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The Incidence and Influence of Musculoskeletal and Nerve Injuries Among Occupational Therapists: An Exploratory Study

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THE INCIDENCE AND INFLUENCE OF MUSCULOSKELETAL AND NERVE
INJURIES AMONG OCCUPATIONAL THERAPISTS: AN EXPLORATORY STUDY

by

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Advisor: Anne M. Haskins, PhD, OTR/L

An Independent Study

Submitted to the Occupational Therapy Department

of the

University of North Dakota

In partial fulfillment of the requirements

for the degree of

Masters of Occupational Therapy

Grand Forks, North Dakota
May 17, 2014

This Independent Study Paper, submitted by Alyssa Jenkins and Renae Witta in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

Faculty Advisor

Date

Permission

Title	The Incidence and Influence of Musculoskeletal and Nerve Injuries Among Occupational Therapists: An Exploratory Study
Department	Occupational Therapy
Degree	Masters of Occupational Therapy

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Abstract

Purpose: The purpose of this research study was to explore the incidence and influence of musculoskeletal and nerve injuries among occupational therapists. Specifically, we examined the influence of musculoskeletal and nerve injuries on work satisfaction, work performance and overall quality of life in occupational therapists practicing in physical rehabilitation settings.

Methodology: An exploratory survey research design was implemented following study approval from the University of North Dakota (UND) Institutional Review Board. Occupational therapists who were affiliated with the UND Occupational Therapy Program contract sites were invited, via email, to participate in this exploratory study. In addition, the survey was posted on the American Occupational Therapy online forum, OT Connections. Convenience and snowball sampling was used. Respondents completed demographic questions (pertaining to practice area, work related tasks, work participation and work satisfaction) and the *World Health Organization Quality of Life-Bref*, an instrument intended to assess quality of life. Following data collection, descriptive and inferential analyses of data were completed.

Results: Of the 156 respondents who comprised the final sample, 111 practiced in the primary focus area of rehabilitation, participation and disability and 24 (21.8%) reported having a musculoskeletal or nerve injury. Moderate correlations were found between perceived work satisfaction and quality of life, expected productivity and quality of life and the relationship between job physicality and work satisfaction. No relationships were

found between expected productivity and perceived work satisfaction, and length of musculoskeletal or nerve injury symptom experience and work satisfaction. Similarly, there were no relationships identified between quality of life and hours worked per week, frequency of patient handling, frequency of physical agent modality delivery, job physicality, and length of musculoskeletal or nerve symptom experience. In addition, gender, length of symptom experience, current illness, influence of illness or injury on work performance and perceived work satisfaction did not influence quality of life. Hours worked per week, number of patients seen per day and average length of treatment session did not affect incidence of musculoskeletal or nerve injuries.

Conclusions: There was an increased incidence of musculoskeletal or nerve injuries among occupational therapists when compared to the general population. Although the incidence is higher, the general influence of these injuries or illness in regards to perceived work satisfaction, work performance and quality of life in occupational therapists appears to be inconsequential.

Chapter I

Introduction

Occupational therapy is a growing and dynamic healthcare profession. Occupational therapists work collaboratively as part of an interdisciplinary healthcare team in areas such as rehabilitation, disability, and participation, mental health, and children and youth. As the general population ages, the demand for occupational therapists continues to increase. According to the Bureau of Labor Statistics (BLS) (2014), projected job growth for occupational therapist will increase by 29% from 2012 to 2022. In order to continue to meet the health care and job demands, occupational therapists will be required to ensure that there is a fit between their personal capacities, the occupation of work and the work environment (Law, Cooper & Strong, 1996). As with any health care profession, it is imperative that occupational therapists lead personal and professionally satisfying lives to maintain their own health and wellness, which theoretically should also contribute to occupational therapists' overall quality of life. This study will predominantly focus on the components of work satisfaction, work performance and injury. As with other healthcare professionals, the job functions of occupational therapists can be physical in nature (BLS.gov, 2014; Mayl, Kipstein & Krugger, 2003). Additionally, research has shown these jobs functions have contributed to increased rates of musculoskeletal disorders (MSD) and nerve injuries within these professions.

Purpose of Study

The purpose of this research study was to explore the incidence and influence of musculoskeletal and nerve injuries among occupational therapists. Specifically, we examined the influence of musculoskeletal and nerve injuries on work satisfaction, work performance and overall quality of life in occupational therapists practicing in physical rehabilitation settings.

Research Questions

Throughout this study we sought to answer the following questions: What is the incidence of MSD and/or nerve injuries in occupational therapists practicing in the rehabilitation, disability and participation practice area? Is quality of life influenced by the incidence of MSD or nerve injury in occupational therapists practicing in the rehabilitation, disability, and participation practice area? Is work performance influenced by the incidence of MSD or nerve injury in occupational therapists practicing in the rehabilitation, disability, and participation practice area? Is work satisfaction influenced by the incidence of MSD or nerve injury in occupational therapists practicing in the rehabilitation, disability, and participation practice area? Refer to Appendix A for a complete list of research questions. We anticipated that answering these questions would provide information that may be used to guide further research, occupational therapy practice and the awareness of the health of occupational therapists. We anticipated that this increased awareness would contribute to maintaining quality of life, work performance, and work performance within this population.

Population

Occupational therapy is defined by the American Occupational Therapy Association (AOTA) as a profession that helps “people across the lifespan participate in the things they want and need to do through the therapeutic use of everyday activities (occupations)” (AOTA, 2014, ¶ 1). In 2012, 113,200 therapists were practicing in the United States, (BLS.gov, 2014). Of these practicing therapists, over 50% of respondents to the National Board of Certification of Occupational Therapy (NBCOT) reported working in the rehabilitation, disability and participation practice area (NBCOT, 2012). Our sample included occupational therapists contacted through the University of North Dakota Fieldwork database, as well as through AOTA’s OTConnections, an online forum.

Theory

As a foundation for this independent study, the Person-Environment-Occupation (PEO) Model was used to guide the development of the research questions, development of survey questions, and interpretation (Law, Cooper & Strong, 1996). The PEO model aims to identify the fit between the interactions of a person performing an occupation within his or her specific environment. This model uses a transactive approach to better understand how each of these components can influence one another in order to enable individuals to perform desired activities or occupations (Law, Cooper, & Strong, 1996).

Definitions

In order to more comprehensively understand aspects related to this study, the following definitions have been identified and provided.

Musculoskeletal Disorder - Inflammatory and degenerative disorders characterized by reoccurring musculoskeletal symptoms, changes in posture to compensate, and functional disabilities (Comper, Macedo, & Padula, 2012).

Nerve Injury - A disruption or dysfunction caused by nerve compression or entrapment (National Institute of Health [NIH], 2014)

Work Performance – Measured by the number of patients seen of the number of billable units received on any given day as well as the quality of patient care delivered (Campo & Darragh, 2010).

Work Satisfaction – The self-perceived degree to which a person is content with his or her work environment and job functions (Campo & Darragh, 2010).

Quality of Life – A broadly defined, multi-dimensional concept that usually encompasses an individual’s subjective opinion on both negative and positive aspects of life (World Health Organization Quality of Life Group, 1998).

The World Health Organization Quality of Life Assessment (WHOQOL)

identifies 4 key domains that contribute to overall quality of life. They include:

1. Physical Health – A construct measured by the WHOQOL-Bref. The items of this domain include questions pertaining to activities of daily living, dependence on medicine, energy and fatigue, mobility, pain and discomfort, sleep and rest, and work capacity (WHOQOL Group, 1994).

2. Psychological – A construct measured by the WHOQOL-Bref. The items of this domain include questions pertaining to bodily image, negative feelings, positive feelings, self-esteem, spirituality, religion, and beliefs, thinking, learning, memory and concentration (WHOQOL, 1994).
3. Social Relationships - A construct measured by the WHOQOL-Bref. The items of this domain include questions pertaining to personal relationships, social support and sexual activity (WHOQOL, 1994).
4. Environment - A construct measured by the WHOQOL-Bref. The items of this domain include questions pertaining to financial resources, freedom, physical safety and security, health and social care, accessibility and quality, home environment, opportunities for acquiring new information and skills, participation in and opportunities for recreation/leisure activities, physical environment (pollution/noise/traffic/climate), and transport (WHOQOL, 1994).

Summary

Chapter I was comprised of an introduction to this independent study and a brief introduction to the literature supporting study conception and development. In addition, an overview of the research questions, population, and definitions of terms were provided. In Chapter II, a more thorough and in depth presentation of the literature has been provided. Chapter II contains literature regarding manual therapies, physical agent modalities, the incidence of MSD and nerve injuries as well as implications other healthcare professionals. In addition, an overview of work satisfaction, work performance, and quality of life are described, as well as an introduction to the quality of life instrument used throughout the study. Chapter III is composed of the study

methodology including: research design, model application, ethical considerations, sampling procedures, subject characteristics, and data collection and analyses. Chapter IV consists of a detailed presentation of results from the descriptive and inferential statistical analyses performed. Chapter V presents a discussion of these findings and the relationship of these findings to existing research among other healthcare professions as well as implications for future research and general practice.

Chapter II

Literature Review

Chapter II includes a complete and thorough review of existing published literature pertaining to occupational therapists as well as other healthcare professions in relation to musculoskeletal and nerve injuries and the influence these have in both the personal and professional realm. This chapter also reviews the major and relevant components of the Person-Environment-Occupation model (PEO model). The PEO model was used as guide in development of the scope of the study and interpretation of data.

Occupational therapy is a vital healthcare profession that utilizes the therapeutic nature of everyday task, otherwise known as occupations to facilitate occupational performance (American Occupational Therapy Association [AOTA], 2008). Occupational therapists work with people with a myriad of diagnoses and disabilities that affect all facets of life. The primary practice areas of occupational therapists include rehabilitation, disability and participation, children and youth, mental health, work and industry, productive aging and health and wellness. Within the 6 identified domains, 43% of occupational therapists work in rehabilitation, disability and participation (National Board for Certification in Occupational Therapy [NBCOT], 2012). This domain will be the main area of focus and concern throughout subsequent chapters of this study.

According to the Executive Summary of Practice Analysis (2012), the majority of occupational therapists surveyed work in rehabilitation settings (24%), followed by schools (23%), and skilled nursing facilities (21%) while acute care accounts for the practice area of approximately 13% of practicing occupational therapists. According to the United States Bureau of Labor Statistics (BLS) (2012), the essential functions of occupational therapists are to work with patients with illness or injury through the use of the patients' daily activities in order to develop, recover, and improve the skills needed for their daily life activities, including work. Duties of occupational therapists include observing and interviewing patients and making recommendations based on skilled perceptions. This may include evaluating households and workplaces, as well as working with specialized compensatory equipment. For patients with permanent disabilities, occupational therapists often assist in performing daily activities. Similarly, patients in hospitals, rehabilitation settings and skilled nursing facilities often require a significant amount of physical assistance in completing their activities. Occupational therapists in the hospital, rehabilitation, and/or skilled nursing facility setting often work, as a part of the healthcare team in order to provide holistic and complete medical care (BLS.gov, 2012).

The job functions of occupational therapists, who provide patient care in the rehabilitation, disability and participation sector, often involve significant physical performance by the therapist. Essential job functions frequently include regularly lifting and moving of patients and/or heavy equipment as it pertains to the individual patient and assist level required. In addition, occupational therapists may also be obligated to perform

various manual therapies and apply physical agent modalities (PAMS) on a regular basis depending on practice setting (AOTA, 2008).

Manual Therapies

Manual therapies are defined by the American Academy of Orthopaedic Manual Physical Therapists (AAOMPT) as hands-on manipulation of a client's joints or muscle by the therapist (AAOMPT, 2011). According to the Executive Summary of Practice Analysis in 2012, occupational therapists are qualified to perform various types of manual therapies as a precursor to occupational engagement. Manual therapies include muscle stretching, passive or active assisted movement of a body part, or applying physical resistance against a client's movement. Additionally, other therapies provided by occupational therapists may include: manual muscle testing (MMT), trigger point release, soft-tissue mobilization, joint mobilization, orthotic fabrication, and scar, pain and edema management (Caragianis, 2002).

Physical Agent Modalities

The American Occupational Therapy Association affirmed for the first time in 2002 in the *Occupational Therapy Practice Framework: Domain and Process* that occupational therapists are competent to apply and integrate physical agent modalities into an intervention plan. Physical agent modalities are methods utilized to modify client factors that may limit occupational performance, such as conditions that are neurological, musculoskeletal or certain conditions pertaining to the skin (AOTA, 2002). Physical agent modalities are used to control pain, enhance tissue healing, and modify skin and scar tissue to promote healing and decrease inflammation and edema in patients (AOTA, 2002; Bracciano, 2008). These PAMs may include but are not limited to: therapeutic

ultrasound, iontophoresis, phonophoresis, hydrotherapy, cryotherapy, fluidotherapy, hot packs, paraffin, neuromuscular electrical stimulation (NMES), transcutaneous electrical nerve stimulation, etc. (AOTA, 2008;Bracciano, 2008).

