1.38)	0.345	0.64 (0.62-1.59)	0.447

Less Visible Disability						
No (Ref. Group)						
Yes	0.57 (0.42-0.79)	0.001	0.42 (0.29-0.60)	0.000	1.50 (0.42-0.79)	0.383
Severity Disability						
Mild (Ref. Group)						
Moderate	0.35 (0.25-0.47)	0.000	0.50 (0.32-0.77)	0.002	0.20 (0.06-0.60)	0.004
Severe	0.19 (0.13-0.29)	0.000	0.32 (0.20-0.51)	0.000	0.16 (0.49-0.52)	0.002
Very Severe	0.11 (0.06-0.22)	0.000	0.12 (0.06-0.26)	0.000	0.05 (0.01-0.30)	0.001
Level of Participation in Leisure and Social Activities						
No Participation (Ref. Group)						
Low Participation	1.77 (0.95-3.28)	0.071	0.92 (0.48-1.77)	0.800	1.58 (0.20-1.67)	0.315
High Participation	3.87 (2.05-7.33)	0.000	1.65 (0.81-3.35)	0.165	1.16 (0.33-4.02)	0.819

Note. N for individuals aged 65 to 74 was 555,590, for 75 to 84 years old was 515,800, and for aged 85+ was 143,960.

As summarized in Table 15, for both men and women, the odds of reporting positive health increased with age. Among men and women, those who were living with someone had significantly increased odds of reporting positive general health. There was a significant

association between level of income and general health among women, but not among men. For both groups, the odds of reporting positive general health was negatively associated with severity of disability. High participation in leisure and social activities was significantly associated with increased odds of reporting positive general health for women and men both.

Table 15. *Predictors of Positive General Health for Older Canadian Adults with Disability Aged 65+ by Sex, 2006*

	Females		Males	
Predictors	AOR 95% CI	P Value	AOR 95% CI	P Value
Age				
65 to 74 (Ref Group)				
75 to 84	1.18 (0.89-1.57)	0.250	0.98 (0.69-1.38)	0.891
85+	2.69 (1.65-4.37)	0.000	2.47 (1.28-4.75)	0.007
Living Arrangement				
Living alone (Ref Group)				
Living with Someone Else	1.42 (1.05-1.91)	0.022	1.48 (1.028-2.13)	0.035
Social Network				
None (Ref. Group)				
1 to 2 Friends	1.28 (0.72-2.25)	0.395	1.68 (0.97-2.92)	0.064
3 to 5 Friends	1.49 (1.11-3.11)	0.018	1.04 (0.63-1.74)	0.871

6 to 10 Friends	1.26 (0.70-2.26)	0.431	1.22 (0.71-2.08)	0.473
11 to 20 Friends	1.53 (0.79-2.97)	0.207	2.62 (1.36-5.04)	0.004
21+ Friends	1.74 (0.79-3.81)	0.168	1.13 (0.62-2.08)	0.658
Individuals' Total Income				
Less than $14,520 (Ref. Group)	1.58 (1.08-2.30)	0.018	0.60 (0.32-1.10)	0.101
$14,521 - $ 19,278	1.42 (0.96-2.08)	0.077	0.93 (0.53-1.63)	0.799
$19,279 - $30,670	2.59 (1.71-3.94)	0.000	1.33 (0.77-2.30)	0.303
$30,671 or more				
Movement Disability				
No (Ref. Group)				
Yes	0.50 (0.15-1.67)	0.260	0.28 (0.05-1.65)	0.159
Sensory Disability				
No (Ref. Group)				
Yes	0.88 (0.53-1.48)	0.636	0.69 (0.40-1.20)	0.193
Less Visible Disability				
No (Ref. Group)				
Yes	0.50 (0.36-0.70)	0.000	0.63 (0.36-0.70)	0.007
Severity Disability				
Mild (Ref. Group)				

Moderate	0.37 (0.26-0.53)	0.000	0.40 (0.27-0.59)	0.000
Severe	0.23 (0.15-0.35)	0.000	0.23 (0.15-0.36)	0.000
Very Severe	0.13 (0.07-0.25)	0.000	0.08 (0.04-0.18)	0.000
Level of Participation in Leisure and Social Activities				
No Participation (Ref. Group)				
Low Participation	0.96 (0.54-1.71)	0.889	1.14 (0.61-2.12)	0.677
High Participation	2.20 (1.18-4.08)	0.012	1.94 (1.02-3.70)	0.044

Note. There were a total of 707,700 older females and a total of 507,640 older males in the study populations.

Life satisfaction. Results from the logistic regression modeling examining predictors of positive life satisfaction are presented in Tables 16 to18. As shown in Table 16, individuals whose age was 85 years and older, and also those who aged between 75 and 84 had greater odds of reporting positive life satisfaction compared to those who aged 65 to 74 years. Regarding social networks, it was positively associated with individuals' life satisfaction. There was a gradient in life satisfaction by number of friends. Individuals whose number of close friends were more than 21 had significantly greater odds of reporting positive life satisfaction compared to those whose number of close friends were zero. Those who reported to have less visible

disability had a lower odds ratio for positive life satisfaction compared to those who did not have that type of disability (the reference group). As level of disability increased from mild to very severe disability, the odds ratio of positive life satisfaction reduced. Those who reported high participation in leisure and social activities had greater odds of reporting positive life satisfaction compared to those with no participation in leisure and social activities.

Table 16. *Predictors of Positive Life Satisfaction for Older Canadian Adults with Disability Aged 65+, 2006 (n= 1,191,230)*

Predictors	**AOR**	**P Value**	**95% CI**
Age			
65 to 74 (Ref. Group)			
75 to 85	1.41	0.002	(1.13-1.74)
85+	2.42	0.000	(1.66-3.51)
Sex			
Female (Ref Group)			
Male	0.59	0.000	(0.47-0.74)
Living Arrangement			
Living alone (Ref Group)	1.13	0.276	(0.90-1.42)
Living with Someone Else			
Social Network			
None (Ref. Group)			
1 to 2 Friends	1.50	0.048	(1.00-2.25)
3 to 5 Friends	1.82	0.002	(1.24-2.67)
6 to 10 Friends	2.07	0.001	(1.36-3.15)
11 to 20 Friends	3.04	0.000	(1.89-4.88)

21+ Friends	3.84	0.000	(2.32-6.29)
Individuals' Total Income			
Less than $14,520 (Ref. Group)	0.99	0.975	(0.74-1.33)
$14,521 - $ 19,278	1.04	0.801	(0.77-1.39)
$19,279 - $30,670	0.92	0.575	(0.68-1.24)
$30,671 or more			
Movement Disability			
No (Ref. Group)			
Yes	0.35	0.100	(0.10-1.22)
Sensory Disability			
No (Ref. Group)			
Yes	0.87	0.394	(0.62-1.20)
Less Visible Disability			
No (Ref. Group)	0.64	0.000	(0.51-0.81)
Yes			
Severity Disability			
Mild (Ref. Group)			
Moderate	0.64	0.000	(0.50-0.81)
Severe	0.36	0.000	(0.28-0.48)
Very Severe	0.17	0.000	(0.11-0.28)
Level of Participation in Leisure and Social Activities			
No Participation (Ref. Group)	1.16	0.48	(0.80-1.74)
Low Participation	1.65	0.02	(1.08-2.54)
High Participation			

As summarized in Table 17, within each age group, the odds of reporting positive life satisfaction was significantly lower for men than that for women. Among all three age groups, social network (those with 21+ friends) has a statistical significant association with the reported positive life satisfaction. However, it was considerably high for the age group of 85^{+} such that the odds ratio of the reported positive life satisfaction for those with 21^{+} friends is 10.21.

Among all age groups, those with less visible disability had a lower odds ratio compared to those without that type of disability (reference group). Also, for all age groups, the severity of disability was negatively associated with odds of reporting positive life satisfaction. There was a significant positive association between the level of participation in leisure and social activities and reported positive life satisfaction among those who aged 74-85 years.

