THE IMPACT OF OBESITY ON PARTICIPATION IN EVERYDAY LIVING

THE IMPACT OF CLASS III OBESITY ON PARTICIPATION IN THE OCCUPATIONS OF EVERYDAY LIVING FOR ADULTS SEEKING TREATMENT FOR OBESITY

By

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Abstract

This thesis summarizes the findings of two studies, one qualitative and one quantitative, that examined the participation of adults with class III obesity in occupations of everyday living which included work, self-care, recreation and rest. The results of this research form the basis of the three manuscripts included in this thesis.

The purpose of the first study was to describe the experience of living with obesity in the context of participation in daily activities and to identify factors that constrain or facilitate participation. Using a descriptive, phenomenological approach, in-depth, semi-structured interviews were conducted with 10 adults who were enrolled in an obesity treatment program. This analysis revealed themes that underscored the tensions, barriers and coping strategies across and within occupations of everyday living. The quality and diversity of occupation was influenced by several barriers within their environment such as inaccessible physical spaces and negative attitudes towards persons with obesity. Participants described their lives as being "on-hold" until weight was lost. Findings from this study were used to develop a larger, cross sectional survey.

The purpose of the cross sectional survey (study number 2) was to describe how adults with class III obesity spend their daily time and to identify factors that predict participation in the occupations of everyday living. An analysis of data collected (n=128) using the Occupational Questionnaire revealed that the distribution of time spent across activities classified as work, daily living,

recreation and rest was similar to the time use of adults with chronic health conditions. A multiple regression analysis (n=140) resulted in a model in which factors including social support and disability status explained 35% of the variance in satisfaction with participation.

Results of these studies contributed to a better understanding of the daily experience of participation in the occupations of everyday living for adults with class III obesity and the factors that best predict satisfaction with participation.

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Chapter 1

Introduction

This doctoral dissertation is a "sandwich" thesis, a compilation of three articles, all of which have been prepared for submission to peer-reviewed, scholarly journals in the areas of occupational therapy and obesity health care. The first article summarizes the qualitative research findings about the lived experience of adults with class III obesity in the participation of everyday occupations. This article is currently under review for publication by the Canadian Journal of Occupational Therapy. The remaining two articles describe and explore the factors that facilitate or constrain participation in the occupations of everyday living. The purpose of this chapter is to provide background information about obesity, to identify issues that led to the development of the research questions and to describe the process followed to address these questions.

Background Information on Obesity and Obesity Treatment

Obesity is a health condition that is multidimensional in nature. As such, this condition has the potential to impact body functions and structures, activities and participation and can be influenced by contextual factors within both the person and the environment (Ritenbaugh, Kumanyika, Morabia,Jeffery & Antipathies, 1999; World Health Organization, 2007). Obesity rates continue to rise. By the year 2030, it is anticipated that adult obesity rates in Canada will have increased from the current rate of 23% to close to 35% (Statistics Canada, 2005). The ratio of a person's height to weight is used to calculate a body mass index

(BMI). The Canadian weight classification system is based on ranges of BMI calculated in population health studies. A BMI of 18.5–24.9 kg/m^2 is considered normal (Health Canada, 2006). Two percent of adults in Canada (approximately 484 000 Canadians) have a BMI of $40kg/m^2$, thereby meeting the criteria for class III obesity (Tjepkema, 2005).

A report published by the World Health Organization (WHO) estimates that 10% of the world experiences some type of disability (WHO, 2006). Diabetes, cardiovascular disease and cancer are among the most common causes of disability worldwide. These health conditions have been associated with obesity (National Task Force on the Prevention and Treatment of Obesity, 2000). Results from the Canadian Community Health Survey (Statistics Canada, 2005) indicated that men and women aged 45-64 years represented up to 31% of the adult population with obesity. The same age group of Canadians was reported to have the highest rates of disability reported in the Participation and Activity Limitation Survey at 16.7% (Statistics Canada, 2001). While not directly examined, obesity may be a contributing factor to disability for adults' ages 45-64 years.

Obesity can affect many aspects of a person's ability to function in their daily life. Research exploring the health status of persons with obesity report functional impairments and decreased quality of life that include difficulties with mobility and tolerance for physical activity (Fontaine & Barofsky, 2001; Jia &

Lubetkin, 2005; Larsson, Karlsson & Sullivan, 2002). Evidence indicates that extreme BMI values (high or low <18 or > 30) increase the risk for functional impairment. This finding is particularly true for people with a BMI above 40 kg/m^2 (class III) (Jensen, 2005). Given that obesity and associated health conditions have the potential to limit engagement in meaningful occupation; it is important that obesity-related treatments focus on developing strategies to encourage participation. However, participation in the occupations of everyday living is not considered an outcome of obesity treatment.

The Canadian Medical Association (CMA), in collaboration with researchers, practitioners and policy makers, developed clinical practice guidelines for the treatment of obesity in adults (Lau, Douketis, Morrison, Hramiak, & Sharma, 2007). A closer examination of these guidelines found obesity treatment to be primarily focused on reducing a person's body weight and improving health-related quality of life (Lau et al., 2007). Outcomes considered as markers of success for obesity treatment included a reduction in body weight and waist circumference because of their association with biomedical markers of health, including blood glucose cholesterol levels, and blood pressure. In this context, determining how these outcomes translate into performance and satisfaction with participation in the occupations of everyday living has yet to be explored.

Participation in the occupations of everyday living

Occupation is defined as "...everything people do to occupy themselves including looking after themselves (self-care), enjoying life (leisure), and contributing to the social and economic fabric of their communities (productivity)" (Canadian Association of Occupational Therapists, 2002, p. 34). Participating in meaningful occupations takes place in the environments of everyday living and is a determinant of health and well-being (Wilcock, 2006). Occupational performance refers to the ability to execute the tasks required of an occupation. Moyers (2005) suggested individuals should strive to balance time across the occupations of self-care, productivity and leisure. Through balance and participation, health and well-being is then amplified (Moyer).

The International Classification of Functioning (ICF) (WHO, 2001) defines participation as the involvement in a life situation whereas activity relates to the execution of a task. The WHO perspective of activity and participation is congruent with the notion of occupation as defined in the occupational therapy literature (Wilcock, 2006). Wilcock defines occupation as: "participation in any activity...to meet health, personal, societal, and survival needs and wants" (Wilcock, p. 80). Exploring the impact of obesity on participation in meaningful life activities (occupation) has yet to be examined.

Theoretical Framework

The purpose of this study was to describe participation in daily occupations and to identify factors that predict satisfaction with participation for

people with class III obesity. The ICF definitions of activity and participation were used to describe the activity and participation functions and limitations for participants in the studies included in this thesis.

The International Classification of Functioning (ICF) was developed by the World Health Organization (WHO) in order to provide a universal framework to describe how people live with a health condition (WHO, 2001). The ICF represents an important shift away from a focus on impairment to an emphasis on function and participation. The ICF encourages consideration of a variety of factors that contribute or limit activity performance and participation. This framework consists of two distinct, interrelated components. The first component focuses on disability and functioning that result from processes at the level of the individual with an emphasis on impairment of body structures and function and the ability of the person to perform activities and participate in society. The second component of the ICF, contextual factors, includes personal and environmental factors. Based on a biopsychosocial perspective of health, the ICF recognizes that individuals living with chronic health conditions, such as obesity, are influenced by both external (contextual) and internal factors (WHO, 2001). The ICF provides a framework to describe key elements that contribute to functioning and disability that may be affected by class III obesity. The domains listed in the ICF were used to guide the types of data collected in order to describe the impact of obesity on participation in occupations.

Statement of the Problem

Weight loss resulting in improvements to health requires adherence to treatment protocols that emphasize balancing energy intake and energy expenditure. Interventions include but are not limited to: modification of eating and exercise behaviours, drug therapy to control appetite or fat absorption and/or surgical interventions such as gastric banding or gastric bypass. Obesity treatment usually requires a long-term commitment of several months and, in some cases, can take years in order to be successful. Persons involved in obesity treatment typically live in the community. They are expected to continue their participation in occupations of everyday living including work, self-care, recreation and rest (Chung, Francis & Forhan, 2006). The participation profile of adults in treatment for obesity has not been studied. Information about the participation of adults who are in treatment for obesity will contribute to the understanding of how they live their lives while trying to alter the condition of obesity. Living while Losing [TM 1] is a concept that has the potential to enhance participation in daily activities for persons seeking treatment for obesity. This concept is best achieved with an understanding of the factors that contribute to activity limitation and participation restriction. Currently, healthcare practitioners have a limited understanding of the daily experiences of adults with class III obesity. This paucity of knowledge is due to limited studies that focus on the day to day activity involvement of this population.

1 Living While Losing refers to the concept of continuing to participate in roles associated with daily living. It is an original term developed by the author.

This thesis will provide insight about the experience of participation in occupations of daily living for adults with class III obesity who is seeking treatment for this condition. The research will also identify factors that predict satisfaction with participation.

Research Process

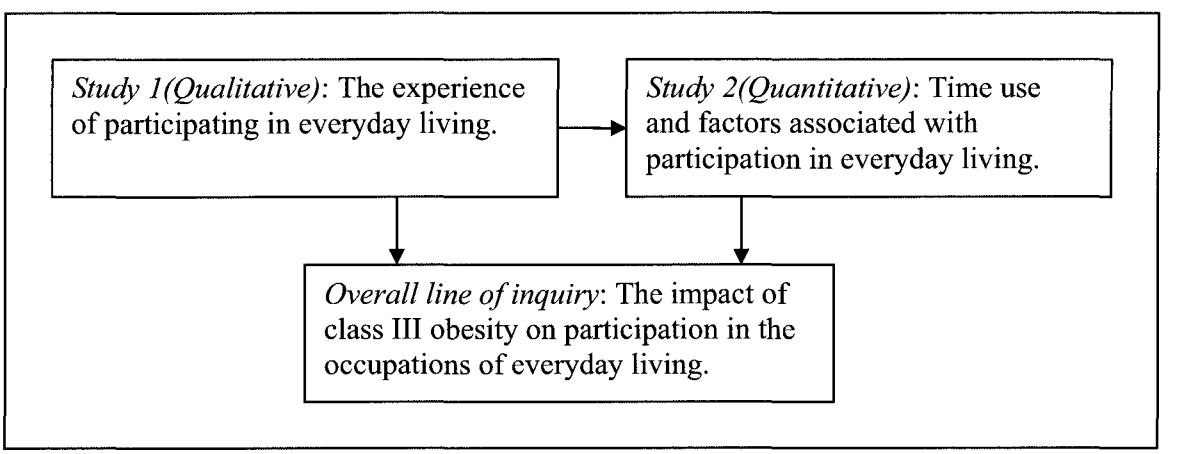
This study was driven by the concept of participation and its contribution to the health and wellness of individuals. The exploration of participation was guided by my belief about the importance of multiple perspectives about the experience of living with obesity. The methods selected for use in this study reflect the value placed on a person's experience. This value comes from my experience as an occupational therapist whose clinical practice was guided by client-centred treatment planning and collaborative practice. This view is also shaped by the demand for research that informs clinical practice and meets the needs of persons seeking treatment for obesity.

To honour this world view and to fit with the state of knowledge about participation and obesity, a sequential, mixed methods approach (Creswell & Plano-Clark, 2007) was used to explore the research questions (Figure 1). Data were collected using qualitative and quantitative methods for the purpose of contributing to a better understanding of participation in daily living. Each research question for this study required specific methods. My intent was not to mix data or the results from the different methods, rather, the qualitative method of descriptive phenomenology addressed questions that informed survey

development. The survey was specifically designed for persons seeking treatment for obesity. Persons seeking treatment for obesity were of interest as it was believed they would be more likely to be aware of issues associated with having obesity and more likely than individuals not seeking treatment to share the experiences of having obesity. These studies contribute to the overall line of inquiry about the impact of obesity on the satisfaction with participation in the occupations of everyday living.

Figure 1

Illustration of sequential mixed methods approach used in this thesis



This research contained two phases. Phase one used the qualitative tradition of phenomenology to describe what it is like to live with class III obesity. The results from phase one of the study were used to make decisions about the content of the survey for use in phase two. Phase two of this study was a cross sectional survey of adults with class III obesity who are seeking treatment for obesity. This survey was completed in order to collect information regarding

the time use of adults living with class III obesity and to identify factors that best predict satisfaction with participation.

Research Questions

The overall goal of this thesis was to investigate the satisfaction with participation of adults with class III obesity in the occupations of daily living including productivity, self-care and leisure. More specific objectives and associated research questions were as follows:

1. To describe the lived experience of adults who have class III obesity undertaking treatment for obesity as they participate in daily occupations and to identify areas of occupation impacted by obesity.
2. To conduct a cross-sectional survey to describe participation in daily occupations among persons with class III obesity and to identify factors associated with satisfaction with participation. This research aim had several associated research questions:
    a. What is the distribution of daily occupations for persons with class III obesity and does this differ from the general population in Canada?
    b. How do people with class III obesity perceive their performance of daily occupations?
    c. Do people with class III obesity enjoy their daily occupations?
    d. How important are daily occupations to persons with class III obesity?

e. What factors are associated with participation in daily occupations and what multivariate model best predict satisfaction with participation in daily occupations for persons with class III obesity?

In chapter 2, the experience of participating in daily activities for adults living with class III obesity is described. In chapter 3, the participation profile of adults with class III obesity is described and in chapter 4, factors associated with participation and a model that best predicts participation for adults with class III obesity who are seeking treatment for obesity are identified.

Chapter 2

The experience of participation in everyday occupations for adults with obesity

(Note: a similar version of this paper has been accepted for publication in the Canadian Journal of Occupational Therapy. Copyright permission granted from the Canadian Association of Occupational Therapists)

Two percent of adults in Canada (approximately 484 000 Canadians) have a BMI of 40 kg/m^2 thereby meeting the criteria for class III obesity (Tjepkema, 2005). Class III obesity is linked to a number of health problems including type 2 diabetes, cardiovascular disease and sleep apnea (National Task Force on the Prevention and Treatment of Obesity, 2000). In addition, person with obesity experience anti-obesity bias and stigma from employers, members of the general public and health care providers (Puhl & Brownell, 2001; Wang, Brownell, & Wadden, 2004).

Participation in occupations of everyday life provides opportunities to connect with others, acquire skills and competencies and is a means of finding a purpose in life (Law, 2002). Participation is recognized in the World Health Organization's (WHO) International Classification of Functioning, Disability and Health (ICF) and is defined as involvement in a life situation (WHO, 2001). The domains listed under participation include: general tasks and demands; mobility; self-care; domestic life; interpersonal interactions and relationships; major life areas such as work; and community social and civic life (WHO, 2001). Having information about the experience of adults with obesity in the domains of participation can inform occupational therapy practice for this population.

