

HEALTH OUTCOMES FOLLOWING WORK- RELATED IMPAIRMENTS

HEALTH OUTCOMES FOLLOWING WORK-RELATED
IMPAIRMENTS:

EXAMINING THE HEALTH STATUS AND LIVED
EXPERIENCE OF INJURED WORKERS THROUGH A LIFE
COURSE LENS

BY
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A thesis submitted to the Department of Sociology and the School
of Graduate Studies of McMaster University in partial fulfilment
of the requirements for the Degree of Doctor of Philosophy

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Abstract

This dissertation focuses on the health, health care utilization rates, and unmet health care needs of individuals aging with work-related impairments. A life course perspective is used to understand the health experiences of these individuals, and a mixed method approach was used to study their health and health care use. Three components make up the dissertation, two quantitative projects and one qualitative project. The first article provides a broad overview of chronic health conditions reported by respondents from the Research Action Alliance on the Consequences of Work Injury (RAACWI) Health and Health Care Utilization Survey who experienced a work-related impairment. Health outcomes and access to health care for this group is compared to a similar aged sample of Ontarian respondents from the Canadian Community Health Survey. The second article uses the National Population Health Survey to examine whether rates of unmet health care needs over eight cycles varied based on disability status. Respondents are categorized as either without disability, having a work-related disability, having a disability as a result of a disease or illness, or having disability for other reasons. The reasons for unmet health care needs is examined for seven cycles to determine whether unmet health care need could be characterized as personal or structural. The third article provides a deeper understanding of how 11 individuals age with a work injury. A convenience sample of 11 participants from the RAACWI Health Survey participated in semi-structured, in-depth interviews where they discussed their work injury and how they are coping with its ongoing consequences, including subsequent health problems as they age. This article provides a richer understanding of health changes and unmet health care

needs that could not be examined in the other projects due to the nature of quantitative analysis. Together these three articles enable me to showcase the lived experiences of individuals with work-related impairments and how they age with the work injury and subsequent, additional chronic health conditions.

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Acronyms

CCHS - Canadian Community Health Survey

CSST - La Commission de la santé et de la sécurité du travail du Québec (Québec's Worker's Compensation Board)

DDI - Respondents with disabilities as a result of a disease or illness

DOR - Respondents with disabilities for other reasons

Health Survey - Health and Health Care Utilization Survey

HUI - Health Utility Index 3

ICF - World Health Organization International Classification of Functioning, Disability, and Health model

IRR - Incidence Rate Ratios

MI - Multiple Imputation

NEL - Non-Economic Loss (classification by the Workplace Safety and Insurance Board)

NPHS - National Population Health Survey

OHIP - Ontario Health Insurance Plan

RAACWI - Research Action Alliance on the Consequences of Work Injury

WCB - Workers' Compensation Board

WHO - World Health Organization

WoD - Respondents without disabilities

WRD - Respondents with work-related disabilities

WSIA - The Workplace Safety and Insurance Act

WSIB - Ontario Workplace Safety and Insurance Board

Chapter 1 - Introduction

Understanding the changes in health status and access to health care after a work injury with a permanent impairment is the primary focus of this dissertation. After a work injury that results in a permanent impairment there may be escalating health problems and difficulty accessing health care services to properly treat the work injury and any subsequent health problems. Using both quantitative and qualitative research, this dissertation examines chronic health conditions, accessing health care, and long-term coping mechanisms as injured workers age with permanent impairments. A life course perspective is used to examine the health changes that occur following a work injury.

Injured workers included in this dissertation are identified from two different surveys. The second and fourth chapters include respondents from the Research Action Alliance on the Consequences of Work Injury (RAACWI) Health and Health Care Utilization Survey. Its respondents were injured during the course of their employment and the injury was authenticated by a compensation claim approved by the Ontario Workplace Safety and Insurance Board (WSIB) and resulted in a Non-Economic Loss (NEL) benefit. The third chapter uses data from the National Population Health Survey (NPHS) and includes respondents who self-identify as being disabled as a result of a work injury or the work environment. As there is much discrepancy between the number of workers who report an injury and the number of claims approved by a Workers' Compensation Board (WCB), it is difficult to capture individuals who are living with impairments as a result of a work injury. There is also a high rate of underreporting of

work injuries (Shannon & Lowe, 2002) that makes studying injured workers challenging. This research is unique as it captures the experiences of both injured workers with claims accepted by the WSIB and injured workers who identify as having experienced a disability through a work injury.

Most workers in Canada have coverage through their employers for Workers' Compensation in the case of a work injury or occupational illness. There are 12 WCBs in Canada, including the WSIB in Ontario, that provide compensation and funding for medical support to individuals who have been injured at work or have an illness related to their work environment (WSIB, 2004). Each year in Ontario there are over 200,000 claims submitted to the WSIB (Association of Workers' Compensation Boards of Canada (AWCBC), 2014). In 2013, approximately 180,000 claims were accepted by the WSIB (WSIB, 2014a, WSIB, 2014b). In Canada the number of claims submitted to one of the 12 Canadian WCBs is estimated at approximately 800,000 annually (AWCBC, 2014).

Language of Disability and Impairment

Disability and impairment are often used interchangeably to describe similar experiences. This is problematic because disability and impairment are not the same. The World Health Organization (WHO) 2001 International Classification of Functioning, Disability and Health (ICF) was created to be a blending of the medical and social models of disability. The ICF model is a bio-psychosocial model that is an integration of medical and social factors, such as health, wellness, and wellbeing (WHO, 2002). The WHO ICF defines disability as a component of health and that disability is "manifested

as activity limitations and participation restrictions” (2002: 27). The WHO proclaims that disability is a universal concern for everyone (WHO, 2002). Impairment has been defined in the WHO ICF as “problems in body function or structure such as significant deviation or loss” (WHO, 2002: p. 10). Despite the effort to distinguish a difference between disability and impairment, the ICF model still conceptualizes disability as a health issue which is problematic.

A social model distinguishes the two terms more clearly. Disability is socially constructed and impairment is a physical attribute of the body (Corker & French, 1999). Barnes, Mercer, and Shakespeare (1999) view impairment as a medically classified condition that refers to a defect in the body. This further emphasizes the health characteristic associated with impairment. Although not all impairments result in the need for medical treatment, individuals with impairments will likely require medical attention throughout their life (Barton, 1993; Oliver, 1996).

Disability and impairment should not be viewed as dichotomous, in that an individual either has impairments or is disabled but does not experience both. Not all individuals with impairments will experience disability (Tremain, 2005; Stone, 2013); however, some individuals with impairments may experience disability when they are restricted from engaging in society, emphasizing the fact that disability is socially constructed (Stone, 2013). Although disability is socially constructed it is also a label used to describe individuals with impairments. It could be a label that individuals use to describe themselves or that others use to describe someone who has impairments. However, many individuals who have impairments will not take on the identity or label

of disability. Stone (2013) stressed that the label of disability is situational and that individuals make a decision on whether or not to use, and, if so, when to use the label. My research focuses on impairments that occur following a work injury. Some of the individuals included in this research experience disability. Some experienced disability immediately following their work injuries that resulted in permanent impairment, some experienced disability throughout their experience of work-related impairments, and others may experience disability later as they age with work-related impairment.

The WSIB in Ontario selects the language of ‘impairment’ over ‘disability’ in assessing and allocating NEL benefits. The terms ‘injured worker’, ‘individual with work-related impairment’, and ‘individual with work-related disability’, will be used interchangeably throughout this dissertation. This is not ideal. Unfortunately, the wording of questions in the surveys, which were used as the basis for this research, use ‘disability’ to describe individuals who have impairments. As a result, the language of the particular survey will determine whether disability or impairment is used to describe respondents. More generally, the terms will be used to describe an individual who experienced an injury at work or an occupational illness related to work that resulted in a permanent impairment that may lead the individual to experience disability.

A Life Course Perspective

A life course perspective is a valuable framework with which to examine, analyse, and understand the experiences of individuals who are aging with work-related impairments. A life course perspective is useful to understand the physical,

psychological, and social aspects of aging that cumulate throughout an individual's life (Dannefer & Settersten, 2010). Theoretically, the life course is understood as a constantly changing process where individuals learn about themselves and build upon past experiences (Elder, 1994: 5). A life course perspective informs our understanding of the ways individuals grow old and the experiences that lead them into and through the life cycle (Dannefer & Settersten, 2010). A life course perspective provides a lens to study transitions, trajectories, and pathways. Trajectories are described as stable and often last for long periods of time. Pathways connect individuals to the different phases in their lives (Moen, Dempster-McCain, & Williams, 1992). Trajectories are often made up of multiple transitions (Hutchison, 2008). Transitions occur when there is a change in status (Elder, Kirkpatrick Johnson, & Crosnoe, 2003) and are components of longer life trajectories (Marshall, 2009).

A life course perspective has recently received more attention within disability research as it provides a lens to view experiences throughout the life course that may be different as a result of the impairment (Heller & van Hueman, 2013; Jeppsson Grassman, Holme, Taghizadeh Larsson, & Whitaker, 2012; Kelley-Moore, 2010; Raymond, Grenier, & Hanley, 2014; Slota & Martin, 2003). This dynamic conceptual lens helps us to better understand the effects of disability, especially as many disabilities will have long-term effects (Jeppsson Grassman & Whitaker, 2013). The length of time with the impairment, the severity of the impairment, and the age when the impairment first occurred will all influence future life transitions and trajectories (Jeppsson Grassman & Whitaker, 2013).

Additionally, impairment will have an effect on life pathways or trajectories, and the fulfilment of social roles (Whitaker & Jeppsson Grassman, 2013).

A work injury can be seen as a turning point in an individual's life that may result in substantial changes for future trajectories (Elder et al., 2003). The transition to becoming an "injured worker" may lead to substantial changes in the health and wellbeing of an individual. Trajectories for education, work, and family may be affected by the work injury and result in changes that were unexpected and unanticipated. Harrison (2003) used a life course perspective to study the aging experiences of women with childhood onset disability. She contends that a life course perspective illuminated the ways the early life experiences of these women affects their lives and experiences in later life. Jeppsson Grassman et al. (2012) also demonstrate the usefulness of a life course perspective for studying individuals aging with impairment. A life course framework highlights that impairment is not a static condition, but rather one that can change over time and is a lifelong process. As individuals age with their impairment their health status can change, often negatively, and they will need to learn to adapt to an uncertain future (Jeppsson Grassman et al. 2012).

Applying a cumulative advantage/disadvantage approach with a life course perspective provides a deeper understanding of how individuals age with a work injury. A cumulative advantage/disadvantage approach articulates how benefits or costs of earlier-life dis/advantages compound over time (Dannefer, 2003; Ferraro, 2006; Ferraro & Shippee, 2009; O'Rand, 1996); such that the accumulation of life events, whether they are positive or negative, will have an impact on later life experiences (Ferraro, 2006), and

inequality will continue to increase throughout the life course (Dannefer & Settersten, 2010). Those who face disadvantages earlier in the life course will often face a cascading risk to their health, wealth, and well-being (Ferraro & Kelley-Moore, 2003). While not all injured workers will experience an accumulation of inequalities after a work injury, those with permanent impairments are likely to be at higher risk of facing additional inequalities throughout the remainder of their life course.

This present research uses a life course perspective to examine the accumulation of disadvantages that occur following a work injury, and the lived experience of these “injured workers”. This will also inform the comparison of health and health care experiences of individuals aging with work-related impairments to individuals who do not have impairments or do not have work-related impairments. It will also inform the lived experiences of injured workers in the qualitative article. Other research that compares individuals with impairments to those without impairments report differences in health conditions, health care access, and financial outcomes (Clarke & Latham, 2014; McColl, Shortt, Gignac, & Lam, 2011; Reichard, Stolzle, & Fox, 2011; Tremblay et al. 1997). People aging with impairments or disabilities will often have different and unique experiences, compared to people who age without disabilities (Tremblay et al., 1997). Those aging with impairments will often need to learn to cope and adapt to their disability and the changes they experience as they age.

What is Unique about Injured Workers - Why Study Them?

Although the research contributes to the literature on aging with disability, there are some differences between injured workers with permanent impairments and individuals who have impairments for reasons other than work-related. One such difference relates to societal perceptions of the labels. There is stigma attached to being an “injured worker” (Kirsh, Slack, & King, 2012; Lippel, 2007; Roberts-Yates, 2003) which is quite different from a label of “disabled” or “disability”. Stigma occurs when an individual or group of individuals are identified as being different from others, and as a result, becomes tainted or discounted (Goffman, 1963). Much of the stigma surrounding disability focuses on dependency. The concept of dependency is often rooted in the notion that individuals who are no longer able to work are dependent on others for survival and, consequently, become economic burdens (Stone, 2003). Although there is a stigma towards individuals with disabilities, in general, the terms used to describe injured workers – and the resulting stigma - are more negative resulting in severe emotional consequences. The stigma experienced by injured workers who become worker compensation claimants is based on common stereotypes that describe injured workers as fakers, malingerers, liars, welfare cheats (Niemeyer, 1991; Roberts-Yates, 2003; Storey, 2009), fraud artists, criminals (Lippel, 2007), lazy (Kirsh et al., 2012), unproductive, weak (Stone, 2003), and not wanting to work (Ballantyne, 2001). Most of these stereotypes are based on the belief that injured workers abuse the compensation system and are not really injured (Kirsh et al., 2012). Injured workers with invisible injuries often face more stigma and stereotypes than injured workers with visible injuries. A

participant in Kirsh et al.'s (2012) research spoke about personal reflection on the way society judges injured workers with amputated limbs less because the injury is visible. Injured workers who experience musculoskeletal injuries that are often invisible find it more challenging to prove the legitimacy of the injury to others (Kirsh et al., 2012). It is challenging for injured workers to escape the stigma as it occurs in the workplace and in social interactions with family and friends (Kirsh & McKee, 2003; Kirsh et al., 2012; Lippel, 2007; Roberts-Yates, 2003; Stone, 2003).

Stigma and doubt also exists within Worker Compensation Boards (WCBs). Unlike individuals with impairments unrelated to work, individuals with work-related impairments are thrust into learning to deal with a WCB and may face a range of challenges as they attempt to navigate the WCB system and process. Many WCBs, including the WSIB, are viewed as adversarial (Lippel, 2007; Storey, 2009). Storey (2009) describes the changes that have occurred during the past four decades at the WSIB that have made the adjudication of an injury claim challenging for injured workers. The WSIB now takes longer to process claims and often denies claims or appeals. Power in the WSIB is held by adjudicators who often do not believe injured workers are as hurt or unhealthy as they claim and frequently believe injured workers are able to do more than what they report they are capable of doing (Storey, 2009). The injured workers in Lippel's (2007) research, who were receiving compensation from the Quebec Compensation Board (CSST), felt stigmatized by the CSST. Lippel's (2007) participants talked about the imbalance of power, which left them feeling powerless; concerns that were similar to participants in Storey's (2009) research. Many of the injured workers in

Beardwood, Kirsh and Clark's (2005) study reported being treated with suspicion by the compensation system. The feeling of being treated with suspicion was worse in cases where there was no specific cause of the injury, such as a repetitive strain injury, or the injury was invisible (Beardwood et al., 2005).

As a result of the adversarial climate in compensation systems (Lippel, 2007; Storey, 2009), injured workers not only need to learn to cope with their injury and the limitations they might experience, but they must also prove to the compensation board, and others who have decision-making authority, that their experiences are legitimate. This places additional stress on injured workers who are already vulnerable from their injury. It also leads to injured workers feeling there is a lack of respect for them and their experiences (Kirsh & McKee, 2003). The treatment of injured workers leaves them as "victims twice over" (Beardwood et al., 2005: 31) because they are victims of the workplace and of a system that implies they are fraudulent.

Health Conditions -- What Happens After an Injury?

There has been little research to date on health outcomes following a work injury. As a result there is little known about the long-term health outcomes of injured workers aging with permanent impairments. There is some evidence, however, that injured workers may 'age' (health-wise) more rapidly than individuals without physical impairments. That is, many chronic conditions experienced by individuals aging with impairments occur earlier than expected. Chronic conditions that are often expected in old age, such as arthritis, heart disease, stroke, and high blood pressure, often start much

earlier - approximately 10 to 15 years after impairment according to research (Trieschmann, 1987; Yorkston, McMullan, Molton, & Jensen, 2010; Zarb, 1993). This has been referred to as accelerated aging (Ballantyne, 2001; Hayes, Wolfe, Trujillo, & Burkell, 2010; Klingbeil, Baer, & Wilson, 2004; Putnam & Pritzker, 2007). Some of these added chronic conditions experienced by individuals with impairments make it difficult for them to adapt and continue working (Johnson, Brown, & Knaster, 2010). The additional chronic conditions have a negative effect on self-perceived health status - that is, individuals who report both impairment and additional chronic conditions are likely to report poor self-perceived health (Wilber et al., 2002). A number of studies have called attention to the need for more research on this subset of the population that is aging with pre-existing impairments (Fortin, Hudon, Haggerty, van den Akker, & Almirall, 2010; Gijzen et al., 2001; Rijken, van Kerkhof, Dekker, & Schellevis, 2005; van den Akker, Buntinx, Metsemakers, Roos, & Knottnerus, 1998). Recent research on individuals aging with chronic illness and impairments has found that secondary health conditions and additional chronic conditions are quite common (Froehlich-Grobe, Lee, & Washburn, 2013; Harrison et al., 2013; Hayes et al., 2010; Jeppsson Grassman, 2013; Johnson et al., 2010; Khoury, Hall, Andresen, Zhang, Ward, & Jarjoura, 2013; McDermott, Moran, Platt, & Dasari, 2006; Reichard et al., 2011). Respondents in Wilber et al.'s (2002) research reported an average of 5.3 chronic conditions in addition to their primary disability. As there is little research on additional chronic conditions that occur after a work injury, more research is needed. Knowing what chronic conditions are likely to

occur after a work injury may lead to earlier detection or preventing the chronic conditions from occurring.

Current work on chronic health conditions reported by individuals with work injuries places more emphasis on the conditions that occurred prior to the injury and the increased likelihood of experiencing a work injury – i.e. illness as the cause of injury (Smith, Bielecky, & Mustard, 2012; Smith et al., 2014). There are few longitudinal studies that analyse the pre-injury and post-injury health status of injured workers. Cross-sectional analysis using the Canadian Community Health Survey (CCHS), (for example, Smith et al., 2012), only provides a snapshot of current health conditions. The definitions for chronic conditions used in the CCHS require these conditions to have existed or be expected to last more than six months in duration and to be diagnosed by a health care professional. Smith et al. (2012) compared health characteristics of respondents who had experienced a work injury or repetitive strain injury within the past 12 months that was serious enough to limit their physical activities to health characteristics of respondents who did not report these types of injuries. Respondents with work injuries were more likely to report chronic back problems, arthritis, and diabetes when compared to the total sample. Respondents with repetitive strain injuries were more likely to report arthritis, back problems, and heart disease (Smith et al., 2012). When focusing on lost time after a work injury and the co-occurrence of a work injury and pre-existing chronic health conditions, the following chronic health conditions resulted in additional time off following the injury: diabetes, coronary heart disease, and osteoarthritis (Smith et al., 2014). The causal effect of these chronic conditions is difficult to determine in these

studies. However, this claim that pre-existing chronic conditions may make respondents more susceptible to work injuries and repetitive strain injuries is problematic. There has been recent media attention about the changes occurring at the WSIB where pre-existing conditions are used to deny long-term compensation for work injury (Monsebraaten, 2014).

The Canadian Health Care System and Workers' Compensation Boards: Are They Working Together?

In Canada, the provincial or territorial governments fund most medically necessary services and hospitalizations. These provincial and territorial plans represent Canada's public health care system. Even though many people assume the public system provides health care to all Canadians, several private plans operate simultaneously and parallel to the public system (Hurley et al., 2008). Workers' Compensation Boards (WCBs) provide financial support for individuals who have claims accepted for a work injury or an illness related to their work environment (WSIB, 2004). The purpose of the WCB is to provide access to health care, some form of salary replacement in temporary situations and rehabilitation or retraining opportunities or a permanent disability pension for work injuries that are long-term.

WCBs are funded by premiums paid by employers. WCBs are responsible for paying for medical care and rehabilitation for injured workers. WCBs will also pay for medications that are required to assist with complications as a result of the injury (Davidson, 2006). Any medical treatment that is associated with the accident is exempt from public coverage. WCBs categorize claims as acute, if time lost is short term, that is,

less than six months, or chronic, if time lost exceeds six months (Brown, McDonough, Mustard, & Shannon, 2006). Claimants who have injuries with short-term implications, or are classified as acute, and return to work with little delay are best served by WCBs (Campolieti & Lavis, 2000; Lippel, 1999; MacEachen, Kosny, Ferrier, & Chambers, 2010). Employers and compensation boards often prefer to use private health care to expedite the process for treating injured workers to help them to return to work more quickly (Gelinas, Wagner, & Harder, 2010; Hurley et al., 2008). A quick recovery is preferred as workers who are out of the workplace for a long period of time, that is, over six months, often have a difficult time returning to work (Gelinas et al., 2010).

In Canada, WCBs rely on family physicians for early treatment and ongoing care for injured workers. The Canadian Medical Association supports this partnership (Russell, Brown & Stewart, 2005), but the opinions are mixed as to the effectiveness of the partnership in managing work injuries. Health care professionals work together with the WCBs to determine the legitimacy of work injuries and provide information to the WCBs about expected outcomes and treatments required (Kosny, MacEachen, Ferrier, & Chambers, 2011). However, family physicians are sometimes criticized by WCBs for not properly documenting workplace exposure, having a lack of knowledge about the workplace, and relying heavily on the patient's description of the injury, which WCBs view to be subjective and unreliable (Russell et al., 2005).

Many physicians do not feel they have enough training to diagnose and treat work injuries (Lax & Klein, 2008; Russell et al., 2005; Soklaridis, Cartmill, & Cassidy, 2011). Work injuries that are more complex or chronic can be a particular challenge for health

care professionals (Russell et al., 2005; Soklaridis et al., 2011). Some family physicians may also be reluctant to provide care for their patients who are injured workers due to the extensive paper work requirements of the WSIB (Kosny et al., 2011; Russell et al., 2005). Family physicians do not appreciate WSIB doubting their opinions and sending patients for second opinions (Russell et al., 2005).

As the health care system and the WSIB are designed to treat acute health care problems, injured workers with chronic conditions and permanent impairments create challenges for the WCBs and can often suffer as a result. The major challenge is the cost of health care treatments for chronic pain and the loss of productivity for workers who must manage chronic pain (Noonan & Wagner, 2005). There is a lack of research on the role of health care providers in claims that are long-term (Kosny et al., 2011). Kosny et al. (2011) list several areas where problems arise when injured workers access health care services. The most common problem with long-term access is the amount of paperwork required of physicians by the WSIB. It can become difficult for injured workers to keep or find a health care professional willing to work with them throughout the claim process (Kosny et al., 2011). Without access to health care professionals, the claim process becomes even more challenging for injured workers.

Injured workers may face stigma when receiving health care because the physician may doubt their pain or limitation (Kirsh et al., 2012; Roberts-Yates, 2003; Soklaridis et al., 2011; Storey, 2009). These stereotypes and resulting stigma may make injured workers less likely to seek care because they want to avoid being judged or labeled. Soklaridis et al. (2011) found that family physicians often question the degree of

pain their patients report after an injury at work. It is challenging for family physicians to assess subjective pain and many questioned whether the patient was telling them the truth (Soklaridis et al., 2011). Injured workers in Kirsh et al.'s (2012) research spoke about the negative treatment they have received from health care professionals. The treatment was perceived as worse when received by WCB physicians as injured workers viewed them with more scepticism and distrust than family physicians (Kirsh & McKee, 2003).

The importance of access to health care for people with non-work related impairments has been well documented in the literature. Inappropriate health care or unmet health care needs can impact independence and general health and wellbeing (Neri & Kroll, 2003). When health care needs are not addressed, individuals report challenges in other aspects of their lives, such as interactions with family members and friends, and the ability to work (Neri & Kroll, 2003). Similar findings about unmet health care needs may be found when focusing on individuals with work-related impairments.

Disability is usually a good predictor of health care needs and utilization (McColl et al., 2011; McColl & Shortt, 2006). Disability and old age both contribute to higher health care utilization rates (McColl et al., 2011). Individuals who reported a disability were twice as likely to see a general practitioner compared to individuals without a disability. Older individuals with disabilities have high health care utilization rates (McColl et al., 2011). Research that examined health care utilization rates for Canadians between the ages of 20 and 65 showed that individuals with complex or chronic health conditions had higher utilization rates when compared to individuals without complex or chronic health conditions (McColl & Shortt, 2006). Further, those with higher health care

utilization rates were also more likely to report unmet health care needs (McColl, 2005; McColl & Shortt, 2006). These individuals were generally unhappy with the services they received.

Access to health care services is also affected by socioeconomic status, that is, individuals with lower socioeconomic status typically report poorer health and require additional health care services (Kim & Durden, 2007). Individuals with impairments are a minority group in society and more likely to experience low income because they may be unable to work (Drainoni et al., 2006; Parish & Ellison-Martin, 2007; Stapleton, O'Day, Livermore, Imparato, 2006) or because they face discrimination in hiring (Harcourt, Lam, & Harcourt, 2007). It is often challenging for individuals with impairments to work because of the limitations they experience that, in turn, may result in their needing to rely on other systems for income support (Drainoni et al., 2006). Finkelstein (2001) used the Canadian NPHS to examine whether people with low income report less health care utilization rates. He believed that income does not play as important a role in access to health care services in Canada because the system is publicly funded. Finkelstein's (2001) findings illustrated that those with the lowest incomes had the highest per capita expenditures in physician services. Individuals who experience work-related permanent impairments may face multiple disadvantages when seeking health care services. For those who face economic hardships as a result of their work injury, their lower income may place them at a higher likelihood of requiring access to health care but when they do access health care they may be affected by the stigma associated with work injuries.

Physicians may also refuse treatment as a result of the extensive paperwork. All of these factors place them at a high risk of having unmet health care needs.

There is a need for additional research on the health care experiences of injured workers with permanent impairments as little research has been conducted in this important area of study. It is likely that individuals with work-related impairments have higher health care utilization rates, similar to those reported by McColl, Jarzynowska, and Shortt (2010) and McColl and Shortt (2006). They may also report unmet health care needs as a result of stigma associated with work injuries and the amount of paperwork required by the WCB of all partners in the treatment of a workplace injury, including the injured worker. It may also be more challenging for individuals with work-related impairments, especially those with more chronic or complex health conditions, to find health care professionals willing to treat them. This present research addresses the gap in the literature by focusing on the health status and health care needs and experiences of injured workers with permanent impairments. These injured workers may face additional chronic health problems that require health care, either regularly or episodically, throughout their life course. This work also focuses on the lived experience of individuals aging with work-related permanent impairments as they navigate their changing health needs and life circumstances.

Overview of the Research

This work involved three components, two quantitative research projects and one qualitative research project. It is a mixed method approach to the study of health and

health care of injured worker. First, this research draws on survey data from the Research Action Alliance on the Consequences of Work Injury (RAACWI) Health and Health Care Utilization Survey, the CCHS, and the National Population Health Survey (NPHS) to study the long-term health and health care outcomes for individuals aging with work-related permanent impairments. Additionally, qualitative data were collected through a convenience sample of participants included in the RAACWI Health Survey. The dissertation in its entirety includes three chapters that utilize different methodologies and datasets to examine the health changes and health care utilization for injured workers. Together the three papers represent the broader picture of what it means to age with work-related permanent impairments, an area of research that is currently underdeveloped.

The first component of the research (Chapter 2) examines health care access and health outcomes following a work-related impairment using the RAACWI Health Survey. In this study, the health characteristics and access to health care professionals of 494 WSIB claimants are compared to a similar aged sample of non-injured Ontarians using data from the Canadian Community Health Survey (CCHS). Respondents in the CCHS who reported a disability as a result of a work accident or work environment, or a work-related injury in the past 12 months or a repetitive strain injury in the past 12 months were excluded. Both samples, then, included English-speaking Ontarians aged 26 to 58. Questions about access to family practitioners and health care specialists were examined to determine if RAACWI respondents have higher utilization rates. The presence of chronic health conditions was also examined to determine whether RAACWI

respondents were more likely to report chronic health conditions compared to the CCHS respondents.

The second component of the research (Chapter 3) explores the unmet health care needs for individuals aging with disabilities, including work-related disabilities, over eight cycles of the NPHS. Four distinct groups (respondents without disabilities (WoD), respondents with work-related disabilities (WRD), respondents with disabilities as a result of a disease or illness (DDI), and respondents with disabilities for other reasons (DOR)) are examined throughout the eight cycles to determine whether they have unmet health care needs. The causes of unmet health care needs was also examined for seven cycles and separated into two different causes, personal reasons and structural reasons. Due to small responses, the disability categories were collapsed and analyses were also completed for differences between respondents without disabilities and respondents with disabilities.

The third component of this work (Chapter 4) describes the lived experience of 11 individuals with work-related impairments as they age and learn to adjust, adapt, and cope with their changing health and health care needs. These participants were selected as a convenience sample from the RAACWI Health Survey. This qualitative research focuses on the participants' experiences with health changes following their work injury, their concerns about the future, and the coping mechanisms they use to manage their current (and future) chronic pain and limitations. Participants were also asked about other chronic conditions and their experiences with access to health care services. This

component of the research provides a richer, more textured, picture of what happens to individuals who are aging with work-related impairments.

The final chapter of the dissertation (Chapter 5) summarizes the key findings and conclusions from the three projects, and discusses the overarching themes and linkages within and across the three components of the research, as well as the limitations of the research. The conclusion will also identify the ways a life course perspective was a valuable framework for understanding the research findings. Recommendations are also presented here relating to policy changes that the WSIB and other WCBs, as well as for other health and social care agencies that work with injured workers, might consider to better address the long-term needs of individuals with work-related impairments. This chapter ends with suggestions for future research on aging with work-related permanent impairments. Together, these research projects present a multi-layered picture of individuals aging with work-related injury or impairment - changes in their health status and health care needs, their access to health care services, and their lives and lived experience as ‘injured workers’.

References

- Association of Workers' Compensation Boards of Canada (AWCBC) (2014). KSM Report. Retrieved from:
<https://aoc.awcbc.org/KsmReporting/ReportReview/0?tempdatakey=ceef069f-312c-4bf8-a657-1036617835a8>
- Ballantyne, P. J. (2001). *Workplace Safety and Insurance Board Pre-1990 Claims Unit Study*. Final Report to the Board.
- Barnes, C. (2002). Introduction: Disability, policy and politics. *Policy & Politics*, 30(3), 311-318.
- Barnes, C., Mercer, G., & Shakespeare, T. (1999). *Exploring disability, a Sociological introduction*. Cambridge: Polity.
- Barton, L. (1993). The struggle for citizenship: The case of disabled people. *Disability, Handicap & Society*, 8(3), 235-248.
- Beardwood, B. A., Kirsh, B., & Clark, N. J. (2005). Victims twice over: Perceptions and experiences of injured workers. *Qualitative Health Research*, 15(1), 30-48.
- Brown, J. A., McDonough, P., Mustard, C. A., & Shannon, H. S. (2006). Healthcare use before and after a workplace injury in British Columbia, Canada. *Occupational and Environmental Medicine*, 63, 396-403.
- Campolieti, M., & Lavis, J. N. (2000). The silent payer speaks: Workers' Compensation Boards and Canadian physicians. *Canadian Medical Association Journal*, 162(8), 1152-1153.
- Clarke, P., & Latham, K. (2014). Life course health and socioeconomic profiles of Americans aging with disability. *Disability Health Journal*, 7(1 Suppl), S15-S23.
- Corker, M., & French, S. (1999). Reclaiming discourse in disability studies. In M. Corker & S. French (Eds.), *Disability discourse* (pp. 1-11). Philadelphia, PA: Open University Press.
- Dannefer, D. (2003). Cumulative advantage, and the life course: Cross-fertilizing age and social science knowledge. *Journal of Gerontology*, 58b, S327-S337.
- Dannefer, D., & Settersten, R. A. (2010). The study of the life course: Implications for social Gerontology. In D. Dannefer & C. Phillipson (Eds.), *The SAGE handbook of social gerontology* (pp. 4-21). London, UK: SAGE Publications.
- Davidson, A. (2006). Under the radar: Stealth development of two-tier healthcare in Canada. *Healthcare Policy*, 2(1), 25-33.
- Drainoni, M., Lee-Hood, E., Tobias, C., Bachman, S. S., Andrew, J., & Maisels, L. (2006). Cross-disability experiences to barriers in health-care access. *Journal of Disability Policy Studies*, 17(2), 101-115.
- Elder, G. H. Jr. (1994). Time, human agency, and social change. Perspectives on the life course. *Social Psychology Quarterly*, 57, 4-15.
- Elder, G. H. Jr., Kirkpatrick Johnson, M., & Crosnoe, R. (2003). The emergence and

- development of life course theory. In J. T. Mortimer & M. J. Shanahan (Eds.), *Handbook of the Life Course* (pp. 3-22). New York, NY: Kluwer Academic Publishers.
- Ferraro, K. F. (2006). Health and aging. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the Social Sciences* (6th ed.) (pp. 238-256). New York, NY: Elsevier.
- Ferraro, K. F., & Kelley-Moore, J. A. (2003). Cumulative disadvantage and health: Long-term consequences of obesity?. *American Sociological Review*, 68(5), 707-729.
- Ferraro, K. F. & Shippee, T. P. (2009). Aging and cumulative inequality: How does inequality get under the skin?. *The Gerontologist*, 49(3), 333-343.
- Finkelstein, M. M. (2001). Do factors other than need determine utilization of physicians' services in Ontario?. *Canadian Medical Association Journal*, 165(5), 565-570.
- Fortin, M., Hudon, C., Haggerty, J., van den Akker, M., & Almirall, J. (2010). Prevalence estimates of multimorbidity: A comparative study of two sources. *BMC Health Services Research*, 10, 111-116.
- Froehlich-Grobe, K. Lee, J., & Washburn, R. A. (2013). Disparities in obesity and related conditions among Americans with disabilities". *American Journal of Preventive Medicine*, 45(1):83-90.
- Gelinas, S., Wagner, S. L., & Harder, H. (2010). Private health care option: Disability management in Canada. *Journal of Disability Policy Studies*, 21(2), 116-125.
- Gijzen, R., Hoeymans, N., Schellevis, F. G., Ruwaard, D., Satariano, W. A., & van den Bos, G. A. (2001). Causes and consequences of comorbidity: A review. *Journal of Clinical Epidemiology*, 54(7), 661-674.
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, NJ: Prentice-Hall.
- Harcourt, M., Lam, H., & Harcourt, S. (2007). The impact of Workers' Compensation experience-rating on discriminatory hiring practices. *Journal of Economic Issues*, 41(3), 681-699.
- Harrison, T. (2003). Women aging with childhood onset disability. A holistic approach to using the life course paradigm. *Journal of Holistic Nursing*, 21(3), 242-256.
- Harrison, T., LeGarde, B., Kim, S., Walker, J., Blozis, S., & Umberson, D. (2013). Work related injury among aging women. *Policy, Politics, & Nursing Practice*, 14(1), 16-25.
- Hayes, K. C., Wolfe, D. L., Trujillo, S. A., & Burkell, J. A. (2010). On the interaction of disability and aging: Accelerated degradation models and their influence on projections of future care needs and costs for personal injury litigation. *Disability and Rehabilitation*, 32(5), 424-428.
- Heller, T., & van Heumen, L. (2013). Aging with disability. In M. Wehmeyer (Ed.), *The Oxford handbook of positive psychology and disability* (pp. 409-423). Oxford, U.K.: Oxford University Press.
- Hurley, J., Pasic, D., Lavis, J. N., Mustard, C., Culyer, A. J., & Gnam, W. (2008). Parallel lines do intersect: Intersections between Workers' Compensation and provincially publicly financed health care systems in Canada. *Healthcare Policy*, 3(4), 100-112.

- Hutchison, E. D. (2008). A life course perspective. In E. D. Hutchison (Ed.), *Dimensions of human behaviour: The changing life course* (pp. 1-38). Thousand Oaks, CA: Sage Publications.
- Jeppsson Grassman, E. (2013). Time, age and the failing body: A long life with disability. In E. Jeppsson Grassman & A. Whitaker (Eds.), *Ageing with disability. A life course perspective* (pp. 17-34). Chicago, IL: Policy Press
- Jeppsson Grassman, E., Holme, L., Taghizadeh Larsson, A., & Whitaker, A. (2012). A long life with a particular signature: Life course and aging for people with disabilities. *Journal of Gerontological Social Work*, 55(2), 95-111.
- Jeppsson Grassman, E., & Whitaker, A. (2013). Ageing with disability: An introduction. In E. Jeppsson Grassman & A. Whitaker (Eds.), *Ageing with disability. A life course perspective* (pp. 1-15). Chicago, IL: Policy Press.
- Johnson, K. L., Brown, P. A., & Knaster, E. S. (2010). Aging with Disability in the workplace. *Physical Medicine and Rehabilitation Clinics of North American* 21:267-279.
- Kelley-Moore, J. (2010). Disability and aging: The social construction of causality. In D. Dennerfer & C. Phillipson (Eds.), *The SAGE handbook of social gerontology* (pp. 96-110). Thousand Oaks, CA: SAGE Publications.
- Khoury, A. J., Hall, A., Andresen, E., Zhang, J., Ward, R., & Jarjoura, C. (2013). The association between chronic disease and physical disability among female medicaid beneficiaries 18-64 years of age. *Disability and Health Journal*, 6, 141-148.
- Kim, J., & Durden, E. (2007). Socioeconomic status and age trajectories of health. *Social Science & Medicine*, 65(12), 2489-2502.
- Kirsh, B., & McKee, P. (2003). The needs and experiences of injured workers: A participatory research study. *Work*, 21, 221-231.
- Kirsh, B., Slack, T., & King, C. A. (2012). The nature and impact of stigma towards injured workers. *Journal of Occupational Rehabilitation*, 22, 143-154.
- Klingbeil, H., Baer, H. R., & Wilson, P. E. (2004). Aging with a disability. *Archives of Physical Medicine and Rehabilitation*, 85(3), S68-S73.
- Kosny, A., MacEachen, E., Ferrier, S., & Chambers, L. (2011). The role of health care providers in long term and complicated workers' compensation claims. *Journal of Occupational Rehabilitation*, 21(4), 582-590.
- Lax, M. B., & Klein, R. (2008). More than meets the eye: Social, economic, and emotional impacts of work-related injury and illness. *New Solutions*, 18(3), 343-360.
- Lippel, K. (1999). Workers' Compensation and stress. *International Journal of Law and Psychiatry*, 22(1), 79-89.
- Lippel, K. (2007). Workers describe the effect of the workers' compensation process on their health: A Quebec study. *International Journal of Law and Psychiatry*, 30, 427-443.
- MacEachen, E., Kosny, A., Ferrier, S., & Chambers, L. (2010). The 'toxic dose' of system problems: Why some injured workers don't return to work as expected. *Journal of Occupational Rehabilitation*, 20(3), 349-366.