Table 17. *Predictors of Positive Life Satisfaction for Older Canadian Adults with Disability by Age Group, 2006*

	Aged 65-74		**Aged 75-84**		**Aged 85+**	
Predictors	**AOR 95% CI**	**P Value**	**AOR 95% CI**	**P Value**	**AOR 95% CI**	**P Value**
Sex						
Female (Ref Group)						
Male	0.71 (0.53-0.95)	0.024	0.59 (0.40-0.86)	0.007	0.25 (0.09-0.67)	0.006
Living Arrangement						
Living alone (Ref						

Group)						
Living with Someone Else	1.31 (0.97-1.77)	0.072	0.81 (0.57-1.15)	0.246	2.60 (1.15-5.87)	0.021
Social Network						
None (Ref. Group)						
1 to 2 Friends	2.52 (1.21-5.26)	0.014	1.01 (0.59-1.75)	0.960	1.26 (0.37-4.36)	0.711
3 to 5 Friends	2.68 (1.32-5.46)	0.006	1.25 (0.75-2.08)	0.396	3.14 (0.99-9.92)	0.051
6 to 10 Friends	3.29 (1.58-6.85)	0.001	1.35 (0.73-2.48)	0.340	3.10 (0.89-10.80)	0.076
11 to 20 Friends	4.89 (2.21-10.86)	0.000	2.05 (0.99-4.21)	0.051	3.18 (0.57-17.81)	0.189
21+ Friends	4.88 (2.09-11.41)	0.000	2.91 (1.43-5.93)	0.003	10.21 (0.57-17.81)	0.039
Individuals' Total Income						
Less than $14,520 (Ref. Group)	0.88 (0.58-1.33)	0.544	0.97 (0.60-1.56)	0.889	1.58 (0.55-4.58)	0.394
$14,521 - $ 19,278	0.99 (0.68-1.45)	0.991	1.22 (0.76-1.99)	0.403	0.81 (0.26-2.47)	0.710
$19,279 - $30,670	0.82 (0.56-1.20)	0.304	1.05 (0.64-1.73)	0.830	0.87 (0.27-2.78)	0.809
$30,671 or more						
Movement Disability						
No (Ref. Group)						
Yes	0.26 (0.04-1.71)	0.159	0.40 (0.07-2.30)	0.309	1.18 (0.19-7.26)	0.856
Sensory Disability						

No (Ref. Group)						
Yes	0.85 (0.55-1.33)	0.485	0.98 (0.58-1.66)	0.956	0.62 (0.17-2.32)	0.479
Less Visible Disability						
No (Ref. Group)						
Yes	0.60 (0.44-0.81)	0.001	0.63 (0.43-0.92)	0.016*	0.88 (0.40-1.92)	0.741
Severity Disability						
Mild (Ref. Group)						
Moderate	0.65 (0.48-0.90)	0.008	0.70 (0.47-1.06)	0.091	0.36 (0.14-0.91)	0.031
Severe	0.33 (0.23-0.47)	0.000	0.40 (0.25-0.63)	0.000	0.33 (0.12-0.92)	0.034
Very Severe	0.16 (0.08-0.31)	0.000	0.17 (0.08-0.38)	0.000	0.14 (0.03-0.64)	0.011
Level of Participation in Leisure and Social Activities						
No Participation (Ref. Group)						
Low Participation	0.75 (0.39-1.44)	0.391	1.93 (1.10-3.40)	0.022	0.81 (0.27-2.40)	0.707
High Participation	1.12 (0.57-2.20)	0.736	2.62 (1.45-4.75)	0.001	1.09 (0.30-3.94)	0.889

Note. N for individuals aged 65 to 74 was 552,310, for 75 to 84 years old was 502,030, and for aged 85+ was 136,890.

As seen in Table 18, the odds of reporting positive life satisfaction significantly increased with age among women only. For both men and women, those with movement and less visible disability had lower odds of reporting positive life satisfaction compared to those without these types of disabilities. There was a significant negative association between severity of disability and odds of reporting positive life satisfaction for both men and women. High level of participation in leisure and social activities was also found to be a significant predictor of positive life satisfaction among women, but not men.

Table 18. *Predictors of Positive Life Satisfaction for Older Canadian Adults with Disability Aged 65+ by Sex, 2006*

	Females		**Males**	
Predictors	**AOR** **95% CI**	**P Value**	**AOR** **95% CI**	**P Value**
AGE				
65 to 74 (Ref Group)				
75 to 84	1.58 (1.18-2.11)	0.002	1.17 (0.84-1.64)	0.347
85+	3.42 (2.13-5.47)	0.000	1.40 (0.71-2.77)	0.332
Living Arrangement				
Living alone (Ref Group)				
Living with Someone Else	0.81 (0.57-1.15)	0.246	1.14 (0.77-1.67)	0.035
Social Network				
None (Ref. Group)				
1 to 2 Friends	1.01 (0.59-1.75)	0.960	1.17 (0.58-2.35)	0.662
3 to 5 Friends	1.25 (0.75-2.08)	0.396	1.54 (0.79-3.01)	0.207
6 to 10 Friends	1.35 (0.73-2.48)	0.340	1.88 (0.93-3.77)	0.077
11 to 20 Friends	2.05 (0.99-4.21)	0.051	3.33 (1.57-7.07)	0.002

21+ Friends	2.91 (1.43-5.93)	0.003	3.64 (1.75-7.57)	0.001
Individuals' Total Income				
Less than $14,520 (Ref. Group)				
$14,521 - $ 19,278	0.97 (0.60-1.56)	0.889	1.01 (0.62-1.94)	0.738
$19,279 - $30,670	1.22 (0.76-1.99)	0.403	0.98 (0.58-1.63)	0.911
$30,671 or more	1.05 (0.64-1.73)	0.830	1.24 (0.76-2.04)	0.390
Movement Disability				
No (Ref. Group)				
Yes	0.40 (0.07-2.30)	0.309	0.23 (0.03-1.72)	0.152
Sensory Disability				
No (Ref. Group)				
Yes	0.98 (0.58-1.66)	0.956	0.73 (0.45-1.20)	0.218
Less Visible Disability				
No (Ref. Group)				
Yes	0.63 (0.43-0.92)	0.016	0.69 (0.50-0.97)	0.034
Severity Disability				
Mild (Ref. Group)				
Moderate	0.70 (0.47-1.06)	0.091	0.74 (0.51-1.07)	0.110
Severe	0.40 (0.25-0.63)	0.000	0.47 (0.30-0.73)	0.001
Very Severe	0.17 (0.08-0.38)	0.000	0.16 (0.07-0.37)	0.000
Level of Participation in Leisure and Social Activities				
No Participation (Ref. Group)				
Low Participation	1.93 (1.10-3.40)	0.022	0.75 (0.35-1.59)	0.448
High Participation	2.62 (1.45-4.75)	0.001	1.39 (0.65-2.98)	0.398

Note. N for Females Older Adults was 694,450, and N for Males was 496,780.

Summary of the Findings

Approximately 42% of the population aged in the range of 65-74 years, 42% aged 75-84 years and 15% were 85^{+} years old. There were more women than men in the study population (57.67% versus 42.33%). More than 60% of the study population were living with someone such as spouse, partner, or children. About 51.41% of the population had 3 to 10 close friends whom they can rely on in the time of need while 11.20% had no close friends. An estimated 36.73% of the study population reported unmet needs for participation in leisure and social activities. The most commonly reported barriers for participation in social and leisure activities of older Canadian with disability were their disability condition. Controlling for the effects of all other factors, the study confirmed a significant independent effect of participation in leisure and social activities on the positive general health and positive life satisfaction of older Canadians with disability. The results were significant for both men and women.

CHAPTER 5: DISCUSSION AND CONCLUSIONS

General Discussion

The main objectives of the present study were to: 1) describe participation in leisure and social activities patterns of older Canadian adults with disability; 2) determine the most commonly reported barriers for participation in leisure and social activities in older Canadian adults with disability; and 3) examine the independent effect of participation in leisure and social activities on general health and life satisfaction of older Canadians with disability.

Although some studies have examined the relationship between social participation and general health or life satisfaction in older populations (Riddick &, Daniel, 1984; Riddik & Stewart, 1985; Riddik & Stewart, 1994; Ho, 1991; Gilmour, 2012), less was known specifically about the effects of social participation on general health and life satisfaction of older Canadian adults with disability. In addition, none of the above studies examined the effect of social participation by type, or severity of disability, or by sex.

In this study, I used national-level data from the Participation and Activity Limitation Survey (PALS) 2006, which provides a wide range of information on demographics, socio-economic characteristics, health status, social participation and life satisfaction for people with different types of disability residing in private and some collective households across the ten provinces and three territories in Canada (Statistics Canada, 2007). In PALS 2006, disability was defined broadly based on activity limitations that the individuals experienced; a concept of disability that is consistent with the World Health Organization's (WHO) proposed International Classification of Functioning, Disability, and Health (ICF) model. Thus, the survey allowed to measure 10 different types of disabilities classified into three main groups of movement disability, sensory disability, and less visible disability.

To the best of my knowledge, the present study is the first Canadian study based on national-level data to examine the effects of participation in leisure and social activities on general health and life satisfaction of older Canadian adults with disability.

In the PALS 2006, overall health of the survey participants was measured using the single-item self-rated health. General health can be measured using single-item, or more complex multi-item measures, with each having its own advantages and disadvantages (Fayers & Machin, 2000; Sloan et al., 2002). The single item measure of general health, for example, the self-rated health indicator used in PALS 2006 enables individuals to provide a subjective assessment of their health that is found to have good reliability (Gill & Feinstein, 1994) and predictive validity for a number of health outcomes including mortality (Menec et al. 2007; Mossey & Shapiro, 1982; Shooshtari et al. 2007). The single-item measures of overall health are easier to administer on a national survey and it is less stressful for participants (de Boer, et al., 2004; Fayers & Sprangers, 2002; Sloan et al., 2002). In addition, some of the multiple-item measures of health and quality of life such as the 36-item Short Form Survey (SF-36) may cause anxiety in participants with disability (Krahn et al., 2009), because some of the questions (e.g., those on "climbing a flight of stairs" might not be appropriate to measure health in persons who have mobility, or agility type disability. Climbing the stairs may not even be a necessary activity when the environment is designed to be accommodating for this reason. In this study I used the single-item self-rated health to measure general health status among the target population that consisted of older Canadians with disability.