A review of the literature using the search terms obesity, participation in daily activities, and social participation yields a large number of studies which explored the participation of persons in activities for the purpose of weight loss. One study explored the impact of obesity on social participation of older adults (mean age=71 years) however the participants in the study did not meet the classification for obesity (mean BMI=26.1 kg/m2) and participation was defined as time spent interacting or being in the presence of other people (Zetttel-Watson & Britton, 2008). Although results from this study imply that body weight was not a significant predictor of social interaction or direct contact with others they do not contribute to our understanding of what it is like to participate in a range of occupations of daily living for adults with obesity. To our knowledge, there has only been one study of participation in the occupations of everyday living for persons with obesity. This qualitative study involved 72 persons with obesity, aged 16-72 years, and focused primarily on identifying socio-cultural factors that impact the lives of persons with obesity (Thomas, Hyde, Karunaratne, Herbert, & Komesaroff, 2008). Results from the study suggested the majority of participants continued to participate in many of their daily activities. However, specific activities and the way in which participants engaged in these activities were not explored. Use of a framework to explore the impact of obesity on day to day activities might facilitate further understanding of those factors that can impact participation for this population. The person-environment-occupation model (PEO), familiar to occupational therapists, illustrates the interaction of personal,

environmental and occupation factors that result in occupational performance (Law, Cooper, Strong, Stewart, Rigby & Letts, 1996). The PEO model has been used to guide the identification and interaction of key factors that contribute to the participation experience of individuals (Law, Cooper, Strong, Stewart, Rigby, & Letts, 1996). To date, the influence of personal and environmental factors on participation in self-care, work and leisure for adults with class III obesity has yet to be explored.

The purpose of this study was to describe the experience of participation in the occupations of everyday life for adults with class III obesity undergoing treatment for obesity. Important personal and environmental issues that impact participation were explored using the PEO framework. This study was phase one of a PhD research project which used a sequential mixed methods design. The results of this study will be used to make decisions about the content of a cross sectional survey to be conducted as the second phase of the project.

Methods

Approval for the study was granted by the McMaster University/Hamilton Health Sciences Research Ethics Board. Participants were not compensated for their participation in the study. Participants provided written consent witnessed by the administrative director of the treatment program.

Because the purpose of this study was to describe the experience of adults living with class III obesity, the tradition of descriptive phenomenology was selected as the most appropriate methodological approach. Specifically, this

method, as explained by Giorgi (1985), was used to guide the line of inquiry and analysis for the purpose of describing participation in occupations and identifying factors that support or hinder participation.

Participants

Criterion based sampling was used in the study. All participants had class III obesity, were involved in treatment for obesity and were between 30-60 years of age. In order to describe the experience of living with obesity, participants needed to be aware that they have obesity. Therefore treatment seeking for obesity was an important inclusion criterion. The age range was selected based on Eriksons' theory of human development that describes the stage of middle-adulthood having tasks associated with productivity, family and civil interests, the everyday life activities of interest (Edwards & Christiansen, 2005). This age range also includes the typical ages at which people seek treatment for obesity (Dalton, 2006).

Adults referred to an obesity treatment program in Ontario, Canada, were invited to participate in this study. The administrative director of the obesity clinic randomly selected 20 patients from the active patient list who met the study criteria and who had previously expressed interest in participating in research studies. Those who agreed to participate were then provided with an information sheet and consent form to complete at their next appointment. The researcher contacted potential participants by telephone after consent was provided to schedule the interview. The response rate to participate was 70% (n = 14).

Participants were interviewed by the researcher, MF, at the obesity treatment program. This location was selected as it was convenient for the participants and provided seating in a private space that met the body size and weight requirements for participants.

Participant Demographics

Of the fourteen participants who provided consent, ten scheduled an interview. Three participants declined to be interviewed due to challenges in finding a suitable date for an interview. One participant decided not to participate for reasons unknown. The body mass index (BMI) for each participant was based on recorded weight and height measurements taken within one week of the interview. Participants had been enrolled in the treatment program for a minimum of one month. The participants' health problems were identified from their medical record and were confirmed by each participant. The types of health problems included: osteoarthritis, obstructive sleep apnea, type II diabetes, depression, mood disorders, and hypertension. A demographic summary of the sample is found in Table 1. All participants were Caucasian. The sample has a similar profile to adults with obesity in the general population in terms of gender, co-morbid health problems (Tjepkema, 2005) and marital status (McLaren & Godley, 2008).

Table 1

Participant Demographics

Variable			
Gender			
Female (n=7)			
Male (n=3)			
Marital status			
Married (n=6)			
Divorced (n=3)			
Single= (n=1)			
Variable	Mean (standard deviation)	Minimum	Maximum
Age	51.3 (7.9) years	39	60
BMI	45.2 (5.3) kg/m^2	40	54.2
Number of Health Issues	5 (3.4)	2	14
Length of time in current program	6.3 (3.7) months	1	12

Data Collection

An interview guide was developed based on a review of current literature on obesity and also evidence related to the relationship between participation, health and occupations of daily living. This guide was then pilot tested with three persons with obesity. Questions were framed broadly in order to obtain an overall description of the day-to-day experience of living with obesity (e.g., Can you share with me how obesity affects your participation in the typical activities you do everyday?). More specific questions followed in which participants were asked to identify activities in which they currently were involved (e.g. What activities are you participating in at home and outside of the home?) and activities in which they wanted to participate but were not able (e.g. Are there things you would like

to do but don't?, What prevents you from doing these activities?). Interviews were recorded using a digital voice recording device and transcribed verbatim.

Member-checking procedures were employed for the purpose of accuracy within the transcripts. Transcripts were printed and mailed to the appropriate participant for their review, along with a stamped return envelope. Participants were asked to return their transcripts with comments/edits to the investigator within one week of receiving the transcript. The final analysis was based on data collected from all interviews. Member checking procedures resulted in five transcripts returned with comments and edits that were entered by the researcher. Comments served to provide a more detailed description of participation in activities discussed during the interview. Edits were in the form of requests for details to be removed pertaining to family members or specific details about their employer they did not wish to include in the study. The edits did not alter the integrity of the data for the purpose of this study.

Data Analysis

Data were interpreted within the context of the researcher's views as an occupational therapist with experience working with patients who have class III obesity. The researcher is also familiar with the constructs of health and social science. Prior to analysis and even before the collection of data, the assumptions of the researcher were identified and recorded. The researcher recorded these assumptions and other study observations in a reflective journal. Discussions with the PhD supervisory committee, colleagues in the area of obesity research and

students from other disciplines were helpful in highlighting the assumptions held by the researcher.

Transcripts were analyzed by the researcher using descriptive qualitative analysis. The analytical method described by Giorgi (1985) guided the descriptive phenomenology approach. The first step of analysis involved reviewing each transcript in order to understand the overall experiences of living with obesity and associated challenges. The second step of the analysis involved identification of sections of the text which contributed to the description of what it is like to participate in daily occupations as an adult with class III obesity. Within each of these areas of inquiry, codes were identified by the researcher. This process was completed with three interviews that were identified as representative of the range of descriptions in content, depth and length and that would represent the diversity of data collected. The research moved to step 3 using the same three transcripts. During this step, the researcher transformed the description provided by the participant into the language used by occupational therapists to describe participation in occupations. Units of text and the corresponding transformation into discipline specific language were organized into categories guided by the person-environment-occupation model (Law, Cooper, Strong, Stewart, Rigby, & Letts, 1996). Reflection and imaginative variation takes place at this step in an effort to retain the integrity of the participants' description as it is translated into discipline specific language. For example, a participant's use of the phrase "tying shoes" may be replaced with "dressing lower extremity" without changing the

description of the challenges associated with participating in self-care. An example of the analysis process is found in Table 2.

At this point in the analysis, the researcher's PhD supervisor repeated steps 1-3 for the purpose of confirming and expanding the identification of meaningful units and the transformation into discipline specific language. There were no additional units identified as a result of this review. The remaining seven transcripts were then analyzed following steps one through three. In order to describe the essence of the experience of living with obesity, the description of participation in the occupations of everyday living was synthesized from data collected and transformed from all of the interviews with all of the participants.

Results

Data analysis resulted in the identification of three main themes, which each contained two sub-themes. All participants described the tensions associated with participation in daily occupations. Under this theme, sub themes included: 1) choices related to occupation and 2) values about occupation. The second theme was barriers, which corresponded to: 1) the built environment and; 2) beliefs and attitudes. The third theme related to coping strategies utilized by the participants in order to participate in daily living with sub-categories including: 1) attempting to persevere despite obstacles and; 2) supports. Table 2 provides a summary of the thematic categories identified with examples of how the data were analyzed using the PEO model.

Table 2

Examples of the analysis process

Main category: Tensions related to participation in occupations of daily living			
Sub-category	Person	Environment	Impact on participation in occupation
Choices related to occupation	Pain Fatigue Feeling less valued Perceived loss of control to make choices.	People stop coming to visit, invitations stop. Low expectations of others to perform. Limited resources and supports to make choices.	Restriction in the range of activities and the quality of participation.
Values about occupation	Interested in participation. Under stimulated.	Expectations from employers, family to be independent and in control.	Participants describe a lack of meaning and satisfaction in the occupations they do.
Main category: Barriers			
Built environment	Unable to see foot beyond the abdomen. Limited tolerance for walking. Body does not move easily or fit in seating or spaces.	Narrow staircases and short depth of each step. Seats not supportive of weight and shape attributed to obesity.	The range and diversity of spaces in which to participate is restricted.
Beliefs and attitudes	Perceive lack of value from others	Limit contact, do not make demands	
Main category: Strategies to participate in everyday living			
Attempting to persevere despite obstacles	Motivated to participate.	Expectations of others.	Energy expended on necessary occupations. Imbalance of occupations.
Supports	Insightful Motivated to participate.		Structured and planned occupation. Limited spontaneity.

The Tensions Related to Participation in Everyday Living

All participants described a tension between what they wanted to do and what they were able to do. Tensions were caused by a disconnect between values, opportunities and abilities.

Choices for participation in occupations of daily life

Restricted choices for participation in every type of occupation were identified by all participants. Activities such as shopping for clothes, joining a social club, planning a vacation, looking for employment or volunteer work were put on hold for some participants who anticipate having more choices after losing weight.

> *"I made excuses saying that after I lose the weight. But the more you go through the process (of losing weight) the more you think that you should have been doing this (living) a long time ago."* (Participant 8A).
>
> *"I dream of going places everyday with my kids and taking them on vacation and not having to worry about everything because of my weight"* (Participant 11A).

Two of the participants had to leave their careers because they could no longer prepare for work, travel to work or complete demands of their jobs. Six participants worked full-time in jobs ranging from desk-based office work to customer service positions in large chain stores. Two participants were full-time homemakers. Participants employed outside the home described restrictions in the range of activities they performed at work as a result of the pain, fatigue and

limited tolerance for mobility. Two participants perceived a belief that they are viewed as less capable by their employers compared to employees who do not have obesity. They noted that fewer demands were placed on them at work compared to their colleagues.

> *"...in the work site...people looked at me when I was at 29/30(BMI) and believed in me. But when I'm at 35 into the 40's (BMI) being 450 to 460 pounds people would say they didn't know what I was talking about."* (Participant 7A).

All participants had care giving roles, including parenting and caring for grandchildren, aging relatives and/or a spouse who required attendant care. The choices of activities within these roles were restricted in the range of available options. Most participants described feeling as though they were not good parents or grandparents because they could not move about in public places due to physical challenges and also for fear of embarrassment. These participants reported that they were not as active as they would like to be with their families.

> *"...with the kids, it takes a lot of effort mentally as well as physically. I don't do as much with them as I should or that I want to. The last couple of years we haven't done a whole lot."* (Participant 11A).

Options for leisure activities for participants were also limited by their obesity. Some participants described being members of families or social groups that enjoyed hiking, camping or other types of physically demanding activities.

The physical consequences of obesity restricted their desired level of participation.

> *"I'm starting to find that the things that I love and that I could do (are) getting harder. And it's scary to think that well you're almost waiting...what's the next step? I don't leave the house? I cut everything out?"* (Participant 1A)
>
> *"My social life is very, very limited. It kind of evolved over the years because there was so little I could do and take part in I think people stopped inviting you to. I think that was the other thing and then you found excuses for not going because it was too difficult to do".* (Participant 6A).

Participants described changes in their ability to perform self-care occupations particularly bathing, eating and bladder control. One participant stated that prior to her current weight, she enjoyed taking warm baths. Since the weight gain, she no longer has an option of having a bath.

> *"I can't get down into a bathtub and get back out. So I'm stuck with showers. It would be so lovely to sit and relax in a bathtub. So the enjoyment of something like that is gone."* (Participant 3A).

Another participant described feeling that she had no control over her eating behavior and looked forward to a time when she was able to eat for the purpose of providing her body with nutrients rather than for the purpose of coping with boredom, anger or to celebrate. *"I feel that before (the obesity) I ate to live and I feel today that I live to eat."* (Participant 1A).

Urinary incontinence was identified by most participants as an issue that limited their ability to engage in activities outside of the home. A male participant described this as an area about which people with obesity are reluctant to discuss because it is "embarrassing." He also stated that being a male and needing to sit down for urination created challenges in using public washrooms that did not always have a seated option.

Several participants had experienced life at a lower weight. Having the experience of participating in daily occupations at a lower weight provided a reference point of ability and choices. Participants compared and contrasted the experience of participation. There was a reflection on the restrictions on the choices of occupations that accompanied a weight increase. As weight loss occurs, options for participation in the areas of work, leisure and self-care are realized until their weight increases again, and the options for participation change.

> *"When I was at my highest (weight) I could do very little...each time that I lost weight I could see that I can do this (occupations) and get enjoyment out of it. So that is where it is frustrating if you put that weight back on over and over..."* (Participant 5A).

Values attributed to participation in occupations of daily life

Participants identified the value associated with participating in occupations of daily life that included autonomy, feeling valued by others and making a contribution to interpersonal relationships. Participants described an

interest in being involved in social, recreational and work-related activities but stated they would often opt out due to concerns about their inability to meet the expectations of others or the demands of the task. Most described avoiding social interactions that involved physical activities such as dancing, walking, and dining out due to concern that they were "slowing others down." If the activity included food, they felt they were being scrutinized with regard to their portion sizes or menu choices.