- Marshall, V. (2009). Theory informing public policy: The life course perspective as a policy tool. In V. L. Bengtson (Ed.) (2nd ed.), *Handbook of theories of aging* (pp. 573-594). New York, NY: Springer.
- McColl, M. A. (2005). Disability studies at the population level: Issues of health service utilization. *The American Journal of Occupational Therapy*, 59(5), 516-526.
- McColl, M.A., Jarzynowska, A., & Shortt, S. E. D. (2010). Unmet health care needs of people with disabilities: Population level evidence. *Disability & Society*, 25, 205-218.
- McColl, M. A., & Shortt, S. (2006). Another way to look at high services utilization: The contribution of disability. *Journal of Health Services Research & Policy*, 11(2), 74-80.
- McColl, M. A., Shortt, S., Gignac, M., & Lam, M. (2011). Disentangling the effects of disability and age on health service utilisation. *Disability and Rehabilitation*, 33(13-14), 1253-1261.
- McDermott, S., Moran, R., Platt, T., & Dasari, S. (2006). Variation in health conditions among groups of adults with disabilities in primary care. *Journal of Community Health*, 31(3), 147-159.
- Moen, P., Dempster-McCain, D. & Williams, R. M. Jr. (1992). Successful aging: A life-course perspective on women's multiple roles and health. *American Journal of Sociology*, 97(6): 1616-1638.
- Monsebraaten, L. (2014, May 7). Proposed WSIB changes will hurt workers, advocates say. *The Toronto Star*. Retrieved from http://www.thestar.com/news/gta/2014/05/07/proposed_wsib_changes_will_hurt_workers_advocates_say.html
- Neri, M. T., & Kroll, T. (2003). Understanding the consequences of access barriers to health care: Experiences of adults with disabilities. *Disability and Rehabilitation*, 25(2), 85-96.
- Niemeyer, L. O. (1991). Social labeling, stereotyping, and observer bias in workers' compensation: The impact of provider-patient interaction on outcome. *Journal of Occupational Rehabilitation*, 1(4), 251-269.
- Noonan, J. L. & Wagner, S. L. (2005). Chronic pain compensation in Canada. *International Journal of Disability, Community & Rehabilitation*, 4(1). Retrieved from: http://www.ijdc.ca/VOL04_01_CAN/articles/wagner.shtml
- Oliver, M. (1996). *Understanding disability: From theory to practice*. Basingstoke: Palgrave Macmillan.
- O'Rand, A. M. (1996). The precious and the precocious: Understanding cumulative disadvantage and cumulative advantage over the life course. *The Gerontologist*, 36(2), 230-238.
- Parish, S. L., & Ellison-Martin, J. M. (2007). Health care of low-income women Medicaid recipients: Evidence of disability-based disparities. *Journal of Disability Policy Studies*, 18, 109-116.
- Putnam, M., & Pritzker, S. (2007). Translating knowledge to next steps: Professional

- stakeholders' evaluation of facilitators and barriers to crossing network lines. In M. Putnam (Ed.) *Aging and disability: Crossing network lines* (pp. 55-80). New York, NY: Springer Publishing Company
- Raymond, E., Grenier, A., & Handley, J. (2014). The community participation of seniors with disabilities: A matter of self-determination, inclusive environments and identity integration. *Journal of Community and Applied Social Psychology*, 24(1): 50-62.
- Reichard, A., Stolzle, H., & Fox, M. H. (2011). Health disparities among adults with physical disabilities or cognitive limitations compared to individuals with no disabilities in the United States. *Disability and Health Journal*, 4(2), 59-67.
- Rijken, M., van Kerkhof, Dekker, J., & Schellevis, F. G. (2005). Comorbidity of chronic disease. Effects of disease pairs on physical and mental functioning. *Quality of Life Research*, 14, 45-55.
- Roberts-Yates, C. (2003). The concerns and issues of injured workers in relation to claims/injury management and rehabilitation: The need for new operational frameworks. *Disability and Rehabilitation*, 25, 898-907.
- Russell, G., Brown, J. B., & Stewart, M. (2005). Managing injured workers. Family physicians' experiences. *Canadian Family Physician*, 51, 79-85.
- Shannon, H. S., & Lowe, G. S. (2002). How many injured workers do not file claims for workers' compensation benefits. *American Journal of Industrial Medicine*, 42(6), 467-473.
- Slota, N. E. P., & Martin, D. (2003). Methodological considerations in life course theory research. *Disability Studies Quarterly*, 23(2), 19-29.
- Smith, P. M., Bielecky, A., Ibrahim, S., Mustard, C., Scott-Marshall, H., Saunders, R., & Beaton, D. (2014). How much do preexisting chronic conditions contribute to age differences in health care expenditures after a work-related musculoskeletal injury?. *Medical Care*, 52(1), 71-77.
- Smith, P., Bielecky, A., & Mustard, C. (2012). The relationship between chronic conditions and work-related injuries and repetitive strain injuries in Canada. *Journal of Occupational and Environmental Medicine*, 54(7), 841-846.
- Soklaridis, S., Cartmill, C., & Cassidy, D. (2011). Biographical disruption of injured workers in chronic pain. *Disability and Rehabilitation*, 33(23-24), 2372-2380.
- Stapleton, D. C., O'Day, B. L., Livermore, G. A., & Imparato, A. J. (2006). Dismantling the poverty trap: Disability policy for the twenty-first century. *The Millbank Quarterly*, 84(4), 701-732.
- Stone, S. D. (2003). Workers without Work: Injured Workers and Well-Being. *Journal of Occupational Science*, 10(1), 7-13.
- Stone, S. D. (2013). The situated nature of disability. In M. P. Cutchin & V. A. Dickie (Eds.), *Transactional perspectives on occupation* (pp. 95-106). New York, NY: Springer.
- Storey, R. (2009). "They have all been faithful workers": Injured workers, truth, and Workers' Compensation in Ontario, 1970-2008. *Journal of Canadian Studies*, 43(1), 154-185.
- Tremain, S. (2005). Foucault, governmentality, and critical disability theory: An

- introduction. In S. Tremain (Ed.), *Foucault and the government of disability* (pp. 1-24). Ann Arbor, MI: The University of Michigan Press.
- Tremblay, M., Tryssenaar, J., Clark, K., Richardson, J., Watt, S., Rosenthal, C., Tompkins, C., Turpie, I., McColl, M. A., & Pentland, W. (1997). Aging with preexisting disability: Developing a bibliography and curriculum guide for health and social science educators. *Educational Gerontology*, 23(6), 567-579.
- Trieschmann, R. B. (1987). *Aging with a Disability*. New York, NY: Demos Medical Publishing.
- van den Akker, M., Buntinx, F., Metsemakers, J. F., Roos, S., & Knottnerus, J. A. (1998). Multimorbidity in general practice: Prevalence, incidence, and determinants of co-occurring chronic and recurrent diseases. *Journal of Clinical Epidemiology*, 51(5), 367-375.
- Whitaker, A., & Jeppsson Grassman, E. (2013). Living and Ageing with Disability: Summary and conclusion. In E. Jeppsson Grassman and A. Whitaker (Eds.), *Ageing with disability. A life course perspective* (pp. 129-138). Chicago, IL: Policy Press.
- Wilber, N., Mitra, M., Walker, D. K., Allen, D., Meyers, A. R., & Tupper, P. (2002). Disability as a public health issue: Findings and reflections from the Massachusetts Survey of Secondary Conditions. *The Milbank Quarterly*, 80(2), 393-421.
- Workplace Safety and Insurance Board (WSIB) (2004). *Entitlement to health care. Document #17-01-02*. Retrieved from: <http://www.wsib.on.ca/en/community/WSIB/230/OPMDDetail/24347?vnextoid=9637fcea9bfc7210VgnVCM100000449c710aRCRD&vnextchannel=f85bee40cb05e110VgnVCM1000000e18120aRCRD>
- WSIB. (2014a). *By the numbers: 2013 WSIB statistical Report. Schedule 1*. Retrieved from: http://www.wsibstatistics.ca/WSIB-StatisticalReport_S1.pdf
- WSIB. (2014b). *By the numbers: 2041 WSIB Statistical Report. Schedule 2*. Retrieved from: http://www.wsibstatistics.ca/WSIB-StatisticalReport_S2.pdf
- World Health Organization (2002). *Towards a common language for functioning, disability and health ICF*. Geneva: World Health Organization. Retrieved from: <http://www.who.int/classifications/icf/training/icfbeginnersguide.pdf>
- Yorkston, K. M., McMullan, K. A., Molton, I., & Jensen, M. P. (2010). Pathways of change experienced by people aging with disability: A focus group study. *Disability and Rehabilitation*, 32(20), 1697-1704.
- Zarb, G. (1993). 'Forgotten but not gone'. The experience of ageing with a disability. In S. Arber & M. Evandrou (Eds.), *Ageing, independence and the life course* (pp. 27-45). London, UK: Jessica Kingsley Publishers.

Chapter 2: Health and Health Care Following a Work Injury: What Happens to Injured Workers?

Introduction

Health trajectories and health care utilization rates following work injuries have been under researched. Yet, individuals aging with impairments, including impairments resulting from a work injury, are more likely to experience a change in their health trajectories. As a result of the changing health trajectories, health outcomes following impairment are interesting phenomena that are gaining more research attention (Froehlich-Grobe, Lee, & Washburn, 2013; Harrison et al., 2013; Hayes, Wolfe, Trujillo, & Burkell, 2010; Jeppsson Grassman, 2013; Johnson, Brown, & Knaster, 2010; Khoury et al., 2013; McDermott, Moran, Platt, & Dasari, 2006). Chronic conditions become more common in older age and their incidence is even more common when aging is combined with impairment (Mosqueda, 2004b). However, there is little research on the health outcomes of individuals aging with work-related impairments. This leads to questions about what happens to the health of injured workers several years post-injury.

In Canada, in the province of Ontario, there are between 180,000 to 250,000 claims accepted by the Ontario Workplace Safety and Insurance Board (WSIB) each year (WSIB, 2014a; 2014b). The numbers of claims accepted as ‘lost time’ claims and ‘no lost time’ claims¹ have been in decline over the past ten years (WSIB, 2014a; 2014b). Within

¹ Lost time claims represent claims where after the work-related injury the worker is either off work past the day of the accident, experiences a loss in wages or earnings, or experiences a permanent impairment (WSIB, 2013). A no lost time occurs when the worker who experiences the work-related injury does not require time off work other than the day of the injury and requires health care (WSIB, 2004a).

this group of injured workers is a subgroup of workers who health care professionals have determined to have permanent impairments as a result of their work injury. Approximately 15,000 of the claims accepted in 2010 received a Non-Economic Loss (NEL) Award indicating they sustained a permanent impairment (WSIB, 2011), which was an increase from 13,776 in 2007 (WSIB, 2008). A permanent impairment is a physical, functional, or psychological loss that is expected to last the duration of a person's life (WSIB, 2008). The value of the NEL award represents the degree of impairment assigned by the WSIB, ranging from 0.01 to 100 percent. In 2010, the majority of NEL awards (approximately 80 percent) fell in the range of 0.01 to 20% (WSIB, 2011).

Impairments can accelerate the onset or increase the complexity of chronic conditions. However, there is a need for more research on the experiences of aging with impairments (Yorkston, McMullan, Molton, & Jensen, 2010). Chronic conditions, experienced in the context of pre-existing impairments, can negatively affect ability to work (Ipsen, 2006), health and quality of life, ability to maintain social connections, and increase health care utilization rates (Rimmer, Chen, & Hsieh, 2011). The additional chronic conditions can exacerbate the level of disability that people experience (Ravesloot, Seekins & Young, 1998) and make it challenging to participate in physical exercise (Rimmer, 2005).

Injured workers often experience their injury in midlife (Wilkins & Mackenzie, 2007) and many endure limitations for the remainder of their lives. Sprain and strains were the most common injuries (between 40 and 50%) reported to the WSIB in 2013

(WSIB, 2014a; WSIB, 2014b). Unlike others experiencing impairments in midlife, injured workers are thrust into learning to navigate a Workers' Compensation Board (WCB) system as a means of accessing health care related to their workplace injury. The legitimacy and chronicity of their impairment must be evaluated, documented, and approved by a WCB. Dealing with a WCB can be challenging and can lead to additional stress (Beardwood, Kirsh, & Clark, 2005; Boden, 2012; Lippel, 2007; Roberts-Yates, 2005; Strunin & Boden, 2004). Lippel's research (1999; 2007) found that most injured workers reported that dealing with the compensation system negatively affected their mental health, and most of the injured workers Lippel interviewed had claims for mental health conditions relating to the work injury. There is also stigma associated with being an injured worker claimant. Claimants are often viewed as malingerers, liars, fakers, and abusers of the compensation system (e.g.: Ballantyne, 2001; Lippel, 2007; Niemeyer, 1991; Roberts-Yates, 2003; Storey, 2009) which adds to the stress and depression experienced by injured workers. Injured workers may be more vulnerable to additional chronic conditions as they age with their impairment as a result of the chronic stressors, chronic pain, and the long-term side effects of pain medications. Therefore, it is expected that, because of additional chronic conditions, injured workers will have higher health care utilization rates than people without work injuries.

A life course perspective helps to contextualize the work injury effects on an individual's future health and health care experiences. Life events, or transitions, can have long-term implications on the aging experiences of an individual (Elder, 1985). Unfortunately, little is known about the long-term implications of work injuries and the

consequences the injury poses on health outcomes. Transitions in life following a work injury can be seen as turning-moments where an individual experiences a substantial change in the life course (Elder, Kirkpatrick Johnson, & Crosnoe, 2003). However, the changes that occur after a work injury vary by individual. Variations depend on when the impairment occurs, how long the impairment lasts, the severity of the impairment, and how the impairment affects the different stages of life (Jeppsson Grassman & Whitaker, 2013). Socioeconomic factors, such as gender, age, education, and household income, can greatly affect outcomes for the individual. Additionally, personal agency can also assist individuals in their transitions following a turning point (Marshall & Mueller, 2003). An example of personal agency would be coping mechanisms used by individuals who are aging with impairments.

Dupre (2008) recognizes the importance of education on coping resources available to handle health risks and poor health across the life course. Applying a cumulative advantage/disadvantage approach with a life course perspective provides a deeper understanding of how individuals age with a work injury. A cumulative advantage/disadvantage approach articulates how benefits or costs of earlier-life dis/advantages compound over time (Dannefer, 2003; Ferraro, 2006; Ferraro & Shippee, 2009; O’Rand, 1996); such that the accumulation of life events, whether they are positive or negative, will have an impact on later life experiences (Ferraro, 2006), and inequality will continue to increase throughout the life course (Dannefer & Settersten, 2010).

Chronic Health Conditions

Understanding the experience of multiple chronic conditions is gaining more research attention. Chronic conditions are defined as having occurred for at least six months, often having no expected recovery, and having lasting consequences on the person's physical and mental health (van den Akker, Buntinx, Metsemakers, Roos, & Knottnerus, 1998). Individuals aging with impairments are more likely to report concurrent chronic health conditions than those without impairments (Coyle, Santiago, Shank, Ma, & Boyd, 2000; Froehlich-Grobe et al., 2013; Harrison et al., 2013; Hayes et al., 2010; Jeppsson Grassman, 2013; Johnson et al., 2010; Kinne, Patrick, & Lochner Doyle, 2004; Khoury et al., 2013; Marge, 1988; McDermott et al., 2006; Mosqueda, 2004a; Pope & Tarlov, 1991; Ravesloot et al., 1998; Reichard, Stolzle, & Fox, 2011; Rimmer, 1999; Seekins, Smith, McCleary, & Walsh, 1990; Wilber et al., 2002). These additional chronic conditions are often referred to as secondary conditions as they are acquired after the disability or impairment (Marge, 1988; Seekins et al., 1990). Diseases that were common for individuals with impairments include hypertension, depression, diabetes, pulmonary chronic obstructive disease, heart disease (Khoury et al. 2013), high cholesterol (Froehlich-Grobe et al., 2013; Reichard et al., 2011), urinary tract infections, bowel disorders, migraine headaches, asthma (Wilber et al., 2002), arthritis, cardiovascular disease, diabetes, and stroke (Reichard et al., 2011). Respondents with disabilities in Wilber et al.'s (2002) research reported an average of 5.3 additional

chronic conditions and approximately 95% reported at least one additional chronic condition.

Understanding the experiences and prevalence of multiple chronic conditions and impairments is important as a large and growing subset of the population is experiencing multi-morbidity and impairment, a trend that is expected to continue to grow with population aging (Fortin, Haggerty, van den Akker, & Almirall, 2010; Gijzen et al., 2001; Rijken, van Kerkhof, Dekker, & Schellevis, 2005; van den Akker et al., 1998). This is a rich area for research focused on uncovering the possible complex cause-and-effect pathways to later life health. For example, Pope and Tarlov (1991) described multiple chronic health conditions as potentially more disabling than a primary impairment. Yet the chronic conditions and impairments, together, influence quality of life and functionality. Both the multiple chronic conditions and the original impairment can interfere with the ability to engage in paid employment (Ipsen, 2006; Johnson et al., 2010). The inability to work is related to the number and type of chronic conditions such as arthritis, asthma, ulcer, mood disorder, panic disorder, and substance dependence (Kessler, Greenberg, Michelson, Meneades, & Wang, 2001). A better understanding of the impacts of chronic health problems that occur alongside impairments is needed.

There is a lack of research on the impact of chronic conditions reported by injured workers (Smith, Bielecky, & Mustard, 2012). Of those researchers who have focused on chronic health conditions and work injuries, analysis was directed toward chronic conditions present prior to the injury, and their potential influence on the work injury (Smith et al., 2012; Smith et al., 2014). Smith et al. (2012) used the Canadian Community

Health Survey and reported that respondents with work-related injuries were more likely to have had chronic back problems, arthritis, and diabetes when compared to the total sample. Similarly respondents with repetitive strain injuries were more likely to have had arthritis, back problems, and heart disease. Their study suggests that chronic conditions may elevate the risk of experiencing a work injury. However, as it is a cross-sectional study the direction of causality cannot be ascertained. When focusing on lost time after a work injury and the co-occurrence of a work injury and pre-existing chronic health conditions, the following chronic health conditions resulted in additional time off following the injury: diabetes, coronary heart disease, and osteoarthritis (Smith et al., 2014). To date, very few studies have examined the health outcomes following the work injury.

In addition to physical chronic conditions, previous research has emphasized the high rates of depression experienced by injured workers. A study using the Research Action Alliance on the Consequences of Work Injury (RAACWI) Health and Health Care Utilization Survey reported that injured workers experience much higher rates of depression than the general Canadian population (O'Hagan, Ballantyne, & Vienneau, 2012). Most depression was reported to have emerged post injury, suggesting that there is something about the work injury that led to the depression. Incidence of depression has been found in other research that focuses on injured workers (e.g., Beardwood et al., 2005; Kirsh & McKee, 2003). Participants in Beardwood et al.'s (2005) research reported that they were living in pain that was physically and emotionally draining and affecting their sleep. The combination of depression and chronic pain can make it challenging for

injured workers to recover from the injury (Phillips, Carroll, Voaklander, Gross, & Beach, 2012). Therefore, it may be challenging to determine whether the depression experienced by injured workers is related to their work injury or their impairment and possibly living in chronic pain – or both.

There are certain characteristics that increase the likelihood of reporting multiple chronic conditions. For example, being older and female (Fortin et al., 2010), single, and having lower levels of education (van den Akker et al., 1998), have been found to be associated with reporting multiple chronic conditions. Males report fewer health conditions than women unless the primary impairment is a spinal cord injury (Wilber et al., 2002). Individuals with higher incomes are also less likely to report multiple chronic conditions (Agborsangaya, Lau, Lahtinen, Cooke, & Johnson, 2012). Immigrants are typically less likely than non-immigrants to have chronic conditions, 57.9% compared to 60.6% (Newbold & Danforth, 2003). However, when focusing on more specific types of chronic conditions, immigrants are more likely to report arthritis, high blood pressure, and diabetes and less likely to report asthma and heart disease. The likelihood of reporting chronic conditions increases for immigrants who have lived in Canada for over 10 years (Newbold & Danforth, 2003). Therefore, in addition to having a pre-existing impairment, some individuals have a higher risk of reporting multiple chronic conditions based on their personal and demographic characteristics.

Accessing Health Care

The Canada Health Act allows Canadians to access hospitals and physicians for necessary treatment without payment prior to access. Each province and territory is

responsible for administering health care; however, the health care provided must be publicly administrated, comprehensive, universal, portable, and accessible (Duckett & Peetoom, 2013). Ontario provides health care to Ontarians through the Ontario Health Insurance Plan (OHIP). In addition to coverage by OHIP, there are several other ways health care is funded in Ontario because certain individuals are excluded from the Canadian Health Act. One of these excluded groups is injured workers with compensation claims accepted by the WSIB (Hurley et al., 2008). The WSIB is responsible for paying for health care services related to the work injury even when the health care is provided by one's regular family physician. Health care funded by the WSIB is available to workers when the health care is related to the injury and is deemed necessary and appropriate (WSIB, 2004b). Health professionals whose services are covered under Section 33(1) must be a member of a college of a health profession as defined in the Regulated Health Professions Act, 1991 (WSIB, 2004b).

There is growing evidence of complex patterns of utilization of health care among injured workers. Koehoorn, Cole, Hertzman, and Lee (2006) report that people with work-related musculoskeletal injuries have high rates of health care use. Their health care utilization rates were highest when the injury occurred and remained high following the injury compared to a reference group that did not have work injuries. Brown, McDonough, Mustard, and Shannon (2006) reported an increased use of health care services following a work injury, but especially for injured workers who reported a lost time claim. Injured workers included in Beardwood et al.'s (2005) study reported multiple visits to health care professionals because they could not get a formal diagnosis

or adequate treatment for their impairment or chronic pain. The complexity of many of their injuries also led to multiple visits to health care professionals. Therefore, it appears that accessing health care is essential for injured workers who need it for treating the impairment caused by the work injury, as well as for the documentation process required by their WCB.

Individuals with impairments were twice as likely to visit a general practitioner compared to individuals without impairments (McColl, Jarzynowska, & Shortt, 2010). Injured workers with permanent impairments may have similar health care utilization rates as people with impairments as a result of other reasons than work injuries. Conventional biomedical health care is optimal for the delivery of care for acute, short-term health problems. This leaves individuals with impairments, and individuals with impairments and chronic health conditions, with fragmented, poorly coordinated, and sub-optimal care because they have long-term health problems that do not fit into a model designed for acute care (Hwang et al., 2009).

Additionally there are certain populations who utilize more health care professionals than others. Women, older individuals, and those with chronic conditions have high health care utilization rates (Kazanjian, Morettin, & Cho, 2004). Individuals with the lowest incomes had high utilization rates for family physicians. Curtis and MacMinn (2008) reported that individuals with higher education levels had more visits to family physicians than individuals with only high school education. Immigrants have lower utilization rates for family physician (Laporte, Nauenberg, & Shen, 2008), except when they have been living in Canada for over five years (Curtis & MacMinn, 2008).

Individuals who have never married or were previously married have lower utilization rates compared to individuals who are married. Older individuals have higher utilization rates than younger individuals (Curtis & MacMinn, 2008). In addition to the personal characteristics and demographic information, self-perceived health status is associated with access to health care professionals. Individuals with poor health are more likely to access health care professionals (Dunlop, Coyte, & McIsaac, 2000). In addition to poor health, individuals with impairments typically have more complex health needs and require more frequent and ongoing medical care than people without impairments (Druss et al., 2001; McColl, 2005; Valderas, Starfield, Sibbald, Salisbury, & Roland, 2009) and may require seeing multiple health professionals for care (Schoen, Osborn, How, Doty, & Peugh, 2009).

Based on a review of the literature, it can be argued that more information is needed to better understand the post-injury health care needs of injured workers with permanent impairments. In this current study, people with work-related impairments are compared to a similarly aged general population to determine whether a work injury is associated with a greater likelihood of reporting chronic health conditions and accessing more health care services. The timing of a work injury, often in mid adulthood, and the unexpectedness of the injury may influence life trajectories on multiple dimensions, such as early unplanned retirement and poor health outcomes. There is inadequate understanding of the health experiences and life-course pathways of individuals with multiple chronic conditions (Rijken et al., 2005), especially focusing on injured workers with permanent impairments. It is unknown whether injured workers with permanent

impairments have an added chronic health burden relative to the general/aging population, related to the onset of an impairment resulting from a workplace injury. This research will fill this gap in the literature by analyzing the incidence of chronic health conditions of individuals with work-related impairments compared to a sample of similar aged population without work injuries. The main questions guiding this research are:

- 1) How does the likelihood of reporting certain chronic conditions compare in a sample of persons with and without work-related impairments?
- 2) Do persons with work-related impairments have higher utilization rates of health care than a similar sample of persons without work-related impairments? How are utilization rates affected when poor health and chronic health conditions are controlled?

Methods

The data for this research come from the Canadian Community Health Survey (CCHS) 2009/2010 and the Research Action Alliance on the Consequences of Work Injury (RAACWI) Health and Health Care Utilization Survey (2008/09). The 2009/2010 CCHS was selected because it included questions about work injuries for Ontario respondents. The purpose was to create a similar aged sample of non-injured respondents to compare to the RAACWI sample of injured workers. Therefore, respondents from the CCHS sample who reported a disability as a result of a work-related accident or injury in the past 12 months, or a repetitive strain injury in the past 12 months were excluded. These participants were excluded to remove the possibility that injured workers from the

RAACWI sample were included in the CCHS sample. Both samples, then, included English-speaking Ontarians aged 26 to 58. The RAACWI sample is made up of Ontario Workplace Safety and Insurance Board (WSIB) claimants with permanent impairments. Eligibility for the RAACWI study was limited to first-time/single-time claimants (no previous record of a work injury), English-fluent, WSIB claimants, aged 25 to 55, who received a non-economic loss (NEL) benefit certifying permanent impairment between January 2005 and November 2007 and whose workplace injury occurred between January 2002 and November 2007. Details of the screening and sampling procedure for the RAACWI survey can be found in Appendix 1 and in O'Hagan et al.'s (2012) paper.

Concepts and Measures

Dependent Variables

The CCHS and the RAACWI survey included similar questions regarding chronic health conditions and access to health care providers. The first dependent variable, self-reported health status was dummy coded by collapsing 'excellent', 'very good' and 'good' into 'good health' (reference category) and 'fair' and 'poor' into 'poor health'. This categorization of self-reported health status has been used in other studies (Chen & Hou, 2002; Chen et al., 2002; Curtis & MacMinn, 2008). Focusing next on chronic health conditions, both surveys included the following question: "Now I'd like to ask about chronic health conditions which you may have. We are interested in "long-term" conditions which are expected to last or have already lasted 6 months or more and that have been diagnosed by a health professional". Questions regarding the following chronic conditions were asked identically in both surveys: asthma, arthritis but excluding

fibromyalgia, back problems, high blood pressure (hypertension), migraine headaches, intestinal or stomach ulcers, heart disease, and diabetes. Questions pertaining to urinary incontinence and bowel disorder were merged in the RAACWI survey to compare with the CCHS where these two chronic conditions were collapsed. A question pertaining to a diagnosis of depression was worded slightly differently in the CCHS, which asked about mood disorders including depression, while the RAACWI survey asked only about depression. Technically, this could suggest the CCHS respondents would have higher rates as their question includes a more broad definition of depression.

The recoded self-rated health variable and a new count variable for the chronic health conditions mentioned earlier were used as control variables in the models examining health care utilization rates. The count variable for chronic conditions is labeled “chronic conditions” and dummy coded. The reference category was “no chronic conditions”. The other categories included: “one chronic condition”; “two chronic conditions”; and “three or more chronic conditions”. Health characteristics were added to the control models for health care utilization as poor health and multiple chronic conditions increases health care utilization rates (Druss et al., 2001; Curtis & MacMinn, 2008; Glynn et al., 2011; Lemstra, Mackenbach, Neudorf, & Nannapaneni, 2009; McColl & Shortt, 2006; Valderas et al., 2009). By adding the health characteristics, the primary reason for accessing health care services, either for the work injury or the health problems, can be determined.

Focusing on access to health care professionals, both surveys included this lead question “Now I’d like to ask about your contacts with various health professionals

during the past 12 months, that is, from [date one year ago] to yesterday”. In this paper, responses pertaining to reported contacts with general practitioners and ‘other medical doctors’ are included as dependent variables. These variables are continuous count variables, however they are capped at 25 or more visits. In both surveys, the category of ‘other medical doctors’ combines surgeons, allergists, and orthopedists.

Independent and Control Variables

The main independent variable for all the analyses was whether the respondent was from the CCHS or the RAACWI Health Survey. Respondents from the RAACWI survey were coded 1. The CCHS served as the reference category for this dummy variable (0). This was done to examine the health outcomes and health care utilization rates for the RAACWI respondents compared to the CCHS respondents.

Several control variables were selected because they could confound the association between experiencing a work-related impairment, having chronic conditions, and accessing health care. These issues were addressed earlier in the paper. Additionally, household size was included in the model because of its interaction with household income. Larger families may require more income to support or may have more income earners contributing financially. A household income with only one family member has a different effect than a household income for a family of five. The following control variables were dummy coded and used in all of the models: gender (“male” (reference category); “female”), age (“30 years old to 39 years old” (reference category); “20 years old thru 29 years old”; “40 years old to 49 years old”; and “50 years old and older”), marital status (“married or common-law” (reference category); “separated, divorced, or

widowed”; “ever single”), education (“high school graduate” (reference category); “less than high school completed”; “some postsecondary education”; “post-secondary diploma or degree”), household income (“\$20,000 to \$39,999” (reference category); “less than \$20,000”; “\$40,000 to \$79,999”; “\$80,000 or more”; “missing household income information”), country of birth (“Not Canada” (reference category); “Canada”), and community size (“rural” (reference category); “urban”). The number of people living in the household was measured as a continuous variable.

Analysis

The statistical software STATA was used for the following analyses. A logistic regression model was used to determine the presence or absence of chronic conditions. A negative binomial regression model was used to analyze the total number of chronic health conditions, visits to family practitioners and visits to other medical doctors such as surgeons, allergists, or orthopedists. These are positively skewed count variables. Either a Poisson or negative binomial regression model is appropriate for positively skewed count measures. The variance of the count measure for these three variables exceeds the mean, which makes it most appropriate to use a negative binomial regression model (Gardner, Mulvey & Shaw, 1995; Hilbe, 2007; Reynolds & Baird, 2010). The results are presented as Incidence Rate Ratios (IRR). STATA converted the coefficients into Incidence Rate Ratios (IRR) for easier interpretation² (STATA, 2014). Sample weights were applied to the models. The RAACWI survey was weighted first to make the sample similar to the

² For more information on how to convert coefficients into incidence rate ratios:
http://www.ats.ucla.edu/stat/stata/output/stata_nbreg_output.htm

population recruited by WSIB³. The sample over-represents females and older age categories compared to the sampling frame established by the WSIB; each case was therefore weighted to adjust for their over- or under-representation (gender and age-group). The master weight included in the CCHS was used to make the sample generalizable to the population (for more information, see Brisebois & Thivierge, 2001). When combining the two surveys, a new weight was assigned to RAACWI survey participants that treated them as a top-up population in the CCHS and incorporated the original weights used in RAACWI. This new weight for the RAACWI sample was created using a pooled approach explained by Thomas and Wannell (2010)⁴.

Results

Characteristics of the Sample

Table 2.1 provides a summary of the characteristics of both samples, showing the weighted CCHS and RAACWI samples. Bivariate comparisons are based on chi-square and t-tests illustrating statistical differences between CCHS respondents and RAACWI respondents. There are quite a few statistically significant differences between the two groups. The CCHS sample is much younger than the RAACWI sample. Almost 40% of the RAACWI sample is over 50 years of age. This is much higher than the CCHS group, where those over the age of 50 years represent only 26% of the sample. Despite choosing a similar age range with the CCHS sample, the RAACWI respondents are more heavily distributed in the older age categories compared to the population of Ontarians in the

³ See Appendix 1 for additional information about the recruitment strategy by WSIB

⁴ Please email author for more information on this technique.

CCHS. Members of the RAACWI sample are also less likely to be ever single (9.4% compared to 16.8%), but more likely to be divorced, separated, or widowed (15.1% compared to 9.7%). The CCHS sample has higher levels of education compared to the RAACWI sample. The RAACWI sample has fewer people completing postsecondary education (48% compared to 69.4%). More RAACWI respondents were born in Canada (80.5%). The CCHS sample reports higher household incomes compared to the RAACWI sample. This number reflects that fact that many respondents from the RAACWI sample were unable to return to work following the work injury. This inability to work would be reflected in a lower household income. Focusing on community size, more individuals from the CCHS sample live in cities (85.8% compared to 76.9%). The last major difference between the two samples is self-rated health. Just over 40% of the RAACWI sample reports their self-rated health status as fair or poor (rather than good to excellent) compared to 9.3% of the CCHS sample. Although the percentage reporting fair or poor health is quite high, the RAACWI respondents do have permanent impairments and many chronic health problems, which may explain their poorer self-rated health. On average, respondents from the RAACWI survey have approximately two chronic conditions, compared to less than one for the CCHS respondents. These variables will be controlled for in the models for chronic health conditions and health care utilization rates to make the two groups more comparable.

Table 2.1 - Descriptive Information

Characteristic	CCHS N=14290	RAACWI N=494
Gender (Male)		
Female	52.4	50.8
Age (30 to 39 years old)		
20 to 29 years old	11.8	3.5***
40 to 49 years old	34.3	38.0***
50 and older	25.7	39.1***
Marital Status (Married or Common-Law)		
Divorced, Separated, or Widowed	9.7	15.1***
Ever-Single	16.8	9.4***
Education (High School Graduate)		
Less than High School	7.4	11.0**
Some Postsecondary	5.9	17.9***
Completed Postsecondary	69.4	48.0***
Country of Birth (Not Canada)		
Canada	63.8	80.5***
Household Income (\$20,000 to \$39,999)		
Under \$20,000	5.0	8.4**
\$40,000 to \$79,999	27.9	33.9**
\$80,000 or more	44.3	30.5***
Community Size (Rural)		
Urban	85.8	76.9***
Employment Status (Unemployed)		
Employed	86.7	57.8***
Chronic Health Conditions		
Mean (standard error)	0.78 (0.02)	2.27 (0.08)***
Reports Poor Health (No)		
Yes	9.3	40.9***

Notes:

Weighted data

Significance testing based on chi-square and t-tests:

* p = .05, ** p=.01, *** p=.001

Presence and Type of Chronic Condition

Figure 2.1 describes the chronic health conditions present for the RAACWI respondents pre-injury and their current health status, and the health status of the CCHS respondents. The current health status for the RAACWI respondents includes the

presence of chronic conditions pre-injury as well as any point in time following the injury. The average amount of time between the timing of the work injury and the survey was approximately four years. The rates of chronic disease among the RAACWI respondents, both pre-injury and current, are compared to the CCHS respondents. Prior to the injury, RAACWI respondents were more likely than CCHS respondents to report asthma and urinary incontinence or bowel disorders; however, they were less likely to report back problems and diabetes. All other health conditions were not significantly different among pre-injury RAACWI characteristics and the CCHS respondents.

Significant differences emerge when comparing current chronic health conditions of the RAACWI respondents to that of the CCHS respondents. After the work injury and at the time of the survey, RAACWI respondents have higher incidence of all chronic conditions except diabetes. The most common type of chronic condition reported by the RAACWI sample was back problems (51.7%), followed by arthritis (39.6%), and depression (37.8%). While still statistically significant, the difference between RAACWI respondents and the CCHS for heart disease was not as large (5.1% compared to 1.9%). The older age of the RAACWI respondents could explain why they are more likely to report heart disease compared to the CCHS respondents.

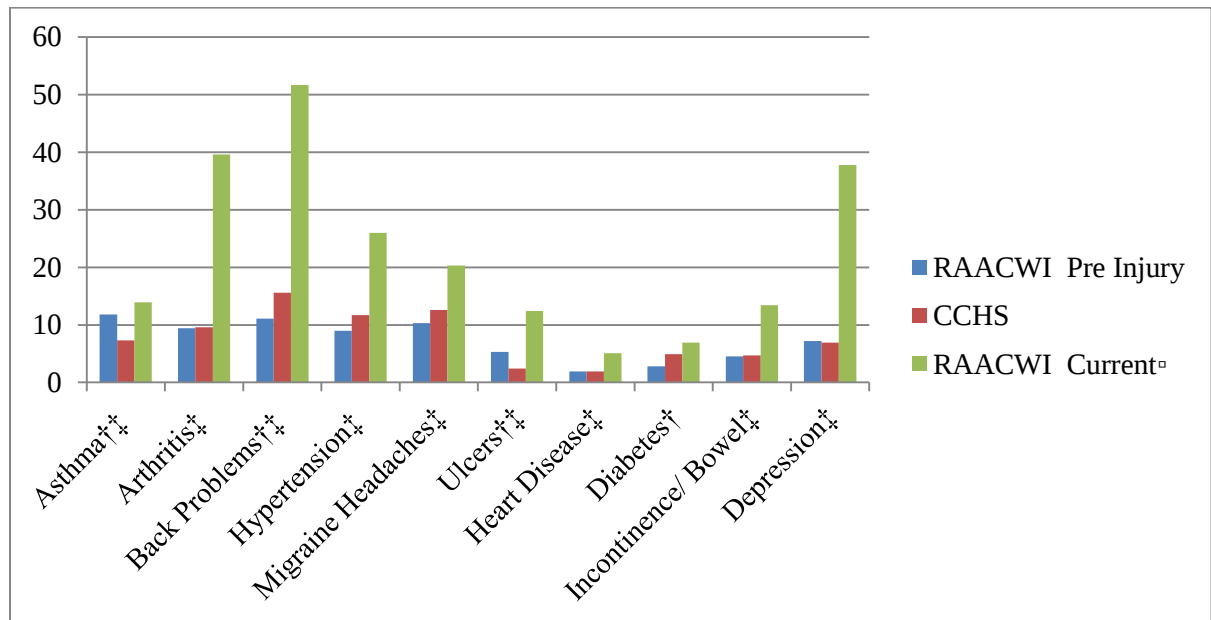


Figure 2.1 - Timing of Chronic Health Conditions

Notes: Weighted data

RAACWI pre-injury and RAACWI current health conditions are compared to the CCHS sample for significance tests

□ RAACWI Current conditions include all chronic conditions reported at the time of the survey (both pre-injury and post-injury)

Significance testing based on chi-square:

† represents statistically significant difference ($p < .05$) between pre-injury RAACWI and CCHS

‡ represents statistically significant differences ($p < .05$) between current RAACWI and CCHS

Table 2.2 shows the weighted analysis for chronic conditions by type controlling for other determinants of health. The reference category is the CCHS sample and a logistic regression model is used to determine the presence of self-rated poor health, specific chronic health conditions, and depression. Additionally, a negative binomial count regression model was used to analyze the total number of chronic conditions reported. Self-rated poor health status is significantly higher for the RAACWI respondents. In fact it is over five times higher than that of the CCHS respondents.

Although this is a concern, the high rates of chronic conditions may explain why RAACWI respondents may view their health as poor.

RAACWI respondents are more likely to report every type of chronic condition except diabetes. As a result, diabetes is not included in the table. The likelihood of reporting asthma, migraine headaches, and heart disease is between 70% and 80% higher when compared to the CCHS respondents (Odds Ratios (OR) 1.81, 1.73, and 1.80 respectively). The likelihood of reporting hypertension and urinary incontinence and bowel disorders is more than double for RAACWI respondents. The chronic conditions that are more worrisome, due to their high likelihood or pain associated with them, are arthritis, back problems, ulcers, and depression. RAACWI respondents are over four times more likely to report arthritis, back problems, and ulcers. Even more concerning is the high rate of depression. RAACWI respondents are over seven times more likely to report depression. This becomes even more worrisome because the question in the CCHS survey about depression also includes mood disorders while the RAACWI question only asks about depression. Therefore, despite the conservative estimate of depression used in the RAACWI as compared to the CCHS, the RAACWI respondents have a much higher rate of depression. RAACWI respondents are 2.36 times more likely to report chronic conditions compared to CCHS respondents. The statistics relating to chronic health conditions are quite concerning for injured workers who, in addition to trying to recover from their work injury, must also deal with the complications arising from these chronic conditions which may be more disabling than the original impairment.

It appears as though the experience of a work injury increases the likelihood of reporting chronic health conditions. However, some personal characteristics can increase or decrease the likelihood of reporting chronic conditions. This means that despite being an injured worker, being younger, single, a male, completing postsecondary education, and higher household incomes can reduce the likelihood of reporting chronic health conditions. Alternatively, being older, married, a female, not completing high school, and lower household incomes can accelerate or increase the likelihood of reporting chronic conditions⁵.

⁵ Full model with control coefficients can be found in the Appendix 3 and Appendix 4

Table 2.2⁶ - Binary Logistic Models for Health Status and Chronic Health Conditions[†]

	Poor Health [‡]	Asthma	Arthritis	Back Problems	Hypertension	Migraine Headaches	Ulcers	Urinary Incontinence and Bowel Disorders	Heart Disease	Depressio n	Chronic Conditions [†]
Survey (CCHS)											
RAACW							4.20 ^{**}				2.36 ^{***}
I	5.42 ^{***} (0.67)	1.81 ^{***} (0.26)	4.37 ^{***} (0.57)	4.49 ^{***} (0.50)	2.06 ^{***} (0.27)	1.73 ^{***} (0.23)	(0.75)	2.39 ^{***} (0.38)	1.80 [*] (0.47)	7.25 ^{***} (0.90)	(0.10)
Wald											
Chi-square	499	68	783	462	393	183	158	205	195	507	1312.64

Notes:

Weighted data for health status and chronic health conditions. All chronic conditions and self-perceived health status are displayed as odds ratios.

[†] Chronic Conditions is a negative binomial regression model and includes all chronic conditions as a count variable and reported as an IRR[‡] Poor Health is self-perceived health status and compares poor and fair health to good, very good, and excellent health

Significance Testing:

^{*}p = .05, ^{**}p=.01, ^{***}p=.001⁶ Additional variations of this table are included in Appendices 2 thru 4. Appendix 2 includes Table 2.2a with the same information but with coefficients. Appendix 3 includes Table 2.2b with odds ratios and the control variables. Appendix 4 includes Table 2.2c with coefficients and the control variables.