Several key findings were emerged that are discussed in the following section. First, it was found that 11.7% of older Canadians with disability did not participate in any leisure or social activities in 2006. Participation in leisure and social activities also significantly decreased

with age. Among those aged 65-74 years, an estimated 41.58% reported having high level of participation in leisure and social activities. Among those who were aged 75-84 years, 31.17% had high level of participation. Among those who were aged 85 years and older, only 19.33% reported high level of participation in leisure and social activities. Similar results have been obtained in previous studies (Lee et al., 2008). The observed age differences in participation in leisure and social activities could potentially be due to the normal aging or pathological factors. In this study, I also found that Canadian men have slightly higher level of participation in leisure and social activities than women (89.45% versus 88.37%). The observed difference might be due to the gendered division of labour within the family. That is, although women's labour force participation has increased over the years, women are still more responsible for household work than men, which limits women's time for participation in leisure and social activities. Although the gender gap in household work has been closing in Canada, it is larger for older adults than younger generations (Marshall, 2011).

Second, it was found that older Canadians with disability who were not living alone reported higher levels of participation in leisure and social activities in comparison with those who had disability living alone. It is proposed that living with someone else provides a sense of social support which is crucial for people with disability and can create a sense of purpose and control over their life for them (Diehl, 1998; Mendes de Leon et al. 2003; Mendes de Leon et al. 1996; Peat et al. 2004). Previous research has shown a significant relationship between individuals' size of their social networks and their level of social participation. More specifically it is shown that by increasing number of friends, individual's tendency for social participation enhances. In this study, it was found that only 16.56% of those who reported having no friends had high levels of participation in leisure and social activities. Among those who reported having

more than 21 friends, an estimated 51% had high levels of participation in leisure and social activities. Previous studies have reported similar results (e.g., Chang et al. 2014). When number of close friends with whom an individual has a sense of relaxation is increased, a type of supporting resources is created for that individual. This is especially useful for those with disability which can help them cope with their disability, have more flexibility in their life and consequently more easily participate in social activities.

Third, it was found that higher income was significantly associated with higher levels of participation in leisure and social activities among the target population. More specifically, only 28.2% of individuals with annual household income of $14,520 and lower reported high levels of participation while 42.52% of those with annual household income of $30,671$ reported high levels of participation. This finding is consistent with what was previously reported (Conference Board of Canada, 2013). It is noted that persons with disability from higher household income might be more likely to overcome some of the barriers for participation in leisure and social activities. Some of the reported barriers are transportation expenses, medical and pharmacological expenses or providing special equipments required for participation of people with disability (Shooshtari et al. 2012).

Forth, a statistically significant association was found between sensory disability (hearing and seeing disabilities) and participation in leisure and social activities. More specifically it was found that persons with a sensory disability were more likely to have high levels of participation in leisure and social activities compared to those without sensory disability (41.12% vs. 33.84%). It should be noted that in this study persons with or without sensory disability might have had other types of disability. Although some might think that sensory impairments prevent individuals from participation in leisure and social activities, previous researches have

demonstrated that persons with sensory impairments do in fact develop a sense of community among themselves, which can promote social participation. For example, a study by Cambell et al. (1999) found that although older adults who reported vision and hearing impairment reported more comorbidities than their non-hearing impaired and non-visually impaired peers, impaired adults with sensory impairments were more able to sustain valued social participation roles than those who did not have these types of impairments. It is noted that specifically for those who have hearing disability, many consider themselves as part of the Deaf community, which gives them a sense of belonging to a large social network (Humphries & Padden, 2005).

Fifth, a significant association was found between less visible types of disability (including emotional, developmental, memory, learning, communication, or pain disability) and level of participation in leisure and social activities. More specifically, those with less visible disability were less likely to have high levels of participation in leisure and social activities compared to those without these types of disabilities (35.69% versus 47.93%). One way to explain this can be based on the fear-avoidance model of chronic pain (Lethem et al. 1983). According to this model, individuals' fear may results in their avoidance in different activities which also may cause emotional problems such as depression or depressive symptoms. This may result in a vicious loop that may make people less active, which may lead to more severe depression and therefore individuals' inactivity.

Another reason for the low participation of individuals with less visible disability could be the language impairments that these individuals experience, for example those with aphasia (a type of communication disability) which can negatively influence their friendship. Friendship is a central core for quality of life, social engagement and emotional well-being. It is found that people with aphasia have lower communication skills and consequently less friends and smaller

social networks (Davidson et al. 2008). In general, the current study shows that among older adults with different types of disability, those with less visible disability are more likely to have lower levels of participation in leisure and social activities.

Sixth, it was found that the severity of disability significantly affect the individuals' level of participation in leisure and social activities. People with more severe disabilities were less likely to participate in the leisure and social activities. In order to promote participation in leisure and social activities, and prevent their social isolation, which is found to be a risk factor for premature death, and a number of other health outcomes in older people (Holt-Lunstad et al. 2015), the specific needs of this population had to be met.

Seventh, I examined general health and life Satisfaction of the study population and found that the likelihood of satisfaction with life increased with increasing age. More specifically, of those aged 65-74 years, an estimated 47.5% were satisfied with their life. Among those aged 75-84 years, a higher proportion, 54% were satisfied with their life. This proportion was increased to 56.6% among those aged 85 years and older. The same positive association was found between self-rated health and age for the study participants. Previous studies have also reported similar results. For instance, in a study conducted with 300,000 adults in 2012-2015, it was found that those aged 65-79 years were more likely to report higher levels of overall health and well-being than those aged 45-59 (Office for National Statistics, 2016). It is suggested that different generations may have different experiences and expectations that may affect their life satisfaction and overall health.

Even studies which involved older adults with chronic pain found that the likelihood of life satisfaction and perceived positive health increases with age (Mantyselka, et al., 2003; Hunfeld, et al., 2001; Wang, et al., 1999; Cleeland & Ryan, 1994; Becker, et al., 1997). It is

suggested that when individuals age, their attitudes towards pain change since they consider pain as a natural part of the aging and they may not even report it on a survey (Jakobosson, et al., 2003).

Eight, in the present study it was found that men were less likely than women to have a positive assessment of their overall health (47.13% versus 54.35%). However, the observed difference was not statistically significant. A similar finding was reported in previous research in ratings of general health by sex. This is consistent with the findings reported by Cott et al. in (1999) and Zunzunegui et al. (2004). They noted that overally women had a more positive attitude perception of their health and more satisfied with their life compared to men, even when they suffer from chronic decreases such as osteoarthritis or chronic pain. This indicates that women probably have better mechanisms to cope with pain or other health problems.

Ninth, results of this study showed that living arrangement and size of social support network were significant factors associated with the study participants' general health and life satisfaction. More specifically it was found that by increasing number of friends, the likelihood of reported negative health and life satisfaction was decreased. However a plateau effect was observed when examining general health. More specifically it was found that for individuals, who had more than 21 friends, the likelihood of reporting positive general health was not significantly different from that of individuals who reported having 3 to 5 friends. It has been found in previous studies that receiving support from friends and family and having a life mate have positive effects on leisure-time physical activity and walking (Booth et al. 2000; Giles-Corti & Donovan, 2003; Castro, et al. 1999; Kahn et al., 2002). It is also shown there is a significant relationship between older adults' social network and their health (Wang, et al., 2005; Zunzuneguli et al. 2004). For instance, in a study on self-rated health and social network

conducted on two French-speaking communities in Quebec, it was found that older Canadians with disability who had fewer friends, had higher odds of reporting poor self-rated health.

Tenth, in this study I examined if participation in leisure and social activities is an independent determinant of general health among older Canadians with disability. This was confirmed based on the multivariate regression results. It is found that in total 88.83% of older Canadians with disability have a level of participation in leisure and social activities (a combination of 54.9% and 33.33% of low and high participation, respectively) and only 11.7% reported no participation. Those who reported high participation in leisure and social activities had significantly increased odds of reporting positive general health which was 2.02 times higher compared to those who had no participation. Results were similar to those reported in previous studies (Riddick & Daniel, 1984; Riddik & Stewart, 1985; Riddik & Stewart, 1994; Ho, 1991; Gilmour, 2012).

It was found that there was a significant association between the individual annual income and general health among older Canadians with disability. Similar results were found by Cott et al. (1999) in a study focusing on self-rated health for Canadians over 20 year old with or without chronic health conditions or disability. It has been suggested that the economic status may affect the health of individuals through access to medical care or social services (Wiliams & Collins, 1995). Economic problems can also cause stress and anxiety which may negatively influence individuals' health.