Feelings of low self-esteem and body image dissatisfaction were identified by most participants as reasons for avoiding sexual activity with their partner, despite the interest of their partner.

Barriers to Participation in Occupations of Daily Living

Barriers to participation in the environment were identified in the context of the built environment and the stigma associated with obesity in family, social and healthcare environments.

The built environment

The built environment was identified most often by participants as limiting participation in healthcare, recreation and social activities. Specific barriers in the built environment included seating in cinemas, restaurants, airplanes, automobiles or public transit that are too small for a person with obesity. Other barriers included parking spaces located far from entrances and poor access to elevators and stairs without adequate depth to each step. These barriers reduced participation in activities outside of the home.

"...your mind is constantly thinking ahead. I find myself thinking about things like oh my goodness if I go to Wonderland with the kids what if I can't fit in the rollercoaster. Or we're going on a family trip, what if I don't fit in the plane seat. I went snorkeling on a trip and I panicked. Did they have a life preserver that's going to fit? I mean you're mortified and you're constantly thinking and because you're constantly thinking there are things you won't attempt to do because you're just afraid that you're going to totally embarrass yourself." (Participant 1A).

Most participants avoided dining out, visiting amusement parks, or traveling by airplane, public transit or in vehicles other than their own. One female participant described feeling as though she was taking up more physical space in public than she should and therefore avoided going out of her home.

"I guess I'm more conscious of how much space I take up...You know you're so smushed in here (public spaces) and feeling like you're taking up more than your fair share of space...people try to get away from you." (Participant 11A).

"Seats on the Go Train, VIA Train are too small so I avoid travel. I need a seat belt extender to go into a friend's car". (Participant 3A).

Beliefs about and attitudes toward persons with obesity

There was a perception by most participants that as their weight increased their credibility in social and professional situations was negatively impacted. *"As you get bigger a lot of people just doubt what you say."* (Participant 7A).

Participants described experiences of public humiliation. Examples included needing to request seatbelt extenders on airplanes and company automobiles; incontinence due to pressure on the bladder and limited access to narrow doorways in public washrooms.

Negative attitudes toward adults with obesity and beliefs about obesity are not limited exclusively to the general community. Participants described avoiding medical care for fear of being reprimanded by their family physician because of their weight. Most stated that their primary healthcare provider never inquired about how they managed their day to day activities.

> *"I'm not going to the doctor for physicals. Before coming here I hadn't gone since 2003. I avoided it because I didn't want to go on the scale. ..she's (the doctor) going to tell me I've got to lose weight and I will say I know I have to lose weight but you tell me how."* (Participant 5A). *"I think that what is the missing piece in all of these (visits with the doctor) is that no matter what point in the process (of weight loss) you are is what are you going to do in between (visits)? Ask what do you want to do? How do you want to feel?"* (Participant 8A).

Instead, they were routinely told to eat less and be more physically active for the purpose of losing weight. *"...there are times I did not want to go to the doctor. You dread the scale. I didn't want to hear the same thing again (you need to lose weight)"* (Participant 6A).

Strategies to Participate in Everyday Living

Despite limitations, all participants described using strategies to enable participation in everyday activities and to cope with the social, psychological and physical consequences of having obesity. Strategies included persevering despite obstacles and utilizing physical and emotional supports.

Persevere despite obstacles

Participants engaged in a variety of occupations of daily living including bathing, dressing, household chores, paid employment, care giving and leisure pursuits. They described requiring more time to do these activities as compared to a non-obese person. They accommodated to the challenges through frequent breaks and prioritizing tasks, doing only what they felt the need to get done first.

> *"I am active and get things around the house done. They just take longer. I get out of breath and I don't like feeling that way."* (Participant 12A).
>
> *"I would be happier if I lost weight. I would do the same things I do now but they would be easier and I would feel more comfortable".* (Participant 5A).

Accomplishing tasks was driven by an internal pressure to prove to others that they can work (paid or unpaid) despite the obesity. This work was often done at the risk of injury, increased pain or fatigue.

> *"I think I try to overcompensate because constantly in the back of my mind I'm not going to lie down to it (obesity). I'm not going to become obese*

and totally lazy. I find I am constantly struggling with overcompensating even at the risk of flaring my arthritis" (Participant 1A).

Most participants described trying to integrate prescribed physical activity into their daily routine as part of the treatment for obesity. Despite feeling anxious in public places or self-conscious in fitness environments, they did try to be as physically active as possible.

"Going to the gym is anxiety provoking. I feel as if everyone is staring at me...I am bigger than everyone around me. I feel very isolated at the gym but I go anyway because I need to". (Participant 8A).

Participants who were working outside of the home describe doing what they needed to in order to meet job requirements. In order to have the energy to complete work tasks, participants stated that they organized their day to minimize walking, and often declined work related social activities or optional off site meetings.

Access to environmental supports

Physical and emotional supports were identified by participants. Physical supports include assistive devices or physical accommodations in environments where participation takes place. Emotional supports include verbal encouragement or a source of empathy and understanding from others.

Physical supports such as canes, walkers, scooters and carts were used by less than half of the participants. When asked specifically about the use of assistive devices, most participants stated that they would prefer not to use them

or did not see the point of purchasing devices that they would no longer need once they lost weight. Two participants requested help from family members to tie their shoes. Most participants found other ways to dress their lower extremities by avoiding lace up shoes, not wearing socks or wearing a long skirt to avoid the need for pantyhose. In the areas of self-care, participants described levels of effort and energy consumption required for showering, drying off and dressing that caused them concern. In order to make it to work on time, many participants needed to start their day 2-3 hours before work to complete self-care.

Conserving energy, planning ahead and surrounding one's self with supportive individuals were strategies identified to enable participation in everyday living. All participants identified people in their family or social network that encouraged participation in day to day activities. Their support network was available to talk about weight related issues, as needed.

Planning ahead was a key strategy described by all participants. This involved seeking out accessible environments for socializing, and finding businesses that demonstrated respect in their customer service.

> *"With obesity every situation you go into you've got to decide if this is going to be too stressful. Is it going to cause me problems? Everything you do has to be managed because of the obesity".* (Participant 7A).

Most participants described feeling anxious about the seating in restaurants. Participants often sent someone to the restaurant ahead of time to assess the

seating or would call ahead to request a table with a chair able to accommodate their weight and size.

In some cases, participants acknowledged that they needed to overcome their fear of what other people "thought" in order to do what they needed to do in a day. For example, a participant wanted to be more active with her children as she realized the benefit of active family leisure for overall health. She planned to go to a park at regular intervals during the summer months when it was less crowded and the heat was not as intense. She reported that her children expressed much joy in spending quality time with their mom, which was worth the anxiety she experienced in the time leading up to their participation in this activity.

Discussion

Living with obesity has an impact within and across all occupations - self-care, productivity and leisure. Obesity affects the way in which daily routines are structured. Participant experiences were influenced by personal and environmental factors that appear to be interrelated. The structure of the daily lives of participants was guided in part by the choices made based on physical ability, past experiences and the expectations of themselves, family members and employers.

Fear and isolation associated with being obese had implications on different areas of living including paid work, care giving, and social relationships. These findings are congruent with Thomas et al. (2008) who identified that opportunities for participation can be limited due to physical condition association

with being obese. Participants in the present study were restricted in their participation as a result of physical limitations from their weight and size, from obesity related complications and the limited choices for self-care, productivity and leisure occupations. Choices for participation in occupations were often based on physical ability and not always on level of interest associated with the activity.

The impact of living with obesity is exacerbated by person based barriers and more substantially, barriers in the built and social environment. Such barriers caused participants to withdraw from social roles and responsibilities and to avoid recreational and healthcare environments that were not obesity friendly. Tension was created as a consequence of their desire to participate more actively which, in turn, was impacted by barriers in the built and social environment. These barriers caused many to put participation on hold until they lost weight. In particular, discretionary activities such as socializing were delayed until a change in body size and weight was achieved. In some cases, stigma associated with obesity and the value or worth of an individual participating in activities such as dining out, swimming, or working impeded their participation.

Participants in this study were enrolled in an obesity treatment program in which they anticipate a reduced body weight and size. Weight loss was the main objective identified by participants with primary occupations of eating and exercise being identified as behaviors they felt they needed to modify. Attention to participation in the occupations of daily life, however, was not discussed in treatment settings. Achieving a weight loss that would be 'enough' to improve

health and well-being would take months and for some, even with significant weight loss, they would still be classified as obese. For health professionals, including occupational therapists, it is important to facilitate participation in occupations of everyday life at the current weight and not a theoretical goal weight. For individuals undergoing treatment for obesity facilitating participation in everyday occupations translates into a concept the authors refer to as "*living while losing*".

For participants in this study, obesity challenged their ability to participate in activities identified as meaningful in their everyday lives. All participants were able to engage in some degree in most occupations by adapting the way in which they engaged in activities. However, the quality and diversity of their participation was not at a level with which they were satisfied.

Most participants described "doing what they can" everyday and adopting a number of coping strategies in order to facilitate occupational engagement. Supports were found through a sense of internal resilience and more tangibly, externally from family members. Participants described routine use of energy conservation strategies mainly by breaking activities into manageable steps. A great deal of effort was expended planning time to enable participation in daily occupations. The process of analyzing environments, anticipating and avoiding barriers in all areas of occupation was consistently described by participants and appears to be a necessary skill to enable participation in occupations of daily living for persons in this study. These behaviours and skills related to

participation in everyday living have been described by adults living with chronic illness (Marris, 1996; Moss & Dyck, 2002). Results from qualitative studies on women living with multiple sclerosis, diabetes and rheumatoid arthritis included themes of limitations to freedoms and achievements due to illness compared to "normal" people, as well as a lack of understanding from others about what it is like to live with fatigue associated with a chronic condition and doing what needs to be done to get through the day including planning ahead and anticipating barriers (Marris, 1996; Moss & Dyck, 2002).

Participants in this current study reported similar experiences to those reported in the literature related to the stigma of living with obesity where labels such as lazy, intellectually inferior and unmotivated are common (Brownell, Puhl, Schwartz & Rudd, 2005). Participants described being treated differently by their family members, friends and colleagues who did not have obesity. Differences included the expectations to complete tasks of everyday living being lower due to perceptions that they were not capable of performing activities due to their weight. A belief that higher body weights are associated with less intelligence was experienced by participants in the workplace who believed the intellectual demands of their tasks at work were reduced as their weight increased.

Clinical implications

Focusing on the strengths of individuals who live with obesity and an effort to address the barriers present in the environment has the potential to influence the experience of adults with obesity. Through a process of

collaboration, occupational therapists can work with individuals to structure living so that it is consistent with their values. According to Pentland and McColl (2008) this focus can result in living with occupational integrity, an important concept to consider in the context of overall health and well-being. Interventions that utilize the strengths of individuals and which consider personal values are aimed at changing the built and social environments in which occupation takes place. These types of approaches are consistent with supporting the concept of "*living while losing*".

Participation for adults with obesity in this study was influenced by a diversity of complex personal and environmental factors that define disability status and social support. Therefore a model that considers the interaction of personal and environmental factors would be useful to guide interventions to enable participation in the occupations of everyday living. The Person, Environment Occupation (PEO) Model (Law, Cooper, Strong, Stewart, Rigby & Letts, 1996) is a dynamic systems model rooted in environmental-behavioural theories used by occupational therapists to identify interventions for the purpose of enabling performance in the occupations of everyday living (Law et al., 1998; Cooper & Stewart, 1997). The PEO model views the person and environment as dynamic in nature and therefore open to change through interventions (Law & Dunbar, 2007).

Results from this study also suggest that a tension exists between what is important to adults living with obesity and the opportunities to participate in

meaningful occupations. The occupational theory of human nature (Wilcock, 2006) explains the role of occupation as an influence on health. Wilcock argues that health and wellbeing are supported with a focus on occupation. Occupation is defined as "doing culturally meaningful work, play or daily living tasks in the stream of time and in the contexts of one's physical and social world" (Kielhofner, 1995 as cited by Christiansen & Baum, 2005, p. 4). The capability approach to well-being as discussed in the rehabilitation literature (Morris, 2009) fits with the occupational theory of human nature.

The capability approach considers a persons' capacity to perform an activity in the context of opportunities and an interest in pursuing participation in a life event. The capability approach emphasizes the value of freedom of choice and has been used as a model to guide discussions by political theorists, philosophers and social scientists about human health and development (Sen, 1984; Sen, 1999; Nussbaum, 2000). Having the right to seek employment on an equal basis with others; being able to enjoy recreational activities; being treated with dignity and being able to move freely from place to place are a few of the ten capabilities identified by Nussbaum (2000), which have influenced the Human Development Index (HDI). Application of the capabilities approach emphasizes that effective opportunities and freedom to participate are of key importance to human development (Sen, 1999).

The results of this study provide insight into the challenges and successes with participation in occupations of everyday life experienced by adults living

with class III obesity who are currently receiving treatment. Occupational therapists, as they work with clients who have obesity, can focus beyond impairment approaches that seek to change the state of obesity to implement ecological interventions that enable participation in community and socially based occupations.

Limitations

While this study provided a description of what it is like to participate in daily occupations as a person with obesity, it does not provide insight to the meaning of occupation for adults with obesity. The sample for this study included adults who were seeking treatment for obesity. Therefore, the sample characterizes the experience of living with obesity for persons who have made a decision to change a condition that they believe to be having a negative impact on their health and well-being.

Conclusion

The results of this study describe the challenges associated with living with obesity, and identify how people adapt in order to continue to engage in activities that are important. Participants were determined to engage in occupations they identified as important to their daily lives. The limitations in physical function and the social and environmental barriers associated with obesity that were experienced by the participants were not unexpected. However, the desire for participation and the impact of the barriers on the choices for participation have not been explored or documented in the literature. The

development and evaluation of strategies that enable participation in the occupations of daily living for adults with obesity may reduce its impact on everyday living.

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Chapter 3

Participation Profile of Adults with Class III Obesity

Participation, as defined by the World Health Organization (WHO), refers to one's involvement in life situations (WHO, 2001). Life situations are defined by the activities of daily living that include self-care, work, recreation and rest. Participation in life situations contribute to the health and wellness of an individual through the acquisition of skills, competencies and connections with others (Law, 2002; Wilcock, 2006). The International Classification of Functioning (ICF) was developed by the World Health Organization (WHO) in order to provide a universal framework to describe how people live with a health condition, such as obesity (WHO, 2001) Activity limitations and participation restrictions are domains included in the ICF.