Visits to Health Care Professionals

Table 2.3 shows the weighted analysis, see analysis section for information about weighting, for number of visits to either family physician or other medical doctors.

Model 1 includes all the control variables used in the models for chronic health conditions (coefficients for controls not shown), but illustrates the differences between RAACWI and CCHS respondents in counts of visits to family or other physicians. Model 2 includes chronic conditions and poor health. As mentioned previously, multiple chronic conditions and reporting poor health increase health care utilization rates. It was determined necessary to add these variables into the model as RAACWI respondents report worse health and more chronic health conditions than the CCHS respondents. Without adding these health characteristics to the model it is not possible to determine whether it is the effect of being an injured worker, being in poor health, or reporting multiple chronic conditions that contributes to higher health care utilization rates.

In model 1, RAACWI respondents visit the family physician over two times more often compared to CCHS respondents and visit other medical doctors 88% (IRR: 1.88) more often than CCHS respondents. However, the significance for visiting other medical doctors is removed when chronic conditions and poor health are added to the model (see Model 2). The Wald Chi-square more than doubles when chronic conditions and self-perceived health status are added to the model (489.51 compared to 1416.80). This suggests that there is something more about accessing health care than the original work impairment. The significance for visits to the family physician remains but is slightly

lower as RAACWI respondents visit the family physician 50% more often than CCHS respondents. This may suggest that access to family physicians is related more to the work injury rather than chronic conditions and poor health. However, utilization rates for specialist physicians are likely due to treatment of the chronic conditions and poor health rather than the work injury.

Respondents who report any chronic conditions are more likely to access both family physicians and other physicians. Respondents with more than three chronic health conditions have over double the number of visits to health care professionals compared to respondents with no chronic conditions. Additionally, respondents who rate their health status as poor visit a family physician 72% more often than respondents in good health, and have more than double the visits to other specialists compared to respondents in good health. It appears the presence of chronic conditions and reporting poor health explains the majority of access to health care professionals, especially when the respondent is an injured worker.

Table 2.3⁷ - Access to Family Physicians and Specialist Physicians

	Family Physician		Other Physicians	
	Model 1	Model 2	Model 1	Model 2
	489.51	1416.80	212.85	582.16
Survey (CCHS)				
	2.45***	1.47***	1.88***	1.11
RAACWI	(0.15)	(0.08)	(0.23)	(0.18)
Health Characteristics				
Self-Rated Health (Good)				
		1.72***		2.35***
Poor Health		(0.09)		(0.23)
		1.50***		1.72***
1 Chronic Condition		(0.06)		(0.16)
		1.97***		2.20***
2 Chronic Conditions		(0.10)		(0.20)
3 or more Chronic		2.74***		3.77***
Conditions		(0.16)		(0.40)
Wald Chi-square	489.51	1416.80	212.85	582.16

Notes:

Weighted data for access to family physician and specialist physicians. These are count variables and therefore a negative binomial regression model was used. Results displayed as Incidence Rate Ratios (IRR)

Significance Testing:

* p = .05, ** p=.01, *** p=.001

Discussion

The health trajectories of injured workers with permanent impairments present a disturbing and challenging picture as they are more likely to have poor health and chronic conditions than their non-injured worker counterparts. With over 15,000 injured workers in Ontario each year identified as having permanent impairments as a result of the injury (WSIB, 2011), their health trajectories become even more of a concern. This large group of injured workers with permanent impairments may face many negative health outcomes

⁷ Additional variations of this table are included in Appendices 5 thru 7. Appendix 5 includes Table 2.3a with coefficients. Appendix 6 includes Table 2.3b with IRR and control variables. Appendix 7 includes Table 2.3c with coefficients and control variables.

as they age with their impairments. Most of these chronic conditions occurred after the work injury and were reported in the RAACWI Health Survey which took place approximately 52 months after the work injury. Based on these findings, it would likely be even more troubling to analyze health outcomes 10 or 20 years post-injury to examine the health of injured workers as they approach old age.

This paper presents a unique perspective on the health status of injured workers as it provides an analysis of a group of WSIB claimants with permanent impairments who received a non-economic loss benefit. There has been little research to date on this type of WSIB claimant aside from the research done by O'Hagan et al. (2012). While some Canadian research has been completed on health care utilization and health outcomes for people with work-related injuries (i.e.: Brown et al., 2006; Koehoorn et al., 2006; Smith, Chen, Hogg-Johnson, Mustard, & Tompa, 2011; Wilkins & Mackenzie, 2007), none have used such detailed information on WSIB claimants with permanent impairments. Wilkins and Mackenzie (2007), using the 2003 CCHS, found that respondents who reported an injury at work in the past 12 months were more likely to report more than three chronic conditions. However, the timing of these chronic conditions was unknown. It is likely that these chronic conditions presented pre-injury based on the questions asked in the CCHS. Chronic conditions must be diagnosed by a health care professional and have lasted or are expected to last at least six months. It is difficult to determine whether the chronic conditions existed pre-injury, or are associated with the injury, or occurred post-injury. Smith et al. (2012) argued that there is little high quality research in the area of injured workers and chronic health conditions. However, they were interested more in

pre-existing chronic conditions and stressed the importance of understanding the influence of chronic conditions on labour market experiences, especially on work injuries. My research is contributing to filling the gap in understanding more about the relationships of post-injury chronic health conditions and work injuries.

Chronic Health Conditions

RAACWI respondents are more likely to report all types of chronic conditions except diabetes. This is an interesting finding as it suggests there is something unique about experiencing a work injury with permanent impairments that contributes to chronic health conditions. Prior to the injury, the RAACWI respondents were in good health and reported few chronic conditions. In fact, they were not that different than the general population. Comparing the presence of chronic conditions pre-injury for the RAACWI sample to the current conditions of the CCHS sample, RAACWI respondents were statistically more likely to report asthma and ulcers. However, RAACWI respondents had statistically lower rates for back problems and diabetes. All other chronic conditions were not statistically significant between the two groups. It is unclear why the RAACWI respondents would report more incidents of asthma or ulcers before the injury. Occupation type could account, in part, for the higher rates of asthma. Almost 50% of the RAACWI sample reported working in blue collar jobs at the time of their work injury. Other researchers have reported that occupation, especially factory work and blue collar and health care occupations, contributes to an increased likelihood of asthma (Henneberger et al., 2010; Jaakkola, Piipari, & Jaakkola, 2003).

Another interesting finding is the number of chronic conditions that occurred post-injury – suggesting that the injury and consequent impairment heightened the onset of chronic conditions. The timing of the incidence of chronic conditions is important as other research examined pre-existing chronic conditions to explain why work injuries occur. Smith et al. (2012) reported that pre-existing diagnosis of arthritis and back problems were associated with an increased likelihood in reporting a work injury. However, my research shows that the RAACWI respondents did not have higher rates of arthritis or back problems pre-injury. In fact, the RAACWI respondents had significantly lower rates of back problems compared to the CCHS respondents. A systematic review done by Palmer, Harris, and Coggon (2008) on chronic health problems increasing the risk of work injuries failed to demonstrate evidence linking pre-existing chronic conditions to an increased risk of work injury. The only pre-existing chronic conditions that were significantly higher for the RAACWI respondents were asthma and ulcers. Palmer et al. (2008) reported the results of one study that found a moderate risk of work injury for people with asthma but the risk was higher when working with livestock. Neither study - Smith et al. (2012) nor Palmer et al. (2008), reported an increased risk of work injuries associated with ulcers. It does not appear as though the RAACWI respondents had any pre-existing chronic conditions that make them more vulnerable to a work injury.

Another characteristic of the RAACWI respondents is that they experience much higher rates of depression than the general Canadian population (O'Hagan et al., 2012). When compared to the age-comparable Ontario sample, the RAACWI respondents were

over seven times more likely to report a diagnosis of depression. Kirsh and McKee (2003) also found high rates of depression in their sample of WSIB claimants. Lippel (2007) reported that dealing with an adversarial compensation system can increase the likelihood of stress and depression among injured workers. The participants in Cacciaccaro and Kirsh's (2006) study reported that navigating the compensation system and fighting for their right to a claim resulted in negative mental health outcomes. Depression is also common for individuals who report musculoskeletal pain (Alcântara, Sampaio, Souza, Silva, & Kirkwood, 2013). Approximately 35% of Miller and Cano's (2009) respondents with chronic pain, mostly from osteoarthritis, spine or disc problems, nerve pain, or back pain reported depression. The cause of the depression for the RAACWI respondents is unknown, but it could be related to the injury and subsequent permanent impairment, the development of chronic conditions, or their interactions in a compensation system that Cacciaccaro and Kirsh (2006) and Lippel (2007) call adversarial at times.

High blood pressure and ulcers were also common among the RAACWI respondents post-injury – a finding that may be a function of the stress of injury and of becoming a WSIB claimant. Exposure to stress has been demonstrated to be a risk factor in many different types of diseases of the gastrointestinal tract, including ulcers (Konturek, Brzozowski, & Konturek, 2011). The interaction between stress and ulcers is more difficult to determine in the RAACWI sample as they were also more likely to report ulcers pre-injury compared to the CCHS sample. Many factors have been found to contribute to high blood pressure, including age (Rosenthal & Alter, 2012), genetics, and

behavioural factors (Spruill, 2010). Some research has shown that there is a relationship between occupational stress and high blood pressure (Rosenthal, & Alter, 2012; Spruill, 2010). Spruill (2010) also argues that there is evidence to suggest that chronic psychosocial stress is a factor contributing to high blood pressure. Some of the RAACWI respondents may be working in precarious employment after the injury which could contribute to poor health outcomes. Clarke, Lewchuck, de Wolff, and King (2007) reported that individuals working in precarious employment reported high levels of stress, anxiety, and multiple health problems.

Arthritis and back problems are two chronic conditions that are more frequent in the RAACWI sample than the CCHS sample. These two chronic conditions are more complicated to explain as it is likely that they are related to the work injury, that is, either a direct result of the injury or a result of complications arising from the work injury. WSIB reports that sprains and strains, low back, and overexertion are the most common types of work injuries reported (WSIB 2014a; 2014b). Wilkins and Mackenzie (2007), using the 2003 CCHS, report that the back is the second most common body part affected by a work injury. Additionally, they determined sprains and strains were the most common type of work injury. These types of work injuries could result in a diagnosis of back problems and arthritis.

It appears the work injury may accelerate the likelihood of reporting chronic conditions, such as arthritis, hypertension, and heart disease that are accepted as part of the aging process. This type of acceleration has been found in other studies that focus on disability and chronic conditions (Coyle et al., 2000; Kinne et al., 2004; Marge, 1988;

Mosqueda, 2004a; 2004b; Pope & Tarlov, 1991; Ravesloot et al., 1998; Rimmer, 1999; Seekins et al., 1990; Wilber et al., 2002). Although it is not possible to determine this by the statistics presented, the chronic conditions experienced by the RAACWI respondents may exacerbate the level of disability experienced and affect their ability to work. These were some of the conclusions drawn by researchers examining the relationship of chronic conditions to disability (Kessler et al., 2001).

Some socio-demographic characteristics act as buffers and may protect injured workers from chronic conditions. For example, RAACWI respondents who are male, have higher household incomes, and completed postsecondary education are less likely to report most types of chronic conditions. On the other hand, this research has shown that RAACWI respondents who are female, have not completed high school, and have lower household incomes are at a greater risk for most chronic conditions. RAACWI respondents who experienced more advantages earlier in life, such as access to higher levels of education and higher household incomes – that situates them in less risky work and less risk of more serious injury when at work – appear to have fewer chronic conditions than the respondents who did not have these advantages.

The study findings support much of the research on individuals aging with impairments that resulted from reasons other than work injuries (Coyle et al., 2000; Jeppsson Grassman, 2013; Kinne et al., 2004; Marge, 1988; Mosqueda, 2004a; Pope & Tarlov, 1991; Ravesloot et al., 1998; Rimmer, 1999; Seekins et al., 1990; Wilber et al., 2002; Yorkston et al., 2010). Experiencing a work injury appears to be the start of a downward health cycle for many of the RAACWI respondents. This is expressed by the

increased likelihood of reporting almost all of the chronic conditions and by the fact that most of the chronic conditions were not reported pre-injury. The work injury could be described as a turning point as it has long-term implications on future health outcomes. This further reinforces the notion of accumulation of dis/advantage for injured workers. Ballantyne (2001) described this phenomenon as the ‘cascading effect’ of a work injury where the injured worker accrues additional health problems following the work injury. Individuals aging with impairments, including work-related impairments, have different life trajectories. As Whitaker and Jeppsson Grassman (2013) argue, aging with impairments has an impact on life phases, transitions and the fulfilment of life roles. Many people aging with impairments worry about ‘off-time’ events. Examples include retiring or leaving work prematurely, experiencing chronic health conditions that are associated with older age at a much earlier age, and requiring assistance at a younger age than expected or desired (Whitaker & Jeppsson Grassman, 2013).

Utilization of Health Care Services

It is not surprising that the RAACWI respondents reported more visits to health care professionals than the CCHS respondents for two reasons. First, people with impairments and chronic health conditions use more health care services than people without impairments (Druss et al., 2001; McColl, 2005; McColl & Shortt, 2006; Valderas et al., 2009). RAACWI respondents have permanent impairments and multiple chronic conditions. Therefore, the similarities between these results and the results reported by McColl et al. (2010), who reported that people with impairments are twice as likely to visit a general practitioner compared to people without disabilities, are not surprising.

RAACWI respondents have much higher utilization rates for family physicians when compared to the CCHS respondents. Health care utilization rates become more interesting when comparing model 1 and model 2 results. Before chronic health conditions and poor health are controlled, RAACWI respondents are much more likely to utilize family physicians and other physicians. This is a reflection of both their higher rates of chronic conditions and their work injury. However, when the chronic conditions and poor health are controlled, RAACWI respondents have slightly lower utilization rates, and actually become non-significant for access to other physicians. Therefore, access to family physicians is necessary for injured workers regardless of their other health conditions. Accessing other physicians is likely due to the other chronic conditions and poor health rather than the work injury.

The second reason why the RAACWI respondents have higher utilization rates is their status as WSIB claimants. Individuals with work-related impairments face more complicated pathways in the health care system because a WCB pays for health services used by people who are injured at work or have an illness relating to their work environment (Hurley et al., 2008). Additionally, WCBs require health care professionals to document and complete paperwork for injured workers and for the services provided for the work injury since the WCB insures the service provided. As a result of the documentation required as a condition to ensure ongoing financial support, it is not surprising that the RAACWI respondents have higher utilization rates. Additionally, several studies have found that injured workers are often forced to seek out multiple health care providers or to seek additional visits to their health care physicians to

determine a diagnosis for their health problems (Beardwood, et al., 2005). Beardwood et al. (2005) discussed how several injured workers in their study had difficulty determining what exactly was wrong with them following their injury. Other participants were unhappy with the treatment and diagnosis and sought out other health care professionals for another opinion. Injured workers with complex health problems often had to seek out several specialists to determine their diagnosis and treatment plans (Beardwood et al., 2005). Additionally, RAACWI respondents may have higher utilization rates as health care providers work closely with WCBs to establish both the capacity to, and the optimal timing of, return-to-work (Campolieti & Lavis, 2000; Lippel, 1999).

Awareness of Additional Chronic Conditions by the WSIB and Health Care Providers

This study draws attention to the health problems that people with work-related impairments face following an injury. Health care providers must be aware of the types of chronic conditions that may occur following a work injury. Early detection of these health problems could improve quality of life and reduce the need to access health care providers. Additionally, WSIB must be aware of post-injury on-set chronic health conditions to determine if they are related to the injury, so as to include consideration of these conditions in the adjudication process. If the relationship of chronic conditions to an injury experience cannot be discerned, the WSIB process, at a minimum, must recognize the impact of these conditions on prospects for return-to-work and income recovery when deliberating an individual's claim.

Limitations

A limitation in this study was the use of self-reported data on chronic conditions and physician utilization; however, this type of question is common in most surveys, including the CCHS. RAACWI respondents were also asked to self-report the timing of on-set of reported chronic conditions. Errors made in recalling this information may have occurred because of the time which had passed between the date of the survey and when the injury occurred ($\bar{x}$ =52 months). Although the RAACWI sample was a non-systematic sample selected from a sampling frame of eligible injured workers with permanent impairment, it over-represents women and older age categories. Thus the RAACWI sample is not a representative sample.

Future Research

Although this research suggests that RAACWI respondents have higher utilization rates for family physician services compared to CCHS respondents, it is not possible to understand the extent to which the health care needs of RAACWI or CCHS respondents are being met. In the RAACWI sample, the high utilization rates could reflect the provision of needed care. Alternatively it could suggest that injured workers are not receiving the care they require, or that they are experiencing difficulties getting a definitive diagnosis for their injury and any health problems that arise following the work injury - as was found in the research by Beardwood et al. (2005) and Roberts-Yates (2003). More research is needed to understand whether the health care needs of injured workers are being met. A qualitative study that asks WSIB claimants about their health

care experiences addresses this gap in the literature. This study is included as Chapter Four and examined the lived experiences of 11 RAACWI respondents who are aging with permanent impairments. Participants were asked whether they reported an unmet health care need and what improvements are needed in the health care system to ensure that their current (and future) health needs are met. Additionally, more research is needed to better understand the timing of onset of chronic conditions and, where applicable, how these conditions directly relate to work injury. Longitudinal research that documents the timing of onset of health conditions over the middle and later life course would enable this pre- and post-injury comparison among injured workers, as well as the comparison of injured workers to the general population. Due to the extremely high rate of depression among the RAACWI respondents, a more in-depth analysis of depression among injured workers is needed. Understanding what causes the depression and eliminating the trigger points could improve the health outcomes for injured workers with permanent impairments.

Conclusion

There appears to be something unique about the RAACWI respondents, who, in the current study, were found to be more likely to report certain chronic health conditions than a similar aged group of Ontarians without work-related impairments. Some findings are quite striking: for example, RAACWI respondents were over four times as likely as Ontarians in general to report arthritis and back problems and over seven times as likely to report depression. Other common chronic conditions among RAACWI respondents

included hypertension and ulcers. Focusing on the timing of onset, the majority of injured worker respondents reported that chronic conditions emerged post-injury. This finding provides support for the cumulative advantage/disadvantage theory in explaining the discrepancy between the CCHS respondents and the RAACWI respondents: the work injury starts (or continues) an accumulation of disadvantages which results in chronic conditions, with pre-injury advantages, such as higher household incomes or higher levels of education, buffering or moderating the chances of experiencing a chronic condition. This study illustrates the importance of not only the awareness of, but the response by, health care providers and WCB decision-makers to the apparent negative health consequences associated with, or following a work injury. This present research shows injured workers with permanent impairments have higher health care utilization rates compared to non-injured workers. These results align with much of the other work on health care utilizations for individuals with impairments. Some of the high utilization rates can be explained by the presence of multiple chronic conditions and reporting poor health. However, whether the health care needs of injured workers are being addressed during these multiple health care visits is unknown. Therefore, RAACWI respondents are faced with multiple chronic health conditions and despite accessing health care professionals may still have unmet health care needs.

The following chapter addresses unmet health care needs experienced by individuals with work-related disabilities. The National Population Health Survey (NPHS) is used to examine rates of unmet health care needs for respondents with work-related disabilities over eight cycles. The fourth chapter provides data from 11 interviews

with respondents recruited from the RAACWI Health Survey to understand their health changes and access to health care services as they age with work-related permanent impairments. These two chapters supplement the data reported in this chapter.

References

- Agborsangaya, C. B., Lau, D., Lahtinen, M., Cooke, T., & Johnson, J. A. (2012). Multimorbidity prevalence and patterns across socioeconomic determinants: A cross-sectional survey. *BMC Public Health*, 12, 201-208.
- Alcântara, M. A., Sampaio, R. F., Souza, M. A. P., Silva, F. C. M., & Kirkwood, R. N. (2013). Chronic pain profile: An interaction between biological and psychosocial factors. *Pain Studies and Treatment*, 1(2), 9-16.
- Ballantyne, P. (2001). *Workplace Safety and Insurance Board Pre-1990 Claims Unit Study*. Final Report to the Board.
- Beardwood, B. A., Kirsh, B., & Clark, N. J. (2005). Victims twice over: Perceptions and experiences of injured workers. *Qualitative Health Research*, 15(1), 30-48.
- Boden L. I. (2012). Reexamining workers' compensation: A human rights perspective. *American Journal of Industrial Medicine*, 55(6), 483-6.
- Brisebois, F., & Thivierge, S. (2001). The weighting strategy of the Canadian Community Health Survey. *Proceedings of the American Statistical Association Meeting. Survey Research Methods Section*. Retrieved from: <http://data.library.ubc.ca/rdc/pdf/CCHSWeightingStrategy.pdf>
- Brown, J. A., McDonough, P., Mustard, C. A., & Shannon, H. S. (2006). Healthcare use before and after a workplace injury in British Columbia, Canada. *Occupational and Environmental Medicine*, 63, 396-403.
- Cacciaccaro, L., & Kirsh, B. (2006). Exploring the mental health needs of injured workers. *Canadian Journal of Occupational Therapy*, 73(3), 178-187.
- Campolieti, M., & Lavis, J. N. (2000). The silent payer speaks: Workers' Compensation Boards and Canadian physicians. *Canadian Medical Association Journal*, 162(8), 1152-1153.
- Chen, J., & Hou, F. (2002). Unmet needs for health care. *Health Reports*, 13(2), 23-34.
- Chen, J., Hou, F., Sanmartin, C., Houle, C., Tremblay, S., & Berthelot, J. M. (2002). Unmet health care needs. *Canadian Social Trends*, 19-22.
- Clarke, M., Lewchuk, W., de Wolff, A., & King, A. (2007). 'This just isn't sustainable': Precarious employment, stress and workers' health. *International Journal of Law and Psychiatry*, 30, 311-326.
- Coyle, C. P., Santiago, M. C., Shank, J. W., Ma, G. X., & Boyd, R. (2000). Secondary conditions and women with physical disabilities: A descriptive study. *Archives of Physical Medicine and Rehabilitation*, 81(10), 1380- 1387.
- Curtis, L. J., & MacMinn, W. J. (2008). Health care utilization in Canada: Twenty-five years of evidence. *Canadian Public Policy*, XXXIV(1), 65-87.
- Dannefer, D. (2003). Cumulative advantage, and the life course: Cross-fertilizing age and social science knowledge. *Journal of Gerontology*, 58b, S327-S337.
- Dannefer, D., & Settersten, R. (2010). The study of the life course: Implications for social gerontology. In D. Dannefer, & C. Phillipson (Eds.), *The SAGE handbook of social gerontology*. (pp. 4-21). London, UK: SAGE Publications.
- Duckett, S., & Peetoom, A., (2013). *Canadian Medicare. Need it and we can keep it*.

- Kingston, ON: McGill-Queen's University Press.
- Dunlop, S., Coyte, P. C., & McIsaac, W. (2000). Socio-economic status and the utilisation of physicians' services: Results from the Canadian National Population Health Survey. *Social Science & Medicine*, 51(1), 123-133.
- Dupre, M. E. (2008). Education differences in health risks and illness over the life course: A test of cumulative disadvantage theory. *Social Science Research*, 37, 1253-1266.
- Druss, B. G., Marcus, S. C., Olfson, M., Tanielian, T., Elinson, L., & Pincus, H. A. (2001). Comparing the national economic burden of five chronic conditions. *Health Affairs*, 20, 233-241.
- Elder, G. H. (Jr.) (1985). Perspective on the life course. In G. H. Elder (Jr.) (Ed.), *Life course dynamics* (pp. 23-49). Ithaca, NY: Cornell University Press.
- Elder, G. H., Kirkpatrick Johnson, M., & Crosnoe, R. (2003). The emergence and development of life course theory. In J. T. Mortimer & M. J. Shanahan (Eds.), *Handbook of the life course* (pp. 3-22). New York, NY: Kluwer Academic Publishers.
- Ferraro, K.F. (2006). Health and aging. In R.H. Binstock and L.K. George (Eds.), *Handbook of aging and the Social Sciences* (6th ed.) (pp. 238-256). New York, NY: Elsevier.
- Ferraro, K.F., & Shippee, T.P. (2009). Aging and cumulative inequality: How does inequality get under the skin?. *The Gerontologist*, 49(3), 333-343.
- Froehlich-Grobe, K., Lee, J., & Washburn, R. A. (2013). Disparities in obesity and related conditions among Americans with disabilities. *American Journal of Preventative Medicine*, 45(1), 83-90.
- Fortin, M., Hudon, C., Haggerty, J., van den Akker, M., & Almirall, J. (2010). Prevalence estimates of multimorbidity: A comparative study of two sources. *BMC Health Services Research*, 10, 111-116.
- Gardner, W., Mulvey, E. P., & Shaw, E. C. (1995). Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. *Psychological Bulletin*, 118(3), 392-404.
- Gijzen, R., Hoeymans, N., Schellevis, F. G., Ruwaard, D., Satariano, W. A., & van den Bos, G. A. (2001). Causes and consequences of comorbidity: A review. *Journal of Clinical Epidemiology*, 54(7), 661-674.
- Glynn, L. G., Valderas, J. M., Healy, P., Burke, E., Newell, J., Gillespie, P., & Murphy, A. W. (2011). The prevalence of multimorbidity in primary care and its effect on health care utilization and cost. *Family Practice*, 28, 516-523.
- Harrison, T., LeGarde, B., Kim, S., Walker, J., Blozis, S., & Umberson, D. (2013). Work related injury among aging women. *Policy, Politics, & Nursing Practice*, 14(1), 16-25.
- Hayes, K. C., Wolfe, D. L., Trujillo, S. A., & Burkell, J. A. (2010). On the interaction of disability and aging: Accelerated degradation models and their influence on projections of future care needs and costs for personal injury litigation. *Disability and Rehabilitation*, 32(5), 424-428.
- Henneberger, P. K., Mirabelli, M. C., Kogevinas, M., Antó, J. M., Plana, E., Dahlman-

- Höglund, A., Jarvis, D. L., ... Zock, J. P. (2010). The occupational contribution to severe exacerbation of asthma. *European Respiratory Journal*, 36, 743-750.
- Hilbe, J.M. (2007). *Negative binomial regression*. Cambridge, UK: Cambridge University Press.
- Hurley, J., Pasic, D., Lavis, J. N., Mustard, C., Culyer, A. J., & Gnam, W. (2008). Parallel lines do intersect: Intersections between Workers' Compensation and provincially publicly financed health care systems in Canada. *Healthcare Policy*, 3(4), 100-112.
- Hwang, K., Johnston, K., Tulskey, D., Wood, K., Dyson-Hudson, T., & Komaroff, E. (2009). Access and coordination of health care service for people with disabilities. *Journal of Disability Policy Studies*, 20(1), 28-34.
- Ipsen, C. (2006). Health, secondary conditions, and employment outcomes for adults with disabilities. *Journal of Disability Policy Studies*, 17(2), 77-87.
- Jaakkola, J.J.K., Piipari, R., & Jaakkola, M. S. (2003). Occupation and asthma: A population-based incident case-control study. *American Journal of Epidemiology*, 158(10), 981-987.
- Jeppsson Grassman, E. (2013). Time, age and the failing body: A long life with disability. In E. Jeppsson Grassman & A. Whitaker (Eds.), *Ageing with disability. A life course perspective* (pp. 17-34). Chicago, IL: Policy Press.
- Jeppsson Grassman, E., & Whitaker, A. (2013). Ageing with disability: An introduction. In E. Jeppsson Grassman & A. Whitaker (Eds.), *Ageing with disability. A life course perspective* (pp. 1-15). Chicago, IL: Policy Press.
- Johnson, K. L., Brown, P. A., & Knaster, E. S. (2010). Aging with disability in the workplace. *Physical Medicine and Rehabilitation Clinics of North American*, 21, 267-279.
- Kazanjian, A., Morettin, D., & Cho, R. (2004). Health care utilization by Canadian women. *BMC Women's Health*, 25(4 Suppl 1), S33-S42.
- Kessler, R.C., Greenberg, P.E., Mickelson, K.D., Meneades, L.M., & Wang, P.S. (2001). The effects of chronic medical conditions on work loss and work cutback. *Journal of Occupational and Environmental Medicine*, 43, 218-225.
- Khoury, A. J., Hall, A., Andresen, E., Zhang, J., Ward, R., & Jarjoura, C. (2013). The association between chronic disease and physical disability among female Medicaid beneficiaries 18-64 years of age. *Disability and Health Journal*, 6, 141-148.
- Kinne, S., Patrick, D. L., & Lochner Doyle, D. (2004). Prevalence of secondary conditions among people with disabilities. *American Journal of Public Health*, 94(3), 443-445.
- Kirsh, B., & McKee, P. (2003). The needs and experiences of injured workers: A participatory research study. *Work*, 21, 221-231.
- Koehoorn, M., Cole, D. C., Hertzman, C., & Lee, H. (2006). Health care use associated with work-related musculoskeletal disorders among hospital workers. *Journal of Occupational Rehabilitation*, 16(3), 411-424.
- Konturek, P. C., Brzozowski, T., & Konturek, S. J. (2011). Stress and the gut:

- Pathophysiology, clinical consequences, diagnostic approach and treatment options. *Journal of Physiology and Pharmacology*, 62(6), 591-599.
- Laporte, A., Nauenberg, E., & Shen, L. (2008). Aging, social capital, and health care utilization in Canada. *Health Economics, Policy and Law*, 3, 393-411.
- Lemstra, M., Mackenbach, J., Neudorf, C., & Nannapaneni, U. (2009). High health care utilization and costs associated with socio-economic status: Results from a linked database. *Canadian Journal of Public Health*, 100(3), 180-183.
- Lippel, K. (1999). Workers' Compensation and stress. *International Journal of Law and Psychiatry*, 22(1), 79-89.
- Lippel, K. (2007). Workers describe the effect of the workers' compensation process on their health: A Quebec study. *International Journal of Law and Psychiatry*, 30, 427-443.
- Marge, M. (1988). Health promotion for persons with disabilities: Moving beyond rehabilitation. *American Journal of Health Promotion*, 2(4), 29-35.
- Marshall, V.W., & Mueller, M. M. (2003). Theoretical roots of the life-course perspective. In W.R. Heinz and V.W. Marshall (Eds.), *Social dynamics of the life course transitions, institutions, and interrelations* (pp. 3-32). New York: Aldine De Gruyter.
- McColl, M. A. (2005). Disability studies at the population level: Issues of health service utilization. *The American Journal of Occupational Therapy*, 59(5), 516-526.
- McColl, M. A., Jarzynowska, A., & Shortt, S. E. D. (2010). Unmet health care needs of people with disabilities: Population level evidence. *Disability & Society*, 25(2), 205-221.
- McColl, M. A., & Shortt, S. E. D. (2006). Another way to look at high services utilization: The contribution of disability. *Journal of Health Services Research & Policy*, 11(2), 74-80.
- McDermott, S., Moran, R., Platt, T., & Dasari, S. (2006). Variation in health conditions among groups of adults with disabilities in primary care. *Journal of Community Health*, 31(3), 147-159.
- Miller, L. R., & Cano, A. (2009). Comorbid chronic pain and depression: Who is at risk?. *The Journal of Pain*, 10(6), 619-662.
- Mosqueda, L. (2004a). Physiological changes and secondary conditions. In B. J. Kemp & L. Mosqueda (Eds.), *Aging with a disability. What the clinician needs to know* (pp. 35-47). Baltimore, MD: The Johns Hopkins University Press.
- Mosqueda, L. (2004b). Maintaining health and function. In B. J. Kemp & L. Mosqueda (Eds.), *Aging with a disability. What the clinician needs to know* (pp. 87-101). Baltimore, MD: The Johns Hopkins University Press.
- Newbold, K. B., & Danforth, J. (2003). Health status and Canada's immigrant population. *Social Science & Medicine*, 57, 1981-1995.
- Niemeyer, L. O. (1991). Social labeling, stereotyping, and observer bias in workers' compensation: The impact of provider-patient interaction on outcome. *Journal of Occupational Rehabilitation*, 1(4), 251-269.
- O'Hagan, F. T., Ballantyne, P. J., & Vienneau, P. (2012). Mental health status of Ontario

- injured workers with permanent impairments. *Canadian Journal of Public Health*, 103(4), 303-308.
- O'Rand, A. M. (1996). The precious and the precocious: Understanding cumulative disadvantage and cumulative advantage over the life course. *The Gerontologist*, 36(2), 230-238.
- Palmer, K. T., Harris, E. C., & Coggon, D. (2008). Chronic health problems and risk of accidental injury in the workplace: A systematic literature review. *Occupational and Environmental Medicine*, 65, 757-764.
- Phillips, L. A., Carroll, L. J., Voaklander, D. C., Gross, D. P., & Beach, J. R. (2012). Pain coping in injured workers with chronic pain: What's unique about workers?. *Disability and Rehabilitation*, 34(21), 1774-1782.
- Pope, A., & Tarlov, A., (1991). *Disability in America: Toward a national agenda for prevention*. Washington, DC: National Academy Press.
- Ravesloot, C., Seekins, T., & Young, Q. R. (1998). Health promotion for people with chronic illness and physical disabilities: The connection between Health Psychology and disability prevention. *Clinical Psychology and psychotherapy*, 5(2), 75-85.
- Reichard, A., Stolzle, H., & Fox, M. H. (2011). Health disparities among adults with physical disabilities or cognitive limitations compared to individuals with no disabilities in the United States. *Disability and Health Journal*, 4(2), 59-67.
- Reynolds, J. R., & Baird, C. L. (2010). Is there a downside to shooting for the stars? Unrealized educational expectations and symptoms of depression. *American Sociological Review*, 75(1), 151-172.
- Rijken, M., van Kerkhof, M., Dekker, J., & Schellevis, F. G. (2005). Comorbidity of chronic disease. Effects of disease pairs on physical and mental functioning. *Quality of Life Research*, 14, 45-55.
- Rimmer, J. H. (1999). Health promotion for people with disabilities: The emerging paradigm shift from disability prevention to prevention of secondary conditions. *Physical Therapy*, 79(5), 495-502.
- Rimmer, J. H. (2005). Exercise and physician activity in persons aging with a physical disability. *Physical Medical Rehabilitation Clinics of North America*, 16(1), 41-56.
- Rimmer, J. H., Chen, M. D., & Hsieh, K. (2011). A conceptual model for identifying, preventing, and managing secondary conditions in people with disabilities. *Physical Therapy*, 91(12), 1728-1739.
- Roberts-Yates, C. 2003. The concerns and issues of injured workers in relation to claims/injury management and rehabilitation: The need for new operational frameworks. *Disability and Rehabilitation*, 25, 898-907.
- Rosenthal, T. & Alter, A. (2012). Occupational stress and hypertension. *Journal of the American Society of Hypertension*, 6(1), 2-22.
- Seekins, T., Smith, N., McCleary, T., Clay, J., & Walsh, J. (1990). Secondary disability prevention: Involving consumers in development of a public health surveillance instrument. A descriptive study of secondary conditions. *Journal of Disability Policy Studies*, 1(3), 21-36.

- Schoen, C., Osborn, R., How, S. K. H., Doty, M. M., & Peugh, J. (2009). In chronic condition: Experiences of patients with complex health care needs, in eight countries, 2008. *Health Affairs*, 1, w1-w16.
- Smith, P. M., Bielecky, A., Ibrahim, S., Mustard, C., Scott-Marshall, H., Saunders, R., & Beaton, D. (2014). How much do preexisting chronic conditions contribute to age differences in health care expenditures after a work-related musculoskeletal injury?. *Medical Care*, 52(1), 71-77.
- Smith, P., Bielecky, A., & Mustard, C. (2012). The relationship between chronic conditions and work-related injuries and repetitive strain injuries in Canada. *Journal of Occupational and Environmental Medicine*, 54(7), 841-846.
- Smith, P., Chen, C., Hogg-Johnson, S., Mustard, C., & Tompa, E. (2011). Trends in the health care use and expenditures associated with no-lost-time claims in Ontario: 1991 to 2006. *Journal of Occupational and Environmental Medicine*, 53(2), 211-217.
- STATA (2014). *STATA annotated output. Negative binomial regression*. UCLA: Statistical Consulting Group. Retrieved from http://www.ats.ucla.edu/stat/stata/output/stata_nbreg_output.htm
- Struin, L., & Boden, L. I. (2004). The workers' compensation system: Worker friend or foe?. *American Journal of Industrial Medicine*, 45, 338-345.
- Spruill, T. M. (2010). Chronic psychosocial stress and hypertension. *Current Hypertension Reports*, 12(1), 10-16.
- Storey, R. (2009). "They have all been faithful workers": Injured workers, truth, and workers' compensation in Ontario, 1970-2008. *Journal of Canadian Studies*, 43(1), 154-185.
- Thomas, S., & Wannell, B. (2009). Combining cycles of the Canadian Community Health Survey. Methodological insights. *Health Reports*, 20(1). Catalogue No. 82-003-XPE. Retrieved from: <http://www.statcan.gc.ca/pub/82-003-x/2009001/article/10795-eng.pdf>
- Valderas, J. M., Starfield, B., Sibbald, B., Salisbury, C., & Roland, M. (2009). Defining comorbidity: Implications for understanding health and health services. *Annals of Family Medicine*, 7(4), 357-363.
- van den Akker, M., Buntinx, F., Metsemakers, J. F., Roos, S., & Knottnerus, J. A. (1998). Multimorbidity in general practice: Prevalence, incidence, and determinants of co-occurring chronic and recurrent diseases. *Journal of Clinical Epidemiology*, 51(5), 367-375.
- Whitaker, A., & Jeppsson Grassman, E. (2013). Living and Ageing with Disability: Summary and conclusion. In E. Jeppsson Grassman and A. Whitaker (Eds.), *Ageing with disability. A life course perspective* (pp. 129-138). Chicago, IL: Policy Press.
- Wilber, N., Mitra, M., Walker, D. K., Allen, D., Meyers, A. R., & Tupper, P. (2002). Disability as a public health issue: Findings and reflections from the Massachusetts Survey of Secondary Conditions. *The Milbank Quarterly*, 80(2), 393-421.

- Wilkins, K., & Mackenzie, S. G. (2007). Work injuries. *Health Reports*, 18(3), 1-18.
Retrieved from: <http://www.statcan.gc.ca/pub/82-003-x/2006007/article/injuries-blessures/10191-eng.pdf>
- Workplace Safety and Insurance Board (WSIB) (2004a). *No lost time. Document #11-02-01*. Retrieved from:
<http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=5253fcea9bfc7210VgnVCM100000449c710aRCRD>
- WSIB (2004b). *Entitlement to health care. Document #17-01-02*. Retrieved from:
<http://www.wsib.on.ca/en/community/WSIB/230/OPMDetail/24347?vgnextoid=9637fcea9bfc7210VgnVCM100000449c710aRCRD&vgnnextchannel=f85bee40cb05e110VgnVCM1000000e18120aRCRD>
- WSIB. (2008). Information for workers. *The Non-Economic Loss (NEL) Benefit Pamphlet*. Retrieved from:
<http://www.wsib.on.ca/files/Content/Downloadable%20FileStatisticalSupplement07/2278A.pdf>
- WSIB. (2011). *Statistical supplement to the 2010 annual report*. Retrieved from:
http://www.wsib.on.ca/files/Content/AnnualReports2010StatisticalSupplement/2278A_StatSupplement2010.pdf
- WSIB. (2013). *Lost time claims. Document #11-02-02*. Retrieved from:
<http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=da53fcea9bfc7210VgnVCM100000449c710aRCRD>
- WSIB. (2014a). *By the numbers: 2013 WSIB statistical Report. Schedule 1*. Retrieved from: http://www.wsibstatistics.ca/WSIB-StatisticalReport_S1.pdf
- WSIB. (2014b). *By the numbers: 2041 WSIB Statistical Report. Schedule 2*. Retrieved from: http://www.wsibstatistics.ca/WSIB-StatisticalReport_S2.pdf
- Yorkston, K. M., McMullan, K. A., Molton, I., & Jensen, M. P. (2010). Pathways of change experienced by people aging with disability: A focus group study. *Disability and Rehabilitation*, 32(20), 1697-1704.