. Eleventh, in this study, I found a significant independent effect of participation in leisure and social activities on individuals' life satisfaction. For example, those with high levels of social participation had significantly higher odds of reporting being satisfied with their life. This finding is in agreement with the findings of previous studies which found structural

quantitative measures of interaction are the best predictors of life satisfaction (Berkman & Syme, 1979; House, Robbins, & Metzner, 1982; Riddick & Daniel, 1984; Riddik & Stewart, 1985; Riddik & Stewart, 1994; Ho, 1991; Gilmour, 2012).

Study Limitations

The present study was based on cross-sectional data obtained from the PALS 2006. The cross-sectional data is the data that is collected from survey participants at one point in time only. It is not possible to measure changes in the study characteristics for the study population over time, or to establish the temporal relationship between study variables. Thus, no causal inferences could be made based on the study results. Most of the statistical tests were correlation in nature, indicating associations. There might also be some bias in responses due to social acceptability. It should also be noted that the participants'' responses might have been affected by the presence of others when they were not alone answering survey questions.

Another limitation relates to the measure of disability itself. The PALS participants were those who self-reported having an activity limitation, which was the basis for classifying individuals' as having a "disability'. The self-reported data is susceptible to recall bias. In addition, persons with activity limitations, for example, those with cognitive, or intellectual disabilities might not have a complete understanding of their condition to report it (Statistics Canada, 2007). It is found that the number of Canadians who reported having mild to severe disability has increased over time (Statistics Canada, 2007). This indicates that Canadians have more accepted individuals with disability and this, in turn, has led to individuals being more relaxed in disclosing their disability.

Proxy responding is also another source of bias that might potentially affected the results of this study. PALS allows those who may be absent during the implementation time of the survey, those who may not be able to speak English or French and those who may have mental or physical problems to participate in the survey by proxy responding (Statistics Canada, 2007). The proxy respondent must have enough knowledge of the individual's disability and his or her limitations. It is reported that proxy responding is very common especially among older adults aged 75 years and older (Statistics Canada, 2007). In the PALS mater data file used for this study, no information on proxy responding for the survey participants was recorded. Therefore, it was not possible to investigate the impact of proxy responding on the results reports in this study. Statistics Canada reported the overall proxy rate for PALS 2006 adult survey at 12.1% (Statistics Canada, 2007).

Policy and Practice Implications of the Study Findings

Results of the present study shows that approximately 12% of older Canadians with disability reported they have not participated in any leisure or social activities over the last 12 months. An additional 55% reported low levels of participation in leisure and social activities. This finding indicates the need for development of policies and programs to promote social participation of older Canadians with disability to enhance their overall health and life satisfaction. Some of the recommended practical actions are implementing the country-special human right legislation, convention of the international protection of adults, and further consideration of the convention on the rights of persons with disability (United Nations, 2008).

This study also enhanced the current knowledge on the barriers for participation of older Canadians with disability. The knowledge gained could assist with the development of the

targeted strategies and programs to support or facilitate the participation of older adults with disability, and therefore promote their health and enhance their life satisfaction.

Directions for Future Research

This research was conducted based on the PALS data which is a cross-sectional data. There is a great need for future studies based on longitudinal data to monitor general health and life satisfaction of the study population over time as they get older. Canadian Longitudinal Study on Aging (CLSA) which is the only national-level survey of longitudinal nature will follow approximately 50,000 men and women who are between ages of 45 and 85 when recruited, for at least 20 years, which is aimed at providing information on changing biological, medical, psychological, social lifestyle and economic aspects of older Canadian's lives (Canadian Longitudinal Study on Aging, 2016). Using the CLSA data, future studies should examine transitions in participation in leisure and social activities in relation to changes in health and life satisfaction over time to gain a deeper understanding of the factors impeding or promoting social participation and therefore health and well-being of older Canadians.

Knowledge Translation and Dissemination

The study findings could be used by several stakeholder groups. First, persons with disability could potentially benefit from the study results, knowing that participation in leisure and social activity is beneficial to their health and life satisfaction. Results of the study on factors associated with increased or decreased risk of social participation by older Canadians with disability could potentially suggest to policy makers and planners ways of promoting health and well-being of this vulnerable group of Canadians. Study findings will be broadly disseminated, presented, and published at the scientific conferences and journals in the fields of Community and Public Health, Family Studies, Aging and Disability.

Summary and Conclusions

The detailed analyses conducted national-level data for older Canadians with disability showed that participation in leisure and social activities outside home for persons 65+ with disability has the potential to promote their general health and life satisfaction. This finding highlights the important of providing such opportunities and support services to facilitate participation of this population in leisure and social activities as a way to promote their health, and enhance the quality of life for these individuals themselves and that of their families and caregivers.

APPENDICES

Appendix A. Definition of each of the ten types of disability (Statistics Canada, 2007).

Type of Disability	PALS Definition
Agility	Difficulty bending, dressing and understanding oneself, getting into or out of bed, cutting own toenails, using fingers to grasp or handling objects, reaching in any direction (for example, above one's head) or cutting own food.
Developmental	Cognitive limitations due to an intellectual disability or developmental disorder such as Down's syndrome, autism or an intellectual disability caused by a lack of oxygen at birth.
Hearing	Difficulty hearing what is being said in a conversation with one other person, in a conversation with three or more persons, or in a telephone conversation.
Learning	Difficulty learning because of a condition, such as attention problems, hyperactivity or dyslexia, whether the condition was diagnosed by a teacher, doctor or other health professional.
Memory	Limited in the amount or kind of activities that one can do due to frequent periods of confusion or difficulty remembering things. These difficulties may be associated with Alzheimer's disease, brain injuries or other similar conditions.
Mobility	Difficulty walking half a kilometer or up and down a flight stairs, about 12 steps without resting, moving from one room to another, carrying an object of 5 kg (10 pounds) for 10 meters (30 feet) or standing for long periods.
Pain	Limited in the amount or kind of activities that one can do because of a long-term pain that is constant or reoccurs from time to time (for example, recurrent back pain)
Psychological	Limited in the amount or kind of activities that one can do due to the

	presence of an emotional, psychological or psychiatric condition, such as phobias, depression, schizophrenia, drinking or drug problems.
Seeing	Difficulty seeing ordinary newsprint or clearly seeing someone's face from 4 meters away (12 feet).
Speech	Difficulty speaking and/or being understood.

Appendix B. Ethics Approval

UNIVERSITY OF MANITOBA | BANNATYNE CAMPUS Research Ethics Board

P126 - 770 Bannatyne Avenue
Winnipeg, Manitoba
Canada R3E 0W3
Telephone 204-789-3255
Fax 204-789-3414

HEALTH RESEARCH ETHICS BOARD (HREB)
CERTIFICATE OF FINAL APPROVAL FOR NEW STUDIES
Delegated Review

PRINCIPAL INVESTIGATOR:	INSTITUTION/DEPARTMENT:	ETHICS #:
Hanieh Chizari	U of M/Community Health Sciences/Family Social Services	HS18842 (H2015:295)
APPROVAL DATE: October 9, 2015	**EXPIRY DATE:** October 9, 2016	
STUDENT PRINCIPAL INVESTIGATOR SUPERVISOR (If applicable): Dr. S. Shooshtari		

PROTOCOL NUMBER:	PROJECT OR PROTOCOL TITLE;
Na	Examining the Effect of Participation in Leisure and Social Activities on General Health and Life Satisfaction of Older Canadian Adults with Disability
SPONSORING AGENCIES AND/OR COORDINATING GROUPS: NA	

Submission Date of Investigator Documents:	HREB Receipt Date of Documents:
July 13 and September 9, 2015	July 28 and September 30, 2015

THE FOLLOWING ARE APPROVED FOR USE:

Document Name	Version(if applicable)	Date
Protocol: Revised REB Submission Form		submitted September 9, 2015
Consent and Assent Form(s):		
Other: List of Data Sheet		submitted July 13, 2015

CERTIFICATION
The above named research study/project has been reviewed in a ***delegated manner*** by the University of Manitoba (UM) Health Research Board (HREB) and was found to be acceptable on ethical grounds for research involving human participants. The study/project and documents listed above was granted final approval by the Chair or Acting Chair, UM HREB.

HREB ATTESTATION
The University of Manitoba (UM) Research Board (HREB) is organized and operates according to Health Canada/ICH Good Clinical Practices, Tri-Council Policy Statement 2, and the applicable laws and regulations of Manitoba. In respect to clinical trials, the HREB complies with the membership requirements for Research Ethics Boards defined in Division 5 of the Food and Drug Regulations of Canada and carries out its functions in a manner consistent with Good Clinical Practices.

QUALITY ASSURANCE
The University of Manitoba Research Quality Management Office may request to review research documentation from this research study/project to demonstrate compliance with this approved protocol and the University of Manitoba Policy on the Ethics of Research Involving Humans.