Healthcare Professionals and Musculoskeletal and Nerve Disorders

Healthcare professionals can provide manual and, at times, physically strenuous services and these essential job functions may lead to injury. Due to the relatively limited amount of literature regarding occupational therapists and the presence of musculoskeletal and nerve disorders, we broadened the literature search to encompass other healthcare professionals. This included professions that have similar essential job requirements such as maladaptive posture, repetitive movements, lifting and physical manipulation of clients, as well as the use of devices to provide care (BLS, 2012). Khan and Chew (2013) examined the effect of working characteristics and ergonomics on the occurrence of musculoskeletal disorders (MSDs) among dental students. They (2013) identified sitting position, instrument handling, dental loupes, and working hours as areas of concern for students in their clinical vs. non-clinical years. Sass et al. (1996) identified that physical therapists are susceptible to a variety of work-related musculoskeletal disorders and therapists who performed manual therapy were 3.5 times more likely to complain of musculoskeletal symptoms than physical therapists that did not perform manual therapy. In addition to development of MSDs, performance of manual therapy techniques was reported to aggravate pain in 82% of respondents in a study conducted by West and Gardner (2001). Similarly, the prevalence of MSDs among Canadian sonographers was estimated to be 80-90% of people surveyed by the Canadian Society of Diagnostic Medical Sonographers (CSDMS) & Healthcare Benefit Trust (HBT) (1999).

Other healthcare professional populations at a greater risk for the development of MSDs are registered nurses and nursing aides. Repetitive job functions of nurses may be similar to that of occupational therapists and include bending, walking, standing for prolonged periods of time, and lifting/repositioning/transferring patients (BLS.gov, 2014). Mayl et al. (2003) reported that nursing staff was at a greater risk of having lumbar spine injuries than other professional groups. Schlossmacher and Amaral (2012) reported that the prevalence of low back pain symptoms was between 14.7% and 72% among nursing staff.

Occupational Therapists and Musculoskeletal Disorders and Nerve Injuries

Essential job duties that require direct patient contact put occupational therapists at a higher risk for occupational injuries (Holder, et al., 1999). The U.S. Department of Labor, Bureau of Labor Statistics (2012) defined occupational injury as an injury that was developed or made worse through participation in the activities within the work environment. MSDs, specifically, are defined as inflammatory and degenerative disorders characterized by reoccurring musculoskeletal symptoms, changes in posture to compensate, and functional disabilities (Comper, Macedo, & Padula, 2012). Musculoskeletal injuries may affect muscles, tendons, ligaments, joints, and blood vessels, as well as peripheral nerves (Deeney & O'Sullivan, 2009). Nerve injuries are characterized as a disruption in the peripheral nerve. Within the scope of this study, nerve injuries will refer to a disruption or dysfunction caused by nerve compression or entrapment (National Institute of Health [NIH], 2014). These injuries specifically may include carpal tunnel syndrome, ulnar nerve entrapment, cubital tunnel syndrome, cervicobrachial neuralgia, sciatic nerve pain, brachial plexus injury, etc. (NIH, 2014).

Both musculoskeletal and nerve injuries can be caused by tasks frequently performed by occupational therapists. Risk factors may include repetition, forceful exertion, and awkward positioning (Caragianis, 2002). In addition, work requiring tedious repetitive motions may also factor into MSD development (Deeny & O'Sullivan, 2009). All of the aforementioned task requirements may be essential job functions of occupational therapists (Bureau of Labor Statistics, 2012). Incidence of injury may also increase with bending and lifting, sitting positions and prolonged periods of maladaptive posture (Khan & Chew, 2013). In addition, the use of PAMs, which may involve high frequency vibration for a prolonged period of time, can contribute to the development of MSDs and/or nerve injuries (Khan & Chew, 2013). Friesen, Friesen, Quanbury, and Arpin (2006) concluded that the use of ultrasound for 7 hours per day, for 2 days per week, contributed to the development of MSDs and/or nerve injuries in healthcare workers.

While many of the risk factors of MSDs and nerve injuries are physical in nature, there also may be psychosocial factors influencing the development of these disorders. In a study conducted by Deeny and O'Sullivan (2009), psychosocial risk factors in the workplace were identified as interacting with physical risks in the work environment to increase frequency and severity of musculoskeletal disorders. The main psychosocial risk factors associated with the development of MSDs include job demands, job control, monotonous work, and social support (Deeny & O'Sullivan, 2009). High job demands, including long hours, time intensive, and high-pressure work may contribute to the development of MSDs (Caragianis, 1998; Deeny & O'Sullivan, 2009). The majority of occupational therapists work full time, often for eight hours or more per day. According

to the Bureau for Labor Statistics (2012), only 30% of therapists work part-time. The need for skilled occupational therapists is on the rise with an anticipated growth rate of 33% largely due to the aging baby-boom population (Bureau of Labor Statistics, 2012). As the demand for occupational therapists continues to grow, the importance of maintaining productivity and work satisfaction among occupational therapists, as well as avoiding workplace injuries, becomes increasingly essential.

Implications for Healthcare Professionals

Increased risk for MSDs and nerve injuries among healthcare professionals and the implications these injuries may have on the overall health, wellness and quality of life of occupational therapists is an important topic. Workers affected by MSDs may have increased sick leave, decreased productivity, as well as an increased likelihood of leaving the profession at an earlier age (Khan & Chew, 2013). Both the employer and employee must be aware of the influence that not only physical task demands of the profession, but also the caseload, hours worked, social environment, equipment used and ergonomics of a particular job that may contribute to Musculoskeletal disorders. (Aas, Thingbo, Holte, Lie, & Lode, 2011). Annually, the Center for Disease Control and Prevention (2013) has estimated that MSDs accounted for approximately 70 million physician visits in the United States and approximately 130 million healthcare encounters in total including outpatient, and emergency room visits. De Costa and Vieira (2010) estimated that of the 1.2 million workers who were currently on leave from work due to disability, 28% of the disabilities were work-related MSDs. While implications for healthcare professionals has been addressed through research, the effect of MSDs and nerve injuries specifically in occupational therapy is still unknown. The intent of this study was to identify the

prevalence of these injuries and the impact these disorders have on practicing occupational therapists' work satisfaction, productivity in the workplace, and overall quality of life.

Work Satisfaction

A great deal of existing literature regarding work satisfaction within healthcare is in reference to nursing personnel, with only a small amount regarding allied health professionals and/or occupational therapists. Bittner and O'Connor (2012) examined the factors that contributed to nursing retention rates and general job satisfaction. It was found that of the many factors that contribute to overall job satisfaction, the most valued were work environment (i.e. feeling safe at work, and interactions with others) and overall workload (Bittner & O'Connor, 2012). Similar to the profession of occupational therapy, nursing is currently experiencing a shortage, creating greater workloads, prolonged hours of work, and as Bittner and O'Connell (2005) reported, decreased overall job satisfaction (Bureau of Labor Statistics, 2012). Randolph (2005) conducted a study regarding the intrinsic and extrinsic factors affecting work satisfaction among rehabilitation professionals. Speech language pathologists, physical and occupational therapists were surveyed. Randolph (2005) found that occupational therapists extrinsically value a work environment that is matched with their own personal and professional values, adequate support staff and a work place that allows and nurtures professional growth. Similarly, Tariah, Hamed, AlHeresh, Abu-Dahab and AL- Oraibi (2011) concluded that occupational therapists reported increased job satisfaction if they believed their physical environment was conducive to providing quality occupational therapy services. In a qualitative study, Campo and Darragh (2010) examined the

influence of pain on both physical therapists and occupational therapists and found that of the participants surveyed (N=19), 7 of them reported they were very satisfied with their position, 11 participants were fairly satisfied and only 1 reported fair disappointment with his or her current position. Campo and Darragh (2010) concluded that the minimal drop in work satisfaction was indicative of the professional responsibility that these therapists felt towards their clients despite the pain they experienced.

Job satisfaction after a work related musculoskeletal or nerve injury varies greatly from profession to profession and is highly connected to work environments. As the results of the aforementioned studies suggest, the theme of a quality work environment is a contributing factor in terms of overall job satisfaction. Also, therapists who are satisfied overall with the position that they hold and where they work are shown to be more productive.

Work Performance

In the occupational therapy profession, work performance is defined differently based on practice area and facility. Generally speaking, productivity is measured by the number of patients seen or the number of billable units received on any given day (Campo & Darragh, 2010). Occupational and physical therapists have also defined work performance as the quality of patient care delivered. Campo and Darragh (2010) studied the influence of work-related pain on physical and occupational therapists. Of those surveyed, a majority of the therapists did not report decreased productivity in terms of patients treated or billable hours, though some did imply that patient care might have been compromised (Campo & Darragh, 2010). Similarly, Cromie, Robertson and Best

(2000) found that 84.2% of physical therapists that participated in the research reported they worked while injured.

Other indicators of work performance include how often an employee is present at work (presenteeism) and how often a person misses scheduled work time (absenteeism) (Campo & Darragh, 2012). Of the two concepts, presenteeism is harder to define because of the many variables that it presents. Presenteeism includes not only the presence, but also the full capacity to complete all necessary job requirements, including documentation and all other associated tasks. Campo and Darragh (2012) indicated that musculoskeletal and nerve injuries were associated with impairments in both absenteeism and presenteeism. In those polled, work presenteeism was reduced by 5% in both physical and occupational therapists with moderate injuries. In terms of absenteeism, approximately 17.3% therapists reported some loss of work within the last four weeks as a result of an injury (Campo & Darragh, 2012). Although the percentage of therapists reporting absenteeism (17.3%) was higher than those reporting a decline in presenteeism (13.6%) (Campo & Darragh, 2012), a decline in presenteeism may be more costly to employers (Loeppke, et al., 2009). Holder et al. (1999) concluded that 25% of physical therapist surveyed reported taking sick leave due to injuries sustained at the workplace.

Quality of Life

Quality of life (QOL) is a broadly defined, multidimensional concept that usually includes an individual's subjective opinion on both positive and negative aspects of life (World Health Organization QOL Group [WHOQOL], 1998). The WHOQOL Group (1994) defined QOL as a person's individual perception of his or her position in life as it relates to his or her goals, cultural expectations and values systems, as well as standards

and concerns. It generally encompasses an individual's overall sense of well being, happiness, and satisfaction with his or her life (Center for Disease Control [CDC], 2000). Across disciplines, QOL typically includes components such as physical and mental health, housing, social support, jobs, culture, and values. McKevitt and Wolfe (2002) conducted a study surveying healthcare professionals aimed at defining quality of life. According to the respondents of the survey, quality of life was a difficult concept to define, however, there are common components that compromise quality of life for a majority of people. These dimensions of quality of life may include happiness, life satisfaction and a general sense of well being (McKevitt & Wolfe, 2002). Influencing these dimensions are at least three different components: the ability to make decisions autonomously about how one wants to live his or her own life, the ability to participate in the types of activities one chooses, as well as the ability to come to the conclusion that an individual's desires or goals have been or are being met (McKevitt & Wolfe, 2002). Another influential factor on quality of life is the concept of health. McKevitt and Wolfe (2002) purported that health includes physical health, mental health, functional abilities, and the absence of pain. In addition to health, as well as the ability to make independent decisions, socioeconomic factors may also influence quality of life. McKevitt and Wolfe (2002) attributed diminished quality of life in older individuals to reduced opportunities for social participation, as well as poor social attitudes towards people of older ages. With all the factors influencing quality of life, as well as its subjective nature, it has been a challenge for healthcare providers to attempt to assess quality of life and how this may affect patient interactions, competency of care, and motivation.

Quality of Life Assessment

Although QOL has a different meaning for everyone, measures have been created to effectively measure the concept of QOL (WHOQOL Group, 1998). Quality of life is a largely discussed topic within occupational therapy; however, available literature predominantly pertains to clients' perceptions of quality of life. Little, if any, research has addressed the quality of life of the occupational therapist and the effect that the therapist's perception on his or her own quality of life has on the delivery of patient care.