Appendix 1
Recruitment Procedure for RAACWI Health Survey

**** Please ask author for more information ****

Appendix 2**Table 2.1a** Binary Logistic Models for Health Status and Chronic Health Conditions[†] (Coefficients)

	Poor Health [‡]	Asthma	Arthritis	Back Problems	Hypertension	Migraine Headache s	Ulcers	Urinary Incontinence and Bowel Disorders	Heart Disease	Depression	Chronic Conditions [†]
Survey (CCHS)											
RAACWI	1.69*** (0.12)	0.59*** (0.15)	1.48*** (0.13)	1.50*** (0.11)	0.72*** (0.13)	0.55*** (0.13)	1.44*** (0.18)	0.87*** (0.16)	0.59* (0.26)	1.98*** (0.12)	0.86*** (0.04)
Wald Chi-square	499	68	783	462	393	183	158	205	195	507	1312.64

Notes:

Weighted data for health status and chronic health conditions. All chronic conditions, self-perceived health status, and total chronic conditions are displayed as coefficients.

[†] Chronic Conditions is a negative binomial regression model and includes all chronic conditions as a count variable

[‡] Poor Health is self-rated health and compares “poor and fair health” to “good, very good, and excellent health”

Significance Testing:

* p = .05, ** p = .01, *** p = .001

Appendix 3

Table 2.1b Binary Logistic Models for Health Status and Chronic Health Conditions[†] (Odds Ratios) with controls

	Poor Health	Asthm a	Arthritis	Back Problems	Hypertension	Migraine Headache s	Ulcers	Urinary Incontinence and Bowel Disorders	Heart Diseas e	Depression	Chronic Health Conditions †
Survey (CCHS)											
RAACWI	5.42*** (0.67)	1.81*** (0.26)	4.37*** (0.57)	4.49*** (0.50)	2.06*** (0.27)	1.73*** (0.23)	4.20** * (0.75)	2.39*** (0.38)	1.80* (0.47)	7.25*** (0.90)	2.36*** (0.10)
Gender (Male)											
Female	0.09 (0.11)	1.47*** (0.16)	1.51*** (0.02)	0.87 (0.07)	0.68*** (0.07)	3.02*** (0.30)	0.96 (0.19)	2.78*** (0.36)	0.51*** (0.09)	1.76*** (0.19)	1.22*** (0.05)
Age Categories (30-39)											
20-29 years	0.71* (0.14)	1.21 (0.19)	0.63 (0.14)	0.75* (0.11)	0.43** (0.12)	0.82 (0.12)	0.91 (0.26)	0.88 (0.20)	0.90 (0.40)	0.71 (0.13)	0.82** (0.06)
40-49 years	1.59** (0.25)	1.03 (0.14)	3.59*** (0.55)	1.47*** (0.14)	2.88*** (0.42)	1.10 (0.11)	1.12 (0.30)	1.15 (0.18)	2.06* (0.70)	1.08 (0.14)	1.44*** (0.07)
50 and older	2.67*** (0.44)	0.95 (0.14)	8.55*** (1.30)	1.85*** (0.20)	5.36*** (0.78)	0.70** (0.09)	1.29 (0.29)	1.56** (0.25)	7.14*** (2.11)	1.06 (0.15)	1.96*** (0.10)
Marital Status (Married or Common-Law)											
Previously	1.55** (0.32)	0.95 (0.17)	1.11 (0.17)	0.99 (0.14)	0.69*** (0.10)	1.10 (0.16)	1.05 (0.23)	1.05 (0.19)	1.22 (0.31)	1.25 (0.17)	1.01 (0.06)
Married	1.37 (0.23)	0.91 (0.14)	0.82 (0.12)	0.78* (0.10)	1.03 (0.17)	0.93 (0.12)	0.74 (0.16)	0.65** (0.10)	1.25 (0.31)	1.14 (0.15)	0.94 (0.05)
Ever-Single											
Country of Birth (Not Canada)											
Canada	1.13 (0.15)	1.68*** (0.24)	1.56*** (0.21)	1.30** (0.12)	0.84 (0.10)	1.36** (0.14)	1.08 (0.26)	2.34*** (0.39)	1.28 (0.32)	2.27*** (0.34)	1.24*** (0.06)
Education (High School)											
Less than	1.53** (0.27)	1.30 (0.26)	1.41* (0.23)	1.39* (0.20)	1.60* (0.32)	1.18 (0.20)	0.95 (0.26)	0.97 (0.21)	1.77* (0.49)	1.43* (0.25)	1.27*** (0.09)
High School	0.76** (0.15)	1.01 (0.24)	1.10 (0.26)	1.23 (0.23)	1.05 (0.25)	0.79 (0.16)	0.82* (0.24)	1.13 (0.25)	0.85 (0.34)	1.21 (0.24)	1.02 (0.09)
Some											
Postsecondary											

Completed Postsecondary	0.79*** (0.12)	0.90 (0.15)	0.78* (0.10)	0.92 (0.10)	0.90*** (0.11)	0.99 (0.12)	0.62 (0.14)	0.94 (0.16)	1.16 (0.26)	1.00 (0.13)	0.91 (0.05)
Household Income (\$20,000 to \$39,999)											
Household income less than \$20,000	2.76*** (0.54)	1.43 (0.37)	1.20 (0.28)	1.04 (0.19)	1.57 (0.39)	1.40 (0.29)	1.31 (0.46)	1.42 (0.28)	1.48 (0.47)	2.12*** (0.33)	1.32** (0.12)
Household income \$40,000 to \$79,999	0.59*** (0.09)	0.92 (0.15)	0.48*** (0.08)	0.55*** (0.07)	0.84 (0.13)	0.69** (0.10)	0.42** * (0.09)	0.77 (0.13)	0.61 (0.18)	0.55*** (0.08)	0.71*** (0.04)
Household Income \$80,000 and more	0.41*** (0.07)	0.83 (0.13)	0.47*** (0.08)	0.54*** (0.07)	0.77 (0.12)	0.75* (0.11)	0.40** (0.12)	0.67* (0.12)	0.41** (0.12)	0.49*** (0.07)	0.66*** (0.04)
Household Missing	0.65* (0.13)	0.70 (0.15)	0.41*** (0.08)	0.49*** (0.08)	0.71 (0.15)	0.71* (0.12)	0.44* (0.13)	0.66* (0.15)	0.44* (0.15)	0.51*** (0.10)	0.62*** (0.05)
Household size [‡]	1.14 (0.06)	0.93 (0.04)	0.98 (0.04)	0.92* (0.03)	0.91* (0.04)	1.03 (0.03)	0.99 (0.06)	0.96 (0.06)	1.04 (0.09)	0.87** (0.04)	0.97* (0.02)
Community Size (Rural)											
Urban	0.95 (0.13)	1.09 (0.13)	1.10 (0.12)	1.06 (0.09)	0.89 (0.10)	1.07 (0.11)	0.92 (0.16)	1.05 (0.13)	0.69 (0.20)	1.45** (0.19)	1.02 (0.05)
Wald Chi-square	499	68	783	462	393	183	158	205	195	507	1312.64

Notes:

Weighted data for health status and chronic health conditions. All chronic conditions and self-perceived health status are displayed as odds ratios.

[†] Chronic Conditions is a negative binomial regression model and includes all chronic conditions as a count variable as is displayed as an IRR

[‡] Poor Health is self-rated health and compares “poor and fair health” to “good, very good, and excellent health”

[‡] Household size is a continuous variable

Significance Testing:

*p = .05, **p=.01, ***p=.001

Appendix 4**Table 2.1c** Binary Logistic Models for Health Status and Chronic Health Conditions[†] (Coefficients) with controls

	Poor Health	Asthma	Arthritis	Back Problems	Hypertension	Migraine Headaches	Ulcers	Urinary Incontinence and Bowel Disorders	Heart Disease	Depression	Chronic Health Conditions [†]
Survey (CCHS)											
RAACWI	1.69*** (0.12)	0.59*** (0.15)	1.48*** (0.13)	1.50*** (0.11)	0.72*** (0.13)	0.55*** (0.13)	1.44*** (0.18)	0.87*** (0.16)	0.59* (0.26)	1.98*** (0.12)	0.86*** (0.04)
Gender (Male)											
Female	-0.10 (0.12)	0.39*** (0.11)	0.41*** (0.11)	-0.14 (0.08)	-0.37*** (0.10)	1.11*** (0.10)	-0.04 (0.20)	1.02*** (0.13)	0.67*** (0.18)	0.56*** (0.11)	0.20*** (0.04)
Age Categories (30-39)											
20-29 years	-0.34* (0.20)	0.19 (0.16)	-0.46 (0.23)	-0.29* (0.15)	-0.85** (0.27)	-0.20 (0.14)	-0.10 (0.29)	-0.12 (0.22)	-0.11 (0.45)	-0.34 (0.18)	-0.20** (0.07)
40-49 years	0.46** (0.16)	0.03 (0.14)	1.28*** (0.15)	0.38*** (0.10)	1.06*** (0.15)	0.09 (0.10)	0.11 (0.27)	0.14 (0.15)	0.72* (0.34)	0.08 (0.13)	0.36*** (0.05)
50 and older	0.98*** (0.17)	-0.05 (0.15)	2.15*** (0.15)	0.61*** (0.11)	1.68*** (0.14)	-0.36** (0.12)	0.25 (0.22)	0.45** (0.16)	1.97*** (0.29)	0.06 (0.14)	0.67*** (0.05)
Marital Status (Married or Common-Law)											
Previously Married	0.44** (0.21)	-0.05 (0.18)	0.10 (0.15)	-0.01 (0.14)	-0.37*** (0.15)	0.09 (0.15)	0.05 (0.22)	0.05 (0.18)	0.20 (0.25)	0.23 (0.14)	0.01 (0.06)
Ever-Single	0.31 (0.17)	-0.09 (0.16)	-0.20 (0.15)	-0.25* (0.12)	0.03 (0.16)	-0.07 (0.13)	-0.31 (0.21)	-0.43** (0.15)	0.22 (0.25)	0.13 (0.13)	-0.07 (0.05)
Country of Birth (Not Canada)											
Canada	0.12 (0.13)	0.52*** (0.14)	0.44*** (0.14)	0.26** (0.10)	0.84 (0.10)	0.31** (0.10)	0.08 (0.24)	0.85*** (0.16)	0.25 (0.25)	0.82*** (0.15)	0.22*** (0.05)
Education (High School)											
Less than High School	0.42** (0.18)	0.26 (0.20)	0.34* (0.16)	0.33* (0.14)	0.47* (0.20)	0.17 (0.17)	-0.05 (0.28)	-0.04 (0.22)	0.57* (0.28)	0.36* (0.18)	0.24*** (0.07)
Some	-0.27** (0.11)	0.01 (0.11)	0.09 (0.11)	0.21 (0.11)	0.05 (0.11)	-0.24 (0.11)	-0.20* (0.11)	0.13 (0.11)	-0.17 (0.11)	0.19 (0.11)	0.02 (0.11)

Postsecondary	(0.20)	(0.24)	(0.24)	(0.19)	(0.23)	(0.20)	(0.29)	(0.22)	(0.40)	(0.20)	(0.09)
Completed	-										-0.09
Postsecondary	0.25*** (0.15)	-0.10 (0.16)	-0.25* (0.12)	-0.08 (0.10)	-0.10*** (0.13)	-0.01 (0.12)	-0.48 (0.23)	-0.06 (0.17)	0.15 (0.22)	0.00 (0.13)	(0.05)
Household Income (\$20,000 to \$39,999)											
Household income less than \$20,000	1.02*** (0.16)	0.36 (0.26)	0.18 (0.23)	0.04 (0.18)	0.45 (0.25)	0.34 (0.20)	0.27 (0.35)	0.35 (0.19)	0.39 (0.32)	0.75*** (0.16)	0.28** (0.09)
Household income \$40,000 to \$79,999	-0.53*** (0.16)	-0.09 (0.17)	-0.73*** (0.16)	-0.60*** (0.13)	-0.17 (0.15)	-0.37** (0.14)	-0.88*** (0.23)	-0.26 (0.17)	-0.50 (0.29)	-0.60*** (0.14)	-0.35*** (0.06)
Household Income \$80,000 and more	-0.89*** (0.16)	-0.19 (0.16)	-0.75*** (0.16)	-0.62*** (0.13)	-0.27 (0.16)	-0.28* (0.14)	-0.91** (0.29)	-0.40* (0.17)	-0.90** (0.28)	-0.72*** (0.15)	-0.42*** (0.06)
Household Missing	-0.43* (0.20)	-0.67 (0.22)	-0.90*** (0.20)	-0.72*** (0.17)	-0.34 (0.21)	-0.34* (0.17)	-0.81* (0.29)	-0.41* (0.23)	-0.82* (0.35)	-0.67*** (0.19)	-0.47*** (0.08)
Household size [‡]	0.13 (0.05)	-0.07 (0.04)	-0.02 (0.04)	-0.08* (0.04)	-0.09* (0.04)	0.03 (0.03)	-0.01 (0.06)	-0.04 (0.06)	0.04 (0.09)	-0.14** (0.05)	-0.03* (0.02)
Community Size (Rural)											
Urban	-0.05 (0.13)	0.09 (0.12)	0.10 (0.11)	0.06 (0.09)	-0.12 (0.11)	0.07 (0.11)	-0.09 (0.18)	0.05 (0.13)	-0.38 (0.29)	0.37** (0.13)	0.02 (0.04)
Wald Chi-square	499	68	783	462	393	183	158	205	195	507	1312.64

Notes:

Weighted data for health status and chronic health conditions. All chronic conditions, self-perceived health status, and total chronic conditions are displayed as coefficients.

[†] Chronic Conditions is a negative binomial regression model and includes all chronic conditions as a count variable

[‡] Poor Health is self-rated health and compares “poor and fair health” to “good, very good, and excellent health”

[‡] Household size is a continuous variable

Significance Testing:

*p = .05, ** p=.01, *** p=.001

Appendix 5**Table 2.3a** - Access to Family Physicians and Specialist Physicians as coefficients

	Family Physician		Other Physicians	
	Model 1	Model 2	Model 1	Model 2
Survey (CCHS)				
RAACWI	0.90 *** (0.06)	0.38 *** (0.06)	0.63 *** (0.12)	0.11 (0.13)
Health Characteristics				
Self-Rated Health (Good)				
Poor Health		0.54 *** (0.06)		0.85 *** (0.10)
Chronic Conditions (No Chronic Conditions)				
1 Chronic Condition		0.41 *** (0.04)		0.54 *** (0.09)
2 Chronic Conditions		0.68 *** (0.05)		0.79 *** (0.09)
3 or more Chronic Conditions		1.01 *** (0.06)		1.33 *** (0.11)
Wald Chi-square	489.51	1416.8	212.85	582.16

Notes:

Weighted data for access to family physician and specialist physicians. These are count variables and therefore a negative binomial regression model was used. Results displayed as coefficients.

Significance Testing:

*p = .05, **p=.01, ***p=.001

Appendix 6**Table 2.3b** - Access to Family Physicians and Specialist Physicians (Incidence Rate Ratios (IRR)) with controls

	Family Physician		Other Physicians	
	Model 1	Model 2	Model 1	Model 2
Survey (CCHS)				
RAACWI	2.45 ^{***} (0.15)	1.47 ^{***} (0.08)	1.88 ^{***} (0.23)	1.11 (0.18)
Health Characteristics				
Self-Rated Health (Good)				
Poor Health		1.72 ^{***} (0.09)		2.35 ^{***} (0.23)
Chronic Conditions (No Chronic Conditions)				
1 Chronic Condition		1.50 ^{***} (0.06)		1.72 ^{***} (0.16)
2 Chronic Conditions		1.97 ^{***} (0.10)		2.20 ^{***} (0.20)
3 or more Chronic Conditions		2.74 ^{***} (0.16)		3.77 ^{***} (0.40)
Gender (Male)				
Female	1.41 ^{***} (0.05)	1.37 ^{***} (0.05)	1.96 ^{***} (0.15)	2.07 ^{***} (0.16)
Age Categories (30-39)				
20-29 years old	0.98 (0.05)	1.03 (0.05)	0.77 [*] (0.09)	0.82 (0.09)
40-49 years old	0.99 (0.04)	0.87 ^{***} (0.04)	0.87 (0.09)	0.75 ^{**} (0.08)
50 and older	1.14 ^{**} (0.06)	0.89 ^{**} (0.04)	0.94 (0.09)	0.66 ^{***} (0.07)
Previously Married	1.03 (0.06)	0.97 (0.05)	1.17 (0.14)	1.00 (0.11)
Ever-Single	0.98 (0.05)	0.95 (0.04)	0.94 (0.11)	0.87 (0.10)
Country of Birth (Not Canada)				
Canada	0.98 (0.04)	0.91 [*] (0.03)	1.49 ^{***} (0.12)	1.37 ^{***} (0.11)
Education (High School)				
Less than High School	1.04 (0.07)	0.94 (0.06)	0.84 (0.12)	0.81 (0.12)
Some Postsecondary	1.06 (0.08)	1.06 (0.07)	0.90 (0.13)	1.01 (0.17)
Completed Postsecondary	1.05 (0.05)	1.09 [*] (0.05)	1.17 (0.12)	1.31 ^{**} (0.13)
Household Income (\$20,000 - \$39,999)				
Household income less than \$20,000	1.34 ^{***} (0.10)	1.07 (0.08)	1.28 (0.20)	0.93 (0.15)
Household income \$40,000 to \$79,999	0.80 ^{***} (0.05)	0.89 [*] (0.05)	0.76 [*] (0.11)	0.93 (0.12)
Household Income \$80,000 and more	0.77 ^{***} (0.04)	0.91 [*] (0.05)	0.70 ^{**} (0.10)	0.92 (0.13)
Household Missing	0.47 ^{***} (0.05)	0.87 [*] (0.06)	0.61 ^{**} (0.10)	0.75 (0.13)
Household size [†]	1.01 (0.01)	1.01 (0.01)	0.99 (0.03)	0.99 (0.04)

Community Size (Rural)

		1.15 ^{***}		
Urban	1.12 ^{**} (0.04)	(0.04)	1.25 [*] (0.11)	1.28 ^{**} (0.11)
Wald Chi-square	489.51	1416.80	212.85	582.16

Notes:

Weighted data for access to family physician and specialist physicians. These are count variables and therefore a negative binomial regression model was used. Results displayed as IRR

‡ Household size is a continuous variable

Significance Testing:

* p = .05, ** p=.01, *** p=.001

Appendix 7**Table 2.3c** - Access to Family Physicians and Specialist Physicians (coefficients) with controls

	Family Physician		Other Physicians	
	Model 1	Model 2	Model 1	Model 2
Survey (CCHS)				
RAACWI	0.90 ^{***} (0.06)	0.38 ^{***} (0.06)	0.63 ^{***} (0.12)	0.11 (0.13)
Health Characteristics				
Self-Rated Health (Good)				
Poor Health		0.54 ^{***} (0.06)		0.85 ^{***} (0.10)
Chronic Conditions (No Chronic Conditions)				
1 Chronic Condition		0.41 ^{***} (0.04)		0.54 ^{***} (0.09)
2 Chronic Conditions		0.68 ^{***} (0.05)		0.79 ^{***} (0.09)
3 or more Chronic Conditions		1.01 ^{***} (0.06)		1.33 ^{***} (0.11)
Gender (Male)				
Female	0.34 ^{***} (0.04)	0.31 ^{***} (0.06)	0.68 ^{***} (0.08)	0.73 ^{***} (0.08)
Age Categories (30-39)				
20-29 years old	-0.03 (0.05)	0.03 (0.05) -0.13 ^{***}	-0.26 [*] (0.11)	-0.20 (0.11)
40-49 years old	-0.01 (0.05)	(0.04)	-0.14 (0.10)	-0.29 ^{**} (0.10)
50 and older	0.13 ^{**} (0.05)	-0.12 ^{**} (0.04)	-0.06 (0.10)	-0.42 ^{***} (0.10)
Previously Married	0.03 (0.06)	-0.03 (0.05)	0.16 (0.12)	-0.00 (0.11)
Ever-Single	-0.02 (0.05)	-0.05 (0.04)	-0.06 (0.12)	-0.14 (0.12)
Country of Birth (Not Canada)				
Canada	-0.03 (0.04)	-0.09 [*] (0.04)	0.40 ^{***} (0.08)	0.31 ^{***} (0.08)
Education (High School)				
Less than High School	0.04 (0.07)	-0.06 (0.06)	-0.18 (0.15)	-0.21 (0.15)
Some Postsecondary	0.06 (0.07)	0.06 (0.06)	-0.11 (0.15)	0.01 (0.17)
Completed Postsecondary	0.05 (0.05)	0.09 [*] (0.04)	0.16 (0.10)	0.27 ^{**} (0.10)
Household Income (\$20,000 - \$39,999)				
Household income less than \$20,000	0.29 ^{***} (0.08)	0.08 (0.08)	0.24 (0.16)	-0.07 (0.16)
Household income \$40,000 to \$79,999	-0.23 ^{***} (0.06)	-0.11 [*] (0.05)	-0.28 [*] (0.14)	-0.07 (0.14)
Household Income \$80,000 and more	-0.27 ^{***} (0.06)	-0.10 [*] (0.05)	-0.36 ^{**} (0.14)	-0.08 (0.14)
Household Missing	-0.30 ^{***} (0.07)	-0.13 [*] (0.06)	-0.49 ^{**} (0.17)	-0.29 (0.18)

Household size [‡]	0.01 (0.01)	0.012 (0.01)	-0.01 (0.03)	-0.01 (0.04)
Community Size (Rural)				
Urban	0.12 ^{**} (0.04)	0.14 ^{***} (0.03)	0.22 [*] (0.09)	0.25 ^{**} (0.09)
Wald chi-square	489.51	1416.8	212.85	582.16

Notes:

Weighted data for access to family physician and specialist physicians. These are count variables and therefore a negative binomial regression model was used. Results displayed as coefficients.

[‡] Household size is a continuous variable

Significance Testing:

^{*}p = .05, ^{**}p=.01, ^{***}p=.001

Chapter 3: Exploring the Relationship between Work-Related Disability and Unmet Health Care Needs: A Longitudinal Analysis⁸

Introduction

Unmet health care needs occur when health care is required for a particular health problem but the care is not received, does not adequately address the health problem, or is deemed unsuitable by the recipient. Unmet health care needs in Canada are becoming a problem with increasing rates (Chen et al., 2002; Sanmartin, Houle, Tremblay, & Berthelot, 2002; Sibley & Glazier, 2009). The high rates of unmet health care needs reported in Canada are of particular concern as the health care system is publicly funded and should be available and equally accessible to all Canadians (Health Canada, 2010). Canadians are becoming more disillusioned with the health care system and more concerned about its sustainability (Lewis, Donaldson, Mitton, & Currie, 2001) and its ability to maintain equity in delivering services. Health care that does not meet the needs of individuals can negatively impact their independence and general health and wellbeing (Neri & Kroll, 2003).

There is a particular growing concern for those who are most vulnerable to unmet health care needs, including people with disability. One Canadian study showed this group to be three times more likely to report an unmet health care need compared to people without disabilities (McColl, Jarzynowska, & Shortt, 2010). More awareness of

⁸ A version of this paper received a revise and resubmit from the *Disability and Health Journal*. The transcript was revised and resubmitted on July 2, 2014.

and research on the influence of disability and reporting an unmet health care need in Canada is required. Further, there is an absence of research that compares the rates of unmet health care needs by cause of disability. This current research will help address this gap by examining differences in unmet health care needs by type of disability, with a particular focus on people with work-related disabilities (WRD) compared to people with disabilities as a result of a disease or illness (DDI).

This research is particularly interested in the differences between respondents with WRD and respondents with DDI related to unmet health care needs. There is a lack of research on whether certain causes of disability lead to more or different reasons for unmet health care needs. Qualitative researchers (Ballantyne, 2001; Lippel, 2007; Roberts-Yates, 2003; Stone, 2003; Storey, 2009) have commented on the stigma that individuals with WRD face due to being labeled an injured worker. I am interested in whether the stigmatized label of “injured worker” spills over into health care experiences. Goffman’s (1963, 3) definition of stigma as “an attribute that is deeply discrediting”, such that the person who is stigmatized “is thus reduced in our minds from a whole and usual person to a tainted, discounted one” is a good fit for people with WRD. Kirsh, Slack, and King (2012) reference the work by Link and Phelan (2001), who develop their theory of stigma from Goffman’s work, to understand the reasons why injured workers may feel stigmatized. Stigma often occurs for injured workers as a result of power relationships and is perpetuated and reinforced by individuals and organizations.

The Canadian National Population Health Survey (NPHS) and the Canadian Community Health Survey (CCHS) both include questions regarding unmet health care

needs and disability status. Participants are asked whether they needed health care in the past 12 months but did not receive it. This subjective measure has been used in many research projects (Allin, 2008; Allin, Grignon, & Le Grand, 2010; Chen & Hou, 2002; Chen et al. 2002; Hurley, Jamal, Grignon, & Allin, 2011; McColl et al., 2010; Sanmartin et al., 2002; Sibley & Glazier, 2009; 2010), but most of these previous analyses have not distinguished unmet health care needs by presence or type of disability. The rates of unmet health care needs for those 12 and older increased approximately 1% in each of the first three cycles of the NPHS, from 4.2% in 1994/95 to 6.3% in 1998/99. Based on the CCHS, in 2000/01 the percentage of people aged 12 and older reporting an unmet health care need was 12.5% (Chen et al., 2002; Sanmartin et al., 2002).

Reasons for Unmet Health Care Needs

Accessing health care is a multi-level process where many factors can influence whether an unmet health care need is reported and the reasons can vary over time. One methodological problem in analysing the reasons for unmet health care needs is the relatively small percentage of respondents with unmet health care needs and the large number of possible reasons for having an unmet need. To address this problem many researchers have grouped reasons together under subheadings such as ‘acceptability’, ‘personal choice’, and ‘barriers’ (see Table 3.1). In the 1998/99 NPHS and 2000/01 CCHS, ‘structures of the health care system’ (Sanmartin et al., 2002) and ‘acceptability’ (Chen & Hou, 2002) were the most commonly reported reason for an unmet health care need and ‘personal circumstance’ reasons declined between 1998/99 and 2000/01. Sibley and Glazier (2009), using data from the 2003 CCHS, reported ‘availability’ as the most

commonly cited reason, followed by ‘acceptability’. Similarly, Allin et al. (2010) reported the most common reason was ‘wait-related’. Hurley et al. (2011) reported system-related unmet health care needs were more common than personal reasons, comparable to Sanmartin et al.’s (2002) findings.

Table 3.1 - Explanation for Unmet Health Care Needs Categories using the NPHS and CCHS

Personal	Personal Reasons*	Personal Circumstance ³	Personal Circumstance ⁶	Acceptability ^{2,7}	Personal Choice ⁴	Personal Choice ⁵			
Felt care would be inadequate	✓	✓	✓	✓	✓	✓			
Too busy	✓	✓	✓	✓	✓	✓			
Didn't get around to it/didn't bother	✓	✓	✓	✓	✓	✓			
Personal or family responsibilities	✓	✓	✓	✓	✓				
Dislikes doctors/afraid	✓	✓	✓	✓	✓	✓			
Decided not to seek care	✓	✓	✓	✓	✓	✓			
Other Reasons		✓	✓	✓					
Not available - in the area									
Not available - at time required									
Waiting time too long									
Cost			✓						
Transportation Problems			✓		✓				
Didn't know where to go		✓		✓	✓				
Language Problems				✓					
Structures and Barriers	Structural Reasons*	Health Care Delivery ³	Availability ^{2,7}	Features of the Health Care System ⁶	Barriers ⁵	System-Related ⁴	Wait Related ¹	Cost and Transportation ³	Accessibility ^{2, 7}
Felt care would be inadequate									
Too busy									
Didn't get around to it/didn't bother									
Personal or family responsibilities					✓				
Dislikes doctors/afraid									
Decided not to seek care									

Other Reasons

Not available - in the area	✓	✓	✓	✓	✓	✓			
Not available - at time required	✓	✓	✓	✓	✓	✓	✓		
Waiting time too long	✓	✓	✓	✓	✓	✓	✓		
Cost	✓				✓	✓	✓	✓	✓
Transportation Problems	✓				✓			✓	✓
Didn't know where to go	✓				✓				
Language Problems	✓				✓	✓			

Notes:

* New category created for this research

¹Allin et al., 2010

²Chen & Hou, 2002

³Chen et al., 2002

⁴Hurley, et al., 2011

⁵McColl et al., 2010

⁶Sanmartin et al., 2002

⁷Sibley & Glazier, 2009

A Life Course Perspective on Disability and Unmet Health Care Needs

According to the World Health Organization (WHO), disability occurs when a person experiences activity limitations and restrictions in participation (WHO, 2002, 27). The wording of the question about disability status in the NPHS fits the WHO International Classification of Functioning, Disability, and Health (ICF) model. Critical disability theorists argue that disability needs to be viewed as a continuum and not a dichotomy (Shakespeare & Watson, 2001). Therefore, people are neither disabled nor non-disabled, but rather ability status falls somewhere between the two. The interplay of social characteristics and how they influence experience, is useful when studying disability (Withers, 2012) For example, race, gender, age, and socioeconomic status can affect the likelihood of a person experiencing disability or unmet health care needs. This includes, for example, the greater likelihood of reported disability (McColl et al., 2010) or unmet health care needs (Chen et al., 2002; Sibley & Glazier, 2009; McColl et al., 2010) by women as compared to men, or the experience of low income as a result of being unemployed due to ability (Drainoni et al., 2006).

A life course perspective will guide this analysis as it allows the process of aging to be viewed as interactive, flexible, and constantly changing to adapt to social change and social structures. The physical, psychological, and social aspects of aging can be studied using a life course perspective (Dannefer & Settersten, 2010). The fluidity of the experience of disability makes life course a particularly valuable conceptual framework. Combining a life course perspective with disability research has received recent attention (Heller & van Hueman, 2013; Jeppsson Grassman, Holme, Taghizadeh Larsson, &

Whitaker, 2012; Kelley-Moore, 2010; Slota & Martin, 2003). Applying a life course perspective to longitudinal analysis allows an opportunity to examine the changes in disability status and unmet health care needs over time. As individuals age with their impairment their health status can change, often negatively, and they will often require additional health care services which may result in unmet health care needs.

As the Canadian population ages and the rates of disability for people at all ages increases (Statistics Canada, 2013), longitudinal research is needed to better understand the way aging with a disability influences unmet health care needs. The influence of the different causes of disability on unmet health care needs must also be examined. This present research uses a longitudinal perspective to examine whether people with WRD report more unmet health care needs than people with DDI, with particular focus on the reasons for unmet health care needs. The main questions guiding this research are:

- (1) Do unmet health care needs increase over time? What is the effect of disability status?
- (2) What is the impact of work-related disability on unmet health care needs?
- (3) Do personal or structural unmet health care needs change over time? What is the effect of disability status?

Methods

The data for this research come from Cycles 1 to 8 (1994/95 to 2008/09) of the NPHS, a longitudinal survey administered by Statistics Canada. The target population of the NPHS includes people living in households in all provinces and territories, except

those residents on Aboriginal reserves, Canadian Forces Bases, or in remote areas. One person from each household was selected to participate in the survey and followed through each cycle (Tambay & Caitlin, 1995).

Respondents in the 1994/95 survey were included in this research if they were between 25 and 50 years of age at that cycle (n=7249). These participants were then followed for the next 15 years. The number of participants decreased over time due to attrition and in 2008/09 there were 4577 participants (63.1% of the original sample). Attrition was approximately five percent of the sample in each cycle. People who missed an entire cycle were returned to the sample if they participated in subsequent cycles.

Missing Data

Missed responses in longitudinal studies compound the problem of sample attrition. For example, in Cycle 1, 4.6% of respondents missed one response, 4.2% missed two or more responses, but no one missed the entire cycle. Participants in Cycle 8 had the most missing data: 7.3% had one missed response, 2.6% had two or more missed responses, and 36.9%⁹ missed the entire cycle. The overall response rates across waves did not drop below 70%; however, this is similar to the response rate reported by Statistics Canada. The data missing from each cycle, not missing an entire cycle, were missing at random. Multiple imputation (MI) was used to impute data for participants who were missing some responses in a cycle. Using STATA 11, missing values were imputed using the multiple imputation by chained equations (MICE) command to create

⁹ Attrition in the NPHS is common and Statistics Canada reports that 29.6% are missing from the 2008/09 NPHS which includes all respondents. This research focuses only on people between the ages of 25 to 50 in cycle 1 which could explain why the rate of attrition is a little higher.

five separate datasets. Only the variables that are included in the analyses were used to produce the estimated values. Analyses were conducted on all five datasets and the results were combined using Rubin's Rules for MI (Rubin, 1987).

To assess the attrition, participants who did not participate in 2008/09 (n=2672) were compared to those included in the analysis (n=4577). Those excluded were more likely to be: single, in need of health care, in fair or poor health, younger, and to have lower levels of education, household income and Health Utility Index (HUI3) scores. Gender and disability were not associated with attrition in Cycle 8. This means the remaining sample is generally in better health, married, has higher household income, and is less likely to report an unmet health care need. There were 255 participants (0.04%) who died during the fifteen year time period. Those who died were more likely to be male, report poor health, and report DDI in Cycle 1.

Concepts and Measures

Dependent Variables

The first dependent variable used in this research was unmet health care need. Participants who answered yes to the question "was there ever a time in the past 12 months when you felt that you needed health care but you didn't receive it?" were classified as having an unmet health care need (coded 1; all other respondents were coded 0). Those who reported having an unmet health care need in the last seven cycles were asked the reasons for the unmet health care need at each cycle. The first cycle was not used because the questions were worded differently from subsequent cycles. Respondents could report more than one reason. The second dependent variable included respondents

who selected 'personal reasons' for unmet health care need. The third dependent variable included respondent who selected 'structural reasons'. The 'other reasons' responses are not included in either of the categories due to the inability to determine whether they would fall under 'personal' or 'structural' reasons. Those participants who only selected the response category 'other' as a reason for unmet health care needs are excluded from the analysis. However, they were still included in the analysis of reporting an unmet health care need.

Independent Variable

The independent variable in all three analyses is disability status. Respondents were classified as people with disabilities if they answered yes to the question: "Do you have any long-term disabilities or handicaps?" The responses from this answer were used to create a disability variable that was dummy coded with each of the following responses coded as 1: WRD (disability relating to work or to the work environment), DDI (disability relating to a disease or illness), and DOR (disability resulting from any other reason). The reference group is respondents without disability (WoD). The DOR group is diverse due to the large number of response options and small number of endorsements to each cause of disability. At each cycle participants would be classified by one of these four responses, the responses could be different or similar at each cycle reflecting the fluidity of disability status. The three categories of disability status were collapsed for the analysis focusing on reasons for unmet health care needs due to the small number of responses. They created a new category called 'respondents with disabilities'.

Comparisons between respondents with WRD and respondents with DDI can be compared but must be used with caution as these are small samples.

The following variables were used as control variables: self-perceived health (1=Excellent, very good, or good health, 0=Fair or poor health), household income (measured in \$10,000 increments), age (measured in years), gender (1=male, 0=female), marital status (1=married or common-law, 0=single, divorced, separated or widowed), country of birth (1=born in Canada, 0=not born in Canada), education (measured in years), and health utility index (HUI3) (measured on a score from -0.36 to 1). The control variables were selected because these factors could confound the association between disability status and unmet health care need. That is, the likelihood of reporting an unmet health care need is greater for people with low income or in poverty (Chen et al., 2002; Sanmartin et al., 2006; Sibley & Glazier, 2009), with fair or poor self-reported health, chronic health conditions, chronic pain (Chen et al., 2002), who were younger or middle aged (18-34 years of age), female (Chen et al., 2002; Sibley & Glazier, 2009; WHO, 2011), and with higher education (Sibley & Glazier, 2009).

Analysis

Multilevel modelling (growth curve analysis) using a logistic regression model and the statistical software MLwiN 2.2 were used to model change in the reporting of unmet health care needs and the extent to which these changes were associated with a change in disability status. The data form a hierarchical structure such that repeated responses over time (Level 1) are nested within individuals (Level 2). Sample weights

were applied at Level 2 and come from the longitudinal square weight included in the NPHS and adjusts for missing responses. Gender, citizenship, and years of education are time invariant and measured at level 2 whereas disability status and the other control variables can change from cycle to cycle (time dependent) and are measured at level 1. This allows for the passage of time to be captured in this analysis. Time is calibrated as cycles (i.e., 2-year intervals) and starts at 0 which represents 1994/95. The quadratic term for time (Time²) was used in the model examining unmet health care needs. This was done to take into account the curvature of time trajectories in the model. It was not significant in the models exploring reasons for unmet health care needs and, therefore, not included. Wald tests were performed in MLwiN (Rabash, Steele, Browne, & Goldstein, 2009) to determine significance of each variable.

Results

Characteristics of the Sample

Table 3.2 provides a summary of the demographic characteristics of the sample in 1994/95. Almost 16% of the population self-report a disability. Within the group of people who report a disability, 24.5% (3.9% of total population) reported WRD, 27.7% (4.4% of total population) reported DDI, and 47.8% (7.6% of total population) reported DOR.

Table 3.2 - Descriptive Characteristics of the Population in 1994/95

	Total <i>n</i> =7249	No Disability <i>n</i> =6094 (84.1%)	Work-Related <i>n</i> =285 (3.9%)	Disease or Illness <i>n</i> =322 (4.4%)	Other Reasons <i>n</i> =548 (7.6%)	P
Unmet Health Care Needs						
Yes	5.0	3.5	13.4	12.4	13.8	***
No (ref. cat)						
Personal Reasons for Unmet Health Care Need[†]						
Yes	53.6	58.8	62.7	40.8	46.5	
No (ref. cat)						
Structural Reasons for Unmet Health Care Need[†]						
Yes	49.6	43.4	41.7	60.3	60.7	
No (ref. cat)						
Self-Perceived Health						
Good	93.3	97.1	78.1	59.7	78.9	***
Fair (ref. cat)						
Health Utility Index	0.89 (0.26)	0.92 (0.12)	0.72 (0.28)	0.65 (0.31)	0.73 (0.27)	
Household Income	48.02 (25.94)	48.91 (24.50)	45.17 (25.79)	40.85 (27.17)	43.79 (26.22)	
Age	37.07 (7.06)	36.90 (7.03)	38.44 (6.70)	39.36 (7.35)	36.92 (7.16)	
Gender (%)						
Female	49.7	49.6	29.3	66.4	52.0	***
Male (ref. cat)						
Marital Status						
Single	25.9	24.9	23.6	36.0	35.6	***
Married (ref. cat)						
Country of Birth						
Not Canada	21.0	22.2	12.5	13.7	14.6	****
Canada (ref. cat)						
Years of Education[¶]	13.31 (2.38)	13.38 (2.36)	12.54 (2.27)	12.82 (2.48)	13.22 (2.41)	

Notes: Imputed and weighted data with five datasets. I report the mean for all continuous variables, and percentages for categorical variables. Standard Deviation is reported in brackets for all continuous measures.

*p = .05, **p=.01, ***p=.001 (two-tailed test)

† data from 1996/96 because these questions remained the same from 1996/97 to 2008/09 but were different in 1994/95

|| measured in \$1,000

¶ measured in years

Prevalence of Disability Status and Unmet Health Care Needs

Although not shown in a table, the prevalence of disability status increases over time: from 15.9% in 1994/95 to 27.6% in 2008/09. The prevalence for reporting WRD increases from 3.9% to 6.3%, DDI from 4.4% to 7.6%, and DOR from 7.6% to 13.7%. The biggest increase was in the group reporting DOR, which includes aging in the list of other reasons for a disability.

Rates of reporting an unmet health care need increased over time for all groups (Figure 3.1). Respondents with disabilities have more unmet health care needs than respondents WoD at each time point. Rates of unmet health care needs seem to increase more quickly for every group except respondents with WRD.

Over time the likelihood of reporting an unmet healthcare need for either personal or structural reasons changes (see Figure 3.2). Personal reasons decrease over time. Respondents with WRD are the most likely to report personal reasons in 1996/97 but are least likely to report them in 2008/09. Respondents with DDI are less likely to report structural reasons over time (see Figure 3), whereas respondents with WRD and respondents WoD increase their likelihood.