CONDITIONS OF APPROVAL:

1. The study is acceptable on scientific and ethical grounds for the ethics of human use only. ***For logistics of performing the study, approval must be sought from the relevant institution(s).***
2. This research study/project is to be conducted by the local principal investigator listed on this certificate of approval.
3. The principal investigator has the responsibility for any other administrative or regulatory approvals that may pertain to the research study/project, and for ensuring that the authorized research is carried out according to governing law.
4. **This approval is valid until the expiry date noted on this certificate of approval. A Bannatyne Campus Annual Study Status Report** must be submitted to the HREB within 15-30 days of this expiry date.
5. Any changes of the protocol (including recruitment procedures, etc.), informed consent form(s) or documents must be reported to the HREB for consideration in advance of implementation of such changes on the **Bannatyne Campus Research Amendment Form.**
6. Adverse events and unanticipated problems must be reported to the HREB as per Bannatyne Campus Research Boards Standard Operating procedures.
7. The UM HREB must be notified regarding discontinuation or study/project closure on the **Bannatyne Campus Final Study Status Report**.

Sincerely,

John Arnett, PhD. C. Psych.
Chair, Health Research Ethics Board
Bannatyne Campus

Please quote the above Human Ethics Number on all correspondence.
Inquiries should be directed to the REB Secretary **Telephone:** (204) 789-3255/ **Fax:** (204) 789-3414

REFERENCES

Active Living by Design. (n.d.). Low income populations and physical activity: An overview of issues related to active living. Retrieved from http://www.bms.com/documents/together_on_diabetes/2012-Summit-Atlanta/Physical-Activity-for-Low-Income-Populations-The-Health-Trust.pdf

Albrecht, T. L., & Adelman, M. B. (1987). Communicating social support: A theatrical perspective. In T. L. Albrecht & M. B. Adelman (Eds.), *Communicating social support* (pp.18-39). Newbury Park, CA: Sage.

Albrecht, T. L., & Goldsmit, D. (2003). Social support, social network, and health. In T.L. Thompson, A. M. Dorsey, K. I. Miller, & R. Parrott (Eds.), *Handbook of health communication* (pp. 263-284). Mahwah, NJ: Lawrence Erlbaum.

Badley, E. M. (1995). The genesis of handicap: Definition, models of disablement, and role of external factors. *Disability and Rehabilitation, 17*(2), 53-62.

Barnes, L. L., Mendes de Leon, C. F., Wilson, R. S., Bienias, J. L., & Evans D. A. (2004).Social resources and cognitive decline in a population of older African Americans and whites. *Neurology, 63,* 2322-2326.

Bearon, L. (1996). Successful ageing: What does the good life look like? *The Forum for family and community issues, 1*(3), Reterived from http://www.ncsu.edu/ffci/publications/1996/v1-n3-1996-summer/successful-againg.php

Benyamini, Y. & Idler, E. L. (1999). Community studies reporting association between self-rated health and mortality - Additional studies, 1995 to 1998. *Research on Aging*, *21*, 392-401.

Berg, S., Mellstrom, D., Persson, G., & Svanborg, A. (1981). Loneliness in the Swedish Aged. *Journal of Gerontology, 36*,342-349.

Berkman, L. F., & Syme, L. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents. *American Journal of Epidemiology*, *109*(2), 186-204.

Betts Adams, K., Leibrandt, S., & Moon, H. (2011). A critical review of the literature on social and leisure activity and well-being in later life. *Ageing and Society* , *31*(4), 683-712.

Björner, J. B., Sondergaard Kristensen, T., Orth-Gomer, K., Tibblin, G., Sullivan, M. & Westerholm, P. (1996). *Self-rated health: A useful concept in research, prevention and clinical medicine*, Stockholm: FRN, Swedish Council for Planning and Coordination of Research.

Booth M., Owen N., Bauman A., Clavisi O., & Leslie E. (2000). Social-cognitive and perceived environment influences associated with physical activity in older Australians. *Prev Med., 31*(1):15–22 .

Cambell, V. A., Crews, J. E., Moriarty, D. G., Zack, M. M., & Blackman, D. B. (1999). Surveillance for Sensory Impairment, Activity Limitation, and Health-Related Quality of Life Among Older Adults - United States, 1993-1997. *Morbidity and Mortality Weekly, 48*(SS08), 131-156.

Canadian House of Commons. (1981). Obstacles-Report of the special committee on the disabled and the handicapped. (Catalogue no. XC 2-321/5-O3E).

Canadian Longitudinal Study on Aging. (2016). Retrieved March 21, 2015, from https://www.clsa-elcv.ca/

Canada Mortgage and Housing Corporation. (2010). 2001 Participation and Activity Limitation Survey: Issue 10-summery of the housing condition of Canadians with disability aged 15

years and older who are living in a household in core housing need. *Socio-economic Series, 10*(020), 1-2.

Cardol, M., de Jong, B., van den Bos, G. A., et al. (2002). Beyond disability: Perceived participation in people with a chronic disabling condition. *Clinical Rehabilitation,16*, 27–35.

Castro, C., Sallis J., Hickmann, S., Lee, R., & Chen, A. (1999). A prospective study of psychosocial correlates of physical activity for ethnic minority women. *Psychology Health, 14*(2), 277–293.

Centers for Disease Control and Prevention. (1997). *Principles of community engagement*. Atlanta, GA: Public Health Practice Program Office.

Chamie, M. (1995). What does morbidity have to do with disability? *Disability and Rehabilitation, 17*(7), 323-337.

Chang, P. J., Weay, L., & Lin, Y. (2014). Social relationships, leisure activity, and health in older adults. *Health Psychology*, *33*(6), 516-23.

Cleeland, C. S., & Ryan, K. M. (1994). Pain assessment: Global use of the Brief Pain Inventory. *Annual of the Academy of Medicine Singapore, 23*, 129-138.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, *38*, 300-314.

Cohen, S., & McKay, G. (1984). Social support, stress, and the buffering hypothesis: A theoretical analysis. In A. Baum, S. E. Taylor, & J. E. Singer (Eds.), *Handbook of psychology and health.* Vol. 4: Social psychological aspects of health (pp. 253-267). Hillsdale, N J: Lawrence Erlbaum.

Cohen, L., & Syme, S. L. (1985). Issues in the study and application of social support. In L., Cohen, & S. L. Syme (Eds.). *Social support and health*. New York: Academic Press.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310–57.

Conference Board of Canada. (2016). Compensation planning outlook-increases by region: Planned average salary Increases, by region, 2016. Retrieved May 19, 2015, from http://www.conferenceboard.ca/topics/humanresource/compensation-outlook-image.aspx

Cornwell, B., Laumann, E. O., & Schumm, L. P. (2008).The social connectedness of older adults: A national profile. *American Sociological Review, 73*(2), 185-203.

Cott, C. A., Gignac, M. A. M., & Badley, E., M. (1999). Determinates of self rated health for Canadians with chronic disease and disability. *Journal of Epidemiology & Community Health, 53*, 731-736.

Crandall, R. (1980). Motivations for leisure. *Journal of Leisure Research, 12*, (1), 45-54.

Davidson, B., Howe, T., Worrall, L., Hickson, L., & Togher, L. (2008). Social participation for older people with aphasia: the impact of communication disability on friendships. *Top Stroke Rehabil, 15*(4), 325-40.

de Boer, A. G., van Lanschot, J., J., Stalmeier, P. F., van Sandick, J. W., Hulscher, J. B., de Haes, J. C.. (2004). Is a single-item visual analogue scale as valid, reliable and responsive as multi-item scales in easuring quality of life? *Quality of Life Research, 13*(2), 311-320.

Del Bono, E., Sala, E., Hancock, R., Gunnell, C., & Parisi, L. (2007). *Gender, older people and social exclusion: A gendered review and secondary analysis of the data*. Essex, UK: Institute for Social and Economic Research.

Depp, C. A., & Jeste, D. V. (2006). Definitions and predictors of successful aging: A comprehensive review of larger quantitative studies. *American Journal Geriatric Psychiatry, 14*, 6–20.

Desrosiers, J., Noreau, L., & Rochette, A. (2004). Social participation of older adults in Quebec. *Aging Clinical and Experimental Research, 16*, 406-412.

Diehl, M. (1998). Everyday competence in later life: current status and future directions. *The Gerontologist, 38*, 422-433.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin,* 85, 542-575.

Diener, E., Horwitz, J., & Emmons, R. A. (1985). Happiness of the very wealthy. *Social Indicators Research,16*,263-274.

Duckworth, D. (1984). The need for a standard terminology and classification of disablement. In C. V. Granger & G. E. Greshman (Eds.), *Functional assessment in rehabilitation medicine.*

Eastertin, R. A. (1974). Does economic growth improve the human lot? Some empirical Evidence. In P. A. David & W. R. Melvin (Eds.), *Nations and Households in Economic Growth* (pp. 98-125). Palo Alto, CA: Stamford University Press.