The World Health Organization Quality of Life (WHOQOL) instrument was developed to measure the dynamic concept of Quality of Life. To ensure a measure that was both reliable and valid across a variety of cultures, international collaboration across 15 different WHO Centers was utilized to create an assessment that identifies key physical, psychological, social, and spiritual domains of a person's life and the affect those domains have on QOL (WHOQOL Group, 1998). The WHOQOL is a 100-item assessment aimed at addressing a broad range of independent domains correlating and contributing to general QOL. The WHOQOL-Bref is an abbreviated version of this measure made up of 26 items taken from the WHOQOL (Skevington, Lotfy, & O'Connell, 2004). The WHOQOL-Bref is a valid and reliable measure to be used when time is restricted and participation burden must be minimized (Skevington, Lotfy, & O'Connell, 2004). The WHOQOL-Bref is scored based on four domains of QOL including: Domain 1: Physical health, Domain 2: Psychological health, Domain 3: Social relations and Domain 4: Environment. Each of these respective domains is scored on a scale of 0 to 100 to allow comparisons between domains. In a large cross-cultural study conducted by Skevington, Lotfy, and O'Connell (2004), data from field trials of the

WHOQOL-Bref were used to examine the use of this assessment as an integral part of assessment of quality of life as well as the psychometric properties of the assessment. Throughout the study, the responses of 11,830 individuals were analyzed along with demographic, socioeconomic, and health status responses provided by respondents (Skevington et al., 2004). Analysis was performed to determine internal consistency, item-total correlations, discriminant validity, and construct validity (Skevington et al., 2004). Through factor analysis, Skevington et al. (2004) confirmed that the WHOQOL-Bref has good to excellent psychometric properties of reliability and validity.

Person- Environment-Occupation Model

The Person- Environment- Occupation model (PEO model) is the theoretical basis that was used to structure this study, formulate the survey and interpret subsequent data. The PEO model, developed by Law, Cooper, and Strong (1996) presents the relationship between a person, his or her environment and the valued and necessary occupations in which the person engages in on a regular basis. This model describes these three entities as transitive, which is to say that a change in the any one of variables, will lead to changes in the other two (Law et al., 1996).

We chose the PEO model because it illustrates the effect that a musculoskeletal or nerve injury could have on an occupational therapist's job, including work satisfaction, work performance (occupation) and his or her environment. Law et al. (1996) also described the concept of fit, or the extent to which these three components are working together to optimize occupational performance. In terms of musculoskeletal or nerve injuries, when a person's client factors change with injury, the other areas of the person's (i.e. therapist's) life are also affected.

Summary

Chapter II presented a review of literature regarding the profession of occupational therapy, scope of practice, and essential job functions of occupational therapists. In addition, a review of current literature pertaining to the definition, incidence and impact of MSD's and nerve injuries among healthcare professions was presented. The aim of this study is to identify the incidence and impact of MSD's and nerve injuries among occupational therapists in regards to work satisfaction, work performance and overall quality of life. These three factors were also outlined and defined within Chapter II. Chapter III includes a presentation of the methodology utilized to develop and implement this research study.

Chapter III

Methodology

Chapter III, Methodology, consists of descriptions of the process used in this study including study conception, literature review, study design and collection and analysis of data. This chapter includes information regarding the population targeted, sampling procedures, ethical considerations, research design, locale of the study, instrument development, and theoretical basis for survey development, as well as the instrument used for statistical analysis.

Conception of Study

This topic was chosen as both of us, as a result of our level I fieldwork experiences, encountered therapists that had recovered or were recovering from a musculoskeletal disorder (MSD) or nerve injury that was either developed or exacerbated through participation in work activities. We are interested in practicing in adult physical rehabilitation upon graduation, which is the rationale for focusing in on that particular practice area. In addition, we were interested in the effect of the musculoskeletal injury on the therapists work performance, work satisfaction and overall quality of life.

Literature Review

Prior to formulation of the survey, we completed a literature review (refer to Chapter II) of relevant literature pertaining to the incidence and influence of MSDs and nerve injuries among therapists and related health professionals. The databases utilized

in this search were CINAHL and PubMed, which we accessed through the University of North Dakota's library system. Search terms utilized included: *musculoskeletal injury, health professionals, occupational therapists, nerve injuries, work performance, work satisfaction, quality of life, and work injuries*. These terms were searched in a variety of combinations in order to expand the amount of available literature presented.

Person-Environment-Occupation Model

The model used to guide survey development and analysis is the Person-Environment-Occupation (PEO) model. The foundation of this model emphasizes the transactive nature of the interaction between a person and his or her environment and occupation rather than viewing each of these entities as separate (Law et al., 1996). Instead of separately analyzing all of the factors influencing an event, the PEO model is used as a framework to understand the dynamic and mutually influencing context, person, and occupation specific process (Law et al., 1996). We used this model to identify the fit between all three of these variables (person, environment, occupation) and the influence they have on occupational performance and quality of life of practicing occupational therapists. Tables 1a and 1b outline the questions formulated for the survey as well as the items of the WHOQOL-Bref, all of which are intended to identify how these entities influence work performance, work satisfaction, and quality of life. The nature of occupational performance and quality of life is ever changing as it relates to these factors, which is why it is an understanding of this study that the factors being analyzed are on a dynamic continuum.

Table 1a
Questions from survey addressing Person, Environment and Occupation

Person	Environment	Occupation
Are you currently ill?	How healthy is your physical environment?	What is your primary area of practice?
If something is wrong with your health what do you think it is?		Is productivity tracked at your place of employment?
Do you currently have a musculoskeletal or nerve injury?		What is your expected productivity level?
What region of the body is affected?		
How long have you been experiencing symptoms of this injury?		
How would you rate your quality of life?		
How satisfied are you with your health?		
How much do you enjoy life?		
To what extent do you find your life meaningful?		
Do you have enough energy for everyday life?		
Are you able to accept your bodily appearance?		
How often do you have negative feelings, such as blue mood, despair, anxiety, depression?		
What is your gender		
What is your date of birth?		

Questions that are included within the WHOQOL-Bref are in **BOLD**

The World Health Organization. (2004) The world health organization quality of life (WHOQOL)- Bref. Geneva, Switzerland

Table 1b

Questions from survey addressing Person-Environment-Occupation transactions

Person- Environment	Person- Occupation	Environment- Occupation
Have you ever modified or discontinued treatment delivery as a result of this injury?	Do you believe that your injury was caused by or made worse through participation in work activities?	How many patients do you typically treat in a day?
To what extent do you feel that physical pain prevents you from doing what you need to do?	In the past week, did you meet or exceed your expected productivity?	How many hours per week do you work?
How much do you need any medical treatment to function in your daily life?	Do you feel as though your illness or injury has had an impact on your ability to meet productivity standards?	What is your average length of treatment session?
How well are you able to concentrate?	Overall, do you feel as though your illness or injury has impacted your work satisfaction?	How physical is your job on a daily basis?
How safe do you feel in your daily life?	To what extent does your injury impact your work satisfaction?	How many days per week do you perform patient handling (transfers, lifts, limb manipulations, massage, or other manual therapies)?
How available to you is the information that you need in your day-to –day life?	Have you ever considered leaving your current position as a result of this injury?	On average, how many hours per day o you spend performing patient handling?
To what extent do you have the opportunity for leisure activities?	How satisfied are you with your sleep?	On average, how many days per week do you perform physical agent modalities?
How well are you able to get around?	How satisfied are you with your ability to perform your daily living activities?	On average, how many hours per day do you spend performing physical agent modalities
How satisfied are you with your personal relationships?	How satisfied are you with your capacity to work?	Have you enough money to meet your needs?
How satisfied are you with the support you get from friends?	How satisfied are you with your abilities?	
How satisfied are you with your current place of living?	How satisfied are you with your sex life?	
What is your martial status?	What is the highest level of education you received?	
How satisfied are you with your access to health services?		
How satisfied are you with your mode of transportation		

Questions that are included within the WHOQOL-Bref are in **BOLD**

The World Health Organization. (2004) The world health organization quality of life (WHOQOL)- Bref. Geneva, Switzerland

Subject Characteristics

The inclusion criteria of the target population included: (1) working as an occupational therapist or occupational therapy assistant, (2) therapists working in the practice area of rehabilitation, disability and participation as their primary practice area, (3) therapists working at least a .5 equivalent, and (4) therapists working with clients 18 years or older. Exclusion criteria included: (1) therapists working primarily in mental health or pediatrics, and (2) therapists with a pre-existing musculoskeletal or nerve injury unrelated to work environment. The study included 162 respondents.

Sampling Procedures

Convenience sampling was used to reach potential survey respondents through email access and OTConnections. Snowball sampling was also in effect as recipients were allowed and encouraged to forward study information to eligible colleagues. Potential respondents to this study that were accessed through the University of North Dakota Occupational Therapy Department's fieldwork database were given an invitation to share the survey with other occupational therapists and occupational therapy assistants employed at their respective facility. The Chair of the Occupational Therapy Department granted permission to utilize contact information of current fieldwork correspondents. In addition, the American Occupational Therapy Association Web and Social Media Administrator granted permission to post on the OTConnection forum regarding this study. Refer to Appendix B to view the IRB form, which includes request letters and granted permission responses from respective organizations.

Overall, 812 survey links via electronic mail were sent to potential respondents. Included in this distribution were all fieldwork site correspondents with an existing

contract with the University of North Dakota's Occupational Therapy program. Additionally, the survey was posted for public use on the American Occupational Therapy Associations OTConnections web forum. In total, 156 surveys were completed. This number comprised the survey sample.

Ethical Considerations

The University of North Dakota's Institutional Review Board (IRB) approved this study on December 16, 2013 (case number: IRB-201312-200). Refer to Appendix C to view the official IRB approval letter. Due to unexpected technological difficulties, revision of IRB approval was granted on January 24, 2014 to extend data collection from January 31st, 2014 to March 1st, 2014. Refer to Appendix D to view the protocol change letter.

Each respondent provided informed consent prior to commencement of survey. Survey distribution was done using Qualtrics, a secure online server through the University of North Dakota, in order to maintain confidentiality. We chose the option in this program that disallowed tracking of respondents Internet provider addresses.

Research Design

This study is prospective and exploratory in nature and was comprised of an online survey format for data collection. Potential respondents were recruited by either direct electronic mail or through OT Connections online forum. In sampling both methods, potential respondents were provided a link to the survey, which increased ease and accessibility. Survey research has been shown to be an effective method of data collection as researchers are able to gather data efficiently while reducing the respondents' burden of time and effort (Forsyth & Kiviv, 2006). It also allows researchers

to effectively analyze data in a quantitative manner while answering the respective research questions (Forsyth & Kviz, 2006; Skevington et al., 2004). Limitations of survey research include non-response bias, meaning that individuals choosing not to respond may have different inherent characteristics than those choosing to participate (Forsyth & Kviz, 2006). In addition to non-response bias, for those that chose to participate, response bias also may exist. Types of bias may include: different interpretations of questions, limited response choices, and/or difficulty accurately recalling events and injuries (Forsyth & Kviz, 2006). Overall, despite potential drawbacks to the research design, the use of a survey for data collection is an efficient, low cost, and effective method that easily provides transferrable data for analysis. It also provides an easily accessible means for respondents to provide information (Forsyth & Kviz, 2006).

Locale

After IRB approval, data collection began on January 28th, 2014. Data collection concluded on March 1st, 2014. Surveys were completed in an online format at a location and time chosen by the respondent. Any device with Internet accessibility could be utilized to complete the online survey (i.e. computer, tablet, mobile device, etc). Survey responses were housed in the University of North Dakota's Qualtrics Program. This online system is a secure program that allows respondents to respond anonymously. It also allows for the confidential storage of data. Respondents were not asked any identifying characteristics or other information that could link a survey to a particular respondent. In addition to these confidentiality measures, all respondents were required to

consent to partake in this research. The consent form clearly outlined the purpose and instrumentation used within the survey.

Instrument

The utilized instrument was a survey that consisted of questions we developed and the WHOQOL-Bref, an existing instrument. We developed items aimed at answering questions pertaining to incidence of musculoskeletal and nerve injuries, work performance and satisfaction variables. Also, we developed or utilized questions targeting other occupational and environmental components such as number of hours worked, and amount of time each week spent applying physical agent modalities and manual patient handling and manipulation. The items we developed have not been tested in any other arena and, therefore, do not have any data to support reliability or validity though given the objective nature of potential answers we anticipate they would provide an accurate assessment of the information we sought.

World Health Organization Quality of Life Assessment

The World Health Organization Quality of Life Assessment (WHOQOL) was developed as a cross-cultural instrument used to measure the dynamic concept of quality of life (The WHOQOL Group, 1998). This instrument is comprised of key domains that affect a person's general well being in the areas of *physical, psychological, social, and spiritual health* (The WHOQOL Group, 1998). In order to create an instrument that would reduce the amount of time required as well as decrease the burden on those taking it, the World Health Organization abbreviated the WHOQOL to create the WHOQOL-Bref condensing this instrument to 26 items (Skevington et al., 2004). This instrument was chosen as a way to identify four key domains that affect individuals' quality of life

including their: *physical health, psychological health, social relations, and environment.*

In field trials, the WHOQOL-Bref has demonstrated good to excellent psychometric properties in the areas of reliability and validity (Skevington et al., 2004).