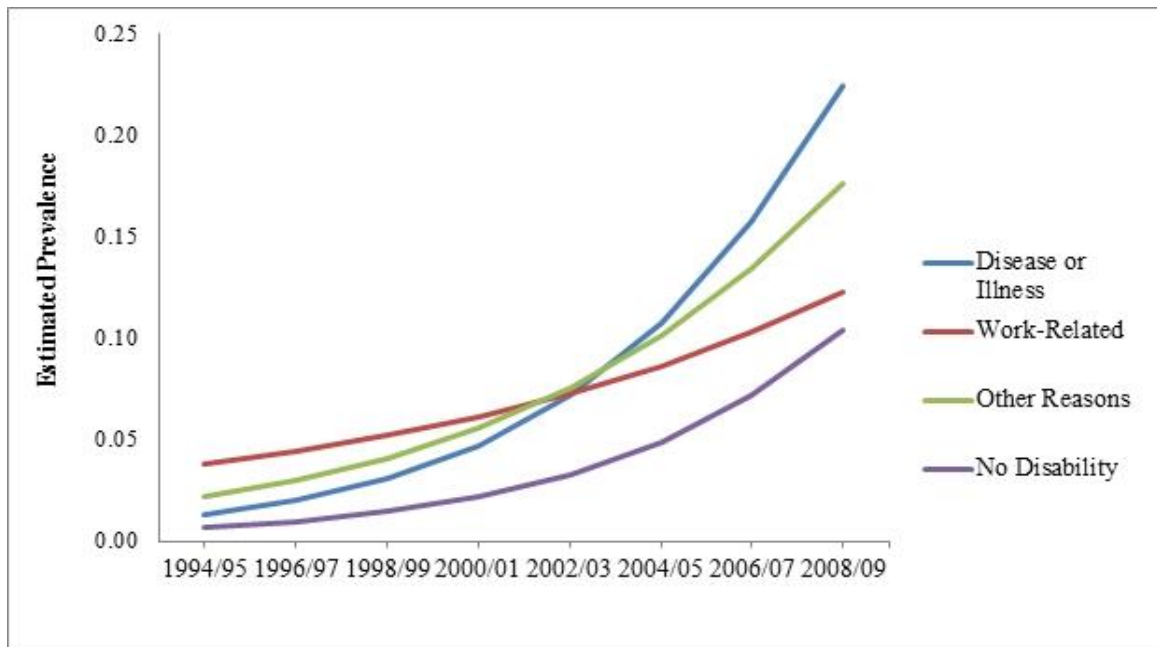


Figure 3.1 - Unmet Health Care Needs (1994/95 – 2008/09). Imputed and weighted data in MLwiN 2.2 with control variables.

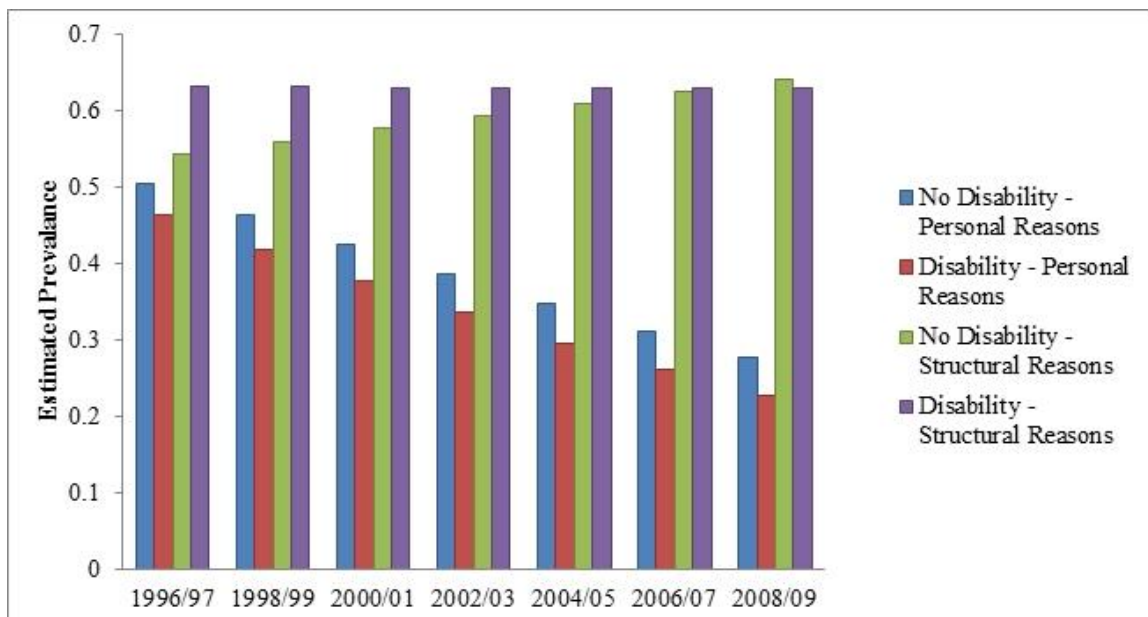


Figure 3.2¹⁰ - Personal and Structural Reasons for Unmet Health Care Needs (1996/97 – 2008/09). The cause of disability has been collapsed into one category labelled disability (it includes: disease or illness, work-related, and other causes). Imputed and weighted data in MLwiN 2.2 with control variables.

Trajectories of Unmet Health Care Needs: Results from Estimated Growth Curve Analyses

Table 3.3 shows the weighted growth analysis of unmet health care needs presented as odds ratios by disability status, both without control variables (model 1) and with control variables (model 2). The reference group includes respondents WoD. As mentioned previously, the quadratic function for time was used in this analysis to account for the curvilinear relationship between time and unmet health care needs. In model 1, the linear function of time in reporting unmet health care needs increases while quadratic function of time decreases. This creates a ‘U’ shaped curve for unmet healthcare needs over time. When time is interacted with disability status, the only group significantly different are respondents with WRD. Compared to respondents WoD, respondents with WRD have a slower rate of increase. This slower rate is also significantly different from the other disability groups. Respondents with a disability are 4.95 times more likely to report an unmet health care need. When focusing on specific causes of disability status, respondents with WRD are 5.39 times more likely, respondents with DDI are 4.29 times more likely, and respondents with DOR are 5.23 times more likely. However, there were no significant differences when the three disability groups were compared. The rate of unmet health care needs increase faster for respondents with a disability compared to respondents WoD.

¹⁰ Variations of Figure 3.2 are included in Appendix 8 and 9. Appendix 8 includes the personal reasons for unmet health care needs for all disability categories and Appendix 9 includes the structural reasons for unmet health care needs for all disability categories.

Model 2 includes control variables which slightly alter the odds ratios.

Respondents with any type of disability are 3.25 times more likely to report an unmet health care need compared to respondents WoD. Again, there were no significant differences among the three disability groups but they are all significantly higher than respondents WoD. All the control variables, except for household income, are significant. For each additional year of education at baseline, there is an increased likelihood of reporting unmet health care need. Women, people who are unmarried, and people in poor health are more likely to report an unmet health care need. Older people are less likely to report an unmet health care need. Non-Canadians are less likely to report an unmet health care need.

Table 3.3 - Weighted Multilevel Logistic Growth Model Estimates

Independent Variables	Unmet Health Care Needs [†]		Personal Reasons [‡]		Structural Reasons [‡]	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)
Time [§]	1.42 (1.37-1.47)***	1.52 (1.47-1.57)***	0.85 (0.83-0.88)***	0.85 (0.82-0.88)***	1.07 (1.04-1.10)**	1.07 (1.04-1.10)**
Time ^{2 §}	0.97 (0.96-0.97)***	0.97 (0.96-0.97)***				
Cause of Disability (No Disability)						
Disabled			0.80 (0.66-0.94)	0.85 (0.70-0.99)	1.42 (1.28-1.56)**	1.45 (1.30-1.59)**
Work-Related	5.39 (5.20-5.57)***	3.86 (3.67-4.04)***				
Disease or Illness	4.29 (4.12-4.45)***	2.55 (2.39-2.72)***				
Other Reasons	5.23 (5.10-5.37)***	3.47 (3.33-3.61)***				
Cause of Disability X Time (No Disability X Time)						

Disabled X Time			0.98 (0.94-1.02)	0.98 (0.94-1.02)	0.94 (0.90-0.98)	0.93 (0.89-0.97)
Work-Related X Time	0.81 (0.70-0.92)*	0.79 (0.68-0.91)*				
Disease or Illness X Time	1.06 (0.96-1.56)	1.06 (0.96-1.15)				
Other Reasons X Time	0.92 (0.84-1.00)	0.91 (0.82-0.99)				
Cause of Disability X Time ² (No Disability X Time ²)						
Work-Related X Time ²	1.02 (1.01-1.04)	1.02 (1.01-1.04)				
Disease or Illness X Time ²	0.99 (0.97-1.00)	0.98 (0.97-1.00)				
Other Reasons X Time ²	1.00 (0.99-1.01)	1.00 (0.99-1.01)				
Self-Perceived Health (Good)						
Fair		1.65 (1.59-1.72)***		1.03 (0.92-1.13)		0.99 (0.89-1.10)
HUI3		0.20 (0.09-0.32)***		1.10 (0.91-1.29)		1.17 (0.98-1.35)
Household Income		0.99 (0.98-1.00)		1.05 (1.03-1.07)***		0.95 (0.93-0.96)***
Age [¶]		0.97 (0.97-0.98)***		0.99 (0.99-1.00)		1.01 (1.01-1.02)*
Gender [#] (Male)						

Female	1.15 (1.09-1.20)**	0.77 (0.69-0.85)***	1.19 (1.11-1.27)*			
Marital Status (Married)						
Single	1.23 (1.17-1.28)***	1.11 (1.03-1.21)	0.79 (0.71-0.87)**			
Country of Birth [#] (Canada)						
Not Canada	0.81 (0.72-0.89)**	0.88 (0.74-1.02)	1.05 (0.92-1.18)			
Education ^{¶, #}	1.06 (1.05-1.07)***	0.96 (0.94-0.98)	1.05 (1.03-1.07)**			
Wald Statistic	268.1***	232.4***	30.9***	30.4***	32.1***	29.9***

Notes: Imputed and weighted data

CI = Confidence Interval

* p = .05, ** p=.01, *** p=.001

† data from 1994/95 – 2008/09

‡ data from 1996/97 – 2008/09

§ measured in 2 year cycles

|| measured in \$10,000

¶ measured in years

time invariant

Trajectories of Unmet Health Care Needs for Personal Reasons: Results from Estimated Growth Curve Analyses

Table 3.3 shows the results from the growth curve models for respondents who report an unmet health care need related to personal reasons and structural reasons. The categories of disability status were collapsed in these models due to small sample sizes. The reference group is respondents WoD. Model 2 will be discussed as there is very little difference between the two models. Model 2 indicates that the rate of personal reasons for unmet health care needs decreases (0.85) over time. At baseline, the risk of reporting personal reasons for respondents with disability is not statistically significant from respondents WoD. Time is not significant when interacted with disability status. Women are less likely than men to report personal reasons. Those with higher household incomes are more likely to report personal reasons. Ratings of poor health or low HUI3 scores are not significant. While this result may appear to be contrary to expectations, further analysis shows this subgroup of the sample includes only those respondents who report unmet health care needs. Most of these respondents are likely in poor health, which contributes to the small variation observed.

An analysis for the three categories of disability status was performed, but these results must be examined with caution as each category is quite small. Differences emerge among the disability categories - WRD, DDI, and DOR. The analysis is included as Table 3.4. Respondents with WRD have higher rates of personal reasons for unmet health care needs compared to respondents with DDI. However, respondents with WRD are not statistically different from respondents WoD. Differences emerge when focusing on respondents with DDI. Respondents with DDI have a much lower likelihood of

reporting personal reasons compared to respondents WoD. The interaction effect of time and disability category is not significant, that is, rates of personal reasons for unmet health care needs are similar regardless of the disability category.

Trajectories of Unmet Health Care Needs for Structural Reasons: Results from Estimated Growth Curve Analyses

Table 3.3 includes results from the growth curve analysis for respondents who report an unmet health care need due to structural reasons. As there is very little difference between model 1 and model 2, only model 2 will be discussed. There is an increase in reporting structural reasons over time (7% increase each cycle). Respondents with disabilities have higher rates of structural reasons for unmet health care needs compared to respondents WoD. There is no significant difference when time is interacted with disability status. Figure 2 illustrates that in 2008/09 respondents WoD had more structural reasons for unmet health care needs than respondents with disabilities; however, this difference in reporting was not statistically significant. For each additional year of education at baseline respondents were more likely to report structural reasons, as were women, older respondents and married respondents. Respondents with higher incomes were less likely to report structural reasons for unmet health care needs.

When comparing the disability categories, again using caution as the sample sizes for each disability category are small, there are differences between the disability categories (see Table 3.4). Initially respondents with WRD have lower rates of structural reasons for unmet health care needs compared to respondents with DDI. However, the difference between respondents with WRD and respondents WoD is not statistically

significant. When comparing respondents with a DDI or DOR to respondents WoD, respondents with a DDI or DOR have a much higher likelihood of reporting structural reasons for unmet health care needs. However, over time the likelihood of reporting structural reasons for unmet health care needs for respondents with DDI and DOR decreases.

Table 3.4 Weighted Multilevel Logistic Growth Model for Personal and Structural Reasons for Unmet Health Care Needs - Examining Three Disability Categories

	Personal Reasons		Structural Reasons	
	Model 1 Odds Ratio (95% CI)	Model 2 Odds Ratio (95% CI)	Model 1 Odds Ratio (95% CI)	Model 2 Odds Ratio (95% CI)
Time ^a	0.85 (0.83-0.88)***	0.85 (0.82-0.88)***	1.07 (1.04-1.10)**	1.07 (1.04-1.10)**
Cause of Disability (No Disability)				
Work-Related	1.24 (1.00-1.47)	1.26 (1.02-1.50)	0.77 (0.55-1.00)	0.80 (0.57-1.03)
Disease or Illness	0.59 (0.40-0.78)**	0.63 (0.43-0.83)*	2.00 (1.82-2.19)***	2.01 (1.81-2.20)***
Other Reasons	0.85 (0.66-1.03)	0.88 (0.69-1.08)	1.45 (1.26-1.64)*	1.51 (1.32-1.71)**
Disability status X Time (No Disability X Time)				
Work-Related X Time	0.90 (0.83-0.96)	0.90 (0.83-0.96)	1.09 (1.03-1.15)	1.09 (1.02-1.15)
Disease or Illness X Time	1.04 (0.98-1.09)	1.05 (0.99-1.10)	0.87 (0.81-0.92)**	0.86 (0.80-0.91)**
Other Reasons X Time	0.97 (0.92-1.03)	0.98 (0.93-1.03)	0.93 (0.88-0.98)	0.92 (0.83-0.97)*
Self-Perceived Health (Good)				
Fair		1.05 (0.95-1.16)		0.97 (0.86-1.07)
HUI3		1.12 (0.93-1.31)		1.15 (0.97-1.34)
Household Income ^b		1.05 (1.03-1.07)**		0.95 (0.93-0.96)***
Age ^d		0.99 (0.99-1.00)		1.01 (1.01-1.02)*
Gender ^c (Male)				
Female		0.78 (0.70-0.86)**		1.18 (1.10-1.26)*
Marital Status (Married)				
Single		1.12 (1.03-1.21)		0.79 (0.70-0.87)**
Country of Birth ^c (Canada)				
Not Canada		0.88 (0.74-1.02)		1.04 (0.91-1.18)
Education ^{c, d}		0.96 (0.94-0.98)*		1.05 (1.03-1.07)**

Notes: Imputed and weighted data

CI=Confidence Interval

*p = .05, ** p=.01, *** p=.001

^a measured in 2 year cycles

^b measured in \$10,000

^c time invariant

^d measured in years

Discussion

This research provides a longitudinal analysis of unmet health care needs based on cause of disability status and examines the differences and similarities among respondents with different types of disability. In general, rates of unmet health care needs for all groups increase but the rate of increase is not constant over time. Similar to the findings by McColl et al. (2010), respondents with disabilities are more likely to report unmet health care needs when compared to respondents without disabilities. This is shown to be true throughout the 15 year time period. The number of respondents self-reporting a disability has increased over time, which could be another explanation for the growth in unmet health care needs over time.

Growth Models for Unmet Health Care Needs

There is a positive linear slope and a negative quadratic slope when focusing on unmet health care needs for respondents with DDI. Therefore, the rate of increase in unmet health care needs is not consistent over time. The linear function of time is smaller for respondents with WRD which could be explained, in part, by the expedited health services that people with compensation claimants may receive to speed up their return to work (Gelinas, Wagner, & Harder, 2010; Hurley et al., 2008). However, with time, respondents with WRD may require additional health care services, some of which may not be covered under their Workers Compensation Board (WCB) claim. This may result in more unmet health care needs. The findings from this research are inconclusive as to whether respondents with WRD face stigma in the health care system.

Growth Models for Personal Reasons for Unmet Health Care Needs

Overall, the likelihood of reporting a personal reason for an unmet health care need declined over time. This is similar to the findings reported by others who study unmet health care needs (Chen & Hou, 2002; Hurley et al., 2011; Sanmartin et al., 2002). Initially the odds of reporting a personal reason are higher for respondents with WRD but this declined over time. Respondents with WRD are also not statistically different from respondents WoD. Personal reasons include believing the care would not be adequate, disliking or being afraid of the doctor, or deciding not to seek care. Identifying personal reasons could result from avoidance of care-seeking by those with WRD because they feel stigmatized. Although there may be stigma associated with any disability, it could be intensified for people with WRD as they are often viewed as fakers, malingerers, and liars (Ballantyne, 2001; Kirsh, Slack, & King, 2012; Roberts-Yates, 2003; Storey, 2009). However, the small sample size of respondents with WRD reporting personal reasons for unmet health care needs was very small. Therefore, there is not enough evidence to suggest that respondents with WRD do experience stigma in the health care system.

Family physicians may treat injured workers differently than other patients because of the problems physicians face when dealing with WCBs (Russell, Brown, & Stewart, 2005). Physicians have been criticized by WCBs because they do not properly document the injury, have a lack of knowledge about the workplace, and rely too heavily on the patient for information (Russell et al., 2005). Further, the overall decline in reporting personal reasons for people with WRD over time could reflect that people just give up trying to access care and/or they change their expectations for care.

Stigmatization and negative experiences in the health care system would likely not be the same for those with DDI – where physicians do not have to negotiate the diagnosis or treatment with WCBs. This could mean that people with DDI may be more likely to seek the care they need – unless they are hindered by structural barriers, and therefore less likely to report personal reasons.

Growth Models for Structural Reasons for Unmet Health Care Needs

Unlike personal reasons for unmet health care need, structural reasons for unmet health care need increase over time. Respondents with either WRD or WoD have a greater likelihood of reporting structural reasons over time while the likelihood for respondents with DDI or DOR groups decreased over time. Focusing on disability status more generally, respondents with any type of disability had a greater likelihood of reporting structural reasons at baseline. The higher rates of structural reasons is comparable to other research on reasons for unmet health care needs (Sanmartin et al., 2002; Sibley & Glazier, 2009; Allin et al., 2010; Hurley et al., 2011). Interestingly, even though the change is not statistically significant, the differences diminish over time.

Although caution is needed when interpreting the data focusing on respondents with WRD, there may be an explanation for their initial higher rates for personal reasons for unmet health care needs and then the increasing rate for structural reasons for unmet health care needs over time. As discussed earlier, expedited health care services by WCBs (Gelinas et al., 2010; Hurley et al., 2008) may be one explanation for why those with WRD are less likely to initially report structural reasons. However, over time respondents with WRD are more likely to report a structural reason. These findings may

suggest that respondents with WRD initially experience more personal reasons but as they age they may start to experience structural problems that exist within the health care system, such as long wait times and unavailability of services.

The Control Variables – Refining our Understanding of Unmet Health Care Needs?

The following control variables were used in the analyses: self-perceived health, household income, age, gender, marital status, country of birth, education, and HUI3. Household income is not significant when studying whether or not respondents report unmet health care needs. This is a positive finding, since in a publicly funded system income should not influence access to care. However, higher household income was associated with more personal reasons and fewer structural reasons for reporting an unmet health care need. Allin (2008) reported those with higher household incomes had quicker access to health care professionals, especially specialists. The initial speedy access could result in people with higher incomes not experiencing long wait times or problems accessing care. People with higher household incomes may be more likely to report personal reasons because they have higher expectations for care.

Not surprisingly, when self-rated health status and the HUI3 were considered, those in the worst health were more likely to report an unmet health care need. This supports the findings from other researchers who argue that high users of the health care system will be more likely to report an unmet health care need (Chen et al., 2002).

Similar to other research, women, younger people, and those with higher education levels are also at higher risk of reporting unmet health care needs (Chen et al.,

2002; Sibley & Glazier, 2009; WHO, 2011). Women and people with higher education are less likely to report personal reasons and more likely to report structural reasons. This may reflect greater expectations regarding access to and heightened awareness of impeded access to health care among women and the more highly educated. While age and marital status are not significant when reporting a personal reason, older people and married people are slightly more likely to report structural reasons. The reason for more structural reasons could be that these groups of people are more likely to seek care and therefore may have more experience with long wait times for care, which has been a criticism of the health care system.

The key findings from this research suggest people with any disability are more likely to report unmet health care needs. Differences emerged when the cause of unmet health care was examined. First focusing more generally on any type of disability, respondents with disabilities are more likely to report structural barriers. There are no significant differences for personal reasons. For both personal and structural reasons, the rate of change over time is not statistically significant between respondents with disabilities and respondents WoD. There are differences based on disability status for reporting structural reasons, however, these differences appear to diminish over time. Unmet health care needs are not static and do change over time, similar to disability status. Additionally the reasons for reporting an unmet health care need change over time which further emphasizes the need for longitudinal research.

There has been an increase in the number of Canadians reporting unmet health care needs since 1994. People with a disability are at a higher risk of reporting unmet

health care needs than people without a disability. Further, there is a lack of research on the long-term effects of disability and the experience of unmet health care needs, particularly longitudinal research (Allin et al., 2010).

Study Limitations

This study is limited by the survey questionnaire used by Statistics Canada to create the database requiring respondents to self-identify as being disabled. As a result of this requirement, some respondents who experience functional limitations did not self-identify as disabled and therefore were included in the category of respondents without disabilities. Unpacking the DOR category would provide richer data which would be useful in future studies. It is recognized, however, expanding the number of categories could lead to small numbers of responses in some categories which would limit the usefulness of the data. A further limitation of the study is the small percentage of respondents with unmet health care needs and the large and diverse number of possible reasons for having an unmet need. For analytical purposes, this resulted in the need to collapse the reasons into two categories. It would have been preferable to test each reason, or smaller clusters of reasons.

Future Research

There are a number of issues in this area of study that would benefit from further research. A study with larger sample sizes for examining causes for unmet health care needs is needed. This is especially important if comparisons are to be made between different disability groups. Although there is not enough data to support the initial

hypothesis that respondents with WRD experience stigma in the health care system, this may be found if a larger database, or at least a larger sample of respondents with WRD, were examined. More information is needed about challenges respondents with WRD may face in accessing health care and about their perceptions of the quality of care received.

Chapter 4 includes in-depth interviews with 11 participants to discuss their health and health care experiences as they age with a work-related permanent impairment. The participants were asked if they had any unmet health care needs and what health care services they would like to receive to help them manage their chronic pain and limitations as a result of their work injury. This qualitative component adds further depth to the issue of unmet health care needs as the participants can explain, in their own words, the problems they experience when accessing health care.

Policy Recommendations

Policy recommendations that emerge from this research reflect the need to ensure that all Canadians, regardless of ability status, have equal access to quality health care. People who report a disability status are more likely to report an unmet health care need than people without disabilities. As the population ages, as seen in this research, the rates of disability increase. Therefore, a larger number of older people with disabilities, especially those with a new disability, can be expected to have unmet health care needs.

Conclusion

It is important to identify the prevalence of the unmet health care needs of people with disabilities and to understand how their needs change over time. As other research has indicated, the rates of disability in the population and the rates of unmet health care needs continue to increase. Based on this research, respondents with WRD are initially more likely to report personal reasons (rather than structural) for unmet health care needs. However, over time this trend changes and respondents with WRD are more likely to report structural reasons. It is apparent, from this research and the research of others, that there is something about disability that makes people more likely to report an unmet health care need, and there is variation in accounts of unmet health care needs. Further research is needed to tease out the relationship between disability and unmet health care needs so people with disabilities get the care they need.

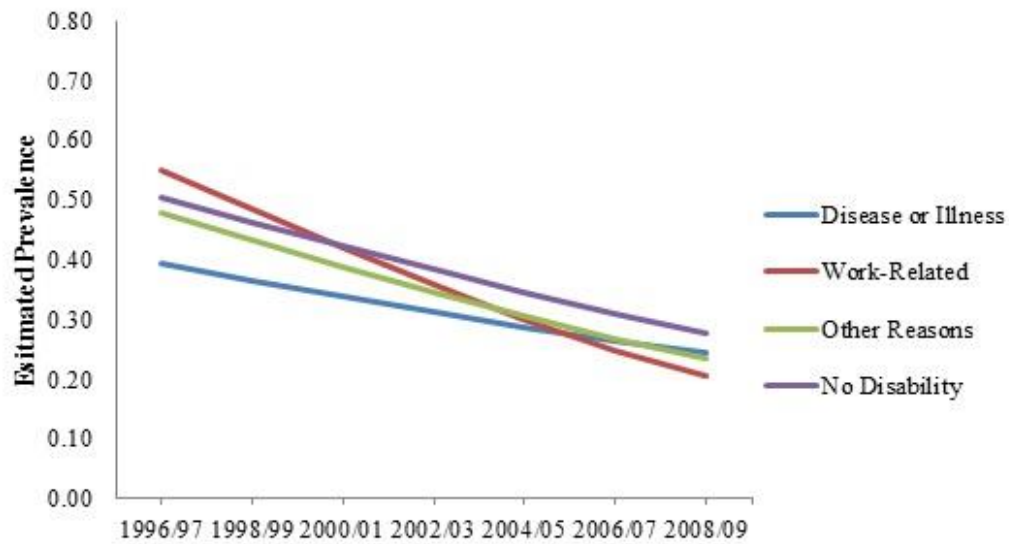
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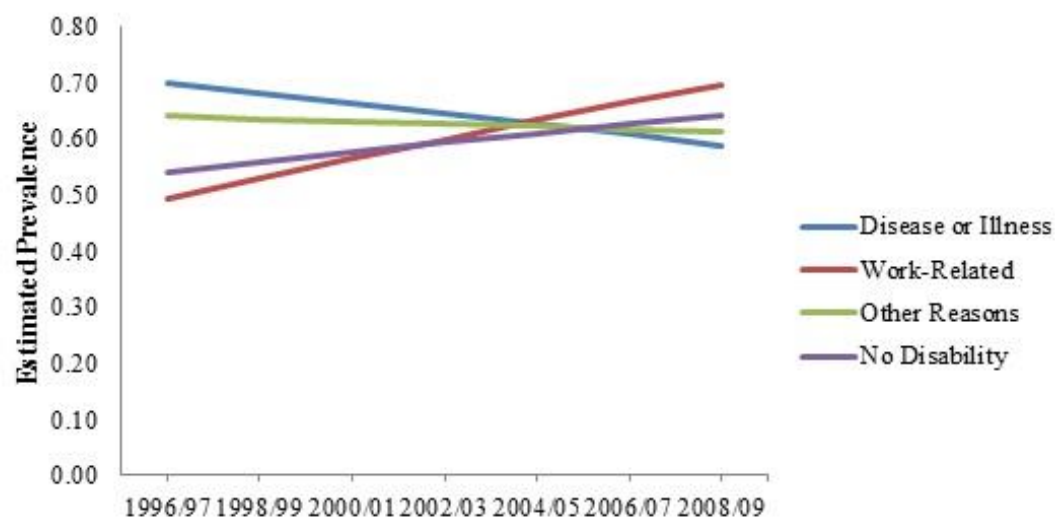
- Allin, S. (2008). Does equity in healthcare use vary across Canadian provinces?. *Healthcare Policy*, 3(4), 83–99.
- Allin, S., Grignon, M., & Le Grand, J. (2010). Subjective unmet need and utilization of health care services in Canada: What are the equity implications?. *Social Science & Medicine*, 70(3), 465–472.
- Ballantyne, P. (2001). *Workplace Safety and Insurance Board Pre-1990 Claims Unit Study*. Final Report to the Board.
- Chen, J., & Hou, F. (2002). Unmet needs for health care. *Health Reports*, 13(2), 23–34.
- Chen, J., Hou, F., Sanmartin, C., Houle, C., Tremblay, S., & Berthelot, J. M. (2002). Unmet health care needs. *Canadian Social Trends*, 19–22.
- Dannefer, D. & Settersten, R. A. (2010). Study of the lifecourse: Implication for social Gerontology. In D. Dannefer and C. Phillipson (Eds.), *The SAGE handbook of social gerontology* (pp. 3–20). London: Sage Publications.
- Drainoni, M., Lee-Hood, E., Tobias, C., Bachman, S. S., Andrew, J., & Maisels, L. (2006). Cross-disability experiences to barriers in health-care access. *Journal of Disability Policy Studies*, 17(2), 101–115.
- Gelinas, S., Wagner, S. L., & Harder, H. (2010). Private health care option: Disability management in Canada. *Journal of Disability Policy Studies*, 21(2), 116–125.
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, NJ: Prentice-Hall.
- Health Canada. (2010). Canada's health care system (Medicare). Accessed 18/08/12: <http://www.hc-sc.gc.ca/hcs-sss/medi-assur/index-eng.php>
- Heller, T., & van Heumen, L. (2013). Aging with disability. In M. Wehmeyer (Ed.), *The Oxford handbook of positive psychology and disability* (pp. 409–423). Oxford, U.K.: Oxford University Press.
- Hurley, J., Jamal, T., Grignon, M., & Allin, S. (2011). The relationship between self-reported unmet health need for health care and health care utilization. *RDC Research Paper 23*. Accessed 18/19/12: <http://socserv.mcmaster.ca/rdc/RDCwp23.pdf>
- Jeppsson Grassman, E., Holme, L. Taghizadeh Larsson, A. & Whitaker, A. (2012). A long life with a particular signature: Life course and aging for people with disabilities. *Journal of Gerontological Social Work*, 55(2), 95–111.
- Kelley-Moore, J. (2010). Disability and aging: The social construction of causality. In D. Dannefer & C. Phillipson (Eds.), *The SAGE handbook of social gerontology* (pp. 96–110). Thousand Oaks, CA: SAGE Publications.
- Kirsh, B., Slack, T., & King, C. A. (2012). The nature and impact of stigma towards injured workers. *Journal of Occupational Rehabilitation*, 22, 143–154.
- Lewis, S., Donaldson, C., Mitton, C., & Currie, G. (2001). The future of health care in Canada. *British Medical Journal*, 323, 926–929.
- Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology*, 27, 363–385.

- Lippel, K. (2007). Workers describe the effect of the workers' compensation process on their health: A Quebec study. *International Journal of Law and Psychiatry*, 30, 427-443.
- McColl, M.A., Jarzynowska, A., & Shortt, S. E. D. (2010). Unmet health care needs of people with disabilities: Population level evidence. *Disability & Society*, 25, 205-218.
- Neri, M.T., & Kroll, T. (2003). Understanding the consequences of access barriers to health care: Experiences of adults with disabilities. *Disability and Rehabilitation*, 25, 85-96.
- Rabash, J., Steele, F., Browne, W. J., & Goldstein, H. (2009). *A user's guide to MLwiN*. Retrieved from: <http://www.bristol.ac.uk/cmm/software/mlwin/download/mlwin-userman-09.pdf>
- Roberts-Yates, C. (2003). The concerns and issues of injured workers in relation to claims/injury management and rehabilitation: The need for new operational frameworks. *Disability and Rehabilitation*, 25, 898-907.
- Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. New York, NY: J. Wiley & Sons.
- Russell, G., Brown, J. B., & Stewart, M. (2005). Managing injured workers. Family physicians' experiences. *Canadian Family Physician*, 51, 79-85.
- Sanmartin, C., Houle, C., Tremblay, S., & Berthelot, J. (2002). Changes in unmet health care needs. *Health Reports*, 13(3): 15-21.
- Shakespeare, T. & Watson, N. (2001). The social model of disability: an outdated ideology?. In S. N. Barnartt & B. M. Altman (Eds.), *Exploring theories and expanding methodologies: Where we are and where we need to go. Research in Social Science and Disability*, Vol. 2 (pp. 9-28). London, UK: JAI.
- Sibley, L. M. & Glazier, R. H. (2010). Many Canadians feel healthcare needs are not being met. *Healthcare Quarterly*, 13(3), 19-22.
- Sibley, L.M., & Glazier, R. H. (2009). Reasons for self-reported unmet health care needs in Canada: A population-based provincial comparison. *Healthcare Policy*, 5, 87-104.
- Slota, N. E. P., & Martin, D. (2003). Methodological considerations in life course theory research. *Disability Studies Quarterly*, 23(2), 19-29.
- Statistics Canada (2013). *Disability in Canada: Initial findings from the Canadian Survey on Disability*. Catalogue number 89-654-X. Retrieved from: <http://www.statcan.gc.ca/pub/89-654-x/89-654-x2013002-eng.pdf>
- Stone, S. D. (2003). Workers without work: Injured workers and well-being. *Journal of Occupational Science*, 10(1): 7-13.
- Storey, R. (2009). "They have all been faithful workers": Injured workers, truth, and workers' compensation in Ontario, 1970-2008. *Journal of Canadian Studies*, 43, 154-185.
- Tambay, J. L., & Catlin, G. (1995). Sample design of the national population health survey. *Health Reports*, 7(1): 29-42.
- Withers, A. J. (2012). *Disability politics and theory*. Black Point, NS: Fernwood Publishing.

World Health Organization. (2002). *Towards a common language for functioning, disability and health ICF*. Geneva: World Health Organization.

World Health Organization (2011). *World report on disability*. Retrieved from:
http://whqlibdoc.who.int/publications/2011/9789240685215_eng.pdf?ua=1

Appendix 8**Figure 3.2a** Personal Reasons for Unmet Health Care Needs (1996/97 – 2008/09)**Figure 3.2a** - Personal Reasons for Unmet Health Care Needs (1996/97 – 2008/09) for all disability categories. Imputed and weighted data in MLwiN 2.2 with control variables.

Appendix 9**Figure 3.2b** Structural Reasons for Unmet Health Care Needs (1996/97 – 2008/09)**Fig. 3.2b** - Structural Reasons for Unmet Health Care Needs (1996/97 – 2008/09) for all disability categories. Imputed and weighted data in MLwiN 2.2 with control variables.

Chapter 4: Aging with a Work-related Impairment: Through a Life Course Lens

Introduction

There is little known about the lived experience of individuals aging with disability (Yorkston, McMullan, Molton, & Jensen, 2010) and even less so for those whose disability is related to a work injury (Post, Vander Sluis, Ten Duis, 2006). This research is focused on the lived experiences of injured workers, based on in-depth interviews with 11 injured workers living with permanent impairments. The injured workers in this study all experienced various degrees of chronic pain and utilized strategies for managing health changes and chronic pain over time. This research seeks to understand how these injured workers cope with and manage their chronic pain and limitations. Many injured workers have to face the intrusions of an impairment on their lives and come to terms with the ways the impairment affects their sense of self and identity. They face a new and unexpected transition in life – that of being an ‘injured worker’. Given a time lag of several years ($\bar{x}=9$) since their injury events, all participants in this study were aging with permanent impairments and spoke about what they believed their future would be like as they moved toward old age with their work-related impairments.

The previous two chapters examined the health changes and access to health care services for individuals with work-related impairments/disabilities. These chapters led to the importance of including a qualitative component as there were unanswered questions

about the lived experiences of injured workers. By including a qualitative component, the rich and textured lives of injured workers with permanent impairments can be examined. In this qualitative chapter, a richer understanding of the coping mechanisms used by injured workers who are aging with work-related impairments and possible chronic conditions can be examined. A more detailed description of possible unmet health care needs can also be examined using qualitative research.

Long-Term Health Needs of Injured Workers with Permanent Impairments

The health and social needs of injured workers living with permanent impairments are best understood using a life course perspective. A life course perspective recognizes the dynamic and complex processes within individual lives over their lifespan (George, 1993; Heller & van Hueman, 2013; Jeppsson Grassman, Holme, Taghizadeh Larsson, & Whitaker, 2012). Individual lives are influenced by previous events, statuses, and experiences. When individuals are aging with impairments and disabilities, their life course becomes more complex and dynamic (Putnam, 2002).

Currently, research that uses a life course perspective to study aging with impairments is underdeveloped (Heller & van Hueman, 2013; Jeppsson Grassman et al., 2012; Kelley-Moore, 2010; Raymond, Grenier, & Hanley, 2014). With life expectancy increasing for individuals aging with impairments (Jeppsson Grassman et al., 2012), there is an increasing need to focus on how those who experience impairment in mid-life adapt while they age with their impairment.

A life course perspective focuses on individual transitions and trajectories (Elder, 1985; 1994). Trajectories include the roles and experiences that change over the life course. Trajectories can also last for long periods of time and are often described as stable and can include multiple transitions (Hutchison, 2008). Transitions are a change in status (Elder, Kirkpatrick Johnson, & Crosnoe, 2003) and are components of longer life trajectories (Marshall, 2009). Life transitions occur in myriad areas of life, including employment - from employed to unemployed or retired, marital status - from married to widowed (Wheaton, 1990), and parent status - child free to parenthood (Macmillan & Copher, 2005).

Transitions are discrete and bounded, resulting in a new phase in life (Hutchison, 2008). The transitions or trajectories experienced earlier in life pave the way for future circumstances (Moen, Dempster-McCain, & Williams, 1992) which are often referred to as pathways (Macmillan & Copher, 2005). Pathways connect individuals to the different phases in their lives. The connections of different phases earlier in the life course can lead to changes in social and health integrations later in life (Moen et al., 1992).

The main status changes examined in this paper are: employment-related transitions (from employment to unemployment or change in employment arrangements including modifications to duties and/or hours worked); and the transition to living as an “injured worker”. The transition to being an injured worker may also be linked to a transition to poor health. Injured workers included in the second chapter reported high rates of chronic conditions, most which occurred post-injury. A work injury can begin a transition that will affect future trajectories, such as employment and health. For persons

with work-related impairments, work and family trajectories may be drastically altered following a work injury.

The timing of a work injury that results in impairment is important to consider from a life course perspective. Most work injuries occur unexpectedly in mid-life, between 25 and 44 years of age (WSIB 2014a; 2014b). These mid-life injuries may alter subsequent work experiences, family structures, health outcomes, and retirement trajectories. The earlier experiences of dealing with the structural and individual consequences¹¹ of a work injury will shape the new experiences of individuals as they age with work-related impairments.

Jeppsson Grassman et al. (2012) argue that a life course perspective allows a better understanding of the long-term consequences of aging with an impairment, including changes in functional status, illness onset, and future health problems and limitations. For example, findings from the second chapter illustrate the subsequent health problems that face injured workers as they age with their work-related impairments. Compared to a similar aged group of individuals from Ontario who did not report work-related injuries or impairments, injured workers with permanent impairments are four times more likely to report arthritis and ulcers, seven times more likely to report depression, and over twice as likely to report hypertension, urinary incontinence and bowel disorders. The majority of these chronic conditions occurred post-injury, suggesting that as injured workers age with permanent impairments they are more likely to report secondary health problems that may create additional challenges as they age.

¹¹ Structural consequences could occur in employment and the compensation system. Personal consequences could reflect the pain and limitations experienced following the work injury.

Therefore, the current and future health conditions – and lived experience - of injured workers can be better understood using a life course perspective.

Who are Injured Workers?

In 2010, the Ontario Workplace Safety and Insurance Board (WSIB, 2011a) accepted over 185,000 work injury claims. This number has been gradually decreasing over the last several years. Approximately 15,000 of these injuries in 2010 were classified as resulting in permanent impairments (WSIB, 2011a). These claimants received a Non-Economic Loss (NEL) benefit that indicates how much of their entire body is impaired as a result of the injury. These injured workers will never fully recover from their injury as they have reached maximum medical recovery (MMR) as determined by the WSIB (WSIB, 2008). In addition to receiving a NEL income benefit, injured workers are also eligible to receive health care services funded by the WSIB. The Workplace Safety and Insurance Act (WSIA) states that:

A worker who sustains an injury is entitled to such health care as may be necessary, appropriate and sufficient as a result of the injury and is entitled to make the initial choice of health professional for the purposes of this section (WSIA, 1997: Section 33(1)).

What is not clear in the Ontario Worker Compensation legislation, however, is the duration of time that health care services will be funded by the WSIB for injured workers with permanent impairments. Email correspondence from the WSIB about the length of time injured workers were eligible for WSIB-funded health care stated that “there is no age or time limit on entitlement to health care that is related to a work-related injury, so long as the WSIB decision-maker determines it is necessary, appropriate and sufficient”

(Operational Policy Branch, personal communication, December 9, 2013). Health care services provided by physicians and surgeons, chiropractors, massage therapists, occupational therapists, physiotherapists, as well as some other health care providers are eligible for reimbursement by the WSIB (WSIB, 2004).