Emmons, K. M., Barbeau, E. M., Gutheil, C., Stryker, J. E., & Stoddard, A. M. (2007). Social influences, social context, and health behaviors among working-class, multi-ethnic adults. Health Education Behavior, *34*(2), 315–334

Employment and Social Development Canada. (2014, December 23). *Canadians in context – people with disabilities*. Retrieved from http://www4.rhdcc.gc.ca/

Employment and Social Development Canada. (2012). Indicator of well-being in Canada: Self-rated health. Retrieved June 13, 2014, from http://well-being.esdc.gc.ca/misme-iowb/.3ndic.1t.4r@-eng.jsp?iid=10

Employment and Social Development Canada. (2003). *Indicators of well-being in Canada: Social participation - participation in social activities.* Retrieved May 1, 2014, from http://www4.rhdcc.gc.ca/

Engelhardt, H., Buber, I., Skirbekkk, V., & Prskawetz, A. (2010).Social involvement, behavioural risks and cognitive functioning among older people. *Ageing and Society ,30*(5), 779-809.

Escobar-Bravo, M. A., Puga-Gonzàlez, D., & Martín-Baranera, M. (2011). Protective effects of social networks on disability among older adults in Spain. *Archives of Gerontology and Geriatrics.*

Ettinger, W., Fried, L., Harris, T., Shemanski, L., Schulz, R., & Robbins, J. (1994). Self-reported causes of physical disability in older people: The Cardiovascular health study. CHS collaboration research group. *Journal of the American Geriatrics Society, 42*(10), 1035-1044.

Ettner, S. L. (1996). New evidence on the relationship between income and health. *Journal of Health Economics, I5,* 67-85.

Eyler, A., Baker, E., Cromer, L., King A., Brownson, R., & Donatelle, R. (1998). Physical activity and minority women: a qualitative study. *Health Educ Behav, 25*(5), 640–652.

Fayers, P. & Sprangers, M. A. (2002). Understanding self-rated health. *The Lancet, 359* (9302), 187-188.

Fayers, P. M., & Machin, D. (2000). *Quality of life: Assessment, analysis, and interpretation.*

New York: John Wiley.

Ferlander, S., & Mäkinen, I. H. (2004). Social capital, gender and self-rated health: evidence from the Moscow health survey . *Social Sciences Medicine, 69*, 1323–1332.

Fernández-Ballesteros, R., Robine, J. M., Walker, A., & Kalache, A. (2013). Active Aging: A Global Goal. *Current Gerontology and Geriatrics Research*, *2013*, 1-4.

Ferraro, K. F., Farmer, M. M. & Wybraniec, J. A. (1997). Health trajectories: Longterm dynamics among black and white adults. *Journal Health Sociences Behavior*, *38*, 38-54.

Fisher, A. (2001). Is your business taking over your life? *Fortune Small Business, 11*(9), 32–40.

Fiorel, J., Coppel, D., Becker, J., & Cox, G. (1986). Social support as multifaceted concept: Examination of important dimensions for adjustment. *American Journal of Community Psychology*, *14*(1), 93-111.

Fisher, K., Li, F., Michael, Y., & Cleveland, M. (2004). Neighborhood-level influences on physical activity among older adults: A multilevel analysis. *Journal Aging Physical Activity, 12*(1), 45–63.

Fiori, K. L., Antonucci, T. C., & Cortina, K. S. (2006).Social network typologies and mental health among older adults. *Journal of Gerontology: Psychological Sciences, 61B*(1), P25-P32.

Freedman, A. V. (2009). Adopting the ICF language for studying late-life disability: A field of dreams. *Journal of Gerontology A Biological Sciences: Medical Sciences, 64A*(11), 1172-1174.

Freedman, V. A., Stafford, F., Schwarz, N., Conrad, F., & Cornman, J. C. (2012). Disability, participation, and subjective wellbeing among older couples. *Social Science & Medicine, 74* ,588-596.

Fylkesnes, K. & Forde, O. H. (1991). The Tromso Study: predictors of selfevaluated health – has society adopted the expanded health concept? *Social Science & Medicine*, *32*, 141-6.

George, L. K., & Bearon, L. B. (1980). *Quality of Life in Older Persons: meaning and measurement*. New York: Human Services Press.

Giles-Corti, B., Donovan, R. J. (2003). The relative influence of individual, social, and physical environment determinants of physical activity. *Social Science & Medicine, 54*(12), 1793–1812.

Giles, L. C., Metcalf, P. A., Glonek, G. F., Luszcz, M. A., & Andrews, G. R. (2004). Effect of social networks on disability in older Australlians. *Journal of Aging and Health, 16*(4), 517-538.

Gill, T. M., & Feinstein, A. R. (1994). A critical appraisal of the quality of life measurements. *Journal of the American Medical Association, 272*(8), 619-626.

Gilmour, H. (2012). Social participation and the health and well-being of Canadian seniors. *Component of Statistics Canada Catalogue, Health Reports*, Retrieved from http://www.statcan.gc.ca/pub/82-003-x/2012004/article/11720-eng.pdf

Given, B., Given, W. (1989). Cancer nursing for & the elderly. A target for research. *Cancer Nursing, 12*, 270-273.

Glass, T. A., & Balfour, J. L. (2003). Neighborhoods, aging, and functional limitations. In I. Kawachi, & L. F. Berkman (Eds.), *Neighborhoods and health* (pp. 303-334). NewYork: Oxford University Press.

Glass, T. A., Mendes de Leon, C. F., Bassuk, S. S., & Berkman, L. F. (2006). Social engagement and depressive symptoms in late life. *Journal of Aging and Health ,18(4)*, 604-28.

Gottlieb, B. H. & Bergen, A. E. (2010). Social support concepts and measures. *Journal of Psychosomatic Research, 69*, 511-520.

Gttlieb, B. (2000). Selecting and panning support interventions. In S. Cohen, L. Underwood, & B. Gotlieb (Eds.), *Social support measurement and intervention* (pp. 195-220).

Hague Conference on Private International Law. (2000). *Convention on the international protection of adults*. Retrieved July 24, 2016, from hcch.e-vision.nl/index_en.php?act=conventions.text&cid=71

Hahan, H. (2002). Academic Debates and Political Advocacy: The US Disability Movement. In C. Barnes, M. Oliver, & L. Barton (Eds.), Disability Studies Today. Cambridge, United Kingdom: Polity Press.

Hand, C., Law, M., McColl, M., Hanna, S., & Elliott, S. (2014). An examination of social support influences on participation for older adults with chronic health conditions. *Disability and Rehabilitation. 36*(17)*,* 1439- 1444.

Havens, B. & Hall, M. (1999). The Effect of Social Isolation and Loneliness on the Health of Older Women. *Aging in Manitoba.*

Heikkinen, E. (2003). *What are the main risk factors of disability in old age and how can disability be prevented? Copenhagen, WHO Regional Office for Eroupe (Health Evidence Network Report)*. Retrieved May 4, 2010, from http://www.euro.who.int/document/E82970.pdf.

Heller, K., & Swindle, R. W. (1983). Social networks, perceived social support, and coping with stress. In R. D. Felner, L. A. Jason, J. N. Moritsugu, & S. S. Farber (Eds.), *Preventive psychology: Theory, research and practice* (pp. 87-103). New York: Pergamon Press.

Hemmingsson, H., & Jonsson, H. (2005). An occupational perspective on the concept of participation in the international classification of functioning, disability and health-some critical remarks. *American Journal of Occupational Therapy, 59*, 569-576.

Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: a meta-analytic review. *Perspectives Psychooical Sciences, 10*(2), 227-37.

Hunfeld, J. A., Perquim, C. W., Duivenvoorden, H. J., Hazebroek-Kampschreur, A., Passchier, J., Van Suijlekom-Smit, L., & Van der Wouden, J. (2001). Chronic pain and its impact on quality of life in adolescents and their families. *Journal of Pediatric Psychology, 26*,145-153.

Hyyppä, M. T., & Mäki, J.(2001). Individual-level relationships between social capital and self-rated health in a bilingual community. *Preventive Medicine ,32*,148–155.

Idler, E. L. & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal Health Sociences Behavior*, *38*, 21-37.

Idler, E. L., Russell, L. B. & Davis, D. (2000). Survival, functional limitations, and self-rated health in the NHANES I epidemiologic follow-up study, 1992: First National Health and Nutrition Examination Survey. *American Journal Epidemiology*, *152,* 874-83.

Jakobsson, U., Klevsgard, R., Westergren, A., & Hallberg, I. R. (2003). Older people in pain: A comparative study. *Journal of Pain and Symptom Management, 26*(1), 625-636.

Janlert, U. (2000). *Folkhälsovetenskapligt lexikon [Public Health Dictionary]*,Stockholm: Natur och kultur & Folkhälsoinstitutet [In Swedish].

Jason, L. A. (2006). Benefits and challenges of generating community participation. *Professional Psychology: Research and Practice, 37*(2), 132-139.

Jelsma, J. (2009). Use of the international classification of functioning, disability and health: A literature survey. *Journal of Rehabilitation Medicine, 4*, 1-12.

Jette, A. (2009). Beyond dueling models. *Journal of Gerontology A Biological Sciences: Medical Sciences, 64A*(11), 1175-1176.

Jr, M. B. (1986). Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology, 14 (4),* 413-445.