Activity and participation domains are categorized within the ICF as follows: general tasks and demands, mobility, self-care, domestic life, interpersonal interactions and relationships, major life areas and community, social and civil life (WHO, 2001). Definitions of activity and participation within the ICF are congruent with the notion of occupation described in the occupational science literature (Wilcock, 2006). Occupation is defined as: "participation in any activity...to meet health, personal, societal, and survival needs and wants" (Wilcock, p. 80). Understanding the domains of participation and, in turn, how participation can be measured is important.

Measuring participation is challenging in part because of the complex pattern(s) created by time use across types of life situations and various environments. One method that has been used is to examine time spent in different types of activities. Since the conceptual association of time use that was balanced, varied and purposeful to health and well-being was recognized (Meyer, 1922), time use patterns of humans has been explored (Andorka, 1987). Studies that examined time use by persons with and without disabilities provided evidence for models that linked the diversity and balance of time use in meaningful activities to health and well-being (Kielhofner, 1992; Lavasseur, Desrosiers & Noreau, 2004; Matuska, & Christiansen, 2008).

Time diaries are a method used to collect data on how individuals spend their time (Pentland & McColl, 1999). They collect information over a period of time and allow for detailed analysis of how individuals organize their time, including the type of activity, the amount of time spent in activities as well as subjective data including satisfaction and enjoyment. Satisfaction with participation varies across individuals (Hammel, Magasi, Heinemann, Whiteneck, Bogner & Rodriguez, 2008; Ueda & Okawa, 2003). Therefore, a comprehensive measure of participation in daily occupations needs to gather information about the subjective experience of participation and recognize the idiosyncratic nature of participation. Studies exploring life balance, a concept that includes participation, have used the Occupational Questionnaire (Smith, Kielhofner, & Watts, 1986) to gather information about the types of activities that constitute participation and

the subjective experiences related to participation including ratings of performance, enjoyment and interest (Backman, Kennedy, Chalmers & Singer, 2004; Forhan & Backman, 2009). Studies using general population samples have explored time spent on sedentary behaviour for the purpose of identifying factors that contribute to obesity (Gilmour, 2007, Shields & Tremblay, 2008).To date, studies of time use have not specifically focused on persons with class III obesity.

Two percent of adults in Canada (approximately 484 000 Canadians) have a body mass index (BMI) of 40 kg/m^2, thus meeting the criteria for class III obesity (Tjepkema, 2005). Class III obesity is linked to a number of physical health problems including type 2 diabetes, cardiovascular disease and sleep apnea (National Task Force on the Prevention and Treatment of Obesity, 2000). These conditions have been identified as some of the most common causes of disability worldwide (World Health Organization, 2006). The strength of association between obesity and disability observed in a study of older adults (60+ years) was similar to those reported between other chronic conditions (e.g. arthritis, diabetes, asthma) and disability (Alley & Chang, 2007). Adults with obesity may have similar experiences and disability profiles as persons with chronic health conditions; however, this information has yet to be verified.

Studies of time use reported by persons with chronic conditions, including rheumatoid arthritis, multiple sclerosis and spinal cord injuries, identified a disproportionate amount of time in self-care occupations (Forhan & Backman, 2009; Matuska & Erickson, 2008; Pentland, Harvey, Smith & Walker, 1999).

Persons with chronic illness reported that they required more time and energy for self-care due to fatigue or other physical symptoms, and had an expectation to rest more than adults without chronic illness (Backman, Kennedy, Chalmers & Singer, 2004; Matuska & Erickson, 2008; Pentland, Harvey, Smith & Walker, 1999; Pentland, Harvey & Walker, 1998; Sandqvist & Eklund, 2008). Obesity has been associated with pain, fatigue and other symptoms that are similar to those associated with chronic health conditions (Alley & Chang, 2007). Conceptually, therefore, persons with obesity are likely to have distributions of time use similar to persons with chronic health conditions, although this relationship has not been studied in this population.

Qualitative studies that explored participation of individuals with obesity suggest that while individuals continue to participate in many of their daily activities (Thomas, Hyde, Karunaratne, Herbert, & Komesaroff, 2008), many were not satisfied. They reported a tension between what they wanted to do and what they were able to do (Forhan, Law, Vrkljan & Taylor, 2009).

Understanding where adults with obesity spend their time along with subjective measures that capture how they spend their time will provide information about the experiences of adults with obesity in day-to-day living. The purpose of this study was to describe the pattern of time use in activities categorized by the occupations of everyday living among persons with Class III obesity, including their level of satisfaction with their performance. Ratings of importance and enjoyment of such activities were also captured.

Methods

The overarching assumption in this line of inquiry was that persons with class III obesity experienced daily life in a similar way as persons with chronic health conditions. Therefore, the way in which time use and occupational profiles have been explored for persons with chronic illness was used as a guide to the design of this study (Michelson, 1999; Pentland & McColl, 1999). Aspects of time use deemed important for exploration include the allocation of time, the balance of time use across domains of daily activities, rest, recreation and work and the satisfaction with time use (Pentland & McColl, 1999).

Design

The data for this study was collected from a mail survey developed for use in a cross-sectional study of participation in occupations of daily living for persons with class III obesity. The present report is an original analysis of one of the study's objectives, to describe patterns of participation in daily occupations. Ethics approval was obtained through the McMaster University and Hamilton Health Sciences Research Ethics Board.

A mail survey was designed using the Total Design Method (TDM) in which the following procedural elements have the potential to yield a response rate over 75%: create respondent trust; perception of increased rewards and reduced cost for being a respondent; and a goal to reduce survey error (Dillman, 1978). The survey was developed using published reliable and valid questionnaires placed in a logical and increasingly personal order from a

description of a typical day to more specific details about performance, quality of life and personal information. The primary purpose of this study was to describe the occupational patterns of adults with class III obesity. Therefore, the occupational questionnaire was the primary source of data.

Recruitment

Potential study participants were identified through six obesity treatment programs in Ontario, Canada. Four of the obesity programs provide medical assessment and care that is paid for by a provincial government health care plan. Nutritional supplements used in some treatment plans were paid for by the patient. Two of the treatment programs were surgical programs that offered interventions either paid for directly by patients or through private insurance coverage. Patients typically come to these programs either through self-referral or via referral from family physician. Typically, involvement in these types of obesity treatment programs focus on issues directly related to obesity (e.g. energy intake and expenditure) and not on participation in everyday activities.

Letters of invitation were sent from the obesity programs to all current and eligible patients. Patients who were 25 years up to and including 65 years of age , who had a BMI of 40kg/m^2 or greater and were able to read and write English, were invited to participate. This age range was selected based on Eriksons' theory of human development that describes the stage of middle-adulthood as having tasks associated with productivity, family and civil interests, the everyday life activities of interest (Edwards & Christiansen, 2005). This age range also includes

the typical ages in which people seek treatment for obesity (Dalton, 2006). Treatment seeking status was selected for sampling as it was believed that such individuals are likely to be more aware of the impact of obesity on their participation in day to day activities and open to sharing their experiences of living with obesity.

The letter of invitation asked patients to further identify eligibility to participate based on exclusion criteria that included a new diagnosis of major mental illness in the past three months or an injury or surgery in the last 30 days that would interfere with their participation in the study. Additionally, the invitation included a brief description of the project and a consent form. All invitations included a business reply envelope addressed to the principal investigator at the university. Patients who released their name and address were registered for the study.

Mail Survey Procedure

A cover letter expressing thanks to participants for their interest in the study, instructions on completing the survey and a stamped return envelope were mailed to all participants who registered for the study. Participants who did not return the survey within one week were sent a reminder letter. A final reminder call was placed to participants after six weeks.

Variables and Measures

Demographic information collected in the survey included age, sex, educational achievement, household income, time of first episode of obesity,

marital status, employment status, BMI, number of coexisting health conditions, use of assistive devices, use of human physical support, and ethnic background (Table 1). These variables were used for the purpose of describing the sample. BMI was also used to stratify participants into BMI group 1 (BMI of 40-49kg/m^2) or BMI group 2 (BMI of 50kg/m^2 or more). These groups were based on BMI categories used in the obesity treatment outcome literature (Siddiqui, Linvinston & Huera, 2006). These groupings were decided a priori and were used to explore differences in variables measured using the Occupational Questionnaire.

The Occupational Questionnaire

The Model of Human Occupation (MOHO) describes occupation as the complex interaction of volition, habits and the capacity to perform in the context of the environment (Kielhofner, 2002). Volition refers to the motivation an individual has for an occupation, habits refer to the patterns or routines in which occupation is organized and performance capacity refers to the abilities required to perform an occupation. The Occupational Questionnaire was developed based on the MOHO. The Occupational Questionnaire (Smith, Kielhofner, & Watts, 1986) provided a method for participants to record daily occupations for a typical day using 30 minute increments. Occupations are coded by participants, using a coding scheme developed by the authors of the questionnaire into four types: daily living; work; recreation; and rest. Work was defined as any productive activity that is useful to other people such as volunteering, caring for others, paid employment or housekeeping. Daily living tasks were defined as activities related

to self-care including meal preparation, grooming and running errands. Recreation referred to activities such as socializing with friends, hobbies, sports, games, travelling and watching television and rest included taking naps or sleep. These constructs provide a coding scheme that allowed a quantifiable description of patterns of occupation. This questionnaire has good test-retest reliability (.77-.87) and construct validity (.84-.92) (Smith, Kielhofner, & Watts, 1986). The questionnaire has been used in studies with persons living with chronic conditions, specifically arthritis (Backman, Kennedy, Chalmers & Singer, 2004, Forhan & Backman, 2009), but not with adults with obesity.

The occupational questionnaire was designed to collect information on time spent in activities over a typical 19 hour period and information pertaining to activities conducted after 11:30 pm is not typically collected. The questionnaire was designed based on the assumption that most people are awake during the daytime hours and sleep later in the day. In addition to collecting units of time spent on daily occupations, the occupational questionnaire also measures a person's perception of their ability, interest and enjoyment related to each identified activity, thereby collecting information about the volition and performance capacity associated with occupation. Participants were asked to rate their perception of how well they performed an identified activity using a scale from 1(*very well*) to 5(*very poorly*). Participants were asked to rate enjoyment with the activities they identified doing in a typical day using a scale from 1*(like it very much*) to 5(*strongly dislike it*). Participants were asked to rate the importance

of each activity each day on a scale of 1(*extremely important*) to 5(*total waste of time*).

The data collected from this questionnaire provided information on the distribution of occupations, perceived ability, enjoyment, and interest for persons involved in this study.

Impact of obesity on participation

Participants were asked to respond to the question, "To what extent does your obesity impact your ability to perform daily occupations?" by selecting a response from a five point Likert scale using the following descriptors: 1. Impacts everything I do, 2. Impacts almost everything I do, 3. Impacts half of the things I do, 4. Impacts less than half of the things I do, 5. Does not impact anything I do. This question was used to identify participants who were limited by their obesity. Participants who responded with option 1-4 were identified as being limited by obesity and participants who responded with option 5 were identified as not limited by their obesity. This variable was used to stratify participants into groups (1. limited by obesity or 2.not limited by obesity). These groupings were used to explore differences in variables measured using the Occupational Questionnaire.

Data analysis

Data from the survey were entered into SPSS (version 17.0). Activities listed by participants were coded by participants using the codes developed by the authors of the Occupational Questionnaire. In the cases where an activity was listed without a code, the researcher assigned the most appropriate code. This

occurred in eight cases. When items were left blank and the participant had provided a telephone number, they were contacted to gather missing data (n=5). Accuracy of the data was evaluated by searching for values that fell extremely out of range. No outliers were found. Missing items on the Occupational Questionnaire were handled in the following way: Values missing for more than 4 units (2 hours) were considered invalid and data from those surveys were not included in the final analysis.(n=12). For situations where participants did not identify an activity for less than two hours, the missing data were replaced by the type of category more prevalent for the time periods one hour previous to and one hour after the missing time period. The ratings for performance, interest and enjoyment were entered based on the mean performance, interest and enjoyment ratings for the one hour previous and the one hour post the missing time period. When an activity was recorded with a pattern followed by missing data for less than two hours and then a recording of a different activity the missing values were replaced with the same activity category and ratings of the activity first reported. For example, if a participant recorded "preparing dinner" at five o'clock in the afternoon, followed by missing values for five thirty pm, 6pm, and 6:30pm and then recorded washing dishes at 7:00pm the missing values from 5:30-6:30 would be replaced with "daily living." This method was used for six cases. The method used for missing data was decided upon by the author in consultation with the research committee members due to the absence of standard methods for handling missing data for the Occupational Questionnaire.

Descriptive statistics were produced for each variable in the survey (see Table 1). Time spent in the occupations of work, daily activities, and recreation was compared to hours spent in similar occupations by the general population in Ontario, Canada (Statistics Canada, 2007). Comparisons for rest were not possible because of the differences in categorizing this activity. Data was also analyzed using three age groups, 25-44, 45-54 and 55-65. These groupings were based on categories used in the literature related to activity limitations (Statistics Canada, 2007). Two groups of BMI (group 1: 40-49 kg/m^2; group 2: 50 kg/m^2 plus) were calculated based on the subcategories of a BMI rating of 40 kg/m2 or more reported in the surgical literature (Siddiqui, Linvinston, & Huera, 2006). Limited by obesity or not limited by obesity groups were created based on the rating of limitation provided by participants (to what extent does your obesity impact your ability to perform daily occupations?).

Differences in the time spent across occupations between sub-groups (obesity groups 1 and 2, limited by obesity or not limited by obesity, and age) were assessed using t-tests and one way analysis of variance (ANOVA) for continuous data and Chi square tests for categorical data. Levene's test for equality of variance was used with the t-tests, and the appropriate level of significance for comparing means was reported. In the case where Levene's test was significant, the Mann-Whitney U test, a non-parametric test, was used.

Results

Participant Demographics

A total of 500 invitations were prepared and distributed (60-100 invitations per site) amongst the six recruitment sites. The response rate to this invitation was 34% (n=168). Demographics for those who did not respond or for those who declined to participate in the study were not able to be collected. The rate of return of surveys (complete or incomplete) was 83% (n=140). Twelve surveys were not valid as a result of missing data on the Occupational Questionnaire. The final sample was 128 adults (Table 1).

A summary of participant demographics is found in Table 1. The sample was 89.1% Caucasian and 81.3% female. More than one half of the participants (57.8%) reported being married and had a household income (50.8%) of greater than $50 000.00 (Canadian dollars). The majority of participants had completed post secondary education and two-thirds (65.7%) reported paid employment.