Data Collection and Analyses

Respondents were directed to the online survey through either email description or the OTConnections forum via an embedded hyperlink. Once the respondent arrived on the Qualtrics website, he or she was required to access the statement of informed consent for the intended study. The informed consent included the purpose of the study, the process of the study, the potential risks of participation and the respondents' right as a participant. Only after the respondent acknowledged that he or she had read the statement of informed consent and indicated that he or she wished to continue, was he or she directed to the study survey, which included both the questions we developed and the WHOQOL-BREF in its entirety. The quantitative data collected from the surveys were gathered and analyzed using descriptive and inferential statistical measures. The results of the analyses are provided in Chapter IV of this independent study.

Summary

The information in chapter III included sampling procedures, which described methods of selection, ethical considerations of the study, research design and instrumentation description. In addition, Chapter III was comprised of procedures used to collect data. The PEO model was described in relation to this study and how it influenced survey development. In Chapter IV we provided an in depth report of collected data via inferential and descriptive statistical analyses.

Chapter IV

Results

Chapter IV is comprised of demographic and inferential data analyses of survey results. Analysis of the instrument reliability was conducted, followed by descriptive statistical analysis of demographic and instrument responses.

Pre-Analysis Data Screening

There was one occurrence of missing data in the final data set as a result of an incomplete survey by one respondent. This respondent did not answer more than 20% of the questions included on the WHOQOL-Bref. Per the scoring instructions for the WHOQOL-Bref (The WHOQOL-Bref Group, 1998), this respondent's data was not included in the final analysis.

Instrument Reliability

The total item and domain subscale internal consistency of the WHOQOL-Bref was calculated. Cronbach's Coefficient Alphas are presented in subsequent sections of the chapter.

WHOQOL-Bref

The WHOQOL-Bref is composed of four domains: physical health, psychological, social relationships, and environment (Skevington, Lotfy, & O'Connell, 2004). All domains were analyzed to determine the instrument's internal consistency and resulted in Cronbach's Alphas that ranged from .657-.743. The total item internal

consistency for the WHOQOL-Bref resulted in a Cronbach's Alpha of .861. Refer to Table 2 to view the reliability for each domain, number of items in each domain, and the entire instrument.

Table 2
WHOOL-Bref Domains Reliability

WHOQOL-Bref Domains	Number of Items	Cronbach's Coefficient Alpha
Physical Health	7	.749
Psychological	6	.714
Social Relationships	3	.741
Environment	8	.657
Total	26*	.882

*Total domain score includes questions 1 and 2 of the WHOQOL-Bref, which were not included in the individual domain items.

Respondent Demographics

One hundred and fifty-six respondents comprised the final study sample. Respondents working in the rehabilitation and disability practice area comprised the majority of the sample (71.2%), followed by children and youth (19.9%) and mental health practice areas (9.0%) (Refer to Table 3). Although 156 respondents participated in the initial questions of the survey, only those reporting a MSD or nerve injury continued to additional demographic information including gender, marital status, and age (refer to Table 4). Additionally, 8 respondents reported holding a Bachelor's degree and 13 reported holding a Master's degree.

Table 3
Practice Area Frequencies and Percentages

Practice Area	<i>n</i>	%
Rehabilitation & Disability	111	71.2
Mental Health	14	9.0
Children & Youth	31	19.9
Total	156	100

Table 4
Gender, Martial Status and Age Descriptive

Gender	<i>n</i>	%	Martial Status	<i>n</i>	%	Age	<i>n</i>	%
Male	2	9.5	Single	4	19.0	20-30	3	17.6
Female	19	90.5	Married	17	81.0	31-40	6	35.2
			Divorced	0.0	0.0	41-50	7	41.1
			Widowed	0.0	0.0	51-60	1	5.9
						60+	0	0
Total	21	100	Total	21	100	Total	17	100

In accordance with the research purpose and questions (refer to appendix A for complete list of research questions), the following demographic information was collected on only those who responded as working in the rehabilitation and disability practice area. Table 5 below provides information regarding the work environment of those respondents (*n*=111) working in rehabilitation and disability in regards to hours worked per week, average number of patients seen per day and average treatment length.

Table 5
Frequencies and Percentages of Work Environment Descriptive

Hours worked per week	<i>n</i>	%	Number of patients treated per day	<i>n</i>	%	Treatment duration in minutes	<i>n</i>	%
9 or less	5	4.5	Less than 5	7	6.3	15	5	4.5
10-20	5	4.5	6-10	81	73.0	30	46	41.8
21-30	15	13.6	11-15	22	14.1	45	43	39.1
31-40	65	59.1	16-20	1	.6	60	16	14.5
40+	20	18.2						
Total	110	100		111	100		110	100
Mean	3.82 (21-30 hours)			2.15 (6-10 patients)			2.64 (30 minutes)	
SD	.940			.526			.787	

Of the respondents who reported working in the practice area of rehabilitation and disability ($n=111$), 24 reported a current MSD or nerve injury (21.8%). Eighty-six respondents (78.2%) reported no current MSD or nerve injury. The following data includes only those respondents who reported having a current MSD or nerve injury ($n=24$). Refer to Table 6 to view a summary of the duration of symptoms experienced.

Table 6
Frequencies and Percentages of Duration of Symptoms

Time	<i>n</i>	%
1 year or less	5	20.8
2-4 years	11	45.8
5+	8	33.3
Total	24	100
Mean	2.3 (2-4 years)	
SD	.741	

Of the 24 respondents reporting a MSD or nerve injury, 18 respondents reported an area or areas of the body that are primarily affected by the MSD or nerve injury. Of these 18, 50% ($n=9$) reported that the upper extremity, (hand, wrist, elbow, and shoulder) was the site of injury. Three respondents (16.6%) reported that the low back and/or hips were affected. Similarly, 16.6% ($n=3$) respondents indicated that the upper back and/or neck were the primary site of injury. One respondent (5.5%) indicated that the hands, hips, and feet were all affected. Another respondent (5.5%, $n=1$) reported that his or her

thumb and back were affected. Finally, one respondent (5.5%) indicated that his or her neck and right upper extremity were the primary regions affected by injury.

Seventeen respondents (70.8%) reported that they perceived their MSD or nerve injury to be caused or made worse through participation in work activities, while 29.2% ($n=7$) reported they did not. Additionally, 54.5% ($n=12$) reported modifying or discontinuing delivery of therapy services as a direct result of their MSD or nerve injury, 45.5% ($n=10$) reported no modification or discontinuation. One respondent (4.8%) reported that productivity has been affected by his or her MSD or nerve injury, while 95.2% of respondents ($n=20$) reported that they did not feel as though the MSD or nerve injury has impacted their productivity. Finally, 28.6% ($n=6$) reported that they have considered leaving their place of employment as a result of the MSD or nerve injury and, 71.4% ($n=15$) reported no consideration.

Eight respondents (38%) reported the MSD or nerve injury had an influence on their work satisfaction, while 13 (61.9%) reported no influence. In regards to perceived satisfaction with capacity to work, 4.7% ($n=1$) reported dissatisfaction, 9.5% ($n=2$) reported being neither satisfied nor dissatisfied, 52.4% ($n=11$) reported satisfaction and 33.3% ($n=7$) reported they were very satisfied. Similarly, 19% of respondents reported that their MSD or nerve injury had no influence on work satisfaction, 57.1% reported a little impact and 23.8% reported a moderate amount of impact. The mean of MSD or nerve injury influence on work satisfaction was 4.14 (satisfied), while standard deviation was .793.

Inferential Statistical Analysis

The following section outlines the research questions and the analyses that was conducted on the data collected through the survey as well as a discussion of whether or not the data was significant in nature. Spearman's rho correlation coefficient, One-way univariate ANOVAs, and Mann-Whitney U tests were utilized for data analysis.

Moderately Significant Findings

Spearman rho correlation coefficients

Is there a relationship between perceived work satisfaction and quality of life in therapists with a MSD or nerve injury? A Spearman ρ correlation coefficient was calculated to assess the relationship between participants' perceived work satisfaction and quality of life. A moderate positive correlation was found ($\rho (16) = .558, p < .05$), indicating a moderate and significant relationship between the two variables. Participants who perceived higher work satisfaction tended to report better quality of life.

Is there a relationship between expected productivity and quality of life among therapists with a MSD or nerve injury? A Spearman ρ correlation coefficient was calculated to assess the relationship between participants' expected productivity and quality of life. A moderate positive correlation was found ($\rho (14) = .331, p < .05$), indicating a moderate and significant relationship between the two variables. Participants who met or exceeded expected productivity tended to report better quality of life.

Is there are relationship between job physicality and work satisfaction among therapists with a MSD or nerve injury? A Spearman ρ correlation coefficient was calculated to assess the relationship between participants' daily job physicality and perceived work satisfaction.

A moderate negative correlation was found ($\rho (13) = -.336, p < .05$), indicating a moderate and significant relationship between the two variables. Participants who reported higher levels of job physicality tended to report lower perceived work satisfaction.

Findings of Little to No Significance

Spearman rho correlation coefficient

Is there a relationship between expected productivity and perceived work satisfaction among therapists with a MSD or nerve injury? A Spearman ρ correlation coefficient was calculated to assess the relationship between participants' expected productivity and perceived work satisfaction. An extremely weak correlation that was not significant was found ($\rho (17) = .099, p > .05$). Expected productivity was not related to perceived work satisfaction within this population.

Is there a relationship between the number of hours worked per week and quality of life among therapists with a MSD or nerve injury? A Spearman ρ correlation coefficient was calculated to assess the relationship between participants' hours worked per week and quality of life. An extremely weak correlation that was not significant was found ($\rho (16) = .124, p > .05$). The number of hours worked per week was not related to quality of life within this population.

Is there a relationship between the number of hours worked per week and work satisfaction among therapists with a MSD or nerve injury? A Spearman ρ correlation coefficient was calculated to assess the relationship between participants' hours worked per week and work satisfaction. A negative weak correlation that was not significant was found ($\rho (19) = -.212, p > .05$). The number of hours worked per week was not related

to perceived work satisfaction.

Is there a relationship between frequency of performing patient handling (days per week) and quality of life among therapists with MSD or nerve injury? A Spearman *rho* correlation coefficient was calculated to assess the relationship between participants' days per week handling patients and quality of life. A weak correlation that was not significant was found ($rho(14) = .130, p > .05$). The number of days per week handling patients was not related to quality of life within this population.

Is there a relationship between the frequency of performing patient handling (hours per day) and quality of life among therapists with MSD or nerve injury? A Spearman *rho* correlation coefficient was calculated to assess the relationship between participants' hours per day handling patients and quality of life. A weak correlation that was not significant was found ($rho(16) = .151, p > .05$). The number of hours per day spent handling patients was not related to quality of life within this population.

Is there a relationship between frequency of physical agent modality delivery (days per week) and quality of life among therapists with a MSD or nerve injury? A Spearman *rho* correlation coefficient was calculated to assess the relationship between participants' frequency of days per week physical agent modality delivery and quality of life. A weak negative correlation that was not significant was found ($rho(14) = -.146, p > .05$). The number of days per week spent providing physical agent modalities was not related to quality of life.

Is there a relationship between frequency of physical agent modality delivery (hours per day) and quality of life among therapists with a MSD or nerve injury? A Spearman *rho* correlation coefficient was calculated to assess the relationship between

participants' hours per day of physical agent modality delivery and quality of life. A weak negative correlation that was not significant was found ($\rho (16) = -.149, p > .05$). The number of hours per day spent providing physical agent modalities was not related to quality of life.

Is there a relationship between job physicality and quality of life among therapists with a MSD or nerve injury? A Spearman ρ correlation coefficient was calculated to assess the relationship between participants' daily job physicality and quality of life. An extremely weak negative correlation that was not significant was found ($\rho (12) = -.113, p > .05$). Job physicality was not related to quality of life within this population.

Is there a relationship between length of MSD or nerve injury symptom experience and perceived work satisfaction? A Spearman ρ correlation coefficient was calculated to assess the relationship between participants' length of MSD or nerve injury symptom experience and perceived work satisfaction. An extremely weak correlation that was not significant was found ($\rho (19) = .099, p > .05$). The length of MSD or nerve injury symptom experience was not related to perceived work satisfaction within this population.

Is there a relationship between length of MSD or nerve injury symptom experience and quality of life? A Spearman ρ correlation coefficient was calculated to assess the relationship between participants' length of MSD or nerve injury symptom experience and quality of life. A negative weak correlation that was not significant was found ($\rho (16) = -.184, p > .05$). The length of MSD or nerve injury symptom experience was not related to quality of life within this population.