Kahn, E., Ramsey, L., Brownson, R., & et al. (2002). The effectiveness of interventions to increase physical activity: A systematic review. *American Journal Preventive Medicine, 22*(4), 73–107.

Kaye, H., S. (1998). Is the status of people with disability improving? *Disability Statistics Abstract, 21*, 1-4.

Kiecolt-Glaser, J., & Newton, T. (2001). Marriage and health: his and hers. *Psychological Bulletin, 127*(4),472–503.

Krahn, G. L., Fujiura, G., Drum, C. E., Cardinal. B. J., Nosek, M. A., & the RRTC Expert Panel on Health Measurement. (2009). The dilemma of measuring perceived health status in the context of disability. *Disability and Health Journal, 2*, 49-56.

Lariviere, N. (2008). Analyse du concept de la participation sociale: définitions, cas d'illustration, dimensions de l'activité et indicateurs. *Canadian Journal of Occupational Therapy, 75*(2), 114-127.

Lee, H. Y., Jang, S., Lee, S., Cho, S., & Park, E. (2008). The relationship between social participation and self-rated health by sex and age: A cross-sectional survey. *International Journal of Nursing Studies, 45,* 1042–1054.

Lethem, J., Slade, P. D., Troup, J. D. G., & Bentley, G. (1983). Outline of a fear-avoidance model of exaggerated pain perception. *Behaviour Research and Therapy, 22*, 401-408.

Levasseur, M., Richard, L., Gauvin, L., & Raymond, E. (2010). Inventory and analysis of definitions of social participation found in the aging literature: Proposed taxonomy of social activities. *Social Science & Medicine, 71*, 2141-2149.

Leveille, S., Penninx, B., Melzer, D., Izmirlian, G., & Guralnik, J. (2000). Sex differences in the prevalence of mobility disability in old age: The dynamics of incidence, recovery, and mortality. *The Journal of Gerontology Series B: Psychological and Social Sciences, 55*(1), S41-S50.

Lim, J. W., Yi, J., & Zebrack, B. (2008). Acculturation, social support, and quality of life for Korean immigrant breast and gynecological cancer survivors. *Ethnicity & Health, 13*, 243-260.

Lindstrom, M., Hanson, B. S., & Ostergren, P. O. (2001). Socioeconomic differences in leisure-time physical activity: the role of social participation and social capital in shaping health related behaviour. *Social Science & Medicine, 52*(3), 441-451.

Lovden, M., Ghisletta, P., & Lindenberger, U. (2005). Social participation attenuates decline in perceptual speed in old and very old age. *Psychology and Aging, 20*(3), 423-434.

Lundberg, O. & Manderbacka, K. (1996). Assessing reliability of a measure of self-rated health. *Scandinavian Journal Social Medicine*, *24*, 218-24.

Lund, R., Nilsson, C. J., & Avlund, K.(2010). Can the higher risk of disability onset among older people who live alone be alleviated by strong social relations? A longitudinal study of non-disabled men and women. *Age and Ageing* .

Giles, L.C., Glonek, G. .F V., Luszcz,M. A., & Andrews, G. R. (2005). Effect of social networks

on 10 year survival in very old Australians: the Australian longitudinal study of aging. *Journal Epidemiology Community Health, 59*, 574–579.

MacKenzie, A. (2001). Disability Statistics in Canada: A History and Current Results. Statistics Canada. Retrived January 2, 2014, from www.earlyinterventioncanada.com

MacKenzie, A., Hurst, M., & Crompton, S. (2009). Living with disability series: Defining disability in the Participation and Activity Limitation Survey. *Canadian Social Trends, 88*, 55-62.

Mantyselka, P. T., Turunen, J. H. O., Ahonen, R. S., & Kumpusalo, E. A. (2003). Chronic pain and poor self-rated health. *Journal of the Medical Association, 290*(18), 2435-2442.

Marshall, K. (2011). Paid and unpaid work over three generations. *Perspectives on Labour and Income*. Statistics Canada Catalogue no. 75-001-X.

Martikainen, P., Aromaa, A., Heliovaara, M., Klaukka, T., Knekt, P., Maatela, J., & Lahelma, E. (1999). Reliability of perceived health by sex and age. *Social Sciences Medicine*, *48*, 1117-22.

Mattson, M. (2011). Linking health communication with social support. In M. Mattson (Eds.). *Health as communication Nexus* (pp.181-218). Retrieved from Property of Kendell Hunt Publishing Co.

Mclaughlin, D., Leung, J., Pachana, N., Flicker, L., Hankey, G.,& Dobson, A.(2012). Social support and subsequent disability: It is not the size of your network that counts. *Age and Ageing, 41*, 674–677.

Mendes de Leon, C. F., Glass, T. A., & Berkman, L. F. (2003). Social engagement and disability in a community population of older adults: The new haven EPESE. *American Journal of Epidemiology, 157*(7), 633-642.

Mendes de Leon, C. F., Seeman, T. E., Baker, D. I., Richardson, E. D., & Tinetti, M. E. (1996). Self-efficacy, physical decline, and change in functioning in community living elders: A perspective study. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 51*, SI83-90.

Menec, V., Shooshtari, S., & Lambert, P. (2007). Ethnic differences in self-rated health among older adults: A cross-sectional and longitudinal analysis. *Journal Aging Health, 19*(1):62-86.

Mossey, J. M., & Shapiro, E. (1982). Self-rated health: a predictor of mortality among the elderly. *American Journal of Public Health, 7*2(8), 800-808.

Moum, T. (1992). Self-assessed health among Norwegian adults. *Social Sciences Medicine, 35*, 935-47.

Nagi, S., (1965). Some conceptual issues in disability and rehabilitation. In M. Sussuman (Eds.)., Sociology and Rehabilitation (Pg. 100-113). Washington, DC: American Sociological Association.

National Cancer of Institute. (n.d.). NCI dictionary of cancer terms. Retrieved from http://www.cancer.gov/publications/dictionaries/cancer-terms

National Association of Social Workers-U.S. (2006). Senior health, safety, and vitality. In Social Work Speaks. Washington, DC: NASW Press.

Neugebauer, A., & Katz, P. P. (2004). Impact of social support on valued activity disability and depressive symptoms in patients with rheumatoid arthritis. *Arthritis Rheum ,51*, 586–92.

Office for National Statistics. (2016). Measuring national well-being: At what age is personal well-being the highest? Estimates of personal well-being, with analysis by country, region and local areas and individual characteristics such as age about personal quality of

life. Retrieved March 21, 2012, from http://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuringnationalwellbeing/atwhatageispersonalwellbeingthehighest

Oliveira, A. J., Lopes, C. S., de Leon, A. C., Rostila, M., Griep, R. H., Werneck,G. L., & Faerstein, E. (2011). Social support and leisure-time physical activity: longitudinal evidence from the Brazilian Pró-saúde cohort study. *International Journal of Behavioral Nutrition and Physical Activity, 26*, 77.

Oliver, M. (1996). *Understanding Disability: From Theory to Practice*. Houndsmill, England: Palgrave.

Östergren, P.O. (1991). *Psychosocial resources and health: With special reference to social network, social support and cardiovascular disease*, Lund: Lund university [Thesis].

Padden, C., & Humphries, T. (2005). *Inside deaf culture*. Cambridge: Harvard University Press.

Peat, G., Thomas, E., Handy, J., & Croft, P. (2004). Social networks and pain interference with daily activities in middle and old age. *Pain, 112*, 379-405.

Perruccio, A. V., Power, J. D., & Badley, E. M. (2007). The relative impact of 13 chronic conditions across three different outcomes. *Journal of Epidemiology and Community Health, 61*, 1056–61.

Pohjolainen, P. (1991). Social participation and life-style: A longitudinal and cohort Cents, study. *Journal of Cross-Cultural Gerontology, 6*(1), 109-117.

Reynolds, C. R., & Fletcher-Janzen, E. (2006). Encyclopedia of special education: A reference for education of children, adolescents, and adults with disabilities and other exceptional individuals. New York: John Wiley & Sons.

Riddick, C. C. (1985). Health, aquariums and the non-institutionalized elderly. *Marriage & family review, 8,*163-173.

Riddick, C. C., & Daniel, S. (1984). The relative contribution of leisure activities and other factors to the mental health of older women. *Journal of Leisure Research, 16*,136-148.

Riddick, C. C., & Stewart, D. G. (1994). An examination of the life satisfaction and importance of leisure in the lives of older female retirees: A comparison of blacks to whites. *Journal of Leisure Research, 26*(1), 75-87.

Rochette, A., Desrosiers, J., & Noreau, L. (2001). Association between personal and environmental factors and the occurrence of handicap situations following a stroke. *Disability and Rehabilitation*, *23*(13), 559- 569.

Rosenbam, P., & Stewart, D. (2004). The World Health Organization International Classification of Functioning, Disability, and Health: A model to Guide Clinical Thinking, and Research in the Field of Cerebral Palsy. *Seminars in Pediatric Neurology, 11*(1), 5-10.