In addition to providing financial compensation and access to health care providers, Workers Compensation Boards (WCBs) are focused on returning injured workers to the workplace (Krause, Frank, Dasinger, Sullivan, & Sinclair, 2001), emphasizing why most research on work injuries is concentrated on the return to work process. Return to work is viewed as a performance measure and can be used to determine the burden of injured workers on society. The burden is measured as the cost of these injured workers, focusing on their compensation claim and health care utilization (MacEachen, Kosny, and Ferrier, 2007). A successful claimant will have a straightforward path that ends in return to work (MacEachen, Kosny, Ferrier, & Chambers, 2010). However, the pathway to returning to work is often problematic and, typically, complicated cases where injured workers do not return to work are rarely discussed in the literature (MacEachen et al., 2007). As a result, narratives of the lived experiences of injured workers who must learn to cope and manage their chronic pain and limitations are missing from the literature. More information is needed to better understand the way injured workers adapt to their limitations, employment transitions, and disruptions (Shaw, MacAhonic, Lindsay, & Brake, 2009), including the voices of the injured workers themselves.

Chronic pain has been found to be a common outcome for workers left with permanent impairments following a work injury (Phillips, Carroll, Voaklander, Gross, & Beach, 2012). Carroll, Rothe, and Ozegovic (2013) studied the coping mechanisms used by individuals who were unable to work as a result of chronic pain from musculoskeletal injuries. Their participants had to learn to manage their pain and develop adaptive behaviours. Coping with pain was complex and could not be isolated from their other parts of life.

Injured workers' experiences can be compared to experiences of others living with chronic pain. Similar to any individuals with chronic illnesses (Charmaz, 1995), injured workers have to face the intrusions of an illness on their lives and the way the illness affects their sense of self and identity, as well as the continuous adaptation process necessary to deal with any additional health problems that arise over time when aging with a chronic illness (i.e. Froehlich-Grobe, Lee, & Washburn, 2013; Harrison et al., 2013; Hayes, Wolfe, Trujillo, & Burkell, 2010; Johnson, Brown, & Knaster, 2010; Marge, 1988; McDermott, Moran, Platt, & Dasari, 2006; Ravesloot, Seekins, & Young, 1998; Rimmer, 1999; Seekins et al., 1990). In the second chapter of this dissertation, an injured worker sample was compared to an age-matched general population. Injured workers with permanent impairments were more likely than age-similar people to report onset of chronic conditions, particularly following (rather than preceding) the work injury. Additional chronic health conditions create further problems for individuals as they have to cope with the original illness or impairment as well as the additional health problems.

Some research that has focused on the long-term health and functional status of injured workers with permanent impairment/disabilities and their concerns about the future reveal its importance, not only for the individual workers, but for their families and for the communities in which they live. For example, the male injured workers included in Cacciaccaro and Kirsh's (2006) research spoke about the effect their injury had on their family members and social experiences. They reported a lack of intimacy after their work injury due to financial worries and reduced levels of energy. Studying workers with low back pain, Coole, Drummund, Watson, & Radford (2010) report that many worried about being able to continue working with chronic pain and wanted to learn how to self-manage their pain. Being in chronic pain was found to affect sleep, exercise, social activities, sexual relationships (Breivik, Collett, Ventafridda, Cohen, & Gallacher, 2006) and ability to work (Silva, Sampaio, Mancini, Luz, & Alcântara, 2010). Use of medications as a means of controlling or managing pain was a concern for the participants in Breivik et al.'s (2006) research. There was a concern about the side effects of medications and becoming addicted to the pain medications, similar to the concerns expressed by participants in Ballantyne's (2001) study.

Injured workers who were unable to remain socially active reported an increase in antisocial behaviours, which for some, led to depression (Kirsh, Slack, & King, 2012). Depression is a common experience for injured workers and is often linked to chronic pain (Alcântara, Sampaio, Souza, Silva, & Kirkwood, 2013; Franche et al., 2011; Kirsh & McKee, 2003; Pransky, Benjamin, Savageua, Currivan, & Fletcher, 2005). Injured workers in Wall, Ogloff, and Morrissey's (2006) research who self-reported their health

status as poor were more likely to report depression. Injured workers with permanent impairments included in the RAACWI Health Survey had high rates of depression, much higher than the general Canadian population (O'Hagan, Ballantyne, & Vienneau, 2012). Not being able to work was associated with a greater likelihood of reporting depression for the injured workers in Stone's (2003) research.

Depression may also occur as a result of dealing with the compensation system (Cacciaccaro & Kirsh, 2006; Lippel, 2007). The participants in Cacciaccaro and Kirsh's (2006) research spoke about how the compensation system rejecting their claim made them feel abandoned and as though they did not have legitimate claim. A few reported feeling they were treated as criminals and were judged as taking advantage of social assistance. Lippel (2007) also reports the problems created by an adversarial compensation system. The experience of navigating a WCB claim can have severe negative consequences on injured workers, including an increase in the likelihood of reporting depression, anxiety, and paranoia. Several of the injured workers in Lippel's (2007) study reported feeling suicidal as a result of the stigma they felt and the pressures of dealing with a WCB.

Managing or Avoiding Stigma

Individuals with work-related impairments may experience stigma that is associated with the label "injured worker". The label "injured worker" is stigmatizing when others doubt the legitimacy or creditability of individuals' claims to have a work injury. Injured workers with more complex claims and delayed recoveries are stigmatized more than injured workers who have a quicker recovery time and return to work.

Individuals with more complex claims and delayed recoveries are often called ‘malingerers’ and thought to be abusing the compensation system (Niemeyer, 1991). Work injuries that result in invisible injuries and chronic pain are especially stigmatized (Niemeyer, 1991; Dembe, 2001, Kirsh & McKee, 2003; Kirsh et al., 2012; Phillips et al., 2012, Silva et al., 2010) because their legitimacy is more difficult to prove to others. Work injuries that result in visible differences, such as an amputated limb, are more easily accepted as legitimate injuries in society (Kirsh et al., 2012).

Not all individuals who experience a work injury accept the “injured worker” label. As mentioned above, the label “injured worker” can be stigmatizing. Stigma was first used by Goffman (1963) to describe a characteristic that is discrediting. Individuals who are stigmatized are often viewed as tainted and incomplete. A discredited label can lead to a status loss, exclusion, discrimination, and rejection (Link & Phelan, 2001). The resulting stigma may be one reason why an individual would decide not to take on or accept the label of an “injured worker”. However, the label of “injured worker” may be easier to take on – or more difficult to reject - when an individual experiences a visible work-related impairment. Visible impairments often become a master status as the impairment is the first thing others notice (Charmaz, 1994). In those cases, it is challenging, and perhaps not possible, to fully detach from the label. Individuals with invisible impairments, however, may try to avoid using the label of disability or “injured worker”. Taking on an identity of “disabled” is challenging for individuals who have previously been able-bodied. The process of creating a new identity, especially one that is more negative, is difficult (Charmaz, 1994). Therefore, some individuals will attempt to

avoid the label or identity of “disabled”, especially if they are able to hide their impairments and adapt to their new limitations. Stone (2013) calls this process of determining when to use the label of “disability” as situational. Individuals will decide based on the situation whether or not to use the label “disability”. For those who are unable to avoid the label of “disability” or “injured worker”, the new label or identity must have meaning to the individual before it will be accepted and used (Stryker & Burke, 2000). When deciding whether to take on the label, individuals may look for others who are similar or share similar traits as a way of making sense of their label and experiences. Individuals are better able to avoid the label of impairment or illness when their injury does not interfere with their lives or they can control the impact of the injury. Avoiding the label is easier when individuals can carry on with their regular routines, such as work and family life (Charmaz, 1995).

The life of a worker can change drastically after a work injury that results in permanent impairment. The goal of this paper is to use a life course perspective to understand the lived experiences of injured workers aging with their permanent impairment in the post-injury life course. The main questions guiding this research are:

- 1) Do individuals with a work-related injury identify with the “injured worker” label? And how does taking on the “injured worker” label (or not taking it on) affect their lived experience?
- 2) How do individuals aging with a work-related injury feel about and describe their health and aging experiences after the injury?

- 3) Do individuals with work-related injuries develop strategies to cope with their work-related permanent impairment; if so, what are they?

Methods

Semi-structured qualitative interviews were used to explore the lived experiences of injured workers and their health status as they age with work-related impairments. The interview guide is included as Appendix 11. Participants were selected from the Research Action Alliance on the Consequences of Work Injury (RAACWI) Health and Health Care Utilization Survey. This is the same survey used in the second chapter. The RAACWI Health Survey was designed to collect detailed information about the pre- and post-health characteristics of injured workers with permanent impairments. The RAACWI Health Survey was administered in 2008 and 2009 and included 494 Ontario Workplace Safety and Insurance Board (WSIB) claimants. Eligibility for the RAACWI study was limited to first-time/single-time, English-fluent, WSIB claimants, aged 25-55, who received a non-economic loss (NEL) benefit certifying permanent impairment between January 2005 and November 2007 and whose workplace injury occurred between January 2002 and November 2007. More details about the recruitment of the RAACWI Health Survey respondents can be found in chapter 2, Appendix 1, O'Hagan et al. (2012) or on the RAACWI website (http://www.consequencesofworkinjury.ca/projects/health/health_c7ef6.htm).

Between December 2012 and July 2013, a convenience sample of 15 respondents from the RAACWI Health Survey were contacted by the survey Principal Investigator to

determine interest in participation in a face-to-face follow up interview. For convenience, participant selection was restricted to those living in Southwestern Ontario. Three individuals declined to participate in the follow up interviews after expressing initial interest, and a fourth individual – who was interested in a follow up interview - could not be reached by telephone. In-depth, face-to-face interviews were completed with the remaining 11 participants between December 2012 and July 2013. Semi-structured qualitative interviews were used to gain detailed and descriptive information. The research was approved by the McMaster University Research Ethics Board.

Participants decided on the location of the interview. Five participants were interviewed at their home, two were interviewed at work, and the remaining four were interviewed at a coffee shop conveniently located near the participants' home, work, or doctor's office. Interviews lasted between 22 minutes and almost three hours (average time was one hour) and were audio-recorded with the participants' consent. Field notes were taken to capture the interviewer's observations of participants' demeanor, body language, or physical characteristics, and to record additional information and observations. Participants also consented to providing access to their anonymized RAACWI survey data (collected in 2008-09) to provide additional details about the work injury and its consequences to link to the qualitative interview data emphasized here.

Participant Information

The sample included five women and six men. The average age of the participants was 52 years. The average time since the work injury was nine years. The average age of the participants at the time of the injury was 43 years. Participants have been assigned

pseudonyms for purposes of this paper. Of the 11 participants, seven (Ben, John, Elizabeth, Karen, Rick, Bruce, and Charles) were married at the time of the interview, one (Diane) was ever single, and three (Lucy, David, and Jennifer) were divorced. All but Diane, Karen, and Charles had children, and most of the children were themselves adults at the time of the interview. All of the participants lived in large urban communities.

The employment trajectories following the work place injuries varied across participants. Their employment trajectories were affected by their chronic pain and limitations resulting from the work injury. At the time of the interview, four participants (Diane, Jennifer, David, and Rick) were unemployed. While Diane, Jennifer, and Rick felt they would never return to work, David was attending school and planned to re-enter the workforce in the near future. Another participant, Ben, participated in WSIB's labour market retraining program and was employed part-time in a different occupation than his pre-injury occupation. Part-time employment was required for Ben to continue receiving medical treatments for his work injury. Elizabeth paid for her own education and was now employed in a management position with higher pay than her pre-injury job. Three participants (Karen, Lucy, and Bruce) were employed by the same employer where the injury occurred; however they were on modified work as a result of their limitations from their work injury. John remained at his same occupation but felt he could not move up the corporate ladder as a result of his injury. Charles had changed jobs after his work injury but the change was unrelated to his work injury. His injury had not affected his employment. Information about the participants can be found in Table 4.1.

The RAACWI Health Survey data provides more detailed information about the participants' injuries. Six participants (Jennifer, Karen, Lucy, Ben, Rick, and David) were injured as a result of a slip or fall. Three participants (Diane, Elizabeth, and Bruce) were injured as a result of overexertion or strenuous movement. Six participants (Elizabeth, Karen, Jennifer, Rick, David, and Ben) reported that their work injury resulted in multiple injuries. The RAACWI Health Survey also included questions about outcomes following the work injury. Five participants (Jennifer, Karen, Ben, David, and Rick) reported a broken bone or fracture when they were injured. Seven participants (John, Ben, David, Rick, Lucy, Jennifer, and Diane) reported a sprain or strain. Injuries that resulted in a scrape, bruise or blister occurred to four participants (Karen, Ben, Rick, and David). Repetitive strain injury was reported by six participants (John, Ben, Rick, Bruce, Elizabeth, and Jennifer). Nine participants (Diane, Elizabeth, Karen, Lucy, Rick, Ben, John, Bruce, and David) reported being left with chronic pain disorders. Injuries that resulted in stress were reported by seven participants (Ben, John, Rick, David, Elizabeth, Lucy, and Jennifer).

All of the participants experienced permanent impairments as a result of their work injury. WSIB assigns a Non-Economic Loss (NEL) benefit to claimants who have been determined to reach maximum medical recovery. To compensate for their permanent impairment the claimants receive financial payments based on the level of impairment experienced (WSIB, 2011b). The NEL benefit for the 11 participants ranged from 11% to 30% ($\bar{x} = 20.75\%$) impairment, with three participants unsure of their score. A NEL benefit represents the WSIB's assessment of the extent of the impairment

experienced by the whole body, not just the part of the body that was injured. The fact that three participants were unsure of their NEL award suggests a gap between their experiences of impairment and the WSIB's rating of the impact (Ballantyne, Casey, O'Hagan, & Vienneau, nd).

Table 4.1 - Participant Characteristics

Name	Age	Years Since Injury	Marital Status	Employment Status
Diane	42	7	Single	Unemployed
Jennifer	57	9	Divorced	Unemployed
Elizabeth	44	9	Married	Employed, new job
Karen	40	9	Married	Employed, modified duty
Lucy	56	9	Divorced	Employed, modified duties
Rick	61	8	Married	CPP-Disability
Bruce	52	10	Married	Employed, modified duty
David	60	9	Divorced	Unemployed, in school
Charles	55	9	Married	Employed, different job
Ben	49	9	Married	Employed, new job/modified hours
John	57	11	Married	Employed same job
$\bar{x}$	52	9		

Data Analysis

Interviews were transcribed verbatim following each interview. The interviews were analyzed using NVivo9 (QSR International Pty Ltd), a qualitative software program. Common themes found across the interviews were coded. For the purposes of

this paper, interviews were analyzed for themes surrounding injured worker identity, living and adjusting to permanent impairments, other health changes, adaptation and coping, access to social support, and the general theme of aging and expectations of the future. The lived experiences of injured workers are emphasized through the quotes used in the paper.

Findings

“I Got Hurt on the Job” – What is in the Label “Injured Worker”?

The participants included in this research are part of a small subgroup of injured workers who received a NEL award indicating that they will never fully recover from their work injury. Each participant experienced a transition in mid-life as a result of their work-related impairment. This transition was from a ‘healthy, functioning worker’ to someone who experienced – and lived with - a permanent impairment. I was interested in how the participants saw themselves considering that they would never fully recover from their injury. As a result of their work-related impairment and chronic pain, some of them experienced significant changes in their work and life transitions, for example, from employment to unemployment, while others had less dramatic transitions that included learning how to manage their lives with permanent impairment and chronic pain. The process of taking on an identity that is stigmatized, such as “injured worker”, can be a challenging process.

During the interview I asked participants what first came to their mind when they heard the terms “injured worker” and “disability”. I then asked them if they would use

either of these terms to describe themselves and why or why not. Participants spoke about the impact of the label on their lived experience. The label “injured worker” was a term that four participants, Elizabeth, Charles, Rick, and Bruce, did not want associated with them or their lives. Two participants, Elizabeth and Charles, who have returned to work and experience no limitations either at work or in their personal life, spoke about why they do not identify with the label of “injured worker” or use the term to describe themselves. Elizabeth spoke about why she rejected the label “injured worker”, because of the stigma she felt it carried. She said:

Elizabeth (E): No I don't. No. I never do. No.

Interviewer (I): Is there any reason?

E: I just find the stigma that comes with it so, so I try to keep away from it.

I: Do you think working back at work has an effect on the fact that you don't take on the label of injured worker.

E: No, no. No actually. No.

Elizabeth reported being treated differently at one of her jobs because she was not as quick at completing tasks after the work injury. The invisibility of her work injury made it more challenging to prove to her co-workers that she was unable to lift as much or as quickly as the others. She recognized her limitations and in her new job she has control over her job activities.

Charles also rejected the label “injured worker”, but for him it was because he felt his injury did not affect his everyday life. He explained:

Charles (C): It's not a visible injury. Nobody would make that association [that he was injured at work] unless I told them about it. Typically speaking, people aren't going to ask.

I: Would you ever use the term injured worker?

C: No

I: Why?

C: I don't. It is just wear and tear. It's life. And it's a joint. So it's not a joint that's really impacting my enjoyment of life. So no. I think I am lucky.

Charles is able to separate himself from the “injured worker” label based on the type and severity of injury he sustained. He believed that his work injury had almost no impact on his future work and life trajectories and transitions. He made it clear during the interview that his experiences were much different than someone who had a more severe injury.

Rather than use the label “injured worker” to describe themselves, Bruce and Rick spoke about how they talk about ‘their injury’. While neither one identified with the term “injured worker”, they would acknowledge that they were no longer able-bodied. Bruce is currently employed but on modified duty. He tells people that he has limitations. His situation is interesting, however, for although he does not take on the label of “injured worker”, he strives to emphasize at work that he is not a ‘fully functioning’ worker, an identity he demonstrates through his manner of dress. For example, prior to his injury Bruce took pride in his appearance at work, which meant he would tuck in his shirt. After his injury his supervisor told him that his appearance at work, especially his tucked in shirt, made him look like he did not have a legitimate work injury. Bruce did not take these words seriously until his friend told him the same thing. He no longer tucks his shirt in at work as he believed that his impairment would be accepted by his colleagues if he did not tuck in his shirt. Bruce’s colleagues reinforce the notion that someone who looks fit and healthy cannot have an impairment. Rick recently applied for and was approved to receive disability benefits provided by the Canada Pension Plan. It is likely that Bruce and Rick would only explain their limitations or “being hurt on the job” if someone asked

them specifically about being on modified duties or receiving a disability pension. It would be preferable to them if they could avoid having those conversations. Rick now has a new employment trajectory, an unexpected one, as he is unable to work.

Other participants were more willing to take on the label of an injured worker over time, even if it was not a label they used immediately after their work injury. Diane spoke about how she uses both “injured worker” and “person with a disability” to describe herself. She recognized that she has a permanent disability now as a result of her work injury. The transition for Karen to take on the label “injured worker” was more complex. She also spoke about how she uses the terms “injured worker” and “disabled” in her everyday life. She said:

I describe myself as that [injured worker]. But I try to use the term I am disabled very infrequently. There are times when I am trying to plead my case to my employer who is giving me a hard time about something where I'll have to say like, 'umm did you forget I am disabled now because of this place?' ... I didn't view myself as disabled or as an injured worker when I first got hurt ... It was like yeah I fell at work. It was always I fell at work. ... And then after it just never would get any better and I knew how bad it was it was like, yeah I got a really bad leg, you know I got hurt at work.

Karen's new pathway as an “injured worker” will affect her interactions at work as she negotiates how to manage her limitations and chronic pain. Her transition to being an “injured worker” started when she realized she would never fully recover from her work injury. Her union was helpful as she negotiated her transition into a worker who required modifications.

John initially, in the interview, did not feel that the label “injured worker” applied to him. He works for a large corporation where he felt that more severe work injuries

occur and those are the people who should be classified as injured workers. He did not see himself as an “injured worker” because he continued to work and had not lost wages as a result of the injury. However, as the interview went on, John came to see himself differently, and that, in fact, he was an “injured worker”, because he had a permanent impairment, and because of his impairment, he had not been able to advance in his job.

It appears that some of the participants believed that the term “injured worker” means the person is no longer able to work. This may explain why some of the participants – including John - used the term injured (or hurt) at work rather than “injured worker”. Ben spoke about initially using the term “injured worker” after his injury but now this term no longer represents him or his experiences. Ben said:

You know, I used to be an injured worker. But I have moved on with my life. Which you have to. You know, you could end up killing yourself or giving up on everything. You have to. You have to really move on.

Ben had to redefine his future life path after the work injury. He never expected that his occupation would change so drastically in midlife. Ben’s main role as the breadwinner of the family was altered after the work injury and he was starting to adapt to his new role in the family.

“I Just Turned 40 and I Feel like I am 80” - Adjusting to Health Changes and Altered Pathways after the Work Injury

As a result of living with a permanent impairment, all of the participants spoke about their health changes since their injury. Their injury altered their pathways as they went from healthy individuals to individuals who were constantly aware of their chronic

pain and limitations in their everyday lives. Being healthy and active were adjectives that participants could no longer apply to themselves. As Jennifer explained:

I went from an active person, I never took any medication, I never saw the doctor, like I had to force myself to go see a doctor for regular physical checkup[s]. And I never took no pain pill, no aspirin. Nothing. I mean, I didn't believe in doctors, you know. Because when you are fine, you are fine.

Yet, after her work injury, Jennifer now experiences her health in a very different way. She explained that she had to learn how to cope and live with her constant pain.

For Karen, her work injury has led to her experiencing her own health as two separate dimensions. She emphasized the difference between her health as a result of the injury and her health outside of her injury. To her, these two health statuses are very different and should be examined separately. Karen also perceived her aging to be dramatically altered - sped up - due to the health outcomes that occurred as a result of her work injury. She explained:

I still have a workplace injury because to me it is a different monster. If you take apart the mobility and the lack of walking and the chronic pain, I'd say I am perfectly healthy other than high blood pressure that I've had since I was 20 years old and have a family history. And that was it. If I had to describe my health with this injury I would say that I just turned 40 and I feel like I am 80. ... You are tired, you are miserable, you know you can get very short tempered because you are living in pain all the time. You often can't do what you want to do. It's frustrating.

This notion of feeling older than one's chronological age was also mentioned by Lucy. She, like Karen, is also living in chronic pain. When asked to describe her health status she exclaimed:

Oh my goodness. I feel like 80 years old. I don't want to cry but it's like crying ... it's the worst thing is when you get older this can be worse not better.

Lucy worries that she will feel pain for the rest of her life. The work injury altered her life pathways because she felt she was no longer able to do a lot of the activities that she used to enjoy and had to rely on cortisone injections to address the sciatica in her legs.

Rick initially described his health status after the injury as poor. He explains why he thought this way:

I have no fluid in between the discs. So whenever it moves, it's aggravating. There is always friction. The more friction, the more pain. ... And I guess with time the bone will fuse. ... Umm, I could sneeze and if I sneeze I have to be sitting down. If I cough I have to be sitting down. My legs just give out. It's not fun.

Yet, over time Rick has learned to adjust his movements and activities so he does not place extra tension and stress on his neck. Therefore, he started referring to his health as good. It could be that he has not allowed the injury to take over all aspects of his life. Rick's perceptions of his health emphasize incongruence between injury-related health and other components of health, and his need - like Karen's - to separate the two.

The change in health status and managing chronic pain led to difficulties with sleeping for most of the participants. While six participants (John, Ben, Bruce, David, Karen, and Jennifer) spoke during the interviews about their difficulty sleeping, all of the participants except for David reported in the RAACWI Health Survey that they had difficulty sleeping. John blamed the pain for his inability to sleep and said that bedtime was the worst time of the day for him because of his sleep problems. John takes *Diazepam* to help him sleep but this increases his worries because it is highly addictive and he does not want to become over-reliant on the medication. Ben explained that sleep,

or lack of sleep, was a major problem for him. When asked if the pain was the reason for his lack of sleeping, he said:

I think [it] is mostly because of the pain. You go through worrying a lot more. You know compensation can cut you off anytime and anything you do that is wrong and anything like that, they can cut you off, and they really have you under their thumb really. And you have to concerns about that.

Ben felt like he was in a precarious position with compensation. Worrying about WSIB denying his claim negatively affects Ben's sleep patterns, even though his work injury occurred nine years ago.

Additional chronic health conditions were a concern for all of the participants. The RAACWI Health Survey data provides context related to the types of diagnosed chronic conditions experienced by the participants at the time of the survey, and prior to their injury. The participants appeared to be quite healthy prior to their injury with only a few chronic conditions. However, the incidence of chronic conditions post-injury was quite high. Information about the chronic conditions reported in the original RAACWI Health Survey can be found in Appendix 10. Seven participants, Diane, John, Elizabeth, Lucy, Rick, David, and Jennifer, reported back pain and back problems that occurred, for all except Diane and John, post-injury. Five participants, Ben, Rick, David, Jennifer, and Diane, reported high blood pressure which occurred after their injury. A diagnosis of depression was reported by five participants (Karen, Lucy, Diane, Jennifer, and Ben). Nerve pain that occurred after the injury was reported by six participants (John, Ben, Rick, Diane, Elizabeth, and Lucy). Musculoskeletal pain that occurred after the injury was reported by six participants (Rick, Bruce, David, John, Elizabeth, and Karen and four

participants (Karen, Jennifer, Lucy, Rick, David, and Charles) reported repetitive strain injury. Six participants (David, Charles, Rick, Jennifer, Karen, and Lucy) reported a mobility impairment that occurred post-injury. During the interviews, only a few of the participants spoke about their chronic health conditions. David spoke about an enlarged heart and high blood pressure, Jennifer spoke about high blood pressure and diabetes, and Karen spoke about her nerve disorder and accelerated heartbeat.

During the interviews, six participants (Diane, Lucy, Karen, John, Ben, and Jennifer) spoke about depression, which seems to be an episodic experience for many of the participants. The depression appeared to be associated with their pain levels and the limitations they experience. None of them spoke about current problems managing depression. Diane attended a pain clinic that she found very beneficial to her overall physical and mental health. The benefits attributed to the pain clinic were clarified in her response:

I've pretty much leveled off. I know my depression is more in check now. Whereas before they were still experimenting with the drugs. And I still have a lot of pain but with the pain class that I am in. I am also learning to do things differently.

Lucy and Karen also spoke in detail about their experiences with depression. Karen's job changed after her injury and it was difficult for her to accept this change. She explained her injury in the following way:

It's so much bigger than the physical. I mean the physical is there but the whole mental I mean I went through severe depression with losing my career and losing ... I mean that was bad. Yeah, it was, it's huge.

Lucy tried to make sense of her injury by looking at younger individuals who had experienced an injury. She explained how isolated she felt after her injury. Lucy said:

At first I thought I was alone, that it only happened to me. I was in such a depression. For two weeks I didn't leave my bed. I couldn't because I was very active and not active you just go down. So at this point the compensation was good. I don't know maybe the caseworker was different.

Lucy met others at a pain clinic and now receives treatments at a pain clinic. Although she feels less alone, she is still struggling with the compensation system as it is no longer as helpful as it was at the beginning of her injury. Dealing with the compensation system is causing more stress for Lucy and she tries to continue working despite her pain and limitations.

Some of the participants blamed their additional health problems on lack of exercise and gaining weight. For example, David, Ben, Jennifer, and Diane all said that they were active before their injuries but now struggle to keep active and fit. David explained how his health deteriorated after the work injury and he was diagnosed with an enlarged heart. He explained why he had an enlarged heart, which he felt was indirectly related to his injury. He states:

It was just too much fat and cholesterol. And umm ... they [doctors] said I had to go for surgery. But I watch what I eat. Lose a lot of weight. I try to be healthy. As much as I can sometimes I can't move too well but I still try to be active. But it doesn't bother me much anymore. It looks as though it was just being overweight.

Although David's enlarged heart is no longer bothering him, he still has high blood pressure. He blames the high blood pressure on his lack of exercise and referred to himself as a 'gimp'. This pathway to a more sedentary lifestyle is a difficult adjustment for David as he proudly spoke about his athletic accomplishments prior to the injury.

Jennifer was also struggling with high blood pressure, and with diabetes. She explained how she used to be healthy and fit and now she has gained weight from being inactive. She explained that she took four different types of medication for her blood pressure and was currently trying to determine the best way to manage her recently diagnosed diabetes. She is concerned that the numbness in her feet, from the diabetes, will never go away. Diane was also discouraged by her weight gain after the injury and felt despair at her inability to be active and have more control over her weight. Physical activities that many people take for granted are no longer possible for some injured workers. Diane explained:

Before the accident I used to be able to walk. And now I actually have people pushing me out of the way in a grocery store because I am not fast enough. Because I am slow. Everyone is in a hurry. And I have actually had people kick my cane out from underneath of me and I have fallen in malls so you've gotten to the point where I am afraid to go into a crowd because I will get injured again.

When asked what would improve her mobility and assist in reducing her weight she said she would love to be able to swim, but could not afford the membership fee. Swimming was one exercise that Diane felt would help her achieve her goals without placing additional pressure on her body.

Based on the lived experiences shared by the participants, the female participants in this study reported worse health and more limitations than the male participants. This may be a reflection of the female participants feeling more comfortable to share their stories of health and limitations with me. Weight gain was more problematic for the female participants as they gained more weight than the male participants. It was also more challenging for the female participants to lose the extra weight.

“Living with 24 Hour Chronic Pain” - The Lived Experience of Individuals in Chronic Pain

Karen, like others, spoke about additional health problems following her work injury. Her health problems escalated after she had surgery for her work injury. It appears that complications from surgery caused her chronic pain and physical limitations. However, she has not found a doctor that can explain what caused her nerve disorder. She explained the changes in her health in the following way:

I live with 24 hour chronic pain and lack of mobility. My leg is starting to atrophy. Like it's just a progression of the disease. So [I] kinda have a secondary injury from the surgery that is worse than the original injury.

Her chronic pain and limitations also make it impossible for Karen to stay active and fit. She relied on a scooter because walking long distances was challenging and exhausting for her. This was a pathway that she did not predict, or at least did not anticipate this early in her life course. Another problem for Karen was a rapid heart rate. She was concerned when this health problem started and spoke to her family doctor about her concerns. Her family doctor dismissed her concerns and told her to quit reading information from the Internet. Karen wanted to see if the WSIB would approve a claim to send her to a specialist to help determine what was causing her increased heart rate. She was frustrated with the Board's response and the rejection of her claim. She expressed her frustration this way:

They actually said to me that my case is basically closed and at this point there's nothing more that they would do. And the one guy said to me, really the only way that anything will ever happen is if you have a re-injury...They want me to say I've been injured. A lot of sense that makes. My own employer goes through all this, you lose time at work, you know...all so that you'll help me? Does that make sense?

Karen felt alone in her struggles to understand her changing health needs. The health changes that occurred for most of the participants were both frightening and frustrating. The participants had to be adaptive and resilient as they aged with their work-related impairments. They also expressed a genuine concern about their health status in the future as several of them recognized that their health problems and mobility would likely get worse with age.

“Asking for Take Home Exercises” - Strategies for Long-Term Adapting

Although almost all of the participants were unable to access physiotherapy, massage therapy, acupuncture, or chiropractors on a long-term basis, they did speak about the benefits of the initial 12 weeks of therapy they received after the injury and funded by the WSIB. Only one participant did not speak as highly of the therapy as the others. Charles felt he was treated differently than other patients, by the physiotherapist, because WSIB paid less for his visits than other insurance companies, such as automobile insurance or private health insurance. However, the other ten participants appreciated the physiotherapy they received and many of them used what they learned during those treatments to help them manage their chronic pain and limitations after they were no longer eligible for additional services.

Elizabeth urges other injured workers to ask their physiotherapist for take-home exercises that they can continue after the treatments end. Charles wants WSIB to educate people on how to take care of their own health. People need to learn to be able to evaluate sources on the internet and use other resources to help them manage their pain and limitations. Charles said he is always seeking information on the internet but recognizes

that there is a lot of untrustworthy information available to people who might be unaware.

Diane spoke about her physiotherapist, who taught her to do neck manipulations on herself. She said:

It's a little awkward for me to do it because she stood behind me and did it. But I do it with my own hands and try to do it a bit of the manipulation that she used to do because she showed, umm she showed me on a picture because we were coming up and comp said no. And even though she said you need it but if comp says no then I'm going to show you how to do this at home to help when it gets really bad.

As she cannot afford to pay for physiotherapy or other exercise programs, Diane is thankful for exercises that allow her to alleviate some of her pain and help stop her neck from seizing. Jennifer also spoke about exercises and stretches that she does at home to help her relieve her pain and limitations. She said that she has to try doing her own exercises because she cannot afford to pay for physiotherapy. Jennifer was willing to try anything that others suggested that might help her alleviate some of the pain. She wanted to get to a point in her life where she could cope with the pain. Ben tried buying products that he thought might help his pain but had not found anything to be successful. David, who cannot afford a gym membership, has been resourceful in ways to keep active. When he was having difficulty walking and was gaining weight he decided to start walking around a grocery store. He explained his routine as:

Every day I would go there and I would go up and down the aisles. I would lean my body on a shopping cart. That is the way old people walk with a walker. That was the only way I could get exercise. There was no treatment or exercise to be available for you. That was the only way I can remain active.

David did this for quite a while and made it part of a regular routine. Although the participants are managing to be resourceful in their strategies for coping with the pain, they would benefit from continuous access to physiotherapy, massage therapy, acupuncture, and chiropractic as they age with their impairments.

“She [wife] Hasn’t Got Rid of Me Yet!” - Relying on Family for Support

Family and spousal support was important for the participants who were in a relationship at the time of the interviews. Only one male participant (David) was single. Three of the married male participants (Ben, Rick, and Bruce) spoke about the support they receive from their spouses. Charles, the only participant not to speak about his wife, was minimally impacted by his work injury and perhaps, as a result, did not need the same level of support from his wife. The other male participants (Ben, Rick, and Bruce) spoke fondly about their wives and appreciated them staying with them as they age with the work injury. Ben recognized the strain the injury had on his family. He appreciated his wife’s ongoing support – including financial support. He explained that his household income had not changed since the injury because his wife had started working. Rick also spoke about the support he received from his family and how they protected him. Although he did not believe he needed to be protected and felt he could make his own judgments on what he could or could not do, he appreciated their support nonetheless.

Only two of the female participants were married (Karen and Elizabeth) but they both spoke about their husbands and the support they receive at home. Karen recognizes

the support from her husband and called him ‘her angel’. She described the activities that her husband has to do for her because she is no longer able to do them:

He does laundry now. He does a lot of grocery shopping now because I can't, you know, if I am not on my scooter I can't walk a full store. Like I can only go get some fruits and then get to the line. You know. ... So he does a lot now, he's taken on a lot.

Karen worried about her husband's health because he had to take on extra responsibilities and because he had stopped being active, because she was unable to participate in physical activities. Elizabeth talked about the support from her husband and daughters when she needed surgery for her work injury. Her husband was able to take time away from his job to cook and care for the children while she recovered.

The importance of a spouse was also identified by Jennifer – but for her, it was in the context of not having a spouse for support. Jennifer wished she had someone to help her financially as she ages with the work injury. She is currently living alone and struggling financially. She told me,

If you had a husband who was supporting you or if he was working, brought a pay cheque home, 90% of my problems would be off. Like you could deal with pain and you could deal. I gotta deal with myself. I mean it's challenging on what they [WSIB] give me right.

Without adequate financial support from the WSIB and not having a spouse for financial support, Jennifer felt stressed. She worried about the negative consequences of stress and living with stress, but was unable to get out of her current situation.

“WSIB is Only Looking to cover the Cure” - Suffering Alone

Several of the participants spoke about the difficulty they experienced when trying to access additional health care services, especially health care services that are

often considered complementary or alternative, through the WSIB. Their discussions about lack of access are best understood after examining the Workplace Safety and Insurance Act (WSIA). The WSIA states “a worker entitled to benefits under the insurance plan is entitled to such health care as may be necessary, appropriate, and sufficient as a result of the injury” (WSIA, 1997). Examples of health care funded by WSIB include services provided by a health care practitioner, services provided by or at a hospital, prescription medications, and measures that would improve the quality of life of severely impaired workers (WSIB, 2004). A maximum of 12 weeks of services provided by a chiropractor or physiotherapist is typically approved by the WSIB (WSIB, 2005). Additionally, WSIB may provide maintenance treatment, treatments after the initial 12 weeks, for workers with permanent impairments if certain criteria are met (WSIB, 2005). The following objectives must be met through the maintenance treatment:

enables the worker to continue working at regular or suitable work, leads to a reduction in the worker’s pain and/or decreases the workers medication use, increases the worker’s level of functioning or prevents deterioration in the worker’s level of functioning, teaches the worker independent management of their condition” (WSIB, 2005: 1).

While the language of maintenance treatment was missing from the experiences shared by the participants, their reasons for wanting access to physiotherapists, chiropractors, or massage therapists fit into the criteria listed above for maintenance treatment. The participants who wanted this additional access felt it would reduce their reliance on pain medications, improve quality of life, and assist in their return to work. Bruce was the only participant who received the additional services of an occupational therapist and a physiotherapist to help him manage his accommodations at work. Three

respondents (Rick, Charles, and Ben) did not require any additional treatments at the time of the interview. The remaining seven (John, David, Karen, Elizabeth, Diane, Jennifer, and Lucy) requested access to physiotherapy, chiropractors, or acupuncture but their requests were denied by the WSIB.

John, who accessed acupuncture through private health insurance provided through his employer, was frustrated that WSIB would not agree to pay for this service, as he saw it as the only way to effectively manage his chronic migraines. He explained:

I am doing acupuncture for the accident which should be covered by WSIB but WSIB tells me that it is not a cure so they won't cover it. If it's something for comfort they are not concerned. Nice company. ... WSIB is only looking to cover the cure. They don't, they are not worried about my comfort and I have, I have a disability that's going to be there for life.

John cannot understand why the WSIB will not pay for his acupuncture treatments when it is the only way he can manage to continue working. Karen relies on a lot of medications to manage her chronic pain but would also like WSIB to pay for physiotherapy. Karen's adjudicator told her that she would have to re-injure herself if she wanted access to additional physiotherapy. She was told to submit a medical and the WSIB would review her request. She explained why she did not submit her request because "*it'll probably be denied. They'll probably deny. I tried that a few years ago*". These participants were surprised and disappointed by the response they received from WSIB. They cannot understand why the WSIB would reject a claim for services that improves their quality of life and decreases pain levels. As a result of the position taken by WSIB, John and Karen were accessing treatments through private insurance and David paid for these services himself. Elizabeth, Diane, and Lucy were also denied

access to physiotherapy even though they had documentation from their doctors supporting their requests for these services. Lucy spoke about her frustration with the WSIB. She explained that dealing with the compensation system was the worst thing to happen to her, even worse than her injury. Therefore, in addition to finding alternative ways to manage pain and reduce limitation, the participants had to deal with navigating an unresponsive compensation system.

Unions can be helpful when navigating the compensation system (Baril et al., 2003). However, only five of the participants were unionized at the time of their injury. Ben and Elizabeth had worked in a unionized environment but changed jobs after the injury. They did not mention their union involvement during the interview. Karen, Lucy, and Bruce who continued working in their unionized jobs spoke about the support they received from their union - either at the time of the injury or after when they negotiated their work modifications. Bruce required further modifications at work because he was unable to stand for long periods of time. Bruce negotiated access to an occupational therapist through his union. Lucy's union stepped in on her behalf when her hours were changed without notification. Karen's union has been involved in discussion about the modifications required at her employment. She told me during the interview that she would be "nowhere without the union".

"I am Afraid. ... As I Get Older I am Going to Get Worse" - Worrying about the Future

All of the participants expressed some fear and anxiety about their future as they age with their work-related impairments. They recognize that the pain they feel now is

only going to get worse with age and there is little they can do to manage or stop the pain. Their fear is reinforced by health care professionals who emphasize the problems they will face in the future. Diane, Jennifer, and Lucy expressed their concerns about lack of mobility in old age and requiring mobility devices. Diane captured her anxiety about aging by saying:

I'm afraid that my neck is just going to be totally seized [sigh] and that I will not be able to move it, control it, or I'll end up with a neck brace on. ... I am going to be in a wheelchair with a neck brace and not able to feed myself. And I am so independent still ... that's one of the things that I am really worried about. About losing my independence. ... I don't want to be confined in a wheelchair on a breathing apparatus with a bag you know. That scares me the worst is the long term. Short-term I can handle. It's when I see that big picture at the end of the road it scares me.

Jennifer also expressed anxiety about her limitations getting worse with age and that she would not be able to do many of the things she enjoys. She said:

I know it [pain and mobility] is going to get worse because my doctor tells me it is going to get worse. Umm the pain doesn't go away, it progresses on. You know what? I am afraid. I am afraid, to be honest truth I am afraid. ... as I get older I am going to get worse. And I am going to be able to do less than I can do. So I am the way I am today ...there is worse to come I am sure. I hope not but I am sure.