One-way univariate ANOVAs

A one-way ANOVA was completed to ascertain whether there was a difference in the number of hours worked per week between therapists with a MSD or nerve injury and those who did not. No significant difference was found ($F(1,107) = .023, p > .05$). The therapists that reported an incidence of musculoskeletal and nerve injury did not differ from those who reported no injury in regards to number of hours worked per week. Therapists who reported an incidence had a mean score of 3.83 ($SD = .816$). Therapists who reported no incidence had a mean score of 3.80 ($SD = .973$)

A one-way ANOVA was completed to identify whether there was a difference in the length of treatment sessions carried out by therapists with a MSD or nerve injury and therapists who did not have a MSD or nerve injury. No significant difference was found ($F(1,107) = .083, p > .05$). The therapists that reported an incidence of musculoskeletal and nerve injury did not differ from those who reported no injury in regards to length of treatment session. Therapists who reported an incidence had a mean score of 2.58 ($SD = .504$). Therapists who reported no incidence had a mean score of 2.64 ($SD = .843$).

A one-way ANOVA was completed to identify whether there was a difference in the number of patients seen per day by therapists that reported an incidence of MSD or nerve injury and those who did not. No significant difference was found ($F(1,108) = 2.092, p > .05$). The therapists that reported an incidence of musculoskeletal and nerve injury did not differ from those who reported no injury in regards to number of patients seen per day. Therapists who reported an incidence had a mean score of 2.29 ($SD = .624$). Therapists who reported no incidence had a mean score of 2.12 ($SD = .495$)

A one-way ANOVA was completed to ascertain whether there was a difference in quality of life among therapists with varying treatment session length times. No significant difference was found ($F(1,16) = 1.24, p > .05$). Treatment session length does not significantly influence quality of life. Therapists' that reported treatment sessions of 30 minutes had a mean score of 109 ($SD = 12.26$). Therapists that reported treatment sessions of 45 minutes had a mean score of 103.25 ($SD = 9.29$).

A one-way ANOVA was completed to identify whether there was a different in job physicality between therapist that reported that they perceived their injury or illness to be influencing work performance and those that did not. No significant difference was found ($F(1,13) = 3.033, p > .05$). The therapists that reported perceived influence of injury or illness on work performance did not differ from those who reported no perceived influence in regards to job physicality. Therapists who reported an influence had a mean score of 5.00. The standard deviation for this score was not calculated as there was one respondent. Therapists who did report an influence had a mean score of 3.00 ($SD = 1.109$).

A one-way ANOVA was completed to identify whether there was a difference in quality of life between various lengths of MSD or nerve injury symptom durations. No significant difference was found ($F(2,15) = .537, p > .05$). Therapist reported symptom durations did not significantly influence quality of life. The therapists who reported symptom duration of 1 year or less had a mean score of 110.3 ($SD = 18.5$). Those with two-four years of symptoms reported a mean score of 105.37 ($SD = 10.65$). Those with five years and greater of symptoms reported a mean score of 102.71 ($SD = 6.24$).

A one-way ANOVA was completed to identify there was a difference in quality of life between therapist level of education received. No significant difference was found ($F(1,16) = .875, p > .05$). Therapists reporting a higher level of education did not significantly influence quality of life. The therapists who reported holding a bachelor's degree had a mean score of 102.29 ($SD = 7.63$). Master's degree had a mean score of 107 ($SD = 11.79$).

Mann-Whitney U Tests

A Mann-Whitney *U* Test was used to determine if there was a difference in quality of life between therapists who believed that their injury or illness had influenced their work satisfaction compared to therapists who did not. No significant difference in quality of life was found ($U = 56.5, p > .05$). Therapists who believed that their injury or illness was an influence on work performance had a mean score of 6.93. Therapists who reported no perceived influence of his or her MSD or nerve injury on work satisfaction had a mean score of 11.14.

A Mann-Whitney *U* Test was used to determine if there was a difference in quality of life between therapists who believed that their injury or illness had influenced work performance compared to therapists who did not. No significant difference in quality of life was found ($U = 15.0, p > .05$). Therapists who believed that their injury or illness was an influence on work performance had a mean score of 3.0. Therapists who reported no perceived influence of his or her MSD or nerve injury on work performance had a mean score of 9.88.

A Mann-Whitney *U* Test was used to determine if there was difference in perceived work satisfaction between therapists who believed their injury or illness had

influenced work performance compared to therapists who do not. No significant difference in perceived work satisfaction was found ($U=20.0, p > .05$). Therapists who perceived that their injury or illness had an influence on work performance had a mean score of 1.0. Therapists who reported no influence of MSD or nerve injury on work performance had a mean score of 11.5.

A Mann-Whitney U Test was used to examine the difference in perceived quality of life in men vs. women. No significant difference in quality of life was found ($U=16, p > .05$) between men and women. Male therapists had a mean score of 9.5. Female therapists had a mean score of 9.5.

A Mann-Whitney U Test was used to examine the difference in duration of symptom experience of therapists who believed that their injury or illness had influenced work performance compared to therapists who did not. No significant difference in symptom duration was found ($U= 12.5, p > .05$). Therapists who perceived that their injury or illness was an influence on work performance had a mean score of 8.5. Therapists who reported no influence of MSD or nerve injury on work performance had a mean score of 11.12.

Summary

In Chapter IV, the reliability of the WHOQOL-Bref was described. Data regarding demographic information of the respondents was portrayed. Additionally, results of inferential statistical analyses were presented both those of moderate significance and little to no significance. Statistical tests utilized included Spearman's rho, one-way univariate ANOVAs and Mann-Whitney U Tests. Chapter V includes an interpretation of these results as they pertain to clinical practice. Furthermore, discussion

on this current studies limitations, as well as implications for further research will be provided.

Chapter V

Discussion

Musculoskeletal disorders (MSD) and nerve injuries are a concern in the allied health profession. Research has been conducted on the incidence and influence of MSD and nerve injuries among healthcare professions; however, a gap in research has been identified regarding these injuries in the field of occupational therapy. The intent of this study was to explore this area, as well as further identify, the influence MSD and nerve injuries have on work satisfaction, work performance, and overall quality of life in occupational therapists practicing in the area of rehabilitation, disability and participation.

Participants in this study consisted of 156 practicing occupational therapists. Due to inclusion criteria, this sample was further refined to those therapists working in a rehabilitation, disability and participation setting that indicated the incidence of a MSD or nerve injury. In total, 24 (21.8%) occupational therapists reported having a MSD or nerve injury and were able to complete the survey in its entirety. In the following section, the incidence of MSD and nerve injuries, and the influence these disorders have on work satisfaction, work performance, and quality of life are discussed. In addition, limitations and concepts for future research have been presented.

Incidence

According to analysis of data gathered during research, the incidence of MSD and/or nerve injuries in occupational therapists working in a rehabilitation, disability and participation setting (21.8%) is higher than that of the general working population (14%) (OSHA.gov, 2014). In addition, 70.8% of respondents reported that their MSD or nerve injury was either caused by or made worse through participation in work activities. The increased incidence of MSD and nerve injuries among allied healthcare professionals is consistent with literature addressing similar concerns (Campo & Darragh, 2012; Darragh, Huddleston, & King, 2009; Friesen, Friesen, Quanbury & Arpin, 2006).

The areas of the body affected by MSD and nerve injuries were also identified by 18 respondents. Nine of these respondents reported that the upper extremity, (hand, wrist, elbow, and shoulder) was primarily affected. Three respondents reported that the low back and/or hips were affected. Three respondents also indicated that the upper back and/or neck were the primary site of injury. One respondent indicated that his or her hands, hips, and feet were all affected. Another reported that his or her thumb and back were affected, while another indicated that both his or her neck and right upper extremity were affected by a MSD or nerve injury. The outcome of this research is congruent with previous studies that indicate the upper extremity and low back as frequently affected regions of the body in regards to the incidence of MSD and nerve injuries (Alnaser, 2007; Darragh, Huddleston, & King, 2009).

Due to the exploratory nature of this study, a clear explanation for the increased incidence was not acknowledged. No significant correlations were found between the incidence of MSD and nerve injuries and the following: number of hours worked per

week, length of treatment sessions, and number of patients seen per day. These results elicited the question of what, if not these factors, influences the increased incidence of MSD and nerve injuries among occupational therapists compared to the general population working in this practice setting.

Work Satisfaction

Although the incidence of MSD and nerve injuries in occupational therapists is higher than the general work population, the general influence of these injuries on perceived work satisfaction appears to be inconsequential. Results of data analysis indicated that increased work satisfaction was correlated with increased quality of life. In contrast, increased job physicality was inversely correlated with work satisfaction. This suggests that when essential job functions are more physical in nature, such as providing manual therapy, lifting, bending, or applying resistance against a patient's movement work satisfaction is moderately decreased among individuals with MSD and nerve injuries (French, Brennan, White, & Cusack, 2010; Caragianis, 2002). This could be due to a number of factors including amplified pain and discomfort from increased movement. Overall, the conclusions gleaned from this information are that therapists indicate satisfaction with work despite the presence of MSD or nerve injuries. However, increased job physicality does have a negative relationship with satisfaction with work within this population. This finding was congruent with that of Campo and Darragh (2010), who concluded that a minimal decrease in work satisfaction was related to the concept of therapists' professional duty and responsibility to provide care for patients despite pain experiences. This finding was not explicitly demonstrated in this study as we

found that 28.6% of respondents reported consideration for leaving their current position as a result of their MSD or nerve injury, while 71.4% did not.

Work Performance

The lack of influence incidence of MSD and nerve injuries had on work satisfaction is consistent in the results regarding work performance. A Spearman's rho correlation coefficient was conducted and a positive correlation was found between work performance, (as measured by expected productivity) and quality of life. This positive effect on quality of life may be influenced by factors within the workplace in regards to meeting work performance standards. For example, job elements including worker/supervisor relationship, job demands, and job control. The relationship between an employee and his or her manager may be influenced by the employee's ability to meet and maintain expected productivity standards. Similarly, therapists meeting or exceeding these standards may have greater autonomy in the work environment in regards to job demands and decision -making (Deeny & O'Sullivan, 2009). This ability to make decisions autonomously about how an individual wants his or her life to be, the ability to participate in the types of activities an individual chooses, as well as the ability to individually conclude whether or not his or her desires or goals have been met are all factors influencing overall quality of life that may also be applied to the workplace (McKevitt & Wolfe, 2002). In order to maintain these expected standards of productivity, it was found that 54.5% of therapists are either modifying or adapting aspects of their environment to increase the fit, or the relationship between the person, environment, and occupation. Whether through modification or adaptation or other means, 95.2% of respondents reported that they did not feel as though the MSD or nerve

injury has influenced their work performance. The result of modifying services is that therapists are able to adapt occupational demands to continue providing safe and effective patient care despite injury or pain.

Quality of Life

When compared to the general population, we found that quality of life among occupational therapists with MSD or nerve injuries did not differ substantially (Skevington, Lotfy, & O'Connell, 2004). An inference that can be made from this finding is that the incidence of a MSD or nerve injury is not a major factor in the determinant of quality of life. Another interpretation of this finding, that is consistent with the WHOQOL Group (1998), is that there are multiple factors affecting quality of life in addition to physical health. These include: mental health, housing, social support, culture, values, and job (Skevington, Lotfy, & O'Connell, 2004). According to the WHOQOL-Bref results, the frequency of negative feelings such as blue mood, despair, anxiety, and/or depression, which are all indicators of perceived mental health was reported as seldom or never by 73.7% of respondents. In general, the field of occupational therapy provides an increasingly stable job outlook (Bureau of Labor Statistics, 2012). Occupational therapy also provides an average salary of \$75,400 per year (Bureau of Labor Statistics 2012). According to the results of this study, 85.7% of occupational therapists reported they have enough money to meet their needs. Similarly, 90.5% of respondents reported that they were either satisfied or very satisfied with the condition of their living environment. In addition, 81% of respondents reported they were either satisfied or very satisfied with their personal relationships. The high level of satisfaction in all of these areas leads to the assumption that despite an increased

incidence of MSD and nerve injuries, quality of life is not significantly and negatively influenced.

Limitations

Several limitations were recognized during the research process. For example, due to the exploratory nature of this study, further aspects addressing work performance measures were not addressed such as absenteeism or presenteeism. The number of respondents that were able to complete the survey in its entirety was limited to those individuals who identified the incidence of a MSD or nerve injury. This was a result of the objectives established by researchers aiming to identify an incidence of a MSD or nerve injury in those individuals in a specific practice area. Due to this focused attention to the practice area of rehabilitation, disability, and participation other pertinent practice areas were not address in this study including, the area of pediatrics, which tends to present with a high degree of physical demands.