Seeman, T. E. (2000). Health promoting effects of family and friends on health outcomes of older adults. *American Journal of Health Promotion, 12*, 362-370.

Shadbolt, B. (1997). Some correlates of self-rated health for Australian women. *American Journal Public Health*, *87*, 951-6.

Shakespeare, T. (2005). Review article: Disability studies today and tomorrow. *Sociology of Health & Illness, 27*(1), 138-148.

Sherwood, S., Ruchlin, H. S., Sherwood, C. C., & Morris, S. A. (1997). *Continuing care retirement communities*. Baltimore: John Hopkins University Press.

Shooshtari, S., Menec, V., & Tate, R. (2007). Comparing predictors of positive and negative self-rated health between younger (25-54) and older (55+) Canadian adults: A longitudinal study of well-being. *Research and Aging, 29*(6), 512-544.

Shooshtari, S., Naghipur, S., & Zhang, J. (2012). Unmet Healthcare and Social Services Needs of Older Canadian Adults With Developmental Disabilities. *Journal of Policy and Practice in Intellectual Disabilitie, 9*(2), 81-91.

Shumaker, S. A., & Brownell, A. (1984). Toward a theory of social support: Closing conceptual gaps. *Journal of Social Issues, 40*, 11-36.

Sirven, N., & Debrand, T. (2008). Social participation and healthy ageing: An international comparison using SHARE data. *Social Science and Medicine , 67*, 2017-26.

Sloan, J A., Aaronson, N., Capperlleri, J. C., Fairclough, D. L., Varricchio, C. (2002). Assessing the clinical significance of single items relative to summated scores. *Mayo Clinic Proceedings, 77*(5), 479-487.

Social Inclusion of people as they age. (2007). *Council on the Ageing (COTA) Queensland*, Retrieved March 20, 2013, from http://cotaqld.org.au/achieving_change/aged-friendly-communities/respect- and-social inclusion-2/.

Statistics Canada. (2013)."*Disability in Canada: Initial findings from the Canadian Survey on Disability,*" Fact sheet, Social and Aboriginal Statistics Division, Catalogue no. 89-654-X, No. 002, Ottawa, December 2013.

Statistics Canada. (2006). A brief history. Retrieved June 12, 2014 from http://www12.statcan.ca/census-recensement/2006/ref/dict/overview-apercu/pool-eng.cfm.

Statistics Canada. (2006). "Participation and Activity Limitation Survey 2006: Analytical report", Social and Aboriginal Statistics Division, Catalogue no. 89-628-XIE-No.002. Ottawa, Ontario, December 2014.

Statistics Canada. (2009). *Seniors*. Retrived April 3, 2011, from http://www41.statcan.ca/2008/70000/ceb70000_000-eng.htm.

Statistics Canada. (2002). *A new approach to disability data: Changes between the 1991 Health and Activity Limitation Survey (HALS) and the 2001 Participation and Activity Limitation Survey (PALS).* (Catalogue number: 89-578-XIE).

Statistics Canada. (2002). *Addressing the challenges and opportunities of ageing in Canada*. Retrieved June 10, 2015, from http://www.esdc.gc.ca/eng/seniors/reports/aging.shtml

Statistical Canada. (2001). *A profile of disability in Canada*, 2001.-x2001001-eng.pdf. December 2002; Catalogue no. 89-577-EIX, Retrieved April 1, 2014, from http:// www.statcan.gc.ca/pub/89-577-x2001001-eng.pdf.

Statistics Canada. (2001b). 2001 Census Consultation Guide. Retrieved 05/24, 2014 from http://www.statcan.gc.ca/pub/02-125-g/html/4064711-eng.htm.

Statistics Canada. (1991). The Health and Activity Limitation Survey (HALS) User's Guide. Ottawa, Ontario: Statistics Canada; August 1995. (Catalogue number: 82F0011GPB).

Statistics Canada (1989). The Health and Activity Limitation Survey (HALS) Microdata User's Guide Adults in Households. Ottawa, Ontario: Statistics Canada; May 1989. Retrieved June 15, 2014, from http://www.library.carleton.ca/ssdata/surveys/doc/pdf_files/hals-86-ah-gid.pdf.

Thomas, C., (2002). *Disability theory: Key ideas, issues and thinkers*. In C. Barnes, L., Barton and M. Oliver (Eds.), Disability studies today. Cambridge, Polity.

Thomas, C. (2004). How is disability understood? An examination of sociological approaches. *Disability & Society, 19*(6), 569-583.

Thompson, E., & Whearty, P. (2004). Older men's social participation: The importance of masculinity ideology. *Journal of Men's Studies, 13*(1), 5-24.

Today's Research on Aging. (2009). Social Support, Networks, and Happiness. *Program and Policy Implications, 17.*

Torgrimson, B, & Minson, C. (2005). Sex and gender: What is the difference. *Journal of Applied Physiology, 99*, 785-787.

United Nations. (2008). *Convention on the rights of persons with disabilities*. Retrieved March 19, 2016, from www.un.org/disabilities/default.asp?navid=12&pid=150

United Nations. (2006). International convention on the right of persons with disabilities. Retrieved April 5, 2015, from http://www.un.org/disabilities/.

United Nations. (2002). *Report of the Second World Assembly on Ageing: Madrid, 8-12 April 2002.* Retrieved September 13, 2016, from www.un-ngls.org/pdf/MIPAA.pdf

Utz, R. L., Carr, D., Nesse, R., & Wortman, C. B. (2002). The effect of widowhood on older adults' social participation: An evaluation of activity, disengagement, and continuity theories. *Gerontologist, 42(4),* 522-533.

Veenhoven, R., Saris, W. E., Scherpenzeel, A. C. & Bunting, B. (1996). The study of life satisfaction. In R. Veenhoven, W.E., Saris, A. C. Scherpenzeel, & B. Bunting (Ed.), A comparative study of satisfaction with life in Europe (pp. 11-48). Retrieved from http://www2.eur.nl/fsw/research/veenhoven/Pub1990s/96d-full.pdf

Verbrugge, L., M., & Jette, A. M. (1994). The disablement process. *Social Sciences and Medicine, 38*(1), 1-4.

Wade, D. T., & Halligan, P. (2003). New wine in old bottles: The WHO ICF as an explanatory model of human behavior. *Clinical Rehabilitation, 17*(4), 349-354.

Wang, C. C. (2008). Leisure participation, leisure motivation, and life satisfaction for elders in public senior resident homes in Taiwan. Retrieved from https://books.google.ca/books?id=8cCcIMD45nEC&printsec=frontcover#v=onepage&q&f=false

Wang, N., Iwasaki, M., Otain, T., Hayashi, R., Miyazaki, H., Xiao, L., Sasazawa, Y., Suzuki, S., Koyama, H., & Sakamaki, T. (2005). Perceived health as related to income, socio-economic status, lifestyle, and social support factors in middle aged Japanese. *Journal of Epidemiology, 15*(5), 155-162.

Wang, H., Karp, A., Winblad, B., & Fratiglioni, L. (2002). Late-life engagement in social and leisure activities is associated with a decreased risk of dementia: A longitudinal study from the Kungsholmen Project. *American Journal of Epidemiology, 155*(12), 1081-1087.

Wilcox, V. L., Kasl, S.V. & Idler, E. L. (1996). Self-rated health and physical disability in elderly survivors of a major medical event. *journals of gerontology. Series B, Psychological sciences and social sciences*, 51, S96-104.

Williams, D. R., & Collins, C. (1995). US socio-economic and racial differences in health: Patterns and explanations. *Annual Review of Sociology, 21*, 349-386.

Wilkins, K. (2003). Social support and mortality in seniors. *Health Reports , 14(3)*, 21-34.

World Health Organization (WHO). (2008). *Internal Classification of Functioning, Disability and Health (ICF)*. Retrieved June 14, 2015 from http://www.who.int/classifications/icf/en/.

World Health Organization (WHO). (2002). *International Statistical Classification of Disease and related health problems*. Volum 10th Revision (ICD-10). Genova, Switzerland.

World Health Organization (WHO). (2002). ICF. Retrieved March 5, 2013, from http:/www.who.int/classifications/icf/site/intors/ICF-Eng-Intro.pdf.

World Health Organization (WHO). (2001). International Classification of Funding, Disability and Health: ICF. Geneva, Switzerland.

World Health Organization (WHO). (1999). Men ageing and Health: Achieving health across the life span. Geneva, Switzerland.

World Health Organization (WHO). (1998). Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychological Medicine, 28* (3), 551-558.

World Health Organization (WHO). (1980). International Classification of Impairments, Disabilities, and Handicaps: A manual of classification relating to the consequences of disease. Retrieved 20/02, 2014 from http://whqlibdoc.who.int/publications/1980/9241541261_eng.pdf.

Zunzunegui, M. V., Koné, A., Johri, M., Béland, F., Wolfson, C., & Bergman, H. (2004). Social networks and self-rated health in two French-speaking Canadian community dwelling populations over 65. *Social Science and Medicine, 58*, 2069-81.