There was a general sense of concern about what the future will bring. Rick is worried about his future and explained that he tries not to think about it. He said:

I just do what you have to do, do what you want to do, do what you can. ... Again, the injury is getting a little worse, and I am a little more frightened, you know you fall down. It's difficult to get up. It's very painful.

Aging was also a concern for Elizabeth and Charles. They have managed to continue working with minimal limitations; however, they both recognize that their work-related impairments will likely start bothering them in old age. Charles was concerned about

needing a wheelchair when he is older. Elizabeth is worried about aging faster because of her work-related impairment.

John identified a problem facing several injured workers – the fact that there was no cure for these work injuries. He spoke quite eloquently about the changes that could occur and his fears for the future:

If I were to break my wrist at work, it heals and then it's better. If you tore a cartilage in your knee, umm I have gone through that but they fixed it. Soft tissue, nobody can fix. ... They [doctors] told me that soft tissue you probably stuck with that for the rest of your life. And what worries me is, you know, what attaches to this now? What other things are going to worse because of my injury? And is it going to affect me you know down the road?

John's concerns for the future also centred on his role as a grandfather and wanting to be able to play with his grandchildren. He said:

I want to roll around on the lawn. I want to chase them. ... you don't want to picture yourself in a wheelchair and your grandchildren come over and you can't pick them up and put them on your lap. Someone has to put them on your lap for you. That's the thing that I picture from other articles I have seen on TV is that you start to worry down the road. ... I am 56 what am I going to be like when I am 66 or 76?

John is trying to stay active and keep mobile so he can continue to enjoy spending time with his family when he is older. These participants have to learn how to cope and manage their current limitations and be prepared for possible additional limitations in the future. Their future trajectories seem frightening to some who are concerned about their lack of mobility and independence. The quality of their relationships with their family may suffer as they age with their work-related impairments.

Discussion

As with persons aging with disabilities (Putnam, 2002), the lived experience of individuals aging with work-related impairments is complex and multi-layered. However, two common threads emerge among the participants in the current study: the need to learn coping mechanisms to manage current chronic pain and limitations, and concern and worry about the future. The participants in this study all experienced permanent impairments that affected, either drastically or minimally, their work and personal lives. This chapter explores their trajectories following their work injury. The participants went from healthy, active, working individuals to individuals with permanent impairments, chronic pain, and limitations.

A life course perspective was used to examine the lived experience of these 11 participants as they age with work-related impairments. Their work injuries resulted in new and unexpected transitions and changed trajectories and pathways. The change to unemployment was the most significant life altering trajectory for several of the participants. Additionally, a life course perspective was used to understand the various changes in health status over time. Their health status was not static and participants spoke about the changes, both positive and negative, that occurred since their injuries.

This research adds to the current research literature emphasizing the contribution of a life course perspective to understanding aging with a disability. Similar to individuals who are aging with various types of impairments, the individuals in this research described the coping mechanisms they learned as they age. The participants in this research were injured in mid-adulthood and learned to navigate their changing health

needs as they aged. The lives of most of the participants have changed drastically and unexpectedly. Several of the participants experienced a role change from a worker to someone who is permanently unemployable. This was a difficult transition and one that came with concerns about financial security. For those who were able to continue working, they had to learn to negotiate their employment within the context of chronic pain and limitations.

Many of the participants did not accept or welcome the label of “injured worker” because of the stigma they felt was attached to this label. Stigma refers to “an attribute that is deeply discrediting” (Goffman, 1963, p.3). The person who is stigmatized is often viewed as incomplete and tainted (Goffman, 1963). The stigmatized label can lead to status loss, exclusion, discrimination, and rejection (Link & Phelan, 2001). Participants in this study were aware that others in society judge injured workers as not being legitimately injured and trying to rely on the WSIB for a ‘free’ ride. The stigma they associated with “injured workers” was similar to the negative characteristics described in other research, such as: fakers, malingerers, liars, welfare cheats (Niemeyer, 1991; Roberts-Yates, 2003; Storey, 2009), fraud artists, criminals (Lippel, 2007), lazy (Kirsh et al., 2012), unproductive, weak (Stone, 2003), and not wanting to work (Ballantyne, 2001).

Not all individuals with work-related impairments take on the label “injured worker”. In this research only three participants took on the label of “injured worker”. Another participant used the label “injured worker” before he returned to work. He does not think the label fits because he was able to return to work. These examples reinforce

Stone's (2013) argument about identifying with "disability" or "injured worker" as being situational. For those who can decide when to use the term "injured worker", they may take on the label for strategic reasons such as gaining access to compensation (Stone, 2013) or seeking accommodations at work. Stone (2013) explained why some injured workers that she interviewed rejected the label of "disability". They felt that the label "disability" would discriminate them when seeking employment. Individuals who were able to hide their impairment entered what Stone (2013) called the transactional situation emphasizing the relationship between the individual and the situation. Individuals with visible impairments may be more likely to take on the label as the visible impairment is seen as a master status. A master status is typically noticeable to others and impossible to avoid (Charmaz, 1994). Most of the injuries sustained by these participants were not visible¹²; which could explain why many of the participants did not apply the label of "injured worker" to themselves. The process of adapting to the label "injured worker" was a challenge for those participants who did identify as being "injured workers". They had been healthy and employed individuals prior to their injury, but were now left with chronic pain and limitations that made working challenging or impossible. They realized that they would never return to their former health status – prior to their injury. This realization typically took time (and was a transition in itself) as it was not a state that the participants wanted to accept immediately after their injury. Participants who were able to continue working and felt that their impairment had little impact on their life were better able to resist the label of "injured worker". This resistance was also mentioned by

¹² Four respondents described their injuries as visible, five as invisible, and two as both visible and invisible in the original RAACWI Health Survey

Charmaz (1995) who reported that individuals were better able to adapt to their impairment and resist the ‘chronically ill’ label when their employment and social life were unaffected or minimally affected.

As a result of the work injury, almost all of the participants spoke about the limitations they face on a regular basis and the coping mechanisms they developed over time to manage their work, social, and family responsibilities. Only one participant (Charles) did not speak about limitations at the time of the interview. However, he too was worried about his future limitations as he aged with his injury. The other participants learned how to anticipate and manage their present situation but worried about their future trajectories based on their physical abilities, limitations and chronic pain. They worry that their health status may become worse as they age. This was not a future that any of them had imagined.

Another theme that emerged from the research is the dissonance between the participants’ perception of their general health and specific health issues related to the work injury. Many of them separated the two as if they were distinct from each other. This may be a coping mechanism or a way to distance themselves from the label of “injured worker” and continue with the pathway of being healthy individuals. However, this compartmentalizing may not be possible for all of the participants in this study. A common problem for the participants was learning to cope with chronic pain, especially chronic pain that was episodic and not constant. This was a problem faced by the injured workers in Phillips et al.’s (2012) research. Dealing with chronic pain may result in missed work or, in the case of three participants in this current study, disengaging from

paid employment. These three participants will not return to work and must adjust to a new trajectory of early and unanticipated unemployment.

Almost half of the participants in this study needed to learn to adapt to additional chronic conditions. Most of their additional chronic conditions were related to high blood pressure attributed to reduced mobility and weight gain. This was especially problematic for the female participants. Depression was a problem for six of the participants. Another two spoke about feeling upset about their health outcomes following the injury and the loss of activities that they enjoyed. However, they did not use the word ‘depressed’ during the interview. The participants who spoke about their depression said it was being controlled with medication, or that episodes were periodic and could be anticipated because the episode coincided with increases in chronic pain. These chronic conditions were common for the RAACWI respondents analyzed in chapter two. The RAACWI respondents were more likely to report in heart disease, hypertension (high blood pressure), and depression when compared to a similar aged group of Ontarians. Other research has found that individuals who have experienced a work injury are more likely to report depression (O’Hagan et al., 2012) and to attribute it to their injuries and to dealing with an adversarial compensation system (Kirsh & McKee, 2003; Lippel, 2007).

The concept of accelerated aging can help us to better understand the lived experiences of individuals with work-related impairments who are experiencing additional chronic conditions and have concerns about future mobility and pain. Accelerated aging is a concept used when studying aging with a disability (Ballantyne, 2001; Hayes et al., 2010; Klingbeil, Baer, & Wilson, 2004; Putnam & Pritzker, 2007).

Hayes et al. (2010) described the accelerated aging process for individuals who were injured at work and felt older than their chronological age, especially when performing tasks. Two participants in this study said “*they felt like they were 80*”, rather than their much younger chronological age, so, for them, accelerated aging may have already occurred. They are facing health problems and limitations in mid-adulthood that they associate with old age. Whether they are already experiencing this feeling of accelerated aging or not, the other participants spoke about what their futures will be like as a result of their work injury. Many of them spoke about concerns about lack of mobility in old age and worrying about needing a wheelchair. For those participants who were still ‘able-bodied’, staying active was the first step in trying to delay this notion of accelerated aging. They felt that by keeping active it would decrease the speed of their decline. The male participants appeared to be more successful at keeping active and fit. All of the male participants spoke about engaging in some form of physical activity. In comparison, all but one female participant spoke about how they could not keep active because of their pain and limitations.

Aging with a work-related impairment may be easier with support from a partner or spouse. Several of the married participants in this study spoke about the emotional, physical, and economic support they received from their spouse. One participant, who was a widow, expressed how much easier she thought her life would be with the financial assistance of a spouse. Another participant’s household income was not affected by his work injury because his wife returned to work. The importance of having family support was discussed by the participants in Silva et al.’s (2010) and Casey and Stone’s (2010)

research. Casey and Stone (2010) emphasize the need for longer term studies as support networks change as individuals' age with impairments and they may not receive the support necessary to help them manage or cope with their limitations over time. The participants in this study who have partners are currently receiving enough support but this may change over time. It is important that individuals with work-related impairments have the support they need as injured workers often feel alone and unsupported (Kirsh & McKee, 2003; Shaw et al., 2010). Access to necessary supports, which may vary individually, is important to help individuals with work-related impairments cope with chronic pain, limitations, and depression.

Despite policies addressing health care services and maintenance treatments, the WSIB fails to be meeting its responsibilities to most of the participants included in this research. The failure of the WSIB to meet the needs of these participants was more apparent as they aged with their permanent work injury impairment. Several participants spoke about wanting more access to health care services that were not covered by the Ontario Health Insurance Plan, but funding for these services were denied to them by the WSIB. When they asked the WSIB to provide additional access to physiotherapy, massage therapy, or acupuncture, their requests were rejected. This was extremely frustrating for the participants, especially those whose health care professionals recommended these health care services for coping with limitations, and reducing chronic pain and reliance on medications. The WSIB has a policy for maintenance treatment that would address these requests from the participants – but it appears to be highly restricted. Maintenance treatment is designed for WSIB claimants who require treatments, such as

physiotherapy, acupuncture, or occupational therapy, after the initial 12 weeks following an injury (WSIB, 2005). A health care professional, either the individual's family physician or a WSIB-employed physician, must identify the treatments as being beneficial. The primary goal of maintenance treatments is keep the individual working, reduce pain and/or medication use, improve functioning and prevent deterioration, and enable the individual to learn how to self-manage his or her condition (WSIB, 2005). Maintenance physiotherapy is most useful for preventing future deterioration and improving or sustaining quality of life (Flanagan & Green, 2000). The little research that has been completed on maintenance physiotherapy demonstrates the benefits of maintenance physiotherapy (Flanagan & Green, 2000). The language of maintenance treatment was not used during the interviews which suggests that these injured workers may not have been aware of the provision within WSIB policy to provide these services. Ideally, access to maintenance treatments or long-term use of physiotherapy, massage therapy, acupuncture, chiropractor, and occupational therapy, would allow the participants in this study to reduce their reliance on medications and improve quality of life by reducing chronic pain and improving limitations.

Although the WSIB appears to provide adequate supports to injured workers with permanent impairments immediately following their injury, there appears to be problems or barriers to these workers accessing long-term assistance to manage limitations and chronic health conditions associated with the impairment. Only one participant in this study was eligible for additional support from the WSIB to assist in changing his modifications at work so that he was not required to stand for long periods of time. His

union was instrumental in gaining access to the services of an occupational therapist and a physiotherapist. Current policies surrounding access to health care imply, more generally, that health care services that are deemed “necessary, appropriate, and sufficient as a result of the injury” (WSIA, 1997) will be provided to the injured worker. However, even when the participants in this research had support and documentation from their family physician about the benefits of physiotherapists, acupuncturists, chiropractors, massage therapists, or occupational therapists they were not eligible for funding from the WSIB to access these services. This suggests that there needs to be clearer guidelines on what health services WSIB will provide for individuals aging with work-related permanent impairments.

Limitations

A convenience sample was used to recruit individuals to participate in this research. This means that the voices of the injured workers in this study are not necessarily a representative sample of all WSIB claimants in Ontario. However, the variations in the limitations, from very minor to more severe, provide more depth to the research than if only the worst case or best case scenarios were shared. While there appears to be much variation in the lived experience of individuals who are aging with work-related impairments, there are many similarities. Learning to cope and manage chronic pain and limitations, regardless of how minor they may be, can be an exhausting and challenging experience. Additionally, concerns about the future were something

faced by all the individuals in this research, not just those experiencing more severe health consequences from their work injury.

This research is missing an ethnic/cultural and gender focus as these were not the focus of the research. Although there were some ethnic/cultural differences among the 11 participants in this study, there needs to be more attention made to the social location of the participants and whether this influences their lived experience. A larger, more diverse sample may be able to draw out any cultural and socioeconomic differences, as well as how/whether language fluency influences experiences at work, avoiding injury and responding to work injury and its consequences. The participants in this study who were able to continue working at the same employment or who did not experience a decrease in their wages as a result of the work injury, worked in white collar or health service positions. A research emphasis on the role and the effects of involvement of unions is needed as union membership may have provided another avenue for support – at least for a worker's entitlement to benefits available through the WSIB, such as maintenance treatments. For those who were unionized, the union was helpful when negotiating modified work hours or duties. One participant used his union to assist him in accessing an occupational therapist to determine what type of modifications he required at work.

Policy Implications

The WSIB and other compensation boards must be aware of the health changes that occur following an injury and provide more long-term assistance and support to individuals who are aging with work-related impairments. Several of the participants

spoke about the lack of support they received from WSIB when they followed up years after their work injury when they were having difficulty coping with chronic pain and limitations. They wanted access to long-term health care support from the WSIB; however, most found the WSIB unsupportive of their request. Without adequate support, many injured workers will likely become depressed (O'Hagan et al. 2012). As one participant said, she could deal with the physical pain but the treatment by the WSIB was too much for her to handle.

Changes to WSIB practice are required to broaden consideration for allowing access to maintenance treatment for claimants with NEL benefits. The Board itself declares these claimants to have reached maximum medical recovery and to have a permanent impairment (WSIB, 2008). These claimants will never fully recover and will likely require additional services throughout their life to deal with new and/or worsening health problems. Yet, additional access to an occupational therapist, perhaps a form of maintenance treatment, was only available to one participant in this study. Many others likely would have benefited from additional services such as physiotherapy, massage therapy, occupational therapy, chiropractor, and acupuncture. The WSIB needs to consider the long-term needs of injured workers with permanent impairments to ensure that the health conditions related to the work injury and any subsequent health problems related to the injury are addressed. When the WSIB fails to consider the long-term needs of injured workers with permanent impairments the injured workers are forced to rely on the Canadian Disability Pension Plan, the Ontario Disability Support Plan, and Ontario Works. Three of the participants included in this research relied on these supports for

financial assistance because they were unable to work. This demonstrates that when the WSIB fails to adequately support injured workers, other agencies, which are not designed to support injured workers, must step in.

Conclusion

The long-term health needs of individuals who are aging with work-related permanent impairments change over time. There is a lack of research on the long-term lived experiences of individuals with work-related permanent impairments and how they cope with their limitations and chronic pain throughout the life course. Although not all of the individuals in this research reported escalating health problems and unmanageable chronic pain, those who are facing these problems feel afraid and alone as they age. They have to learn how to cope with their work-related impairments, additional health problems, and chronic pain. For those without support from family and friends, this can be an extremely isolating experience. The future for most of these participants has been significantly altered. The major transition for these participants was loss of employment. As a result of the work injury, three participants are no longer able to work. Even if the participants were able to return to work after their injury many of them are unsure how long they can continue working. For some of the participants, the exit from the workforce in their forties, fifties, and early sixties was unanticipated and can cause long-term financial limitations. For those who have continued working, some with modified duties and others using various coping mechanisms, they also expressed concern about their futures. Many of them are frightened to grow old as they expect their health will continue

to decline over their life course. They worry about how they will manage their pain in old age when – for some - it is almost unbearable in middle adulthood.

There is a need for more long-term studies on the lived experiences of individuals aging with work-related impairments as their voices are missing from the literature.

Although they may have some similarities with individuals aging with disabilities, they are different because they must learn to navigate a WCB system and deal with the stigma associated with work injuries. With invisible injuries, these participants have to determine when to use the label “injured worker” and when to hide their impairments to avoid being stigmatized. The label is useful when it is noticeable that the individual requires extra assistance at work or is currently unemployed. Using the label of “injured worker” may help to remind others that they are not the fully functioning worker they were prior to the injury. For the participants in this research the label “injured worker” is a double edged sword as it can help to legitimize their limitations but it attaches the individual to a stigmatized label. However, despite their limitations these participants have not disengaged from society and try to continue participating in work, social, and family roles. They want extra help from the WSIB to manage their chronic pain and limitations without having to rely on medications for the next several decades. More awareness is needed to better understand the lived experiences of individuals with permanent work-related impairments and the challenges they face and the necessary resourcefulness they present throughout the life course.

References

- Alcântara, M. A., Sampaio, R. F., Souza, M. A. P., Silva, F. C. M., & Kirkwood, R. N. (2013). Chronic pain profile: An interaction between biological and psychosocial factors. *Pain studies and treatment*, 1(2), 9-16.
- Ballantyne, P. J. (2001). *Workplace Safety and Insurance Board Pre-1990 Claims Unit Study*. Final Report to the Board.
- Ballantyne, P. J., Casey, R., O'Hagan, F. T., & Vienneau, P. (n.d). Poverty status of worker compensation claimants with permanent impairments. Submitted to *Critical Public Health*.
- Baril, R., Clarke, J., Friesen, M., Stock, S., Cole, D., & the Work-Ready group (2003). Management of return-to-work programs for workers with musculoskeletal disorders: A qualitative study in three Canadian Provinces. *Social Science & Medicine*, 57, 2101-2114.
- Breivik, H., Collett, B., Ventafridda, V., Cohen, R., & Gallacher, D. (2006). Survey of chronic pain in Europe: Prevalence, impact on daily life and treatment. *European Journal of Pain*, 10, 287-333.
- Cacciaccaro, L., & Kirsh, B. (2006). Exploring the mental health needs of injured workers. *Canadian Journal of Occupational Therapy*, 73(3), 178-187.
- Carroll, L. J., Rothe, J. P., & Ozegovic, D. (2013). What does coping mean to the worker with pain-related disability? A qualitative study. *Disability and Rehabilitations*, 35(14), 1182-1190.
- Casey, R., & Stone, S. D. (2010). Aging with long-term physical impairment: The significance of social support. *Canadian Journal on Aging*, 29(3), 349-359.
- Charmaz, K. (1994). Identity dilemmas of chronically ill men. *The Sociological Quarterly*, 35(2), 269-288.
- Charmaz, K. (1995). The body, identity, and self: Adapting to impairment. *The Sociological Quarterly*, 36(4), 657-680.
- Coole, C., Drummund, A., Watson, P. J., & Radford, K. (2010). What concerns workers with low back pain? Findings of a qualitative study of patients referred for rehabilitation. *Journal of Occupational Rehabilitation*, 20, 472-480.
- Dembe, A. E. (2001). The social consequences of occupational injuries and illnesses. *American Journal of Industrial Medicine*, 40, 403-417.
- Elder, G. H. Jr. (1985). *Life course dynamics: Trajectories and transitions 1968-1980*. New York: Ithaca New York Cornell University Press.
- Elder, G. H. (1994). Time, human agency, and social change. Perspectives on the life course. *Social Psychology Quarterly*, 57, 4-15.
- Elder, G. H. Jr., Kirkpatrick Johnson, M., & Crosnoe, R. (2003). The emergence and development of life course theory. In J. T. Mortimer & M. J. Shanahan (Eds.), *Handbook of the life course* (pp. 3-19). New York: Springer Publishing Company.
- Flanagan, T. & Green, S. (2000). The concept of maintenance physiotherapy. *Australian Journal of Physiotherapy*, 46, 271-278.

- Franché, R. L., Murray, E., Ibrahim, S., Smith, P., Carnide, N., Côté, P., Gibson, J., & Koehoorn, M. (2011). Examining the impact of worker and workplace factors on prolonged work absences among Canadian nurses. *Journal of Occupational and Environmental Medicine*, 53(8), 919-927.
- Froehlich-Grobe, K., Lee, J., & Washburn, R. A. (2013). Disparities in obesity and related conditions among Americans with disabilities. *American Journal of Preventative Medicine*, 45(1), 83-90.
- George, L. K. (1993). Sociological perspectives on life transitions. *Annual Review of Sociology*, 19, 353-373.
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, NJ: Prentice-Hall.
- Harrison, T., LeGarde, B., Kim, S., Walker, J., Blozis, S., & Umberson, D. (2013). Work related injury among aging women. *Policy, Politics, & Nursing Practice*, 14(1), 16-25.
- Hayes, K. C., Wolfe, D. L., Trujillo, S. A., & Burkell, J. A. (2010). On the interaction of disability and aging: Accelerated degradation models and their influence on projections of future care needs and costs for personal injury litigation. *Disability and Rehabilitation*, 32(5), 424-428.
- Heller, T., & van Heumen, L. (2013). Aging with disability. In M. Wehmeyer (Ed.), *The Oxford handbook of positive psychology and disability* (pp. 409-423). Oxford, U.K.: Oxford University Press.
- Hutchison, E. D. (2008). A life course perspective. In E. D. Hutchison (Ed.), *Dimensions of human behaviour: The changing life course* (pp. 1-38). Thousand Oaks, CA: Sage Publications.
- Jeppsson Grassman, E., Holme, L., Taghizadeh Larsson, A., & Whitaker, A. (2012). A long life with a particular signature: Life course and aging for people with disabilities. *Journal of Gerontological Social Work*, 55(2), 95-111.
- Johnson, K. L., Brown, P. A., & Knaster, E. S. (2010). Aging with disability in the workplace. *Physical Medicine and Rehabilitation Clinics of North America*, 21, 267-279.
- Kelley-Moore, J. (2010). Disability and aging: The social construction of causality. In D. Dennefer & C. Phillipson (Eds.), *The SAGE handbook of social gerontology*. Thousand Oaks, CA: SAGE Publications.
- Kirsh, B. & McKee, P. (2003). The needs and experiences of injured workers: A participatory research study. *Work*, 21, 221-231.
- Kirsh, B., Slack, T., & King, C. A. (2012). The nature and impact of stigma towards injured workers. *Journal of Occupational Rehabilitation*, 22, 143-154.
- Klingbeil, H., Baer, H. R., & Wilson, P. E. (2004). Aging with a disability. *Archives of Physical Medicine and Rehabilitation*, 85(3), S68-S73.
- Krause, N., Frank, J. W., Dasinger, L. K., Sullivan, T. J., & Sinclair, S. J. (2001). Determinants of duration of disability and return-to-work after work-related injury and illness: Challenges for future research. *American Journal of Industrial Medicine*, 40, 464-484.
- Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology*,

- 27, 363-385.
- Lippel, K. (2007). Workers describe the effect of the workers' compensation process on their health: A Quebec study. *International Journal of Law and Psychiatry*, 30, 427-443.
- MacEachen, E., Kosny, A., & Ferrier, S. (2007) Unexpected barriers in return to work: Lessons learned from Ontario injured worker peer support groups. *Work: A Journal of Prevention, Assessment & Rehabilitation*, 29(2), 155-164.
- MacEachen, E., Kosny, A., Ferrier, S., & Chambers, L. (2010). The 'toxic dose' of system problems: Why some injured workers don't return to work as expected. *Journal of Occupational Rehabilitation*, 20(3), 349-366.
- Macmillan, R., & Copher, R. (2005). Families in the life course: Interdependency and roles, role configurations, and pathways. *Journal of Marriage and Family*, 67(4), 858-879.
- Marge, M. (1988). Health promotion for persons with disabilities: Moving beyond rehabilitation. *American Journal of Health Promotion*, 2(4), 29-35.
- Marshall, V. (2009). Theory informing public policy: The life course perspective as a policy tool. In V. L. Bengtson (Ed.) (2nd ed.), *Handbook of Theories of Aging* (pp. 573-594). New York, NY: Springer Publishing.
- McDermott, S., Moran, R., Platt, T., & Dasari, S. (2006). Variation in health conditions among groups of adults with disabilities in primary care. *Journal of Community Health*, 31(3), 147-159.
- Moen, P., Dempster-McCain, D., & Williams, R. M. Jr. (1992). Successful aging: A life-course perspective on women's multiple roles and health. *American Journal of Sociology*, 97(6), 1616-1638.
- O'Hagan, F.T., Ballantyne, P.J., & Vienneau, P. (2012). Mental health status of Ontario injured workers with permanent impairments. *Canadian Journal of Public Health*, 103(4), 303-308.
- Niemeyer, L. O. (1991). Social labeling, stereotyping, and observer bias in workers' compensation: The impact of provider-patient interaction on outcome. *Journal of Occupational Rehabilitation*, 1(4), 251-269.
- Phillips, L. A., Carroll, L. J. Voaklander, D. C., Gross, D. P., & Beach, J. R. (2012). Pain coping in injured workers with chronic pain: What's unique about workers?. *Disability and Rehabilitation*, 34(21), 1774-1782.
- Post, R. B., van der Sluis, C. K., & Ten Duis, H. J. (2006). Return to work and quality of life in severely injured patients. *Disability and Rehabilitation*, 28(22), 1399-1404.
- Pransky, G. S., Benjamin, K. L., Savageua, J. A., Currivan, D., & Fletcher, K. (2005). Outcomes in work-related injuries: A comparison of older and younger workers. *American Journal of Industrial Medicine*, 47, 104-112.
- Putnam, M. (2002). Linking aging theory and disability models: Increasing the potential to explore aging with physical impairment. *The Gerontologist*, 42(6), 799-806.
- Putnam, M., & Pritzker, S. (2007). Translating knowledge to next steps: Professional stakeholders' evaluation of facilitators and barriers to crossing network lines. In M. Putnam (Ed.) *Aging and disability: Crossing network lines* (pp. 55-80). New York, NY: Springer Publishing.

- Ravesloot, C., Seekins, T., Young, Q. R. (1998). Health promotion for people with chronic illness and physical disabilities: The connection between Health Psychology and disability prevention. *Clinical Psychology and Psychotherapy*, 5(2), 75-85.
- Raymond, E., Grenier, A., & Hanley, J. (2014). The community participation of seniors with disabilities: A matter of self-determination, inclusive environments and identity integration. *Journal of Community and Applied Social Psychology*, 24(1), 50-62.
- Rimmer, J. H. (1999). Health promotion for people with disabilities: The emerging paradigm shift from disability prevention to prevention of secondary conditions. *Physical Therapy*, 79(5), 495-502.
- Roberts-Yates, C. 2003. The concerns and issues of injured workers in relation to claims/injury management and rehabilitation: The need for new operational frameworks. *Disability and Rehabilitation*, 25, 898-907.
- Seekins, T., Smith, N., McCleary, T., Clay, J., & Walsh, J. (1990). Secondary disability prevention: Involving consumers in development of a public health surveillance instrument. A descriptive study of secondary conditions. *Journal of Disability Policy Studies*, 1(3), 21-36.
- Shaw, L., MacAhonc, P., Lindsay, R., & Brake, P. (2009). Evaluating the support needs of injured workers in managing occupational transitions after injury. *Work*, 32, 477-490.
- Shaw, L., McDermid, J., Kothari, A., Lindsay, R., Brake, P., Page, P., ... Knott, M. (2010). Knowledge brokering with injured workers: Perspectives of injured worker groups and health care professionals. *Work*, 31(1), 89-101.
- Silva, F. C. M., Sampaio, R. F., Mancini, M. C., Luz, M. T., & Alcântara, M. A. (2010). A qualitative study of workers with chronic pain in Brazil and its social consequences. *Occupational Therapy International*, 18, 85-95.
- Stone, S. D. (2003). Workers without work: Injured workers and well-being. *Journal of Occupational Science*, 10(1), 7-13.
- Stone, S. D. (2013). The situated nature of disability. In M. P. Cutchin & V. A. Dickie (Eds.), *Transactional perspectives on occupation* (pp. 95-106). New York, NY: Springer.
- Storey, R. (2009). "They have all been faithful workers": Injured workers, truth, and workers' compensation in Ontario, 1970-2008. *Journal of Canadian Studies*, 43(1), 154-185.
- Stryker, S. & Burke, P. J. (2000). The past, present, and future of an identity theory. *Social Psychology Quarterly*, 63(4), 284-297.
- Wall, C. L. Ogloff, J. R., & Morrissey, S. A. (2006). The psychology of injured workers: Health and cost of vocational rehabilitation. *Journal of Occupational Rehabilitation*, 16(4), 513-528.
- Wheaton, B. (1990). Life transitions, role histories, and mental health. *American Sociological Review*, 55(2), 209-223.
- Workplace Safety and Insurance Act. (WSIA) (1997). *Workplace Safety and Insurance*

- Act. Retrieved from:
http://www.elaws.gov.on.ca/html/statutes/english/elaws_statutes_97w16_e.htm#BK36
- Workplace Safety and Insurance Board (WSIB) (2004). *Entitlement to health care. Document #17-01-02*. Retrieved from:
<http://www.wsib.on.ca/en/community/WSIB/230/OPMDetail/24347?vnextoid=9637fcea9bfc7210VgnVCM100000449c710aRCRD&vnextchannel=f85bee40cb05e110VgnVCM1000000e18120aRCRD>
- WSIB. (2005). *Best approaches. A guide to continuous improvement in adjudication Maintenance treatment*. Retrieved from:
http://www.wsib.on.ca/files/Content/AdjudicativeAdviceBA-MaintenanceTreatment/BA_MT.pdf
- WSIB. (2008). *Determining maximum medical recovery (MMR). Document #11-01-05*. Retrieved from:
<http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vnextoid=5f13fcea9bfc7210VgnVCM100000449c710aRCRD>
- WSIB. (2011a). *Statistical supplement to the 2010 annual report*. Retrieved from:
http://www.wsib.on.ca/files/Content/AnnualReports2010StatisticalSupplement/2278A_StatSupplement2010.pdf
- WSIB. (2011b). *Determining the degree of permanent impairment. Document #18-05-03*. Retrieved from:
<http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vnextoid=d52ac0d9ca3d7210VgnVCM100000449c710aRCRD>
- WSIB. (2014a). *By the numbers: 2013 WSIB statistical Report. Schedule 1*. Retrieved from: http://www.wsibstatistics.ca/WSIB-StatisticalReport_S1.pdf
- WSIB. (2014b). *By the numbers: 2014 WSIB Statistical Report. Schedule 2*. Retrieved from: http://www.wsibstatistics.ca/WSIB-StatisticalReport_S2.pdf
- Yorkston, K. M., McMullan, K. A., Molton, I., & Jensen, M. P. (2010). Pathways of change experienced by people aging with disability: A focus group study. *Disability and Rehabilitation*, 32(20), 1697-1704.

Appendix 10**Table 4.2[‡]**: Health Problems and the Timing of Occurrence

	Pre-Injury	Post-Injury	Related to the injury [†]	Received Compensation
<u>Diagnosed Chronic Conditions</u>				
Arthritis	0	3	2	0
Back Problems	1	6	6	3
Hypertension	0	5	4	0
Migraine Headaches	1	2	2	0
Ulcers	0	2	1	0
Depression	1	4	5	0
Back Pain	2	5	6	3
Nerve Pain	0	7	7	1
Musculoskeletal pain	1	6	7	2
Repetitive Strain Injury	0	4	4	0
Mobility Impairment	1	6	6	3
Psychological or Emotional Impairment	1	3	4	0
<u>Symptoms (Undiagnosed)</u>				
Back Problems	2	6	7	3
Symptoms of Depression	0	8	8	0
Anxiety Problem	0	5	5	0
Nerve Pain	1	7	8	1
Musculoskeletal pain	1	8	9	4
Numbness in limbs	1	6	7	1
Difficulty Concentrating	0	7	7	0
Negative Experiences with Medications	0	3	3	0

Notes:

[‡] Data from the original RAACWI Health Survey[†] Participants reported that they believed the condition was related to their work injury.

Appendix 11

Interview Guide

Work injury and disability

1. Can you talk a bit about your work injury (probe: type, why/how it occurred, when, how long as injured worker with permanent impairment)
2. What comes to mind when you hear the term injured worker? How do you think society looks at people who are injured workers? (probe for details on how that affects him/her)
3. What comes to mind when you hear the term disabled or impairment? How do you think society looks at people who are disabled or have impairments? (probe for details on how that affects him/her)
4. Does either the term injured worker or person with a disability fit for you (probe for why or why not and how it affects sense of self)
5. Have you ever felt that people treated you differently because of your work injury? (probe to expand on how that made him or her feel)?

Health care needs

6. How would you describe your health status today? How has this changed since you had the work injury? (probe for ups and downs in health status along the way, ask whether participant attributes specific problems to the initial injury) ...
7. Can you access needed health care? (probe for details in reference to specific needs/problems; probe for relations with health care providers)
8. How do you cope when you can't get needed health care (probe for specifics/examples, etc., can you share any coping mechanisms that you use that might help other injured workers)

Closing Comments

9. Do you feel anything positive has come out of your work injury? (probe for him or her to expand on comment)
10. If you think about your experiences since your work injury, what would you like to see put in place relating to health care services that you feel would benefit you and others living with a work injury?
11. Would you like to add anything else?

Chapter 5: Discussion and Conclusion

The purpose of this chapter is to highlight the findings and insights from the two quantitative studies and the one qualitative study. Here the similarities among the three studies will be examined and the value of a mixed methods approach will be highlighted. This dissertation is a contribution in filling the gap that exists in the literature on what happens to the health status and access to health care for individuals who are aging with work-related impairments. Health outcomes and access to health care can change drastically after a work-related permanent impairment - which has been examined throughout this dissertation. By using a mixed method approach, this research emphasizes the changes in health status and access to health care services of a particular group in society - injured workers. Although this dissertation includes three separate analyses, together they provide a richer understanding of aging with work-related impairments.

The first analysis sets the stage for the entire dissertation by providing a broad overview of health status and health care access of individuals with work-related permanent impairments. The high prevalence of chronic conditions and greater than average physician utilization rates of respondents in the Research Action Alliance on the Consequences of Work Injury (RAACWI) Health Survey suggests that injured workers are accessing more health care services than similar aged respondents from the Canadian Community Health Survey (CCHS). Despite higher physician utilization rates, individuals with work-related impairments may still have unmet health care needs, which is the focus of the second analysis. The second article included an analysis of individuals

with different causes of disability compared to individuals without disabilities, to better understand the ways disability status affects health care access over time. In addition to the comparison between individuals with disabilities and those without disabilities (WoD), this research also examines the unmet health care needs of individuals with a disability resulting from disease or illness (DDI) compared to individuals with work-related disabilities (WRD). One of the objectives of comparing the two disability groups was to try to describe the impact of the stigma of being an injured worker with a disability. The initial higher rates of personal reasons for unmet health care needs could be associated to stigma experienced in the health care system. However, it was not possible to make such a broad statement with this data. While these two quantitative studies provide details on the health status and health care experiences of individuals with work-related impairments, the lived experience of these individuals could not be captured. The qualitative component of this research allowed the voices of 11 participants with work-related permanent impairments who shared their lived experiences of aging with their impairments to be heard. Together these three articles emphasize the different pathways or trajectories and transitions that occur as individuals age with work-related impairments.

Several overarching themes emerged in at least two of the analyses, and in some cases were evidenced in all three analyses. The themes that will be discussed here include: ‘access to health care services’, ‘an accumulation of health problems’, ‘protective barriers to more ‘successful’ aging experiences’, ‘stigma associated with work injuries’, ‘the contribution made by the life course perspective, as applied to my

examination of injured workers' lives' and 'comparing "injured workers" to individuals with disabilities'.

Access to Health Care Services

All three analyses focus on health care utilization by individuals who have experienced a work-related impairment. In the first article, RAACWI respondents report higher physician utilization rates compared to a similar aged sample of CCHS respondents. When self-perceived health status and presence of chronic conditions were added to the models, the coefficient for the RAACWI respondents changed. Family physician utilization rates remained significantly higher for RAACWI respondents but utilization rates for specialist physicians were no longer significant. Access to family physicians is important for respondents with work-related impairments as they require documentation of their work injury to support their claim to a Workers Compensation Board (WCB) (Kosny, MacEachen, Ferrier, & Chambers, 2011), prescription renewals (Soklaridis, Cartmill, & Cassidy, 2011), and treatment of additional chronic conditions (Schoen, Osborn, How, Doty, & Peugh, 2009). Although it was not possible to determine conclusively with the data used, RAACWI respondents may require more frequent visits to health care professionals when the cause of their injury was either unclear or related to repetitive strain injury – which was a finding reported by Russell, Brown, and Stewart (2005). The results of my analysis show the need to access specialists may be related to the treatment of the secondary conditions, rather than the work injury, as RAACWI respondents are no longer statistically different from the CCHS respondents when health

status and chronic conditions are controlled. Even though injured workers have higher utilization rates of family physicians and other physicians, it is not clear if these visits are sufficient to address their health care needs.

The second article addresses the gap in unmet health care needs. Typically higher users of the health care system are more likely to report unmet health care needs (Chen et al., 2002). Therefore, there is a need to understand whether respondents with work-related disabilities (WRD) have unmet health care needs despite their higher health care utilization rates reported in the first article. Analyzing the health care needs of individuals with self-reported disabilities over eight cycles of the National Population Health (NPHS) survey shows the needs of respondents with WRD are not being met. Partitioning respondents into three causes of disability status highlights that respondents with any type of disability have much higher rates of unmet health care needs compared to respondents without disabilities (WoD). Despite the initial higher rates of unmet health care needs, individuals with WRD have a slower rate of increase in unmet health care needs over the eight cycles compared to individuals WoD. This slower rate of increase is complex based on what was learned from the first article. Respondents with WRD may have an initial spike in unmet health care needs which is related to the need for more frequent use of the health care system to complete the initial documentation required by a Workers Compensation Board (WCB) (Kosny et al., 2011) or they may experience expedited health (and therefore frequent) services resulting from the goal of the workers compensation system to speed up their return to work (Gelinas, Wagner, & Harder, 2010; Hurley et al., 2008). However, the increased prevalence of chronic conditions observed in

the first article and the higher utilization rates for RAACWI respondents might suggest a continuous need for health care access which could result in higher unmet health care needs over time.

Examining the reasons for unmet health care needs provides a more detailed understanding of why unmet health care needs occur. Individuals with disabilities are more likely to report structural reasons for unmet health care need as the cause of their unmet health care needs, compared to individuals without disabilities. The higher utilization rates of individuals with impairments, as reported by McColl, Jarzynowska, and Shortt (2010), may explain unmet health care needs because these individuals experience barriers such as long wait times or needed care that was not available, because they are exposed to these situations more often than respondents WoD, who have lower utilization rates. Respondents WoD are more likely to identify personal reasons for unmet health care needs. This may reflect a decision by respondents WoD not to seek care, rather than having a structural barrier restricting them from receiving care. The main effect of time illustrates that while personal reasons for unmet health care needs decrease over time, rates of unmet health care needs for structural reasons increases over time. These results are systemically problematic because they suggest the structure of the health care system creates problems for all users, regardless of their ability or disability status. Ultimately, however, any conclusions provided here to explain unmet health care needs can only be speculative due to the nature of the data – that is, it is based on quantitative survey data that has collapsed individual responses into two categories.

Qualitative data where respondents provide their own explanations for unmet health care needs adds a deeper level of understanding to studying unmet health care needs.