Future Research

Throughout the research process, limitations of this study were identified. It may be beneficial for future research endeavors to address the limitations in this study. By doing so, continued researchers may create a better understanding of the effect MSD and nerve injuries have on quality of life, work satisfaction, and work performance. Future research could address these three areas within the occupational therapy profession as a whole as well as among therapists working in specific practice settings, such as pediatrics or hand therapy. It may also be beneficial to make comparisons of quality of life among those with MSD and nerve injuries to those without within these populations. Similarly, quality of life, work satisfaction, and work performance among professionals within other

allied health professions and how it compares to the profession of occupational therapy, would be advantageous. As our research suggests, many occupational therapists who have reported an incidence of MSD or nerve injury have modified their provision of services in some way. Future research could uncover the specific methods that therapists utilize to continually provide safe intervention and delivery of services despite these injuries. In doing so, this information could be transmitted to therapists with an existing injury in order to provide resources, which may increase the fit between the person, work environment, and occupation. This research may also assist in the development of programs designed to prevent MSD and nerve injury occurrence within the rehabilitation, disability and participation practice area.

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Appendices

Appendix A Research Questions

Research Questions

1. What is the incidence of MSD and nerve injury among occupational therapists working in the rehabilitation, disability and participation practice area?
2. Is there a relationship between perceived work satisfaction and perceived quality of life in therapists with a MSD or nerve injury?
3. Is there a relationship between frequency of physical agent modality delivery (days per week) and perceived quality of life among therapists with a MSD or nerve injury?
4. Is there a relationship between frequency of physical agent modality delivery (hours per day) and perceived quality of life among therapists with a MSD or nerve injury?
5. Is there a relationship between job physicality and perceived quality of life among therapists with a MSD or nerve injury?
6. Is there are relationship between job physicality and work satisfaction among therapists with a MSD or nerve injury?
7. Is there a relationship between frequency of performing patient handling (days per week) and perceived quality of life among therapists with MSD or nerve injury?
8. Is there a relationship between the frequency of performing patient handling (hours per day) and perceived quality of life among therapists with MSD or nerve injury?
9. Is there a relationship between the number of hours worked per week and work satisfaction among therapists with a MSD or nerve injury?
10. Is there a relationship between the number of hours worked per week and perceived quality of life among therapists with a MSD or nerve injury?
11. Is there a relationship between length of MSD or nerve injury symptom experience and perceived quality of life?
12. Is there a relationship between length of MSD or nerve injury symptom experience and perceived work satisfaction?
13. Is there a relationship between expected productivity and perceived quality of life among therapists with a MSD or nerve injury?
14. Is there a relationship between expected productivity and perceived work satisfaction among therapists with a MSD or nerve injury?
15. Is there a difference in hours worked per week in therapists who reported an incidence of MSD or nerve injury and those who did not?
16. Is there a difference in the length of treatment session in therapists who reported an incidence of MSD or nerve injury and those who did not?
17. Is there a difference in the number of patients treated per day in therapists who reported an incidence of MSD or nerve injury and those who did not?

18. Is there a difference in job physicality in therapists who believe that their injury or illness has influenced their work performance and those who did not?
19. Is there difference in perceived quality of life in therapists with varying lengths of symptom duration?
20. Is there a difference in perceived quality of life in therapists who hold a bachelor's degree and those who hold a masters degree?
21. Is there a difference in perceived quality of life in therapists who believe that their illness or injury has impacted their work satisfaction and those who did not?
22. Is there a difference in perceived quality of life in therapists who believe that their illness or injury has influenced their work performance and those who did not?
23. Is there a difference in perceived work satisfaction in therapists who believe that their injury or illness has influenced their work performance and those who did not?
24. Is there a difference in perceived quality of life between men and women within this population?
25. Is there a difference in length of symptom experience in therapists who believe that their injury or illness has influenced their work performance and those who did not?

Appendix B
IRB Form

The Incidence and Impact of Musculoskeletal and Nerve Injuries among Occupational
Therapists: An Exploratory Study

Alyssa A. Jenkins, MOTS, Renae H. Witta, MOTS and Anne M. Haskins, PhD, OTR/L

Occupational Therapy Department

University of North Dakota

Researcher Background and Qualifications:

Alyssa Jenkins and Renae Witta are both graduate level occupational therapy students at the University of North Dakota. Both student researchers have an interest in work related injuries within the therapist population and have been exposed to registered therapists that have sustained injuries through the student researchers respective fieldwork experiences. Both student researchers have also taken and successfully completed qualitative and quantitative research coursework as well as CITI training and certification.

Anne Haskins PhD, OTR/L is acting as the advisor for this research study. Dr. Haskins is currently an associate professor of occupational therapy at the University of North Dakota where she teaches OT 428: Quantitative Research Methods in Occupational Therapy. Dr. Haskins also holds a doctorate degree in Teaching and Learning: Educational Foundations in Research, with an emphasis placed on quantitative research. She also has current CITI training and certification.

Proposal for the University of North Dakota Institutional Review Board Consideration

Contents

University of North Dakota Exempt Certification Form

Including:

- Investigators' Letters of Assurance of Compliance
- Alyssa Jenkins and Renae Witt's Student Consent to Release of Educational Record

Exempt Form Addendum

Appendix A: THIS SECTION INCLUDES

1. A replication of the email sent to the American Occupational Therapy Association inquiring as to whether or not the researchers could access their membership in order to invite current members of their organization to participate in the survey once approval from the University of North Dakota Institutional Review Board has been obtained.
 - a. The email response from the American Occupational Therapy Association indicating the organizations willingness to participate in this research.
2. A replication of the correspondence between the researchers and the World Health Organization in regards to obtaining permission to utilize the WHO QOL-BREF in an electronic version within the survey.
 - a. The email response from the World Health Organization granting permission to electronically replicate the WHO QOL-BREF for use.
3. A letter of permission from the chair of the Occupational Therapy department at the University of North Dakota granting access to organizations within the fieldwork database.
4. A replication of the letter sent to fieldwork sites with current contracts with the University of North Dakota inviting them to participate in research.

Appendix B: INFORMED CONSENT

Appendix C: STATEMENT OF INFORMED CONSENT AND ONLINE SURVEY (via Qualtrics)

5. In non-technical language, describe the purpose of the study and the rationale for this research.

The purpose of this study will be to explore the incidence of musculoskeletal and nerve injuries among occupational therapists and to what extent those injuries impact therapist quality of life, work performance and work satisfaction.

Research has revealed that persons working in the healthcare professions (including nursing, surgeons, dental hygienists, physical therapists, ultrasound technologists, etc.) are at a higher risk of developing musculoskeletal and nerve injuries due to their increased exposure to less than ideal posturing, tedious and repetitive fine motor movements and vibration (Darragh, Campo & King, 2012; Ngan, Drebit, Siow, Yu, Keen & Alamgir, 2010). Aas, Thingo, Holte, Lie and Lode (2011) identified that these injuries negatively impact work performance as well as quality of life among those in many different professions, including health care. Although research exists on musculoskeletal and nerve injuries among occupational therapists, there is a lack of evidence regarding the impact on work performance, work satisfaction and perceived quality of life among this specific group of professionals. According to the *Practice Analysis* completed by the National Board for Certification in Occupational Therapy (NBCOT) in 2008, 43% of registered occupational therapists are working in the practice area defined as Rehabilitation Disability and Participation, making it the area of practice most represented in occupational therapy. Furthermore, the largest percentage of occupational therapists work in a rehabilitation setting with 24%, another 21% of therapists reported working in skilled nursing facilities (NBCOT, 2008). These statistics are relevant because the majority of musculoskeletal and nerve injuries sustained across healthcare professionals have been found to occur in hospitals, outpatient clinics or skilled nursing facilities, as these are the settings that consistently require healthcare professionals to be exposed to occupational hazards (Darragh, Campo & King, 2012). Overall

6. In non-technical language, describe the study procedures.

To what extent do musculoskeletal and nerve injuries affect work productivity, work satisfaction, and overall quality of life among occupational therapists working in the primary practice area of physical dysfunction?

Design: Prospective, Exploratory Survey Design in an online format.

Sampling Methods:

Convenience sampling will be used to reach potential survey respondents through email access. Snowball sampling will also be in effect as potential respondents for this study will be accessed through the University of North Dakota Occupational Therapy Department Fieldwork Database. An invitation to participate will be sent to each

fieldwork site supervisor with a request to share the invitation with occupational therapists employed at his or her respective facility. The American Occupational Therapy Association members will also be accessed through convenience sampling by posting the survey on otconnections.org with permission from AOTA. Researchers anticipate a minimum of 30 respondents.

Inclusion Criteria:

- Working in the field of occupational therapy as a registered and licensed occupational therapist or occupational therapy assistant.
- Working at least a .5 full-time equivalent
- Working in a physical rehabilitation setting with clients that are 18 years of age or older.

Exclusion Criteria:

- Must not have any pre-existing condition (any condition lasting longer than 1 year).
- Any occupational therapists that identify their primary practice area as pediatrics.
- Any occupational therapists working primarily in behavioral health.

Informed Consent & Procedures:

Prior to gaining access to this online survey potential respondents will be prompted and required to complete an informed consent. This informed consent outlines the nature of this study and potential impact the study results may have as well as potential risks associated with completion of the survey.

Researcher Background and Qualifications:

Alyssa Jenkins and Renae Witta are both graduate level occupational therapy students at the University of North Dakota. Both student researchers have an interest in work related injuries within the therapist population and have been exposed to registered therapists who have sustained injuries through the student researchers respective fieldwork experiences. Both student researchers have also taken and successfully completed qualitative and quantitative research coursework as well as CITI training and certification.

Anne Haskins PhD, OTR/L is acting as the advisor for this research study. Dr. Haskins is currently an Associate Professor of Occupational Therapy at the University of North Dakota where she teaches OT 428: Quantitative Research Methods in Occupational Therapy and a kinesiology course with an emphasis on musculoskeletal disorders. Dr. Haskins also holds a doctorate degree in Teaching and Learning: Educational Foundations in Research, with an emphasis placed on quantitative research. She also has current CITI training and certification.

Instrumentation:

The proposed study entails an electronic survey housed in the University of North Dakota Qualtrics Server that will be accessible online. The survey includes 51 questions comprised of demographic information, work task requirements, work related injuries, professional abilities, and overall quality of life.

An existing quality of life scale, the World Health Organization's Quality of Life Instrument, the WHOQOL-BREF will be used with permission from the instrument creators as part of the survey. Through analyses of internal consistency, construct, and discriminant validity, it is determined that the WHOQOL-BREF has good to excellent psychometric properties of reliability and tests of validity (Skevington, Lotfy, & O'Connell, 2004). Questions include multiple choice, fill in the blank, or choosing a response based on a scale ranging from not at all, to completely. Additional survey questions are written at an 8th grade reading level. Refer to Appendix C to view the survey and instrument in their entirety. The survey and instrument completion will take approximately 15-20 minutes to complete.

Data Analysis:

Data will be analyzed using SPSS software. This software program will utilize descriptive statistics analysis and inferential analysis of multiple variables to address the research question. Analysis to determine reliability will also be completed on the instrumentation.

7. Where will research be conducted?

Research will be conducted through an online format using the University of North Dakota's Qualtrics program. Respondents will be able to complete the survey using the method and location of their choice. Data will be collected beginning after IRB approval is received, and continue until March 1st, 2014. Data will be stored within an SSL encrypted program.

8. Describe what data will be recorded.

Demographic information gathered from respondents will include respondents age, marital status, work-setting, hours of work per week, typical duties including; frequency, type, and duration of services provided. Refer to Appendix C to view the survey questions in their entirety. Additional questions will be asked to identify whether or not the respondent believes that his or her unique injury is affecting his or her work productivity, work efficacy, and quality of life. Please see the attached WHOQOL-BREF within Appendix C to see specific questions regarding quality of life.

9. How will data be recorded and stored (that is will it be coded, anonymous, etc.)?

Data will be stored in the Qualtrics database. Respondents will not be asked to provide identifying information nor will Internet provider addresses be tracked. During analysis, the information will be stored on Dr. Anne Haskin's computer in a locked office

on the University of North Dakota campus. Once transferred here, the information will be deleted from the Qualtrics system. After data analysis is completed, it will be copied to a compact disk and stored in Anne Haskin's locked office for three years, after which time it will be destroyed.

10. Describe procedures you will implement to protect confidentiality and privacy of participants.

This study will not be initiated until proper approval is received through the University of North Dakota's Institutional Review Board. All respondents' information will be kept anonymous and confidential and all identifying personal information (age, DOB etc.) and Internet provider addresses will not be collected. Any data received will be stored using the University of North Dakota's Qualtrics program. Upon completion of data analysis, information will be stored on the computer of Anne Haskins' (Advisor/Associate Professor in the University of North Dakota Occupational Therapy Department) office on the University of North Dakota campus. After completion of this study, all information will be stored on a compact disk within this office. After this three-year period, all information will be destroyed. Any information used in the results section of the study that may be published will be displayed in a summarized manner, therefore protecting the identity of all respondents.