Participants reported a mean BMI of 48.8 kg/m^2. To measure first occurrence of obesity, participants were asked to identify points on a line representative of a life line that included the following response options: childhood (0-10 years), adolescence (11-17 years), young adulthood (18-24 years) and adulthood (25-64years). The majority of participants reported their first occurrence of obesity in childhood (28.1%) or adolescence (28.9%).

Table 1

Demographics of participants (n=128)

Continuous Variable	Mean (SD)	Minimum	Maximum
Age	46 (9.35)	27	65
BMI kg/m^2	48.8	40	76
Categorical Variables	Frequency	Valid %	
Sex			
Female	104	81.3	
Male	24	18.7	
Marital Status			
Never married	22	17.2	
Divorced	15	11.7	
Currently married	74	57.8	
Widowed	1	0.8	
Separated	8	6.3	
Cohabiting	8	6.3	
Educational Achievement			
Less than grade 9	1	0.8	
Some high school	9	7.0	
High school graduate	22	17.2	
Some college/university	51	39.8	
Trade or vocational	22	17.2	
school	19	14.8	
University graduate	4	3.1	
Masters or Doctoral			
Employment Status			
Paid employment	84	65.7	
Non-paid work	9	7.1	
Unemployed	34.3	27,2	
Household Income			
$20 000.00 or less	19	14.8	
$20 001.00 to $50	44	34.4	
000.00	65	50.8	
Greater than $50 000.00			
First Occurrence of			
Obesity	36	28.1	
Childhood	37	28.9	
Adolescence	25	19.5	
Young Adulthood	30	23.6	
Adulthood			
Ethnic Origin			
Caucasian	114	89.1	

European	7	5.5
North American Indian	4	3.1
Black	3	2.3

Results for health assistance and health conditions are summarized in Table 2.

Three-quarters (75%) of participants reported being limited in their ability to perform daily occupations due to their obesity. Participants (20.3%) reported either use of assistive devices such as a wheelchair, walker, shower chair, etc or use of a person to assist with your self-care, shopping or other daily activities. Of the 26 participants who identified using assistive devices, 19 participants (70%) also reported using human physical support. Of the 74 participants who reported not using assistive devices, seven participants (9%) reported using human physical support. The mean number of health issues reported by participants was 2 (SD=1.7).

Table 2

Comorbities and assistance reported by participants (n=128)

Continuous Variables	Mean (SD)	Minimum	Maximum
Number of health issues	2(1.70)	0	7
Categorical variables	Frequency	Valid %	
Limited by obesity			
Yes	96	75	
No	32	25	
Use of assistive devices			
Yes	26	20.3	
No	74	79.7	
Use of human physical support			
Yes	26	20.3	
No	74	79.7	

Distribution of Time Spent Across Types of Occupations

Time spent in each of the four types of occupations and the proportion of time in a day spent in each type of occupation was calculated for all participants (Table 3). Participants spent over one third of their day involved in activities categorized as daily living (33%, 6.2 hours) with slightly less than one third of their day spent in activities categorized as work (29%, 5.5 hours). Rest (prior to 11:30pm) and recreation activities were identified less often in a typical day taking up 23% (4.4 hours) and 15% (3 hours) of a day respectively.

Table 3

Distribution of time reported across all four types of occupations using the Occupational Questionnaire (n=128)

Variable	Mean (SD)	Minimum/Maximum	Proportion of the day (%)
Work hours	5.5 (3.65)	0/13.5	28.97
Daily activity hours	6.2 (3.149)	1/16	32.73
Recreation hours	3.0 (2.526)	0/12.5	15.44
Rest hours	4.35 (2.33)	.5/15	22.86

Performance, Enjoyment and Importance Ratings for all Four Types of Occupations

Performance, enjoyment and importance ratings were calculated for all types of occupations identified in a day. Participants reported that they believe they perform activities well (mean=2, SD=.543), liked the activities they do in a day (mean=2, SD=.486) and the activities they perform in a typical day were perceived as important (mean=2, SD=.459) (Table 4).

Table 4

Subjective ratings of performance, interest and enjoyment for all activities reported using the Occupational Questionnaire (n=128)

Variable	Mean (SD)	Minimum	Maximum
Performance of occupations (scale 1-5)	2(.543)	1	4
Importance of occupations (scale 1-5)	2 (.459)	1	3
Enjoyment of occupations (scale 1-5)	2(.486)	1	4

Performance, Importance and Enjoyment Ratings for Each Type of Occupation

Ratings of performance, importance and enjoyment for each type of occupation were calculated (Table 5). In cases where participants neglected to record a rating associated with a specific activity the cases were considered invalid for this analysis. Therefore the sample size varies for each type of occupation. Participants reported a mean performance rating of 2 indicative of a belief that they do occupations in the areas of work, daily living, recreation and rest "well". A mean rating of 2 for the variables importance and enjoyment for each of the four types of occupations was also provided.

Table 5

Performance, importance and enjoyment ratings for work, daily activities, recreation and rest.

	Variables								
Type of occupation	Performance			Importance			Enjoyment		
	Mean(SD)	min	max	Mean(SD)	min	max	Mean(SD)	Min	max
Work(n=110)	2(.52)	1	4	2(.43)	1	3	2(.47)	1	4
Daily Living (n=114)	2(.53)	1	4	2(.43)	1	3	2(.47)	1	4
Recreation (n=112)	2(.52)	1	4	2(.42)	1	3	2(.46)	1	4
Rest (n=122)	2(.55)	1	4	2(.45)	1	3	2(.48)	1	4

Difference Between Groups

Differences in the occupational questionnaire (time, satisfaction with performance, interest and enjoyment) between groups of participants based on age, BMI and limited by obesity were examined. The use of assistive devices and human support and its relationship to demographic variables was also analyzed.

Distribution of Time Spent Across all Four Types of Occupations

No significant differences were found for the distribution of time spent in work, daily activities, recreation or rest between groups based on BMI, or limited by obesity. A significant difference in the number of hours spent in work types of activities was found between groups based on age [$F(2, 125) = 3.826$; $p < .05$]. Participants in the age group 55-65 years old worked less hours (mean=3.8, SD=3.363) than participants in the 25-44 year old (mean= 5.6, SD=3.408) and 45-54 year old (mean=6.2, SD=3.853) groups.

Performance, Enjoyment and Importance Ratings for all Four Types of Occupations

No significant differences were found in the ratings of performance, enjoyment or importance between groups based on limited by obesity, BMI or age.

The Impact of Obesity on Activity Limitation

The majority of participants (75%) reported being limited in the performance of their daily occupations as a direct consequence of obesity yet no significant differences were found in the identification of being limited by obesity based on age or BMI group. No significant association was found between being limited by obesity and BMI group (χ^2=.108, df =1, p>.05) or age group (χ^2=.019, df =2, p>.05).

The impact of obesity on use of assistive devices and human support

The same proportion of participants reported using assistive devices and human physical support (20.3%). A significant association was found between participants who reported using assistive devices and the use of human physical support (χ^2=48.236, df =1, p<.05). Participants (69.2%) who reported the use of assistive devices also reported using human physical support. Significant associations were found between being limited by obesity and the use of assistive devices (χ^2 =5.213, df =1, p<.05) and the use of human physical support (χ^2=5.213, df =1, p<.05). Participants (57.7%) who reported being limited in their

performance of daily occupations due to obesity were also more likely to report using assistive devices and human physical support.

A significant association between age group and the use of assistive devices (χ^2=10.238, df =2, p<.05) and the use of human physical support (χ^2=12.416, df =2, p<.05) was found. Participants aged 45-54 were more likely (31.1%) to report using assistive devices while those aged 55-65 were more likely (40%) to report using human physical support.

Discussion

The sample identified in this study was similar to adults with obesity in the general population in terms of gender, co-morbid health problems (Tjepkema, 2005) and marital status (McLaren & Godley, 2008). The demographics of participants in this study are similar to those of Ontarians in terms of marital status, household income and educational achievement (Statistics Canada, 2006). Both the level of obesity reported by participants in this study and their reported lifetime obesity experienced since childhood or adolescence puts this group at high risk for obesity-related health consequences including limited mobility (Stenholm et al., 2008). The majority of participants identified having at least two health conditions and many (75%) identified obesity as limiting their performance of occupations of everyday living. Comparative data collected from the Participation and Activity Limitation Survey (PALS), suggest these findings are more than four times the disability rate of 15.5% reported by residents of Ontario, Canada. PALS defined disability as limitations in activities at work, school and

home (Statistics Canada, 2007). This definition is similar to the way in which disability was conceptualized in the current study through the identification of limitations in the performance of daily activities. However, obesity was not specifically identified as a disability in the PALS.

The percentage of comorbidities (arthritis 25.7%; hypertension 46.4%; diabetes 37.9%) reported by participants in the present study is higher than those reported by adults with obesity living in Ontario (arthritis 22.9%; hypertension 21.9%; diabetes 8.2%) (Tarride & Haq, 2008). These characteristics are typical of patients seen by health care professionals in obesity treatment programs (Martin, 1999).

Having information about where adults with obesity spend their time and the value attributed with performance, enjoyment and interest contributes to a better understanding about the daily life of adults with obesity who is seeking treatment.

Examination of the time use for participants in this study across four types of occupations revealed that most time was spent in daily activities (33% of day), followed by work (29%), rest (23%) and recreation (15%). Comparative data on time use of Canadians collected using the General Social Survey (Statistics Canada, 2006) differed from this in that Ontario residents across the same age group reported spending a smaller proportion in daily activities (10%), a larger proportion (32%) of their day in activities categorized as work, and a larger proportion of their day in activities categorized as recreation (23%). A closer

examination of the time use in this study compared to the general population and adults with chronic conditions reveals specific differences with respect to the distribution of time in hours spent across the occupations of daily activities, work, rest and recreation.

Participants in the present study reported spending slightly more than six hours a day on daily living types of activities such as bathing, dressing, meal preparation, attending medical appointments and running errands. This amount is almost three times more than that reported in similar daily activities by residents in Ontario, Canada (mean=2.3, SD not reported) (Statistics Canada, 2006). More time spent in activities classified as 'daily living' for participants in this study is not surprising. In our previous work, when adults living with class III obesity were asked to describe a typical day, participants stated that they gave themselves more time to bathe, dress and mobilize due to the need to take breaks during tasks to manage fatigue or shortness of breath (Forhan, Law, Vrkljan & Taylor, 2009). The time spent in daily living tasks by participants in this study was close to seven hours per day. This result is similar to that reported by 169 adults with rheumatoid arthritis (Forhan & Backman, 2009). Spending more time in daily living has the potential to limit time spent in other activities, including work, recreation and rest. Activities classified as 'daily living' include household chores, care-giving, and personal care, all of which occur in the home environment and are typically solitary in nature. This finding suggests that more time was spent alone and at home.

The average time spent in work-related occupations (5.5 hours per day) was less than the hours of work reported by residents of Ontario, Canada (mean=8.0, SD not reported) (Statistics Canada, 2006). This amount is slightly more than the time of four hours per day reported in work related activities in a study of adults with rheumatoid arthritis (Forhan & Backman, 2009). A study of obesity and work, using data from the Canadian Community Health Survey and the National Population Health Survey found an association with increased disability days, absenteeism and obesity (Park, 2009). This finding has implications on socioeconomic status and the opportunity to experience the benefits of meaningful work on health and well-being where time spent in work has been linked to increased life satisfaction in later years (Smith, Kielhofner & Watts, 1986).

Participants spent the least amount of time (3 hours per day) in activities classified as recreation. The time spent in activities classified as recreation was less than that of residents of Ontario, Canada (mean=5.5, SD *not reported*) (Statistics Canada, 2006). This finding implies that participants have fewer opportunities to develop social networks and to engage in physical activity such as organized sports, or fitness groups. Less time spent in discretionary types of activities including recreation has been linked to psychological distress (Katz & Morris, 2007) and is associated with decreased life satisfaction in later years (Smith, Kielhofner & Watts, 1986).

The Occupational Questionnaire did not ask participants to record activities for time units between 11:30pm-4:30am, the typical time in which most adults' record sleep. Therefore, the 4.4 hours of time spent in sleep reported by participants probably underestimates the actual time allocated for sleeping and instead is more an indicator of day time or evening rest. However, the proportion of time spent in sleep for the 19 hour day recorded in this study was 23% which is below the 39% reported by adults with rheumatoid arthritis (Forhan & Backman, 2009) and the 33% reported by residents of Ontario, Canada (Statistics Canada, 2006).

Participants in this study reported that the activities they participated in were performed well, and were important and liked. There was little variation in the rating of performance, enjoyment or importance. This is similar to a study of the activity patterns of older adults living in the community in which 75%-100% of the participants reported that they performed activities well, find them important and like the activities they do (Bernt, 2006). In the current study, no difference in the ratings of performance, enjoyment or importance across all four types of occupations was found. This finding was surprising given the limited time spent in activities classified as recreation. Spending more time in daily activities that primarily take place in the home environment has been shown to limit opportunities for social inclusion (Shimitras, Fossey & Harvey, 2003). The limited time spent in recreation types of activities and the discord in time spent in daily activities and work did not appear to impact the satisfaction with

occupations for participants in this current study. This may be due, in part, to the fact that while participants in this study were involved in activities rated as important, they were not asked about activities that they would like to be doing but were not. A qualitative study of adults with class III obesity revealed that although participants were involved in activities classified as daily activities, work, recreation and rest, they looked forward to a future after obesity treatment in which the diversity and quality of participation was expected to increase (Forhan, Law, Vrkljan & Taylor, 2009). Participants in the current study describe a profile of participation that appears to meet their expectations but this may be based on an acceptance of current abilities and not on true levels of satisfaction, implying that in some instances, people are settling for less.

Life balance is a concept that implies a state of equilibrium and is often defined by how time is spent across the occupations of work, daily activities and rest (Pentland, Harvey, Lawton & McColl 1999; Statistics Canada, 2005). The allocation of time across daily occupations however, fails to capture the lived experience defined by satisfaction and meaning associated with the activities in which time is spent. It therefore limits the connection of life balance with health and well-being (Pentland & McColl, 2008). The concept of occupational integrity, proposed in the occupational therapy and occupational science literature, results from "...living congruent with one's personal meaning and values." (Pentland & McColl, 2008 p. 136). This current study collected information about time use and perceptions related to performance, enjoyment and interest and employed

methodology in keeping with the concept of occupational integrity. Occupational integrity provides a framework for the identification of strategies that provide opportunities for the participation in activities that are both meaningful and in keeping with an individual's values. Interventions that enable an individual with obesity to participate in the activities that are consistent with his or her values while at the same time facilitate participation in activities required to manage their obesity are needed.