The third analysis, which uses qualitative data, further addresses the gap emerging from the reliance on quantitative data to determine whether injured workers feel their health care needs are being met. The 11 participants were generally satisfied with the health care they receive from their family physician. However, several commented on the lack of access to health care services that are less mainstream or sometimes labelled complementary or alternative medicine, such as physiotherapy, massage therapy, chiropractic, and acupuncture that would allow them to manage their pain and limitations without relying so heavily on medications. Access to these services was an unmet health care need mentioned by several of the participants. Other research on injured workers reports that utilization rates for massage therapy, physiotherapy (Koehoorn, Cole, Hertzman, & Lee, 2006), occupational therapy, acupuncture, and chiropractor (Kirsh & McKee, 2003) were quite high. These high utilization rates were not reflected in the responses of the participants in my third article. Kirsh and McKee (2003) recommend the need for multidisciplinary treatments with an emphasis on a holistic approach to treatment and rehabilitation for injured workers. Injured workers need more flexibility in their treatment options. Despite the appreciation of the initial 12 weeks of treatments (by physiotherapists, chiropractors, massage therapists, occupational therapists) funded by the Workplace Safety and Insurance Board (WSIB), the research participants required additional treatments as they age with their work-related impairments. Even when their family physicians recommended the usefulness of additional treatments, all but one

participant was denied funding for these types of services and treatments from the WSIB. Therefore, to improve outcomes, it is necessary to look beyond the traditional health care system when treating the long-term health needs of injured workers. The passage of time from Kirsh and McKee's (2003) article to the data collected for my study emphasizes the changes that have occurred within the WSIB as to what services are funded. Previously, access to physiotherapy was provided to WSIB claimants. However, Monsebraaten (2014) describes how restrictive services have become for WSIB claimants who no longer have access to the same services others did previously and may be denied or penalized for pre-existing health conditions. The lack of funded access to physiotherapy is considered an unmet health care need for many injured workers who cannot access the treatment if WSIB does not provide funding. Despite higher utilization rates, it appears there are still unmet health care needs for injured workers which are further pronounced when focusing on accessing other health care services beyond the family physician.

An Accumulation of Health Problems

The first and third analyses address the accumulation of health problems experienced after a work-related impairment. The quantitative data (from Chapter 2) provides detailed information about the type and number of chronic conditions experienced by respondents included in the RAACWI Health Survey. Although the analysis compares chronic conditions that occurred at any time, descriptive data comparing the pre- and post-health characteristics of the RAACWI sample emphasizes that the respondents were in good health prior to their injury. In fact, prior to the injury

they were either less likely to report certain chronic health conditions, such as back problems and diabetes, or their pre-injury health status was not statistically different from that of the CCHS respondents. However, RAACWI respondents had higher rates of asthma and ulcers pre-injury compared to the CCHS respondents. These higher rates are surprising and must be considered in more depth. It could be a random coincidence in the data collection that resulted in recruiting a higher proportion of people with asthma and ulcers. The majority of respondents with asthma and ulcers pre-injury did not associate these conditions with their injury. When comparing their current health status to CCHS respondents, the RAACWI respondents were more likely to report incidence of all of the chronic health conditions identified in the research except diabetes. The most concerning chronic health conditions are arthritis, back problems, hypertension, ulcers, urinary incontinence and bowel disorders, and depression. These are concerning because of the high likelihood of RAACWI respondents experiencing these conditions, and the level of pain and discomfort attributed to the health conditions. The high rates of depression reported by RAACWI respondents are similar to the findings of other researchers (Alcântara et al., 2013; Beardwood et al., 2005; Kirsh & McKee, 2003; O'Hagan, Ballantyne, & Vienneau, 2012). Previous work in chronic conditions reported by individuals with disabilities found that individuals with disabilities were more likely to report the following additional chronic conditions: hypertension, heart disease (Khoury et al. 2013), urinary tract infections, bowel disorders, migraine headaches, asthma (Wilber et al. 2002), arthritis (Reichard, Stolzel & Fox, 2011). These chronic conditions were also reported by the RAACWI respondents. Respondents with disability (from a variety of

different causes but not specifically work-related) included in Wilber et al.'s (2002) study reported an average of 5.3 chronic conditions. This is slightly higher than the average of two chronic conditions reported by RAACWI respondents.

The 11 individuals interviewed for the third article were diverse in their health status. A few participants reported no health problems other than some minor pain as a result of their work injury. However, the majority of the participants were living with arthritis, hypertension, back problems, and depression. Only one participant reported a diagnosis of diabetes; however, several others spoke about a concern with their weight gain, which may lead to diabetes if not controlled. Almost all of the participants spoke about learning to manage their depression and anxiety, with medication or relying on family and friends for support or just knowing what triggered the depression. The depression was most often associated with a decline in mobility and increased chronic pain (these latter conditions being associated with the workplace injury). The major health problem for almost all of the respondents was adapting to chronic pain. Nine of the 11 participants reported that they were in chronic pain when asked in the original RAACWI Health Survey ($\bar{x}$ = 52 months post-injury). However, ten participants spoke about chronic pain during the recent interview ($\bar{x}$ = 9 years post-injury) so, perhaps, the tenth participant developed pain between the timing of the RAACWI Health Survey and the interview.

Despite the variation in health conditions at the time of the interview, all of the participants were concerned about their future as they age with their permanent impairments and chronic pain. A few respondents spoke about feeling much older than

their chronological age and expressed uncertainty about how they would survive to old age. Approximately nine years had passed since their work injuries and many of the respondents were starting to feel the wear and tear of living with permanent impairments and chronic pain. As time passes participants may show a much different, and likely worse, picture of the health conditions of injured workers. The analysis of the interviews emphasizes the need for more long-term studies of injured workers to understand changes in health as injured workers age.

Protective Barriers to More ‘Successful’ Aging Experiences

A common thread throughout this dissertation is the significance of diversity of post-injury experiences of individuals who have experienced a work-related impairment. The diversity of the injuries experienced is reflected in the diversity of the long-term outcomes following the injury. The quantitative research included in this dissertation provides an opportunity to examine which characteristics may aid in accelerating poor health and higher health care utilization rates. Characteristics that increase the likelihood of reporting chronic health conditions include: being female, older, Canadian citizenship, lower household income, and lower education levels. These findings are similar to the work by others who also report a greater likelihood of chronic conditions for individuals who are older, female (Fortin, Hudon, Hggerty, van den Akker, & Almirall, 2010), have lower household income (Agborsangaya, Lau, Lahtinen, Cooke, & Johnson, 2012), and lower levels of education (van den Akker, Buntinx, Metsemakers, Roos, & Knottnerus, 1998). The effect of gender on experiencing chronic health conditions varies based on the

type of disability reported. Typically men report fewer chronic health conditions than women, unless the male's disability was a result of a spinal cord injury (Wilber et al., 2002). Immigrants typically report fewer chronic health conditions especially for those who were more recent (less than ten years) immigrants; however, their self-rated health status is lower than non-immigrants (Newbold & Danforth, 2003). The initial fewer chronic conditions could be explained, in part, by the 'healthy immigrant effect' (McDonald & Kennedy, 2004). In addition to having a pre-existing impairment, some individuals are at higher risk of reporting multiple chronic conditions based on their personal and demographic characteristics.

In this research, the characteristics for reporting higher utilization rates for family physicians and other physicians include: being female and living in an urban community. Canadian-born respondents had lower utilization rates for family physicians but higher rates for specialists. This finding is different from the results reported in other research. Newbold (2005) found that access to general practitioners was not significantly different when comparing immigrants to Canadian-born respondents. Similarly, Laroche (2000) found that access to specialists was not statistically different when immigrants were compared to Canadian-born respondents. The higher utilization rates of specialists by Canadian-born may be related to the sample characteristics of the RAACWI Health Survey which did not include many immigrants. Therefore, higher utilization rates were associated with being an injured worker, regardless of immigration status. Respondents with higher levels of household income had lower utilization rates for both types of health care services. The most prominent explanation for utilization of health care

services was reporting poor health status and multiple chronic conditions. Respondents with the worst health status were more likely to utilize health care services, especially family physician services, than respondents who were in good health and experienced few or no chronic conditions. These findings are supported by the work by Kazanjian, Morettin, and Cho (2004) who reported higher utilization rates for women, older individuals, and individuals with chronic conditions.

The association between socioeconomic status and health care utilization is complex in my findings. In the models which did not control for health status and chronic conditions, respondents with higher household incomes reported fewer visits to both general practitioners and specialists. The lowest income category had the highest likelihood for accessing both types of health care but access to specialists was not statistically different from the reference category. My findings are similar to the findings by McColl and Shortt (2006). McColl and Shortt (2006) did not separate the findings into different types of health care services but reported that respondents with less education and had lower income levels had higher health care utilization rates. The lower utilization rates for specialists by higher income earners reported in my study was different from the findings by Curtis and MacMinn (2008) who reported that socioeconomic status, particularly higher socioeconomic status, was associated with higher utilization rates for specialists. Income may not have been as relevant in my study as most of the respondents with higher utilization rates for specialists were in poor health and reported multiple chronic conditions.

There is a relationship between health status and access to health care services as individuals who report poor health status typically have higher health care utilization rates. Poor health status may imply complex health needs which require more frequent and ongoing medical care (Druss et al., 2001; McColl, 2005; Valderas, Starfield, Sibbald, Salisbury, & Roland, 2009) and may require access to multiple health professionals for care (Schoen et al., 2009), resulting in higher utilization rates. The health care system appears to be responsive to the needs of individual with work-related impairments as they have higher utilization rates compared to respondents without work-related impairments in the CCHS. This is a positive outcome for individuals with work-related impairments as it means they do have access to their family physicians and specialists.

Age was a more complex relationship in my models. When poor health and chronic conditions were not controlled, older individuals had higher utilization rates for family physicians compared to individuals between the ages of 30 and 39. However, when health status and chronic conditions were controlled, older individuals had lower utilization rates compared to the reference category. Access to other physicians was lower for older respondents only when health status and chronic conditions were controlled. This further emphasizes the importance of including health status and chronic conditions in the models because they explain more of the model and improve the model fit.

My analysis of the data shows the characteristics that increase the likelihood of reporting unmet health care needs include: reporting fair or poor health status, a low Health Utilities Index, being younger, female, single, Canadian, and having higher

education. These findings are similar to other research on unmet health care need, which reported that women, younger individuals, and individuals with higher education levels were at higher risk of reporting unmet health care needs (Chen et al., 2002; Sibley & Glazier, 2009; WHO, 2011). Structural reasons for unmet health care need mostly relate to the accessibility of services. Individuals with higher incomes who require health care services that are not immediately available through the Ontario Health Insurance Plan (OHIP) may opt to access private health care, if available, on a self-pay basis. Similar to the first study that reported individuals with poor health status and more chronic health conditions had higher utilization rates, this second study also found that individuals in poor health were more likely to report an unmet health care need. The complementary findings of my two quantitative studies, where individuals with poor health have higher utilization rates and individuals with poor health have more unmet health care needs is supported by Chen et al. (2002). Individuals with higher utilization rates and poor health reported more unmet health care needs due to wait times for general practitioners and specialists (Allin, Grignon, & Le Grand, 2010). These findings further emphasize the importance of studying both utilization rates and unmet health care needs.

Richer and more textured findings were obtained during the interviews with 11 injured workers. One participant identified himself as being “*an abnormality*” in the data because his work injury had little impact on his work and personal life. This participant would be classified as working in a white collar occupation where the injury did not affect his ability to work. Other participants who had more authority and autonomy in their jobs were better able to manage their limitations at work because they had flexible

work schedules and could take time off when necessary to deal with pain. Injured workers with musculoskeletal injuries in Bültmann et al.'s (2007) research were more likely to return to work if they reported less pain, had less functional disability, reported better mental and physical health, reported few depressive symptoms, and reported fewer limitations at work. These characteristics were common among the participants in the qualitative study who were working at the time of the interview. The experiences of pain and limitations shared by the female respondents were often more restricting and debilitating compared to the experiences shared by the male respondents. Respondents who had higher household incomes were able to access additional health services and devices that were not financially accessible to respondents with lower household incomes to help them manage their chronic pain and limitations. For example, some participants were able to purchase products and devices such as weight lifting equipment, creams, and vitamins that they could use in their own home to stay active and mobile. A few participants with higher household incomes spoke about a gym membership, something that the respondents with lower household incomes could not afford. Married participants relied on their spouses for financial and social support, and caregiving. They were appreciative of the support they received and recognized the limitations they may experience if they did not have this support network. The single female participants struggled alone. The major complication for those living alone was the financial struggle to support themselves without a second income. The stress of worrying about their financial future and the ability to sustain their homes was likely associated with an increase in the prevalence of chronic health conditions, especially

depression. Although none of the participants reported a marital breakdown as a result of the work injury, several participants spoke about the additional stress their injury places on their partner. The family is affected after a work injury and spouses may have to adjust to new roles, encounter problems with communicating, and changes in intimacy (Sachs & Ellenberg, 1994). These additional stresses and role changes may result in marital breakdowns (Strunin & Boden, 2004).

Stigma Associated with Work Injuries

The label of “injured worker” is associated with negative terms and carries stigma for those who either self-identity with the label or are given the label as a result of experiencing a work injury (Kirsh, Slack, & King, 2012; Niemeyer, 1991; Roberts-Yates, 2003). Goffman’s (1963) definition of stigma as a discredited attribution is useful in understanding the way the label “injured worker” is interpreted in society. Common stereotypes that are associated with the label “injured worker” include: faker, malingerer, liar, cheat (Niemeyer, 1991; Storey, 2009; Roberts-Yates, 2003), unproductive (Stone, 2003), and not wanting to work (Ballantyne, 2001). There is an assumption in society that injured workers abuse the compensation system because they are not really injured (Kirsh et al., 2012). As a result of the stigma surrounding the label “injured worker”, it is not a label that individuals are keen to accept. The undesirable nature of the label “injured worker” came out during a number of the interviews. Understanding the impact of the label “injured worker” in the quantitative studies was more challenging. In the first article, the high rates of depression reported by the RAACWI respondents may be related

to the stigma of being an injured worker and being required to navigate an adversarial compensation system. Both Lippel (2007) and Storey (2009) describe the WSIB as an adversarial compensation system that can increase the likelihood of depression among injured workers as they must prove the legitimacy of their injury. However, as the cause of the depression was not asked in the RAACWI Health Survey it is not possible to determine why the RAACWI respondents have such high rates of depression nor is it possible to ascertain a person's theory about what caused the depression. Based on the timing of onset of depression it could be inferred, based on the observation that depression occurred post-injury, that it may be related to becoming an injured worker. Based on the qualitative interviews with 11 RAACWI respondents, one cause of depression for them was related to the way they are treated by the WSIB - either by not returning phone calls or the treatment they received when talking to WSIB employees or when their claims for access to physiotherapy, massage therapy, acupuncture, or chiropractors were rejected. Several expressed a fear that their claims may be reassessed by the WSIB and determined ineligible for compensation, even though it has been approximately nine years post-injury. In addition to the stress of dealing with the WSIB causing depression, the participants also related their depression to their continuous chronic pain and limitations. Several respondents reported an increase in feelings of depression when the pain was unmanageable with medications or alternative therapies. Chronic pain was identified as the cause of depression for injured workers included in Phillips, Carroll, Voaklander, Gross, and Beach's (2012) research.

The purpose of the second analysis on unmet health care needs was to determine whether respondents with WRD had different reasons for unmet health care needs compared to respondents with disabilities as a result of a disease or illness (DDI). The differences, if they occurred, may be related to stigma. Both respondents with WRD and respondents with DDI had higher rates of unmet health care needs compared to respondents WoD; however, the two disability groups were not statistically different from each other. Therefore, unmet health care needs appear to be related to the disability status more generally rather than the cause of the disability status, specifically. It is not possible to associate unmet health care needs with stigma for the respondents with WRD because the disability groups have similar rates of unmet health care needs.

When focusing on the reason for unmet health care needs, respondents with WRD initially reported higher rates of personal reasons for unmet health care needs compared to respondents with DDI. The likelihood of reporting a personal reason for unmet health care needs decreases over time for respondents with WRD. Examples of personal reasons include being too busy, deciding not to seek care, disliking the doctor. Examples of structural reasons are long wait times, inaccessible or unavailable health care services (see Table 3.1 for more details). It was initially hypothesized the higher personal reasons for unmet health care need may be related to stigma as health care professionals may treat respondents with WRD differently because of the work injury. Russell et al. (2005) reported that family physicians may not want to treat individuals with WRD as they have been criticized by the WSIB for not properly treating and documenting the injury. Family physicians also feel they have a lack of knowledge about work injuries and need to rely

heavily on their patient for information. A respondent in Kirsh et al.'s (2012) research reported feeling stigmatized by a physician who seemed to only care about the money received for treatment and not the individual. These negative experiences in the health care system could result in respondents with WRD deciding to not seek care as they do not like the physician. Although there are significant differences between respondents with WRD and respondents with DDI, there are no significant differences when respondents with WRD are compared to respondents WoD. Since the rate of citing personal reasons for unmet health care needs is initially the same for respondents with WRD and respondents WoD, the data does not provide enough evidence to support the initial hypothesis that respondents with WRD experience stigma in the health care system.

Focusing on structural reasons for unmet health care needs found that respondents with WRD initially have lower rates of structural reasons for unmet health care needs compared to respondent with DDI but the rates increase over time. Similar to the results for personal reasons for unmet health care needs, when citing structural reasons for unmet health care needs, respondents with WRD are not statistically different from respondents WoD. Again, there is no evidence to suggest that the respondents with WRD experienced stigma in the health care system which would translate into unmet health care needs. Respondents with WRD appear more similar to respondents WoD when examining the reasons for unmet health care needs. Although disability status is associated with higher unmet health care needs, the association between disability status and the cause of unmet health care needs is not as clear. When examining the cause of unmet health care needs,

respondents with WRD are more similar to respondents WoD than to respondents with DDI.

The stigma experienced after a work injury was more explicitly identified during the interviews with injured workers. Several respondents spoke about the way injured workers, more generally, are judged as abusing the compensation system and faking their injuries. Similar comments were made by injured workers in other qualitative research (Kirsh et al., 2012; Neimeyer, 1991). The stigma was a reason why some avoided taking on the label of “injured worker”. The participants who could hide their work injury or those whose work injury had little impact on their employment and personal lives, were more likely to avoid using the label “injured worker” to describe themselves. A few respondents spoke about the way others in society judge “injured workers” and they did not want to be associated with those negative stereotypes. The participants who were in chronic pain and experienced limitations in either their ability to work and/or their personal life, were more likely to take on the label of “injured worker”. This label made sense to individuals who recognized that they would never fully recover and would face limitations and chronic pain for the rest of their lives. Taking on the label also helped some participants to better navigate their limitations at work. Although participants were aware of the stigma associated with the label “injured worker”, some of the participants could not avoid the label and others would use the label when it benefited them.

***The Contribution Made by the Life Course Perspective, as Applied to my
Examination of Injured Workers' Lives***

This dissertation, as a whole and each chapter individually, shows the real value in using a life course perspective to better understand research on the lived experiences of individuals with work-related impairments. These three analyses add to the developing literature on using a life course perspective to study aging with a disability (Heller & van Hueman, 2013; Jeppsson Grassman, Holme, Taghizadeh Larsson, & Whitaker, 2012; Kelley-Moore, 2010; Raymond, Grenier, & Hanley, 2014). The pathways, transitions, and trajectories that occur after a work injury can be better understood using a life course perspective. Transitions from employment to unemployment and from able-bodied to disabled are examined with a life course perspective.

The first article focuses on health changes that occur after a work injury. The transition into an injured worker appears to negatively impact the health status of the RAAWCI respondents. The experience of a work injury increases the likelihood of reporting most chronic conditions, but especially arthritis, back problems, hypertension, ulcers, urinary incontinence and bowel disorders, and depression. The second analysis focuses on a life course perspective as a passage of time. The rates of unmet health care needs were examined over eight cycles of data to show the fluidity of both disability status, the fact that respondents could move from one disability group to another between cycles, and the rate of unmet health care needs. The third analysis, which uses a qualitative approach, provides a deeper examination of the lived experience of injured workers as they age with their work-related permanent impairments. The work injury

resulted in a number of significant transitions for the participants (related to their work, their family relationships, and their own identity) and often changed their trajectories and pathways. The most significant life transition after their injury was the change from employed to under-employment and/or unemployment. Several participants who were employed full-time prior to the injury had to adjust to either part-time employment, and the decrease in pay associated with fewer hours, or a loss of employment. The loss of employment was challenging on two levels, first it was difficult financially for the participants who no longer had a stable source of income, and second on a personal level as they lost their 'worker' identity and their friendships at work. Loss of employment in mid-life was not an expected outcome for the participants, which meant the adjustment to unemployment was challenging. Additionally, a life course perspective was used to understand the various changes in health status over time. The health status of these participants was not static and some spoke about the changes, both positive and negative, that occurred since their injuries. Some positive changes were having more time to spend with their children or developing a stronger relationship with their spouse or meeting health care professionals who offered tips on how to manage pain. There were more negative changes that occurred as almost all of the participants were learning to adapt to a life with chronic pain and limitations. The work injury for all 11 participants was sudden and unexpected - although this is not always the case for work injuries. The new pathways for the 11 injured workers in my research after their work injury were unexpected and, in most cases, undesirable. In a matter of seconds these participants

experienced a major life event and transition that would require them to adapt and cope with chronic pain and limitations over time and into the future.

Comparing “Injured Workers” to Individuals with Disabilities’

This research has found there is value in both comparing the similarities and differences of individuals who experience a work injury with permanent impairments to individuals with impairments/disability as a result of any other reason. This research brings individuals with work-related impairments into the discussion on health and social outcomes for individuals with impairments/disability more generally. Similar to other individuals with disabilities (McColl, 2005; McColl et al., 2010; McColl, Shortt, Gignac, & Lam, 2011), injured workers with permanent impairments reported high rates of unmet health care needs and high health care utilization rates. Therefore, perhaps when focusing on health care utilization, cause of disability is not significant but rather the experience and nature of disability is more important. Despite these initial similarities among individuals with any cause of disability, when the cause of unmet health care needs was examined, respondents with WRD were similar to respondents WoD. Exploring the influence of chronic conditions, this research determined that while the RAACWI respondents had higher rates of chronic conditions compared to a similar aged sample of non-injured workers, it is unclear whether these rates are as high as the rates for individuals who have permanent impairments for reasons other than a work injury. Based on the findings by Wilber et al. (2002), respondents with disabilities reported on average 5.3 additional chronic conditions, which is much higher than the average 2.27 reported by

the RAACWI respondents. However, the types of chronic conditions reported by the RAACWI respondents was similar to what other research has found when reporting chronic conditions experienced by individuals with disabilities. The one major difference was diabetes, which was not significantly more prevalent among the RAACWI respondents. However, based on the 11 interviews and the worry about weight gain, the incidence of reporting diabetes among the RAACWI respondents may increase the longer they live with their impairments. One of the 11 participants was recently diagnosed as having diabetes, this diagnosis, which occurred approximately nine years after the work injury, emphasizes the need for longitudinal research.

The differences among individuals with work-related impairments and individuals with impairments for other reasons may relate to the timing of the impairment. For most injured workers, especially the injured workers included in this study, their impairments occurred mid-life - that is, after their education had been completed, many were already married and had families, and most were settled into a career. Their life courses will be very different from individuals who were born with an impairment or experienced their impairment in childhood, as teenagers or in old age. The onset of work-related impairments is often different from the onset of other types of impairments. For the injured workers that I interviewed, they were able to share the exact moment when their work injury occurred. It may have been a fall, or the turning of their neck, or a collision, but they knew, either at that moment or the next day, that something was wrong. In comparison to individuals who experience other causes of impairment, the cause of their impairment may not be as easily determined or it may progress slowly. However, some

work injuries also occur more slowly, especially occupational illnesses and musculoskeletal injuries.

Individuals who experience a work-related impairment are often thrust into dealing with a Workers Compensation Board (WCB). The goal of the WCB is to enable a quick return to work (Krause, Frank, Dasinger, Sullivan, & Sinclair, 2001). Injured workers who do not return to work or do not return to work quickly are burdensome for WCBs as they cost more to support (MacEachen, Kosny, and Ferrier, 2007). The ideal scenario for an injured worker, from a WCB and worker perspective, is to experience a straightforward path that ends in a timely return to work (MacEachen, Kosny, Ferrier, & Chambers, 2010). Lippel (2007) and Storey (2009) describe the WSIB as an adversarial compensation board that creates additional problems for injured workers. Injured workers often have to wait longer for their claims to be processed and often have their claims denied. Adjudicators often do not believe the experiences reported by the injured worker and believe they are capable of doing more than either the worker or the worker's family physician reports (Storey, 2009). The adjudicators' suspicion has a negative effect on injured workers (Beardwood et al. 2005). As a result, injured workers often feel powerless when dealing with the compensation system (Lippel, 2007; Storey, 2009). When comparing individuals who were injured through work accidents to individuals who had been injured at non-work accidents, researchers found that individuals with work accidents reported post-traumatic stress disorder as a result of dealing with a compensation system (Mason, Wardrope, Turpin, & Rowlands, 2002). Additional stress may be placed on injured workers if they are blamed for their injury (Soklaridis,

Ammendolia, & Cassidy, 2010), something that may not occur for individuals with impairments for other reasons. Therefore, the main difference between individuals with work-related impairments and individuals with impairments for other reasons is the compensation system. Both groups of individuals have impairments but only individuals with work-related impairments must have the legitimacy of their impairment approved by a compensation system.

Limitations

There were several limitations of this research project. The first analysis was limited as only self-reported medically diagnosed health conditions could be examined. However, other surveys, including the CCHS and NPHS, also use this form of questioning for chronic health conditions. RAACWI respondents may not have been accurate in their self-reporting of when the chronic conditions occurred. Errors in recall may occur due to the timing of the injury and when the survey was conducted ($\bar{x}$ =52 months). Additionally, the sampling frame of the RAACWI survey was a non-systematic sample and over-represents women and older individuals. The survey is also missing injured workers who were unable to be contacted by telephone, which may result in the survey missing the most vulnerable injured workers who have lost their homes or have less permanent housing or transitional housing and/or telephones. The voices of participants who could not or would not speak about their work injuries, perhaps because of the emotional toll it had on their lives, are also missing from this research.

Similar limitations occurred in the second article which used the NPHS. Self-reporting was a concern in this study as respondents had to self-identify as being disabled. Respondents who experienced functional limitations could self-identify as non-disabled, thus being categorized as respondents WoD. A further limitation is the small percentage of respondents with unmet health care needs and the large and diverse number of possible reasons for having an unmet health care need. Being able to test the individual causes for unmet health care needs or focusing on smaller categories would have been preferable. By being able to examine detailed reasons for unmet health care needs such as ‘dislikes the doctor’ or ‘is afraid of the doctor’ may have provided a better understanding of the barriers that injured workers may face in the health care system. Survey data is limited in its nature as the patterns are not always clear and it is not always possible to further probe the meaning of the data that was collected.

The limitations in the third analysis are related to the non-representative sample of WSIB claimants as a convenience sample used to recruit individuals to participate in this research. Only participants who were comfortable talking about their work injury agreed to participate in the interviews. One individual who was contacted but decided not to participate explained that she did not want to endure the emotional pain she experiences when she talks about her injury at length. This article is missing ethnic and cultural differences as the sample is fairly homogenous. The gendered experiences were not fully explored but should be in future studies. A larger, more diverse sample could have drawn out similarities and differences based on cultural and socioeconomic characteristics.

Despite these limitations, this dissertation provides an interesting and multidimensional scope of various outcomes that follow a work injury, and individuals' lived experience of being 'injured workers'. Focusing on the long-term health outcomes of injured workers with permanent impairments and claimants of the WSIB is under researched. This research helps to fill this gap by providing both a broad overview of health changes and health care utilization rates after a work injury and a deeper examination of the lived experiences of injured workers aging with their work-related permanent impairments. The data from the NPHS provides a different angle as it focuses on individuals who self-report having a WRD, rather than being identified by the WSIB, as was the case for the RAACWI respondents.

Future Research

This study, overall, emphasizes the need for more longitudinal research, both qualitative and quantitative, focused on the health and lived experiences of injured workers. There are many changes that occur as individuals age with their work injury that would be missed if studies focus only on immediate outcomes. While chronic conditions were already apparent in the RAACWI Health Survey ($\bar{x}$ =52 months post-injury), the participants included in the qualitative study were experiencing other chronic conditions that were not reported in the RAACWI Health Survey, which was approximately nine years post-injury. Some of them had corrected chronic health conditions that occurred after the injury, such as an enlarged heart, while others were beginning to find ways to adapt to or control their depression. The second article on unmet health care needs also

emphasized the changes that occur over time. More research on unmet health care needs is needed to better understand the changes that occur over time as individuals age with a disability. This need was emphasized in the second article where the fluidity of unmet health care needs was examined.

Future research should continue to focus on the long-term health care needs of injured workers with permanent impairments, by focusing on work injuries that occurred over 15, 20, 30, and even 40 years ago. The use and types of coping mechanisms and the health changes and access to health over a longer period of time need to be researched. A better understanding of the lived experience of injured workers who are approaching or have entered 'old age' with pre-existing work-related permanent impairments is also needed. Does their health get worse with age or do they reach a point where it stabilizes? These are important questions to address.

Future research must also look at the financial situation of injured workers with permanent impairments as they age. For those who are unable to work at mid-life, how will this affect their retirement income? What will happen to the health of injured workers who have been using pain medications for long periods of time, or who have been unsuccessful in accessing what is perceived as needed health care for long periods of time? This future research is necessary as individuals live longer than past generations and with more complex health conditions. Policies currently applied by the WSIB may not be adequate to address the needs of a dynamically changing society of workers and injured workers, especially as individuals are living longer and requiring more long-term health support.

References

- Agborsangaya, C. B., Lau, D., Lahtinen, M., Cooke, T., & Johnson, J. A. (2012). Multimorbidity prevalence and patterns across socioeconomic determinants: A cross-sectional survey. *BMC Public Health*, 12, 201-208.
- Alcântara, M. A., Sampaio, R. F., Souza, M. A. P., Silva, F. C. M., & Kirkwood, R. N. (2013). Chronic pain profile: An interaction between biological and psychosocial factors. *Pain studies and treatment*, 1(2), 9-16.
- Allin, S., Grignon, M., & Le Grand, J. (2010). Subjective unmet need and utilization of health care services in Canada: What are the equity implications?. *Social Science & Medicine* 70(3), 465-472.
- Ballantyne, P. J. (2001). *Workplace Safety and Insurance Board Pre-1990 Claims Unit Study*. Final Report to the Board.
- Beardwood, B. A., Kirsh, B., & Clark, N. J. (2005). Victims twice over: Perceptions and experiences of injured workers. *Qualitative Health Research*, 15(1), 30-48.
- Bültmann, U., Franche, R., Hogg-Johnson, S., Côte, P., Lee, H., Severin, C., Vidmar, M., & Carnide, N. (2007). Health status, work limitations, and return-to-work trajectories in injured workers with musculoskeletal disorders. *Quality of Life Research*, 16, 1167-1178.
- Chen, J., & Hou, F. (2002). Unmet needs for health care. *Health Reports*, 13(2), 23-34.
- Chen, J., Hou, F., Sanmartin, C., Houle, C., Tremblay, S., & Berthelot, J. M. (2002). Unmet health care needs. *Canadian Social Trends*, 19-22.
- Curtis, L. J., & MacMinn, W. J. (2008). Health care utilization in Canada: Twenty-five years of evidence. *Canadian Public Policy*, XXXIV(1), 65-87.
- Druss, B. G., Marcus, S. C., Olfson, M., Tanielian, T., Elinson, L., & Pincus, H. A. (2001). Comparing the national economic burden of five chronic conditions. *Health Affairs*, 20, 233-241.
- Fortin, M., Hudon, C., Haggerty, J., van den Akker, M., & Almirall, J. (2010). Prevalence estimates of multimorbidity: A comparative study of two sources. *BMC Health Services Research*, 10, 111-116.
- Gelinas, S., Wagner, S. L., & Harder, H. (2010). Private health care option: Disability management in Canada. *Journal of Disability Policy Studies*, 21(2), 116-125.
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, NJ: Prentice-Hall.
- Heller, T., & van Heumen, L. (2013). Aging with disability. In M. Wehmeyer (Ed.), *The Oxford handbook of positive psychology and disability* (pp. 409-423). Oxford, U.K.: Oxford University Press.
- Hurley, J., Pasic, D., Lavis, J. N., Mustard, C., Culyer, A. J., & Gnam, W. (2008). Parallel lines do intersect: Intersections between workers' compensation and provincially publicly financed health care systems in Canada. *Healthcare Policy*, 3(4), 100-112.
- Jeppsson Grassman, E., Holme, L., Taghizadeh Larsson, A. & Whitaker, A. (2012). A

- long life with a particular signature: Life course and aging for people with disabilities. *Journal of Gerontological Social Work*, 55(2), 95-111.
- Kazanjian, A., Morettin, D., & Cho, R. (2004). Health care utilization by Canadian women. *BMC Women's Health*, 25(4 Suppl 1), S33-S42.
- Kelley-Moore, J. (2010). Disability and aging: The social construction of causality. In D. Dennefer & C. Phillipson (Eds.), *The SAGE handbook of social gerontology* (pp. 96-110). Thousand Oaks, CA: SAGE Publications.
- Khoury, A. J., Hall, A., Andresen, E., Zhang, J., Ward, R., & Jarjoura, C. (2013). The association between chronic disease and physical disability among female Medicaid beneficiaries 18-64 Years of Age. *Disability and Health Journal*, 6, 141-148.
- Kirsh, B., & McKee, P. (2003). The needs and experiences of injured workers: A participatory research study. *Work*, 21, 221-231.
- Kirsh, B., Slack, T., & King, C. A. (2012). The nature and impact of stigma towards injured workers. *Journal of Occupational Rehabilitation*, 22, 143-154.
- Koehoorn, M., Cole, D.C., Hertzman, C., & Lee, H. (2006). Health care use associated with work-related musculoskeletal disorders among hospital workers. *Journal of Occupational Rehabilitation*, 16 (3), 411-424.
- Kosny, A., MacEachen, E., Ferrier, S., & Chambers, L. (2011). The role of health care providers in long term and complicated workers' compensation claims. *Journal of Occupational Rehabilitation*, 21(4), 582-590.
- Krause, N., Frank, J. W., Dasinger, L. K., Sullivan, T. J., & Sinclair, S. J. (2001). Determinants of duration of disability and return-to-work after work-related injury and illness: Challenges for future research. *American Journal of Industrial Medicine*, 40, 464-484.
- Laroche, M. (2000). Health status and health services utilization of Canada's immigrant and non-immigrant populations. *Canadian Public Policy*, XXVI(1), 51-75.
- Lippel, K. (2007). Workers describe the effect of the workers' compensation process on their health: A Quebec study. *International Journal of Law and Psychiatry*, 30, 427-443.
- MacEachen, E., Kosny, A., & Ferrier, S. (2007) Unexpected barriers in return to work: Lessons learned from Ontario injured worker peer support groups. *Work: A Journal of Prevention, Assessment & Rehabilitation*, 29(2), 155-164.
- MacEachen, E., Kosny, A., Ferrier, S., & Chambers, L. (2010). The 'toxic dose' of system problems: Why some injured workers don't return to work as expected. *Journal of Occupational Rehabilitation*, 20(3), 349-366.
- Mason, S., Wardrope, J., Turpin, G., & Rowlands, A. (2002). Outcomes after injury: A comparison of workplace and nonworkplace injury. *Journal of Trauma-Injury Infection & Critical Care*, 53(1), 98-103.
- McColl, M. A. (2005). Disability studies at the population level: Issues of health service utilization. *The American Journal of Occupational Therapy*, 59(5), 516-526.
- McColl, M.A., Jarzynowska, A. & Shortt, S. E. D. (2010). Unmet health care needs of people with disabilities: Population level evidence. *Disability & Society* 25, 205-218.

- McColl, M. A., & Shortt, S. (2006). Another way to look at high services utilization: The contribution of disability. *Journal of Health Services Research & Policy*, 11(2), 74-80.
- McColl, M. A., Shortt, S., Gignac, M., & Lam, M. (2011). Disentangling the effects of disability and age on health service utilisation. *Disability and Rehabilitation*, 33(13-14), 1253-1261.
- McDonald, J. T., & Kennedy, S. (2004). Insights into the 'health immigrant effect': Health status and health service use of immigrants to Canada. *Social Science & Medicine*, 59, 1613-1627.
- Monsebraaten, L. (2014, May 7). Proposed WSIB changes will hurt workers, advocates say. *The Toronto Star*. Retrieved from http://www.thestar.com/news/gta/2014/05/07/proposed_wsib_changes_will_hurt_workers_advocates_say.html
- Newbold, K. B. (2005). Health status and health care utilization of the foreign-born in Canada: A longitudinal analysis, 1994/95 - 2000/01. *Journal of Health Services Research and Policy*, 10(2), 77-84.
- Newbold, K. B., & Danforth, J. (2003). Health status and Canada's immigrant population. *Social Science & Medicine*, 57, 1981-1995.
- Niemeyer, L. O. (1991). Social labeling, stereotyping, and observer bias in workers' compensation: The impact of provider-patient interaction on outcome. *Journal of Occupational Rehabilitation*, 1(4), 251-269.
- O'Hagan, F. T., Ballantyne, P. J., & Vienneau, P. (2012). Mental health status of Ontario injured workers with permanent impairments. *Canadian Journal of Public Health*, 103(4), 303-308.
- Phillips, L. A., Carroll, L. J., Voaklander, D. C., Gross, D. P., & Beach, J. R. (2012). Pain coping in injured workers with chronic pain: What's unique about workers?. *Disability and Rehabilitation*, 34(21), 1774-1782.
- Raymond, E., Grenier, A., & Hanley, J. (2014). The community participation of seniors with disabilities: A matter of self-determination, inclusive environments and identity integration. *Journal of Community and Applied Social Psychology*, 24(1), 50-62.
- Reichard, A., Stolzle, H., & Fox, M.H. (2011). Health disparities among adults with physical disabilities or cognitive limitations compared to individuals with no disabilities in the United States. *Disability and Health Journal*, 4(2), 59-67.
- Roberts-Yates, C. (2003). The concerns and issues of injured workers in relation to claims/injury management and rehabilitation: The need for new operational frameworks. *Disability and Rehabilitation* 25, 898-907.
- Russell, G., Brown, J. B., & Stewart, M. (2005). Managing injured workers. Family physicians' experiences. *Canadian Family Physician*, 51, 79-85.
- Sachs, P. R. & Ellenberg, D. B. (1994). The family system and adaptation to an injured worker. *The American Journal of Family Therapy*, 22(3), 263-272.
- Schoen, C., Osborn, R., How, S. K. H., Doty, M. M., & Peugh, J. (2009). In chronic condition: Experiences of patients with complex health care needs, in eight countries, 2008. *Health Affairs*, 1, w1-w16.

- Sibley, L.M., & Glazier, R. H. (2009). Reasons for self-reported unmet health care needs in Canada: A population-based provincial comparison. *Healthcare Policy*, 5, 87-104.
- Soklaridis, S., Ammendolia, C., & Cassidy, D. (2010). Looking upstream to understand low back pain and return to work: Psychosocial factors as the product of system issues. *Social Science & Medicine*, 71(9), 1577-1566.
- Soklaridis, S., Cartmill, C., & Cassidy, D. (2011). Biographical disruption of injured workers in chronic pain. *Disability and Rehabilitation*, 33(23-24), 2372-2380.
- Stone, S. D. (2003). Workers without Work: Injured Workers and Well-Being. *Journal of Occupational Science*, 10(1), 7-13.
- Storey, R. (2009). "They have all been faithful workers": Injured workers, truth, and workers' compensation in Ontario, 1970-2008. *Journal of Canadian Studies*, 43(1), 154-185.
- Strunin, L. & Boden, L. I. (2004). The workers' compensation system: Worker friend or foe?. *American Journal of Industrial Medicine*, 45, 338-345.
- Valderas, J. M., Starfield, B., Sibbald, B., Salisbury, C., & Roland, M. (2009). Defining comorbidity: Implications for understanding health and health services. *Annals of Family Medicine*, 7(4), 357-363.
- van den Akker, M., Buntinx, F., Metsemakers, J. F., Roos, S., & Knottnerus, J. A. (1998). Multimorbidity in general practice: Prevalence, incidence, and determinants of co-occurring chronic and recurrent diseases. *Journal of Clinical Epidemiology*, 51(5), 367-375.
- Wilber, N., Mitra, M., Walker, D. K., Allen, D., Meyers, A. R., & Tupper, P. (2002). Disability as a public health issue: Findings and reflections from the Massachusetts Survey of Secondary Conditions. *The Milbank Quarterly*, 80(2), 393-421.
- World Health Organization (2011). *World report on disability*. Retrieved from: http://whqlibdoc.who.int/publications/2011/9789240685215_eng.pdf?ua=1