11. Describe the nature of the subject population and the estimated number of subjects.

The target population of this study is therapists working in the practice area of Rehabilitation, Disability and Participation as their primary practice setting. By distributing the survey to all of the existing University of North Dakota Occupational Therapy fieldwork sites with current contracts, as well as providing access to members of the American Occupational Therapy Association, the goal of the researchers is to gather data from at least 30 respondents.

References:

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Appendix A

Replication of email inquiry to the American Occupational Therapy Association

To whom it may concern,

My name is Alyssa Jenkins, I, along with my research partner Renae Witta are third year occupational therapy students at the University of North Dakota in Grand Forks, ND. For our final project, my partner and I have chosen to conduct an exploratory survey research study regarding the incidence and impact of musculoskeletal and nerve injuries among practicing occupational therapists. We are inquiring as to whether or not it is possible to access the American Occupational Therapy Association membership to distribute our survey?

No participants will be contacted or data gathered until approval from the University of North Dakota Institutional Review Board has obtained. As students, our work is being supervised by Dr. Anne Haskins, PhD, OTR/L an associate professor in the Occupational Therapy Department at the University of North Dakota. You may contact our advisor with any questions.

Thank you for your consideration. We look forward to hearing from you.

Sincerely,

Alyssa Jenkins, MOTS
Occupational Therapy Program
University of North Dakota
School of Medicine and Health Sciences

Alyssa Jenkins, MOTS (701)- 720- 1630 alyssa.jenkins@my.und.edu

Renae Witta, MOTS (952)- 897-0404 renae.witta@my.und.edu

Anne Haskins, PhD, OTR/L (701)- 777-0229 anne.haskins@med.und.edu

The organization listed below has agreed to assist us in distribution of our survey. Along with the organizations written agreement to support us in circulation of our survey, below is the organizations name, contact information and brief description of the organizations purpose and mission.

Organization: American Occupational Therapy Association

Contact Information:

[REDACTED]
Web and Social Media Administrator
American Occupational Therapy Association
4720 Montgomery Ln. Suite 200
Bethesda, MD 20814- 3449
[REDACTED]
[REDACTED]

Description: The American Occupational Therapy Association is the national professional association established to represent the well-being and concerns of practitioners and students in the field of occupational therapy and to increase the quality of occupational therapy services rendered.

From: website <website@aota.org>
Sent: Monday, November 04, 2013 2:19 PM
To: Jenkins, Alyssa
Subject: FW: Research

Hi Alyssa—you can post a link to your survey on OT Connections:

otconnections.aota.org

[REDACTED]
[REDACTED]
Web & Social Media Administrator
American Occupational Therapy Association, Inc.
4720 Montgomery Ln. Suite 200
Bethesda, MD 20814-3449
[REDACTED]
[REDACTED]

Below is the confirmation code received by the World Health Organization indicating that we have permission to utilize the WHO QOL-BREF as a part of our proposed study.

**Your responses have been submitted. Your confirmation code is
f817fbf8522ed9b6844cfec3d4bf4160**

Please print this page for your records.

The instrument distribution coordinator will be contacting you soon to complete your order.

Thank you.

In reading the agreement with the World Health Organization, it was unclear to the student researchers as to whether or not this agreement granted the researchers permission to convert the WHO QOL-BREF into a an online format. Below is the email correspondence between the student researchers and the World Health Organization US representative.

Good evening [REDACTED],

I am inquiring as to what the process is to obtain permission to change the format of the WHO QOL-BREF. We currently have permission to use the tool in a printed version, however the research study that my partner and I are currently working on involves the use of an online survey. Through reading the agreement of use, it has come to our attention that there is a special process to gain permission to change the format in order for the tool to be used electronically.

Thank you for your time and consideration,

Renae Witta, Masters of Occupational Therapy Student
University of North Dakota
Grand Forks, ND

Hello Ms. Witta,

Thank you for your inquiry.

You may go ahead and convert the WHOQOL-BREF to an electronic version. All we require is that you forward us a link or a screen shot of the completed electronic version so we may verify that it is an acceptable representation of the instrument.

Please let me know if you have further questions.

[REDACTED]
Project Assistant / Instrument Coordinator
Seattle Quality of Life Group
Department of Health Services | School of Public Health
[REDACTED]
Seattle, WA 98195-9455

Letter of Permission to Access University of North Dakota Fieldwork Affiliates

I, _____ as the chair of the occupational therapy program at the University of North Dakota, grant Alyssa A. Jenkins and Renae H. Witta, under the advisement of Dr. Anne M. Haskins, permission to access the contact information for all fieldwork affiliates with current contracts. I understand that prior to contacting any fieldwork sites, the student researchers will obtain University of North Dakota Institutional Review Board Approval.

I have read the Informed Consent for the proposed study entitled “The incidence and impact of musculoskeletal and nerve injuries among occupational therapists” as well as the letter of invitation that will be sent to the respective fieldwork sites.

Dr. Janet Jedlicka, Ph.D., OTR/L, FAOTA
Chair of the Occupational Therapy Department
University of North Dakota
Grand Forks, ND
Janet.jedlicka@med.und.edu

Replication of letter sent to University of North Dakota fieldwork affiliates

Dear University of North Dakota fieldwork affiliate,

You are invited to participate in a research study being completed by third year occupational therapy students Alyssa Jenkins and Renae Witta through the University of North Dakota in Grand Forks, ND. As a part of our graduate course work, we are conducting a research study through use of a survey. We are gathering information regarding the incidence and impact of musculoskeletal and nerve injuries among occupational therapists and occupational therapy assistants working in physical dysfunction. More specifically we are inquiring the degree to which musculoskeletal and nerve injuries have on an occupational therapists work satisfaction, work performance and quality of life. It is our hope that through this study, we will be able to gain insight into how these injuries affect the work and lives of practicing occupational therapists. In order to complete this research, we are in need of practicing occupational therapists and occupational therapy assistants to complete our online survey.

The survey begins with basic demographic questions, and then goes on to ask questions pertaining to therapists perceived quality of life as measured by the World Health Organization Quality of Life-BREF, work satisfaction and work performance. The survey will take approximately 15-20 minutes to complete. All the information that is provided will be kept confidential and you are free to skip questions that you do not feel comfortable answering. We will not gather any information that would identify you personally during the course of this research. The University of North Dakota Institutional Review Board has approved this survey and research.

If you would like to participate in this study, please follow the link below to complete the online survey: . Thank you for your time and consideration, have a great day!

If you have any questions, feel free to contact us at Alyssa.Jenkins@my.und.edu or Renae Witta@my.und.edu. You may also contact our student advisor Dr. Anne Haskins PhD, OTR/L at Anne.Haskins@med.und.edu

Alyssa A. Jenkins, MOTS and Renae H. Witta, MOTS

Appendix B

**THE UNIVERSITY OF NORTH DAKOTA
CONSENT TO PARTICIPATE IN RESEARCH**

TITLE: *The incidence and impact of musculoskeletal and nerve injuries among occupational therapists*

PROJECT DIRECTOR: *Alyssa A. Jenkins, OTS Renae H. Witta, OTS, and Dr. Anne M. Haskins, PhD, OTR/L (Advisor)*

PHONE # *701-777-0229*

DEPARTMENT: *University of North Dakota, School of Medicine and Health Sciences, Department of Occupational Therapy*

STATEMENT OF RESEARCH

An individual who wishes to participate in this study must give his or her informed consent based on the risks and reward involved in this research. This document attests to your understanding of the nature of this study. Please take your time while choosing whether or not to participate. Feel free to ask any questions you may have.

WHAT IS THE PURPOSE OF THIS STUDY?

You are invited to participate in a research study entitled, “The incidence and impact of musculoskeletal and nerve injuries among occupational therapists”.

You have been invited to participate because you are a registered occupational therapist or occupational therapy assistant who practices primarily in the area of adult physical dysfunction.

Alyssa Jenkins and Renae Witta are completing this study. We are both occupational therapy graduate students at the University of North Dakota. Dr. Anne Haskins, OTR/L an associate professor at the University, is acting as our advisor and assisting us throughout this research process. This research study is required for completion of our degrees. This study will also provide information to the occupational therapy profession.

We are conducting this research to gain a clearer understanding of the occurrence and the general impact that musculoskeletal and nerve injuries have on practicing occupational therapy therapists and assistants. Through this research we hope to better understand the influence of musculoskeletal and nerve injuries within occupational therapy practice.

HOW MANY PEOPLE WILL PARTICIPATE?

It is anticipated that approximately 30 people will take part in this study at the University of North Dakota. Participants will be recruited through University of North Dakota Occupational Therapy fieldwork affiliations and the American Occupation Therapy Association website.

HOW LONG WILL I BE IN THIS STUDY?

Your participation in the study will last approximately 15-20 minutes to complete. You will be able to participate in this study from a location of your choice, as long as you have Internet access.

WHAT WILL HAPPEN DURING THIS STUDY?

Your participation in this study will involve taking part in an online survey. Your participation is completely voluntary, and you may discontinue the survey or skip any questions that you would prefer not to answer at any time. Questions may include demographic information. Other questions may pertain to the nature of your daily work environment, or the impact of musculoskeletal/nerve injuries may have on the practitioners' quality of life, work satisfaction or work performance. No identifying information will be collected.

WHAT ARE THE RISKS OF THE STUDY?

There may be some risks associated with participation in this study. You may experience frustration or anxiety while completing this survey. These risks are not viewed as being more excessive than those experienced in everyday life, however it is your right as a research participant to not answer any questions that you do not wish to.

WHAT ARE THE BENEFITS OF THIS STUDY?

You may not benefit from participating in this study. However, you may benefit others in the future through your participation. Through this study, the student researchers hope to identify the impact musculoskeletal disorders and nerve injuries have on the quality of life of practicing occupational therapists. By identifying the impact these may have, we hope to raise awareness and encourage avoidance of these disorders through modifications and prevention.

WILL IT COST ME ANYTHING TO BE IN THIS STUDY?

You will not have any costs associated with participating in this research study.

WILL I BE PAID FOR PARTICIPATING?

You will not be paid for being in this research study.

WHO IS FUNDING THE STUDY?

The University of North Dakota and the research team are receiving no payments from other agencies, organizations, or companies to conduct this research study.

CONFIDENTIALITY

The records of this study will be kept private to the extent permitted by law. In any report about this study that might be published, you will not be identified. Government agencies, the UND Research Development and Compliance office, and the University of North Dakota Institutional Review Board may review your study record

Any information that is obtained in this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. *If the researcher is a mandatory reporter:* You should know, however, that there are some circumstances in which we may have to show your information to other people. For example the law may require us to show your information to a court or to tell authorities if we believe you have abused a child, or you pose a danger to yourself or someone else. Confidentiality will be maintained at all times. Once the survey has been completed, your information will be stored in a Qualtrics database. During analysis, the information will be stored on Dr. Anne Haskin's computer in a locked office on the University of North Dakota campus. Once transferred here, the information will be deleted from the Qualtrics system. After data analysis is completed, it will be copied to a compact disk and stored in Anne Haskin's locked office for three years, after which time it will be destroyed.

If we write a report or article about this study, we will describe the study results in a summarized manner so that you cannot be identified.

IS THIS STUDY VOLUNTARY?

Your participation in this study is completely voluntary. You may choose not to participate or you may discontinue your participation at any time without penalty or loss of benefits to which you are otherwise entitled. Your decision whether or not to participate will not affect your current or future relations with the University of North Dakota.

CONTACTS AND QUESTIONS?

The researchers conducting this study are Alyssa A. Jenkins, Renae H. Witta, and Anne M. Haskins. You may ask any questions you have now. If you later have questions, concerns, or complaints about the research please contact Alyssa A. Jenkins: (701)-720-1630, Renae H. Witta: (952)-484-4203 or Anne M. Haskins: (701)-777-0229

If you have questions regarding your rights as a research subject, you may contact The University of North Dakota Institutional Review Board at **(701) 777-4279**.

- You may also call this number about any problems, complaints, or concerns you have about this research study.
- You may also call this number if you cannot reach research staff, or you wish to talk with someone who is independent of the research team.
- General information about being a research subject can be found by clicking “Information for Research Participants” on the web site:
<http://und.edu/research/resources/human-subjects/research-participants.cfm>

Appendix C

STATEMENT OF RESEARCH

An individual who wishes to participate in this study must give his or her informed consent based on the risks and reward involved in this research. This document attests to your understanding of the nature of this study. Please take your time while choosing whether or not to participate. Feel free to ask any questions you may have.