Based on the results of this study, living with obesity is associated with an unequal allocation of time spent across four types of occupations in a manner that is similar to adults with other chronic health conditions. Areas in which participants spent the most time included daily living and work in which activities take place across various environments, such as home, work, community and institutions. Therefore, strategies that enable individuals with obesity to maintain participation in daily activities and work are important, as are strategies that expand participation in recreation and rest.

Interventions can utilize the strengths of a person and their networks while, at the same time, identify solutions for factors that restrict participation, such as barriers in the built environment and negative attitudes towards persons with obesity. Interventions that allow a person to acquire the skills needed to increase physical activities, balance nutritional intake or to follow the necessary routines required for successful bariatric surgery are needed. Social support and features in the built environment that create access for persons with larger body

sizes and higher body weights have been identified as factors that enable participation (Forhan, Law, Vrkljan & Taylor, 2009). Interventions for the purpose of energy conservation and the promotion of balance across the day, commonly used in chronic disease management, may be of benefit to persons living with obesity. Motivational strategies that focus on identifying the types of activities that are important and satisfying for individuals could also be used for the purpose of enabling balance in participation across a range of occupations throughout the day.

Enabling participation for adults with obesity also includes supporting individuals to select the type of obesity treatment that promotes occupational integrity. For example, a person who does not value calorie counting or does not have access to a gym with equipment that supports their body weight is not likely to do well in a program that requires clients to plan and prepare their own meals and attend a gym for physical exercise.

Time spent in activities classified as recreation was limited. Adults with class III obesity report that because it takes more time and energy to complete tasks associated with bathing, dressing and mobilizing, they have little energy or time left for discretionary activities located within the category of recreation (Forhan, Law, Vrkljan & Taylor, 2009). Barriers in the social and built environment have also been identified as constraints to the participation in recreation types of activities (Forhan, Law, Vrkljan & Taylor, 2009). Time spent in recreation creates opportunities to develop social networks, skills and access to

resources; all of which contribute to health and well-being. The limited time spent in recreation for participants in this study implies they may be at risk for social isolation, limited skill development and limited access to resources typically associated with recreation.

We anticipated that BMI, being limited by obesity and age would all be factors associated with the participation profile of participants. BMI's in the range identified in this study have been associated with decreased productivity in the work force (Park, 2009) and more time spent seeking medical attention (Tarride & Haq, 2008). But the results of this current study found age to be the only factor associated with a significant difference in the time spent in work related activities. Participants who were ages 25-54 years old spent significantly more time in activities classified as work. This result was expected given that participation in the types of activities included in the work category (school, paid work, childcare, housekeeping) are key activities during young to middle adulthood (Statistics Canada, 2006). An unexpected result of this study was the lack of significant findings for differences associated with BMI or being limited by obesity in the profile of participation including ratings of performance and enjoyment. The majority of participants had obesity since childhood or adolescence and, as such, may have adapted their occupational routine over time affecting the results. While most participants identified being limited by obesity, they did not feel this resulted in a significant difference in how they spent their time, their perceived performance of activities or the enjoyment associated with activities. The sample

in this study was more homogeneous as compared to other studies. Most studies in the area of obesity include samples with BMI ranges starting at 30 kg/m^2 and higher, thereby including persons with obesity classifications as mild, moderate and severe (Martin, 1999; McLaren & Godley, 2008; Shields & Tremblay. 2008; Thomas, Hyde, Karunaratne, Hebert & Komesaroff, 2008). Participants in this study reported BMI values that were classified in the severe range.

Adults living with obesity describe a resilience and determination to participate in the occupations of everyday living despite the obesity (Forhan, Law, Vrkljan & Taylor, 2009), similar to persons who live with chronic illness (Marris, 1996). Participation in occupations that have the potential to provide financial support, skill acquisition, a sense of competency and social inclusion was described by participants in this study. However, it is not known if and to what extent these outcomes associated with participation were realized.

The proportion (57%) of adults in this current study who reported limitations due to obesity and who used assistive devices was less than the two-thirds of adults with participation limitations who responded to the 2006 PALS (Statistics Canada, 2008). However, only 56% of the respondents to the PALS aged 40-64 had their equipment needs met compared to 68% aged 65 or more (Statistics Canada). Cost was the primary reason (56.1%) for not having equipment needs met with not knowing where to get the assistance (9.2%) being a secondary reason for unmet needs (Statistics Canada). Access to assistive devices for use by adults with obesity was not explored in this study. However, with 57%

of participants using assistive devices and at the age of 45-54 years old the need for persons with obesity to have access to assistive devices should be investigated.

Participants between the ages 25-54y.o in this study spent most of their time in activities classified as work that take place during the day and occur in a diverse range of environments including home, community and institutions. Strategies that aim to maintain participation for adults with obesity need to consider when people are working and also the environments in which they are working. This also has implications about when and where adults are available to participate in activities specific to their obesity treatment including office visits, exercise, meal planning, preparation and consumption. Surgical interventions, including pre and post operative activities such as psychological and nutritional counseling, also need to be considered in the context of the individuals' occupational profile.

General areas associated with time use that were not explored in this study include the environments in which adults with obesity spend their time, the level of assistance or support required to perform specific activities and with whom they are spending their time. Another important factor not explored in this study is psychological characteristics including aptitude and affect. These factors could influence time use and should be examined in future research.

Conclusions

The participation profile of adults with obesity, as described by the distribution of time across the occupations of work, daily living, recreation and

rest and the associated measures of performance, interest and enjoyment is similar to those described by adults with chronic medical conditions such as a spinal cord injury or rheumatoid arthritis. More time was spent in daily activities which included self-care tasks such as bathing, dressing and attending medical appointments. These types of activities are known to take longer with persons who experience pain or fatigue and are commonly associated with a chronic health condition. Mobility outside of the home also limits time spent in discretionary activities often located within occupations classified as recreation. The majority of participants in this study reported being employed. The majority of the day was divided between work and daily activities. Rest and recreation were not areas in which significant amounts of time were spent. While the distribution of time for this sample is typical for adults in Canada, the proportion of time spent in rest and recreation was less for participants in this study. This puts the occupational integrity of participants at risk and could impact health and well-being.

The results of this study contribute to current knowledge about the association of age on the distribution of time use across occupations of work, daily activities, recreation and rest. Within a group of adults with obesity who are seeking treatment for obesity, BMI and limitations to the performance of occupations of daily living were not associated with the participation profile nor were differences between groups based on BMI or being limited by obesity. Results from this study show that the group of participants whose BMI was above

40kg/m2 is relatively homogeneous in terms of their participation profile. This has implications for obesity treatment interventions to support individuals in to participation in occupations that are important and provide a sense of accomplishment. Strategies that enable patients in obesity treatment programs to continue "living while losing" will encourage participation in day-to-day occupations that are valued and give life meaning thereby contributing to health and well-being.

Chapter 4

Factors Associated with the Satisfaction of Participation in Daily Activities for Adults with Class III Obesity

The aim of obesity treatment is to facilitate weight loss for the purpose of enabling health and well-being of persons living with obesity (Lau, Douketis, Morrison, Hramiak, Sharma, et al., 2007). Participation in occupations that are congruent with an individual's abilities and values provide opportunities to develop skills and resources that contribute to health and well-being (Law, 2002; Wilcock, 2006). Patients undergoing treatment for obesity typically reside in the community and expect to be able to participate in typical occupations comprised of self-care, paid or unpaid work, and leisure activities. There is no discussion in clinical practice obesity treatment guidelines, however, about how the participation in these daily activities should be maintained or improved for individuals with obesity . Living while Losing ^{TM}, a concept developed by the first author, focuses on enhancing participation in daily activities for persons seeking treatment for obesity. Achieving this goal requires an understanding of the factors associated with participation in daily living activities for this group.

The study of participation has increased since it was highlighted as key concept in the publication of the International Classification of Functioning (ICF). Within this framework, participation was identified as an outcome of the interaction of factors associated with a health condition (World Health Organization (WHO), 2001). In this context, much research has focused on identifying factors that contribute to participation and ways of measuring it for

persons living with a various health condition. To date, no studies have focused on the participation of adults with class III obesity.

The International Classification of Functioning (ICF) was developed by the World Health Organization (WHO) in order to provide a universal framework in which to describe how people live with a health condition (WHO, 2001). As such, it recognizes that a variety of factors can influence activity performance and participation. The ICF framework consists of two distinct, but interrelated, components. The first component is that of disability and functioning which involves the processes at the level of the individual with a focus on impairment of body structures and function. The second component of the ICF, contextual factors, includes personal and environmental factors. The ICF defines participation as "involvement in a life situation." Conversely, participation restrictions are identified as "problems an individual may experience in involvement in life situations" (WHO 2001, page 80).

There is a lack of consensus on the best means of measuring participation. Various measures of social support, health related quality of life, functional status and demographics such as, age, gender and household income have all been used for the purpose of understanding the participation of persons with disabilities (Coster & Khetani, 2008; Rouchette, Bravo, Desrosiers, St.Cyr-Tribble & Bourget, 2007). Typically, measures of participation involving adults use domains of self-care, productivity and leisure (Law, Baptiste, Carswell, McColl, Polatajko & Pollock, 2005); work, daily living, recreation and rest (Smith, Keilhofner &

Watts, 1986); daily activities and social roles (Fougeyrollas, Noreau, & St.-Michael, 2002); or paid work, unpaid work, personal care and free time (Statistics Canada, 2006).

A key concept required for understanding participation involves understanding what is first meant by limitation and restriction. Activity limitations are the result of problems executing activities while participation restrictions are the result of problems in the experience with involvement in life situations (WHO, 2001). Participation in the occupations of daily living remains challenging to measure as there are several domains of interest: participation can be defined by what people do, subjective ratings of performance or satisfaction, enjoyment or interest (Law et al., 2005; Smith, Kielhofner & Watts, 1986), the amount of difficulty, type of assistance required and level of satisfaction (Fougeyrollas, Noreau & St-Michael, 2002) and the amount of time spent in activities throughout the day (Smith, Kielhofner & Watts, 1986; Statistics Canada, 2006). Researchers who measure participation acknowledge a lack of a consensus regarding the definition of participation and recommend researchers clearly articulate the way in which participation is defined in their studies (Coster & Khetani, 2007; Noonan, Kopec, Noreau, Singer and Dvorak, 2009; Perenboom & Chorus, 2003).

Obesity affects many aspects of a person's activities of daily living and ability to function in their daily life. Research exploring the health status of persons with obesity report functional impairments and decreased quality of life including difficulties with mobility and tolerance of physical activity (Fontaine &

Barofsky, 2001; Jia & Lubetkin, 2005; Larsson & Mattsson, 2001). Obesity increases the risk for a number of chronic health conditions including type II diabetes, coronary artery disease, and osteoarthritis (Aronne, 2001; Devlin, Yanovski, & Wilson, 2000). Evidence indicates the greater an individuals body mass index (BMI), the greater the risk for functional impairment defined by upper and lower extremity strength, mobility and tolerance for physical activity. These findings apply to people with a BMI above 40 kg/m^2 (class III) (Jensen, 2005). Since current literature identifies obesity as a contributing factor to the development of disability (Aronne, 2001; Devlin, Yanovski, & Wilson, 2000; Fontaine & Barofsky, 2001; Jia & Lubetkin, 2005; Larsson & Mattsson, 2001), obesity therefore has the potential to limit participation in meaningful activities.

Participation in activities of daily living has been described in a qualitative study about adults living with class III obesity (Forhan, Law, Vrkljan & Taylor, under review). In that study, participants identified barriers and supports to the participation in the activities of everyday living that included the built environment, social attitudes and beliefs and physical limitations associated with having obesity. These results indicate a need to include standard measures of quality of life, social support, and disability for the purpose of identifying specific factors associated with participation for adults living with class III obesity.

The concept of participation remains challenging to define with confusion about whether subjective measures of satisfaction with participation are conceptually linked with quality of life or participation performance. Experts in

the area of participation research have recommended that in an effort to reduce this confusion, measures of objective performance of participation remain distinct from subjective measures of satisfaction with performance (Whiteneck & Dijkers, 2009). Participation, for the purpose of this study, is focused on a subjective measure of satisfaction with performance of activities classified as self-care (grooming, dressing, eating, attending medical appointments, managing illness) along with ratings of the satisfaction with the balance of time spent across life situations classified as work, self-care, leisure and rest. Satisfaction with participation is an indicator of the meaning associated with life events (Coster & Khetani, 2007).

The primary purpose of this study was to identify factors associated with satisfaction with participation in daily living activities for adults living with this illness, who are seeking treatment for their obesity. A specific aim was to analyze how social support, quality of life, disability status and demographic factors are associated with satisfaction with the participation in the occupations of everyday living and to identify an efficient, concise model that predicts participation for adults seeking treatment for class III obesity.

Materials and Methods

Participants

Potential study participants were identified through six obesity treatment programs in Ontario, Canada. Four of the obesity programs provided public health care, defined as medical treatment that is paid for by a provincial government

health care plan. Nutritional supplements used in some treatment plans were paid for by the patient. Two of the treatment programs were private surgical programs that provided surgical interventions paid for by patients or via private insurance coverage. Patients were typically referred to these programs either by a family physician or through self-referral. Issues not directly related to obesity were not dealt with by any of these programs. The recruitment process involved sending out letters of invitation to the obesity programs to patients who were eligible to participate. Patients were eligible to participate if they were aged 25 years up to and including 65 years of age, had a BMI of 40kg/m^2 or greater and were able to read and write English. Patients were contacted only once to participate. The letter of invitation asked patients to further identify eligibility based on exclusion criteria that included a new diagnosis of major mental illness in the past three months or an injury or surgery that would hinder participation in the past 30 days. Additionally, the letters included a brief description of the project and a consent form. All invitations included a business reply envelope addressed to the principal investigator. Patients who released their name and addresses were registered for the study. Ethics approval was obtained through the McMaster University and Hamilton Health Sciences Research Ethics Board.

Design and Survey Development

The data for this study were collected with a mail survey. The survey consisted of measures designed for use in this study and pre-existing scales that measured potential explanatory variables. Potential explanatory variables were

identified through a literature review about participation in daily living activities guided by the framework of the ICF and through findings of a qualitative study to identify factors that constrain or facilitate participation (Forhan, Law, Vrkljan & Taylor, under review).

Measures

Participation. The concept of participation for this study was measured by the level of satisfaction in the occupations of daily living. This variable was rated by participants using a five-point scale in response to three questions, How satisfied are you with your ability to perform self-care activities?, How satisfied are you with the balance of time you spend on work, self-care, leisure and rest?, and At the end of the day how satisfied are you that you have accomplished what you had set out to do?. Responses to each of these questions were combined to result in participation scores with a minimum value of 1 (very dissatisfied with participation) and a maximum value of 5 (very satisfied with participation). An analysis of the validity of the participation measure used was conducted by testing the association of the participation score with the item (S4: How much of a problem did you have joining in community activities the same way as anyone else can?) on the WHO-DAS-II mapped onto the ICF participation domain. The association between the social participation score on the WHO-DAS-II and the overall participation score used in this study was moderate (r= -.50). The measure of participation in the WHO-DAS-II represents subjective social participation that is based on performance while the measure of participation used in this study

represents satisfaction with performance in addition to accomplishment and the balance of time use in activities in the community and also at home. Reliability analysis (internal consistency) of the participation scale found a moderately high Chronbach's Alpha (α=.730), indicating that the items in the measure are intercorrelated and therefore indicate that each item is measuring the same construct with minimal error. Test-retest reliability of the participation measure was examined using data provided by 25 participants who completed the participation scale again after completing the initial study survey. The mean time between test completion was six days (SD=4.03, min. 2days, max. 20days). Participants in the test-retest were representative of the sample in terms of all demographic characteristics. The Type A intraclass correlation coefficient using an absolute agreement definition was .923, ($p<.05$, 95% confidence interval) indicative of excellent test-retest reliability.

The Impact of Weight on Quality of Life-Lite (IWQOL-Lite). Quality of life was measured using the IWQOL-Lite questionnaire (Kolotkin, Crosby, Kosloski & Williams, 2001). The IWQOL-Lite is a 31-item questionnaire that was developed for use with adults who have obesity and is a reliable and valid measure for use with adults seeking treatment for obesity (Kolotkin, 2007; Kolotkin, Crosby & Williams, 2002). The IWQOL-Lite assesses the impact of weight on quality of life in five domains: physical function, self-esteem, sexual life, public distress and work. Total scores were used in this study and calculated from the raw data. Raw, total scores were transformed using the codes provided

by the authors of the measure. Transformed scores range from 0, indicative of poor quality of life, to 100 indicative of good quality of life.

World Health Organization Disability Assessment Schedule II (WHO-DAS-II). Disability was measured using the 12-item version of the WHO-DAS-II, a reliable and valid measure of global disability for use with adults (WHO, 1999). The WHO-DAS-II examines the level of disability experienced by individuals and is framed by the dimensions of body functions and structures, activities, personal and environmental factors outlined in the ICF. The WHO-DAS-II provides a measure of the severity of disability perceived by the individual in the domains defined by the ICF including self-care, mobility, understanding and communication, interpersonal relations, work and domestic responsibilities, and participation in community activities. Items on the WHO-DAS-II measure difficulty in doing specific functions due to a health condition. This measure is a general perceived disability assessment that takes into consideration all health conditions, not just obesity. Respondents were asked to rate the impact of health conditions experienced over a 30 day period using a 5 point scale corresponding to ratings of none, mild, moderate, severe or extreme/cannot do. WHO-DAS-II scores range from 0-100 with higher scores indicating greater disability. The scoring algorithm provided by WHO was used.

Medical Outcomes Study: Social Support Survey Instrument. The social support survey is a measure of social factors that are known to contribute to health and wellness (Sherbourne & Stewart, 1991). This measure was selected because

of the emphasis on functional support that persons with obesity are more likely to rely on to enable participation in daily occupations. The Social Support Survey is a reliable and valid, 19-item, self-administered questionnaire that uses a five point response scale (1=*none of the time* and 5=*all of the time*) (Sherbourne & Stewart, 1991). The authors of the Social Support Survey provided instructions to calculate an overall support index by using the total score for all 18 items used in this study. Scores are converted to fit a scale of 0-100 with higher scores indicative of more support.

Demographics. Information that contributed to the description of the sample was included in the survey. Questions included demographics such as age, gender, body mass index, employment status, level of education and health history. Questions in this section of the survey were adapted from the health information section of the ICF Checklist (WHO, 2003) and also derived from information reported in studies that describe their sample of participants with obesity. Questions related to the use of assistive devices and human physical supports were developed to contribute to the description of the sample.

Mail survey procedure

A cover letter expressing thanks to participants for their interest in the study, instructions on completing the survey and a stamped return envelope was mailed to all participants who registered for the study. Participants who did not return the survey within one week were sent a reminder letter. A final reminder call was placed to participants after six weeks. The survey was pilot tested with a

convenience sample of 10 participants (8 female, 2 male). Based on feedback received, no modifications were necessary.

Data Analysis

Descriptive statistics were produced for each variable. A one way analysis of variance (ANOVA) was used to determine whether there were significant differences in the participation scores between groups based on BMI, or being limited by obesity. This analysis was completed to provide additional information about the validity of the participation scale used in the study.

Variables identified as important potential predictors based on the literature and previous qualitative study by the author were examined using a correlation matrix. Pearson's correlation coefficients were used to identify inter-correlations and reduce the number of candidate variables for multiple regression analyses. Variables that were significantly correlated ($p < .05$) with the participation score were considered candidates for regression analyses.

A review of the literature on participation and informed by the ICF framework led to the identification of factors to be included as priority variables in a model that predicts participation for adults with obesity. Activity performance, according to both the ICF and research in the area of participation, is influenced by resources available to the individual as well as the types of supports a person uses (Dierk, Conradt, Rauh, Schlumberger et al., 2006; Fougeyrollas, Noreau, Bergeron et al. (1998; Lewis & VanPuymbroeck, 2008; Raymore, 2002). Social support was found to be associated with positive well-

being in cross sectional study of 226 adults with obesity (mean BMI 36kg/m2) (Dierk, Conradt, Rauh, Schlumberger et al., 2006). Social support was identified as a significant predictor of subjective well-being (R2=.42) where well-being was defined by measures of affect and life satisfaction (Dierk, Conradt, Rauh, Schlumberger et al., 2006). The link between participation in life events and well-being is established (Badley, 1995; Verbrugge & Jette, 1994). Based on this evidence, it is logical to consider social support as a potential explanatory factor of satisfaction with participation for adults with obesity. Thus, an a priori decision to include social support as a priority predictor variable in the model building process was made.

The regression analysis began with the creation of scatterplots for each potential explanatory variable plotted against the outcome variable to determine that a linear model would be appropriate. Because it was anticipated there would be several inter-correlations (even after examining the correlation matrix), a hierarchical approach (Norman & Streiner, 2008) was employed using the social support index in the initial model, followed by systematically assessing the contribution of each remaining independent variable in turn. In this way, the inter-correlations did not mask the effect of any one variable. The overall support index was entered as a single block, to assess its overall association with participation. Then, a stepwise procedure was used with F-to-enter set at .10, in order to retain all variables close to the conventional level of significance ($p \leq$ .05). Variables that contributed a minimum of 2% to the R^2 were identified. The

variables identified in this process were added to the initial model using a hierarchical method. Significant predictors remaining at the end of this process comprised the final model. Residual analyses were conducted to check that assumptions of the model had not been violated, and to identify potential influential cases. No such cases were found. All analysis was conducted using SPSS (version 17.0).

Results

Sample Characteristics

A total of 500 invitations were prepared and distributed (60-100 invitations per site) amongst the six recruitment sites. The response rate was 34% (n=168). Once participants consented to enroll in the survey, the rate of return of surveys (complete or incomplete) was 83% (n=140). The final sample was comprised of 140 (81% women) adults with obesity. The mean age was 46 (SD=9.25). Most of the participants reported their first episode of obesity to occur in childhood (29%) or in adolescence (28%). The majority of the participants were married (56%). Educational status, marital status, and employment status profiles of this sample was similar to those reported by persons living in Ontario (Statistics Canada, 2006). The mean BMI was 48.5(SD=8.04). A summary of participant demographics is provided in Table 1.

Table 1

Demographics of participants (n=140)

Continuous Variables	Mean (SD)	
Age	46(9.25)	
BMI	48.5(8.04)	
Categorical Variables	Frequency	Valid (%)
Sex		
Female	113	80.7
Male	27	19.3
Marital Status		
Never married	24	17.1
Divorced	17	12.1
Currently married	79	56.4
Widowed	1	0.7
Separated	9	6.4
Cohabiting	10	7.1
Educational Achievement		
Less than grade 9	2	1.4
Some high school	12	8.6
High school graduate	26	18.6
Some college/university	55	39.3
Trade or vocational	22	15.7
school	19	13.6
University graduate	4	2.9
Masters'/doctoral degree		
Employment Status		
Paid employment	88	62.8
Non-paid employment	13	9.4
Unemployed	39	27.8
Household Income		
$20 000.00 or less	21	15
$20 001.00-$50 000.00	52	37.1
$50 001.00 or more	67	47.9
First Occurrence of		
Obesity	41	29.3
Childhood	39	27.9
Adolescence	27	19.3
Young Adulthood	33	23.6
Adulthood		
Ethnic Origin		
Caucasian	123	87.9

European	8	5.7
North American Indian	6	4.3
Black	3	2.1
Japanese	1	0.7

Three-quarters (76%) of participants reported limitations in their ability to perform daily occupations due to their obesity. Participants (19.3%) reported either use of assistive devices, such as a wheelchair, walker, shower chair, or required assistance from a person with their self-care, shopping or other daily activities. Of the 27 participants who identified using assistive devices, 19 participants (70%) also reported using human physical support. Of the 113 participants who reported not using assistive devices 10 participants (9%) reported they still required human physical support. The mean number of health issues reported by participants was 2 (SD=1.7). Eighty-four percent (n=117) of the participants reported having health concerns in addition to obesity. Typical health conditions reported were; hypertension (46%); type II diabetes (38%); obstructive sleep apnea (35%); osteoarthritis (26%); and gastrointestinal reflux disorder (22%). Results for health conditions and assistance are summarized in Table 2.

Table 2

Comorbities and assistance reported by participants (n=140)

Continuous Variables	Mean (SD)	Minimum	Maximum
Number of health issues	2(1.71)	0	7
Categorical variables	Frequency	Valid %	
Limited by obesity			
Yes	106	75.7	

No	34	24.3
Use of assistive devices		
Yes	27	19.3
No	113	80.7
Use of human physical support		
Yes	29	20.7
No	71	79.3

Participation

The mean participation score was 3.0 (SD=.87; range of 1 to 5) whereby a higher score suggests greater satisfaction with participation. An analysis of the differences between groups (obesity limited and BMI) for ratings of participation for the individual items in the participation measure and the total participation score is detailed in Table 3. Seventy-six percent (106) participants identified limitations in the performance of their daily occupations due to obesity. There was no significant difference in participation based on limitation of performance (Z=-.749, $p>0.05$). Sixty-nine percent (97) of participants had a BMI between 40-49kg/m^2 and 31% (43) of participants had a BMI of 50kg/m^2 or more. Participants who had a BMI of 50 kg/m^2 or more reported being less satisfied with their ability to perform self-care activities (Z= X, $p<.05$). No significant difference in overall participation scores was found between groups based on BMI category.

Table 3

Participation scores for entire sample and for subgroups based on obesity limitations and BMI group.

Variable	Entire Sample	Obesity limited group Mean(SD) (n=106)	Obesity not limited group Mean(SD) (n-34)	P Value	Obesity group 1 BMI40-49. Mean (SD) (n=97)	Obesity group 2 BMI 50 plus. Mean (SD(n=43)	P Value
Satisfaction with performance of self-care activities	3.39(1.17)	3.42(1.08)	3.29(1.45)	.60	3.58(1.16)	2.95(1.09)	.00
Satisfaction with achievements in a day	2.76(1.00)	2.80(.95)	2.65(1.15)	.18	2.76(1.01)	2.77(1.00)	.73
Satisfaction with the balance of time spent in self-care, productivity and leisure	2.65(1.04)	2.72(.95)	2.44(1.15)	.43	3.00(1.01)	2.78(.10)	.98
Total Participation Score	2.93(.87)	2.98(.79)	2.79(1.10)	.29	3(.88)	2.78(.86)	.66

Independent Variables

Results from measures of disability status, weight related quality of life and social support are listed in Table 4. Participants reported a total WHO-DAS-II score of 42 (SD 26.10) indicative of moderate to substantial disability (WHO, 1999). Quality of life as measured using the IWQOL-Lite had a mean score of 41.1 (SD=9.84) out of a possible 100 with lower scores indicative of lower quality of life attributed to body weight. Participants reported having support 75% of the time as indicated by a mean overall support index of 67.25(SD=16.95)

Table 4

Scores for measures of disability, and quality of life (n=140)

Variable	Mean (SD)	Minimum/Maximum
WHO-DAS-II total	42(26.1)	0/108
IWQOL-Lite	41.1(9.8)	2.4/90.3
Overall Support Index	67.25(17)	24/90
Number of Health Issues	2(1.7)	0/7

Bivariate Associations with Participation

Bivariate associations between each potential explanatory variable and participation are outlined in Table 5. Variables significantly correlated to participation were employment status, total WHO-DAS-II, total IWQOL-Lite, number of health issues, educational achievement and overall support index. The strongest correlation was found between disability score and satisfaction with participation ($r=-.77$, $p<.01$).

Table 5

Association of potential predictor variables with participation (Pearson correlation coefficients)

	Pearsons' Correlation							
Variable	1	2	3	4	5	6	7	8
1.Household Income		- .37**	- .27**	-.18*	-.11	.27**	.18*	.05
2.Employment Status			.25**	.25**	.18**	-.17*	.29**	.09
3.Total WHO-DAS-II				- .77**	.37**	-.21*	- .25**	.21*
4.Total IWQOL-Lite					.36**	-.10	- .34**	.09
5.Number of health issues						-.01	-.13	.35**
6.Educational achievement							.05	-.15
7.Overall support index								.03
8.Age								1.00
9.Participation score	.08	**- .26****	**- .59****	**- .49****	**- .23****	**.18***	**.20***	-.08

**p<.01 (2-tailed) *p<.05 (2-tailed)

Multivariate Associations with Participation

The overall social support index emerged as a significant predictor of participation in the regression model (p =.04) (Table 6). A low score on the Social Support Index was associated with a low rating of satisfaction with participation. The systematic procedure of adding each additional potential predictor variable to the overall support index resulted in the identification of four new variables to include in the model. Variables that increased the R^2 by 2% or more were: WHO-DAS-II total (R^2 change .313 p=.000); Employment Status (R^2 change .082, p=.002); Educational Achievement (R^2 change .029, p=.039); IWQOL-Lite total

(R^2 change .200, p<.001). Household income, number of health issues and age did not remain in the model.