WHAT IS THE PURPOSE OF THIS STUDY?

You are invited to participate in a research study entitled, “The incidence and impact of musculoskeletal and nerve injuries among occupational therapists”.

You have been invited to participate because you are a registered occupational therapist or occupational therapy assistant.

Alyssa Jenkins and Renae Witta are completing this study. We are both occupational therapy graduate students at the University of North Dakota. Dr. Anne Haskins, OTR/L an associate professor at the University, is acting as our advisor and assisting us throughout this research process. This research study is required for completion of our degrees. This study will also provide information to the occupational therapy profession.

We are conducting this research to gain a clearer understanding of the occurrence and the general impact that musculoskeletal and nerve injuries have on practicing occupational therapy therapists and assistants. Through this research we hope to better understand the influence of musculoskeletal and nerve injuries within occupational therapy practice.

HOW LONG WILL I BE IN THIS STUDY?

Your participation in the study will last approximately 15-20 minutes to complete. You will be able to participate in this study from a location of your choice, as long as you have Internet access.

WHAT WILL HAPPEN DURING THIS STUDY?

Your participation in this study will involve taking part in an online survey. Your participation is completely voluntary, and you may discontinue the survey or skip any questions that you would prefer not to answer at any time. Questions may include demographic information. Other questions may pertain to the nature of your daily work environment, or the impact of musculoskeletal/nerve injuries may have on the practitioners’ quality of life, work satisfaction or work performance. No identifying information will be collected.

WHAT ARE THE RISKS OF THE STUDY?

There may be some risks associated with participation in this study. You may experience frustration or anxiety while completing this survey. These risks are not viewed as being more excessive than those experienced in everyday life, however it is your right as a research participant to not answer any questions that you do not wish to.

WHAT ARE THE BENEFITS OF THIS STUDY?

You may not benefit from participating in this study. However, you may benefit others in the future through your participation. Through this study, the student researchers hope to identify the impact musculoskeletal disorders and nerve injuries have on the quality of life of practicing occupational therapists. By identifying the impact these may have, we hope to raise awareness and encourage avoidance of these disorders through modifications and prevention.

WILL IT COST ME ANYTHING TO BE IN THIS STUDY?

You will not have any costs associated with participating in this research study.

WILL I BE PAID FOR PARTICIPATING?

You will not be paid for being in this research study.

WHO IS FUNDING THE STUDY?

The University of North Dakota and the research team are receiving no payments from other agencies, organizations, or companies to conduct this research study.

CONFIDENTIALITY

The records of this study will be kept private to the extent permitted by law. In any report about this study that might be published, you will not be identified. Government agencies, the UND Research Development and Compliance office, and the University of North Dakota Institutional Review Board may review your study record

Any information that is obtained in this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. ***If the researcher is a mandatory reporter:*** You should know, however, that there are some circumstances in which we may have to show your information to other people. For example the law may require us to show your information to a court or to tell authorities if we believe you have

abused a child, or you pose a danger to yourself or someone else. Confidentiality will be maintained at all times. Once the survey has been completed, your information will be stored in a Qualtrics database. During analysis, the information will be stored on Dr. Anne Haskin's computer in a locked office on the University of North Dakota campus. Once transferred here, the information will be deleted from the Qualtrics system. After data analysis is completed, it will be copied to a compact disk and stored in Anne Haskin's locked office for three years, after which time it will be destroyed.

If we write a report or article about this study, we will describe the study results in a summarized manner so that you cannot be identified.

IS THIS STUDY VOLUNTARY?

Your participation in this study is completely voluntary. You may choose not to participate or you may discontinue your participation at any time without penalty or loss of benefits to which you are otherwise entitled. Your decision whether or not to participate will not affect your current or future relations with the University of North Dakota.

CONTACTS AND QUESTIONS?

The researchers conducting this study are Alyssa A. Jenkins, Renae H. Witta, and Anne M. Haskins. You may ask any questions you have now. If you later have questions, concerns, or complaints about the research please contact Alyssa A. Jenkins: (701)-720-1630, Renae H. Witta: (952)-484-4203 or Anne M. Haskins: (701)-777-0229

If you have questions regarding your rights as a research subject, you may contact The University of North Dakota Institutional Review Board at **(701) 777-4279**.

You may also call this number about any problems, complaints, or concerns you have about this research study. You may also call this number if you cannot reach research staff, or you wish to talk with someone who is independent of the research team. General information about being a research subject can be found by clicking "Information for Research Participants" on the web site: <http://und.edu/research/resources/human-subjects/research-participants.cfm>

Please feel free to print a copy of this consent form for further reference

By choosing the item marked "I understand this study and would like to participate. I understand I can stop completing the study at any time by closing the internet window," you are giving your consent to participate in this research. It also means that you understand the study and that you can exit the study at any time.

If you choose not to participate, you can exit this page now.

Thank you for your time and consideration.

I understand this study and would like to participate. I understand I can stop completing the study at any time by closing the internet window.

What is your primary area of practice?

Rehabilitation & Disability

Mental Health

Children & Youth

How many patients do you typically treat in a day?

Less than 5

6-10

11-15

16-20

More than 20

How many hours per week do you work?

9 or less

10-20

21-30

31-40

More than 40

What is the average length of treatment sessions?

15 Minutes

30 Minutes

45 Minutes

60 Minutes

Are you currently ill?

Yes

No

If something is wrong with your health, what do you think it is?

Do you currently have a musculoskeletal or nerve injury?

Yes

No

How long have you been experiencing symptoms of this injury?

1 year or less

2-4 years

5+ years

How physical is your job on a daily basis?

1 being not physical at all and 5 being extremely physical ?



Do you believe that your injury was caused by or made worse through participation in work activities?

Yes

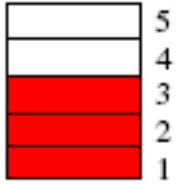
No

Have you ever modified or discontinued treatment delivery as a result of this injury?

Yes

No

How many days per week do you perform patient handling, (transfers, lifts, limb manipulations, massage, or other manual therapies)



On average, how many hours per day do you spend performing patient handling?

- 0
- 1-2
- 3-4
- 5+

How many days per week do you perform physical agent modalities?



On average, how many hours per day do you spend performing physical agent modalities on patients?

- 0
- 1
- 2
- 3+

Is productivity tracked at your place of employment?

- Yes
- No

What is your expected productivity level?

- 10-15 Units
- 16-20 Units
- 21+ Units
- N/A

In the past week, did you meet or exceed your expected productivity?

- Yes
- No
- N/A

Do you feel as though your illness or injury has had an impact on your ability to meet productivity standards?

- Yes
- No

Overall, do you feel as though your illness or injury has impacted your work satisfaction?

- Yes
- No

Instructions

This assessment asks how you feel about your quality of life, health, or other areas of your life. **Please answer all the questions.** If you are unsure about which response to give to a question, **please choose the one** that appears most appropriate. This can often be your first response.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last two weeks.**

		Very poor	Poor	Neither poor nor good	Good	Very good
1(G1)	How would you rate your quality of life?	1	2	3	4	5
		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2(G4)	How satisfied are you with your health?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	An extreme amount
3(F1.4)	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4(F11.3)	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
5(F4.1)	How much do you enjoy life?	1	2	3	4	5
6(F24.2)	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7(F5.3)	How well are you able to concentrate?	1	2	3	4	5
8(F16.1)	How safe do you feel in your daily life?	1	2	3	4	5
9(F22.1)	How healthy is your physical environment?	1	2	3	4	5

		Not at all	A little	Moderately	Mostly	Completely
10 (F2.1)	Do you have enough energy for everyday life?	1	2	3	4	5
11 (F7.1)	Are you able to accept your bodily appearance?	1	2	3	4	5
12 (F18.1)	Have you enough money to meet your needs?	1	2	3	4	5
13 (F20.1)	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14 (F21.1)	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15 (F9.1)	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16 (F3.3)	How satisfied are you with your sleep?	1	2	3	4	5
17 (F10.3)	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18 (F12.4)	How satisfied are you with your capacity for work?	1	2	3	4	5
19 (F6.3)	How satisfied are you with yourself?	1	2	3	4	5
20 (F13.3)	How satisfied are you with your personal relationships?	1	2	3	4	5
21 (F15.3)	How satisfied are you with your sex life?	1	2	3	4	5
22 (F14.4)	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23 (F17.3)	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24 (F19.3)	How satisfied are you with your access to health services?	1	2	3	4	5
25 (F23.3)	How satisfied are you with your transport?	1	2	3	4	5

		Never	Seldom	Quite often	Very often	Always
26 (F8.1)	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

Appendix C
Initial IRB Approval Letter

U N I V E R S I T Y O F  N O R T H D A K O T A

INSTITUTIONAL REVIEW BOARD
c/o RESEARCH DEVELOPMENT AND COMPLIANCE
DIVISION OF RESEARCH
TWANLEY HALL ROOM 106
264 CENTENNIAL DRIVE STOP 7134
GRAND FORKS ND 58202-7134
(701) 777-4279
FAX (701) 777-6708

December 16, 2013

Alyssa Jenkins and Renae Witta
1401 14th St SW
Minot, ND 58701

Dear Ms. Jenkins and Ms. Witta:

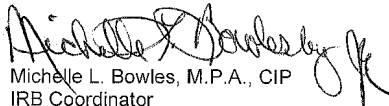
We are pleased to inform you that your project titled, "Incidence and Impact of Musculoskeletal and Nerve Injuries Among Occupational Therapists" (IRB-201312-200) has been reviewed and approved by the University of North Dakota Institutional Review Board (IRB). The expiration date of this approval is May 1, 2014.

As principal investigator for a study involving human participants, you assume certain responsibilities to the University of North Dakota and the UND IRB. Specifically, any adverse events or departures from the protocol that occur must be reported to the IRB immediately. It is your obligation to inform the IRB in writing if you would like to change aspects of your approved project, prior to implementing such changes.

When your research, including data analysis, is completed, you must submit a Research Project Termination form to the IRB office so your file can be closed. A Termination Form has been enclosed and is also available on the IRB website.

If you have any questions or concerns, please feel free to call me at (701) 777-4279 or e-mail michelle.bowles@research.und.edu.

Sincerely,


Michelle L. Bowles, M.P.A., CIP
IRB Coordinator

MLB/jle

Enclosures

Appendix D
Protocol Change IRB Approval Letter

REPORT OF ACTION: PROTOCOL CHANGE
University of North Dakota Institutional Review Board

Date: 1/23/2014 Project Number: IRB-201312-200

Principal Investigator: Jenkins, Alyssa; Witta, Renae

Department: Occupational Therapy

Project Title: Incidence and Impact of Musculoskeletal and Nerve Injuries Among Occupational Therapists

The above referenced project was reviewed by a Designated Member for the University's Institutional Review Board on 1/24/2014 and the following action was taken:

Protocol Change approved. **Expedited Review** Category No. _____
Next scheduled review must be before: _____

Copies of the attached consent form with the IRB approval stamp dated _____ must be used in obtaining consent for this study.

Protocol Change approved. **Exempt Review** Category No. 2
 This approval is valid until MAY 1 2014 as long as approved procedures are followed.
No periodic review scheduled unless so stated in the Remarks Section.

Copies of the attached consent form with the IRB approval stamp dated N/A must be used in obtaining consent for this study.

Minor modifications required. The required corrections/additions must be submitted to RDC for review and approval. **This study may NOT be started UNTIL final IRB approval has been received.**
(See Remarks Section for further information.)

Protocol Change approval **deferred**. **This study may not be started until final IRB approval has been received.**
(See Remarks Section for further information.)

Protocol Change **disapproved**. **This study may not be started until final IRB approval has been received.**

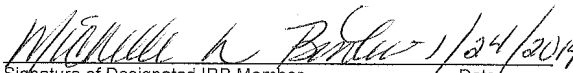
REMARKS: Any unanticipated problem or adverse occurrence in the course of the research project must be reported within 5 days to the IRB Chairperson or RDC by submitting an Unanticipated Problem/Adverse Event Form.

Any changes to the Protocol or Consent Forms must receive IRB approval prior to being implemented (except where necessary to eliminate apparent immediate hazards to the subjects or others).

PLEASE NOTE: Requested revisions for student proposals MUST include adviser's signature. All revisions MUST be highlighted and submitted to the IRB within 90 days of the above review date.

Education Requirements Completed. (Project cannot be started until IRB education requirements are met.)

cc: Dr. Anne M. Haskins


Signature of Designated IRB Member Date 1/24/2014
UND's Institutional Review Board

If the proposed project (clinical medical) is to be part of a research activity funded by a Federal Agency, a special assurance statement or a completed 310 Form may be required. Contact RDC to obtain the required documents.

(Revised 10/2006)