Table 6

Summary of the initial regression model with overall support index.

Initial Model (variables entered in one block)						
Variable	Coefficient Unstandardized	SE	Coefficient Standardized	t	p	R^2
Overall support index	.010	.004	.202	2.419	.041	.041

Table 7 shows the results of the multivariate, hierarchical regression model predicting satisfaction with participation. The overall support index and variables that contributed more than 2% to the prediction in the variance of satisfaction with participation were included in the regression equation. Social support remained the variable of interest to retain in step one. Step 2 of the model included variables that contain elements of body functions and structures and activity limitations (Total WHO-DAS-II, Total IWQOL-Lite). Once the WHO-DAS-II was added to the model, overall support index and IWQOL-Lite were no longer significant predictor variables (p=.523, p=.520). Steps 3 and 4 contained variables considered personal factors in the ICF. Step 3 included employment status and required entry as one block due to the need for creating dummy variables for employment status. At this stage of the model, employment status remained a significant predictor variable (p=.04). Step 4 included educational

achievement. Employment status and educational achievement were no longer significant predictors of participation (p=.05, p=.527). When all five variables were combined, they predicted 38% (R^2 =.377) of the variance in satisfaction with participation [F(6, 133)=13.437; p<.05].

Table 7

Overall model for participation[a]

Variable	Coefficient Unstandardized	SE	Coefficient Standardized	t	p	R^2	R^2 adjusted
Step 1							
Overall support index	.010	.004	.202	2.419	.017*	.041	.034
Step 2							
Overall support index	.010	.004	.047	.640	.523	.355	.341
Total WHO-DAS-II	-.018	.004	-.526	-4.921	.000*		
Total IWQOL-Lite	-.003	.004	-.071	-.646	.520		
Step 3							
Overall support index	.001	.004	.013	.177	.860	.376	.352
Total WHO-DAS-II	-.017	.004	-.497	-4.570	.000		
Total IWQOL-Lite	-.002	.004	-.062	-.565	.573		
Employment status	-.463	.228	-.149	-2.029	.044*		
Step 4							
Overall support index	.001	.004	.014	.192	.848	.377	.349

Total WHO-DAS-II	-.016	.004	-.486	-4.405	.000
Total IWQOL-Lite	.002	.004	-.068	-.618	.538
Employment status	-.447	.230	-.144	-1.946	.054
Educational achievement	.032	.050	.046	.634	.527

[a] for each one-unit change in the predictor variable, the unstandardized coefficient represents the anticipated change in the outcome.

The WHO-DAS-II demonstrated a strong influence in the model predicting satisfaction with participation. A regression analysis using the hierarchical method that included overall social support and total WHO-DAS-II respectively resulted in the most concise model that predicted 35% of the variance in satisfaction with participation [$F(2, 137)=37.452; p<.05$] (Table 8). The change in the strength of the model in predicting participation was not significant ($p=.113$) when employment status was added. In fact, employment status was no longer a factor associated with satisfaction with participation in the context of social support and disability status.

A closer look at the strength of association for Overall Support Index beyond step one of the regression analysis shows the limited capacity of this variable to predict the variance in satisfaction with participation. In fact, the bivariate association of total WHO-DAS-II with participation (Table 5) results in a single variable model that predicts the same amount of variance (35%) as a model that includes Overall Support Index.

Table 8

Most concise model of participation including overal support index

Variable	Coefficient Unstandardized	SE	Coefficient Standardized	t	p	R^2	R^2 adjusted
Step 1							
Overall Support Index	.19	.08	.20	2.42	.02	.04	.03
Step 2							
Overall Support Index	.05	.07	.06	.83	.41	.35	.34
Total WHO-DAS-II	-.02	.00	-.58	-8.14	.00		

Discussion

Results from the participation measure used in this study indicate that participants were somewhat satisfied with their participation in daily occupations, with a mean score at the mid point of the participation scale. BMI or being limited by obesity did not significantly influence differences in overall participation scores.

Findings from this study demonstrate that persons with a BMI of 40kg/m^2 or greater experience limitations in activity, social support and weight-related quality of life. Specifically, a review of studies of adults with chronic health conditions using the WHO-DAS-II, the MOS Social Support Index and the IWQOL-Lite indicates that participants in this current study experienced more severe disability,

similar social support and lower weight related quality of life than adults with chronic disease with and without obesity.

The level of disability reported by participants using the WHO-DAS-II (mean=42, SD 26.10) (Table 4) was higher than the level of disability reported by populations of adults with stroke (mean=38.7, SD=24.8), depression (mean=44.6, SD=19.0), musculoskeletal conditions including rheumatoid arthritis, osteoarthritis and low back pain (mean=22, SD=14.3) and internal conditions including diabetes, COPD, coronary artery disease and obesity (mean=18.5, SD=15.3) (Post, Cieza, Stucki, 2007). The level of disability reported by participants was below the score of 45 used in a study of adults with diabetes to classify participants who had a substantial level of disability (Von Korff, Katon, Lin, Simon, Ludman et al, 2005).

IWQOL-Lite scores reported by participants (mean=41.1, SD=9.84) (Table 4) are lower than a general community sample which consisted of 711 adults who were overweight or obese (mean=91.8, SD=12.0) (Kolotkin & Crosby, 2002), a sample of 225 adults with obesity and diabetes involved in treatment for obesity (mean =67.3, SD=27.1) and a sample of 972 adults with obesity but not diabetes involved in treatment for obesity (mean= 64.2, SD=27.6) (Kolotkin, Crosby & Williams, 2003).

Participants reported a mean overall social support index of 67.25 (SD=16.95) (Table 4), which translates into a perception of support 75% of the time. The level of support reported by participants in this study is similar to an overall support index of 74% reported by 227 adults with chronic heart failure (Bennett, Perkins, Lane, Deer, Brater & Murray, 2001) and by adults with type 2 diabetes (79%) (Gucciardi, Chi-Tyan Wang, DeMel , Amaral, & Stewart, 2008). The level of support reported by participants in this study is slightly higher than the support reported by a sample of 2987 patients with chronic conditions in the Medical Outcomes Study (mean=70.1, SD=24.2) (Sherbourne & Stewart, 1991).

Research to date has focused on obesity as a risk factor for chronic disease and not on the experience of obesity as a chronic health condition. The profile for participants in this study, described through the use of disability, quality of life and social support measures, is similar to the profiles of adults living with other chronic health conditions. Although most participants in this study also reported having chronic health problems, these conditions were not found to be associated with disability status, quality of life, social support or overall participation (Table 5). Results of this study provide evidence to consider the experience of living with obesity in the context of living with a chronic health condition.

The primary findings in this study indicate the association of several factors classified in the ICF framework as impairments of body functions and structures, activity limitations and participation restrictions along with personal

and environmental factors, with satisfaction with participation for adults seeking treatment for class III obesity. Research in the area of participation is challenging due to the diverse conceptions about what elements construct participation. The use of the ICF model as a guide to select specific variables in which to explore participation and the use of a measure that is conceptually grounded in the ICF model was beneficial to organize this study. The ICF model was the conceptual model used to develop the WHO-DAS-II. The total score on the WHO-DAS-II was the strongest predictor of participation when included in a model with variables classified as activity (IWQOL-Lite), personal (educational achievement and employment status) and environmental descriptors (social support). Studies in which the content of the IWQOL-Lite and the WHO-DAS-II have been linked to the ICF confirms that 28 (78%) of the items found on the WHO-DAS-II (Cieza & Stucki, 2005) and 12 (34%) of the items found on the IWQOL-Lite (Stucki, Borchers, Stucki, Cieza, Amann & Ruof, 2006) are linked to the ICF content found in the categories of activity and participation. The moderate correlation and the similar content linked to the ICF of the WHO-DAS-II and the IWQOL-Lite warrant further evaluation about whether both of these measures should be included in the model predicting participation. The unique contribution of the WHO-DAS-II to the model predicting satisfaction with participation is explained by the higher number of items linked to the ICF activity dimension compared to the IWQOL-Lite. It could be concluded that for the purpose of predicting participation, the WHO-DAS-II covers the necessary content, and the use of the

IWQOL-Lite is not warranted. The most concise method to predict participation that follows the inclusion of variables identified a priori is a model that includes only the overall support index and the WHO-DAS-II. The total WHO-DAS-II was able to predict 35% of the variance in satisfaction with participation and includes only those factors that were found to be statistically significant predictors of participation. A bivariate analysis found 35% of the variance in satisfaction with participation was predicted by the total WHO-DAS-II score. Although included a priori based on previous evidence, the Support Index did not contribute importantly to the prediction of satisfaction with participation scores. One explanation for the insignificant contribution of the Overall Support Index is that the concepts of social support measured by the MOS Social Support Survey are included in the WHO-DAS-II. No studies were found that compared the content of the WHO-DAS-II and the MOS Social Support Survey. Additional research is needed to explore this concept and whether social support should be included in future analyses.

The inclusion of a disability status measure in an obesity treatment setting is worth considering given that they are easy to administer and provide important information about areas that contribute to overall participation. Disability experienced by persons with obesity was the strongest predictor of participation. Interventions that aim to reduce the disability experienced by persons with obesity have the potential to impact participation in everyday activities. Treatment programs for obesity that provide interventions that aim to improve the

performance of self-care activities, increase the satisfaction with the accomplishments in a day and aim to balance the amount of time spent in the types of activities performed in a day are encouraged to target the causes of disability for persons with obesity. These interventions need to be developed and evaluated.

Although the importance of social support was not found to be significant in the model with disability status, its use is supported through other research so further exploration of this concept for adults seeking treatment for obesity is warranted. Social support is also a factor for which valid and reliable measures exist and it is not known if a disability status measure alone measures the same concepts included in the MOS Social Support Survey. Interventions that aim to increase the quality and intensity of support may have the potential to increase satisfaction with participation. Family therapy and group based interventions have been found to influence support for adults enrolled in obesity treatment programs (Rothert, Strecher, Doyle, Caplan, Joyce, Jimison, Karm, Mims, & Roth, 2006) in addition to on-line support services or peer run support groups (Gorin, Phelan, Tate, Sherwood, Jeffery & Wing, 2005; Latner, Wilson, Stunkard & Jackson, 2002) These types of interventions have also proven effective in increasing social participation for adults with chronic health conditions caused by traumatic brain injury, spinal cord injury and stroke (Isaksson, Lexell, & Skar, 2007).

Participants in this study were all living with obesity classified as severe. However, the range of BMI reported was broad with 43 (31%) participants reporting a BMI of 50kg/m^2 or more. Despite the variability of BMI, it was not associated with overall satisfaction with participation in this study. It is possible that once a BMI of 40kg/m^2 is reached, there is a plateau in the impact that body size and shape has on overall satisfaction with the participation in the occupations of everyday living and at this level, BMI is no longer as relevant as compared to other factors. However, BMI was found to be a factor associated with a difference in scores on one item used to calculate the overall participation score. Participants with a BMI of 50 kg/m^2 or more reported being less satisfied with their ability to perform self-care activities. This warrants further study.

Results of this study indicate that an emphasis on BMI as a primary outcome associated with obesity treatment does not provide the most important and necessary information about participation in everyday living. These results support recent statements made in obesity commentary that challenges the use of BMI as a primary source of information. An obesity classification system for use as a guide to making obesity treatment recommendations was recently proposed in which factors associated with disability were identified as important in determining the severity of obesity beyond BMI (Sharma & Kushner, 2009).

Participants engaged in obesity treatment describe putting their lives on hold until weight loss goals are achieved (Forhan, Law, Vrkljan & Taylor, under

review). Supporting individuals with obesity to engage in meaningful daily occupations throughout the process of weight loss has the potential to contribute to health and well being similar to those outcomes seen for adults living with chronic illness. Outcomes associated with obesity treatment, such as weight loss, can take months and, in some cases, years to achieve. Interventions aimed at increasing social support, reducing barriers in the built and social environment and modifying tasks associated with activities of daily living create opportunities for participation. Supporting patients to live their lives during treatment for obesity requires policies that create opportunities in places where people work and play. These supports include policies that consider the needs of persons with obesity in the design of workplaces and public spaces similar to policies that require environments to be accessible for persons using a wheelchair.

Although 35% of the variance associated with participation was predicted using social support and disability status variables, or disability status on its own, participation for adults with obesity appears to be more challenging to measure than that of other populations for which participation has been studied. A study that explored factors determining the participation as measured by the London Handicap Scale in a sample of young adults (mean age=22, SD not reported) with physical and complex disabilities resulted in a model that predicted 63% (R^2=.63) of the variance in participation (Bent, Jone, Malloy, Chamberlain & Tennant, 2001). Factors included in the model that predicted participation were; fatigue; pain; independence; and self-efficacy. Researchers interested in predictors of

participation used the Life Habits (Life-H) questionnaire in a sample of adults stroke survivors, resulting in a model that predicted 68.1% (R^2=.681) of participation in life situations six months post stroke (Desrosiers, Noreau, Rochette, Bravo & Boutin, 2002).

The results of the present study imply that predicting satisfaction with participation in everyday living is less challenging than predicting social interactions. A study which explored the impact of obesity on social participation in a population of older adults (mean age =71 years, SD=5.7; mean BMI=26.1kg/m2, SD=4.7) resulted in a model that predicted 12% of the variance (R^2=.12) of overall social participation (Zettel-Watson & Britton, 2008). Gender, race, education, financial status, health status, depression and BMI were identified as factors that contributed significantly to the predictive model. Social participation was defined by time spent interacting with other people and could be considered an aspect of participation in the activities of everyday living. The concept of participation used in this study focused on satisfaction with performance, balance of time use across different types of activities, and accomplishment. As such, elements of frequency, accessibility, self-determination and opportunity for engagement have yet to be explored. Future research in the area of participation will include the validation of a participation specific measure. Dimensions for further study include access to environments in which participation takes place, the frequency of participation and the amount of support

required to participate in daily activities. As well, a focus on specific areas of participation, such as paid employment or leisure, is suggested.

Conclusion

Satisfaction with participation in the occupations of everyday living has not been explored in the context of living with obesity. This research is the first study using multivariate regression analysis to explore predictors of participation in the occupations of everyday living for adults living with class III obesity. The results of this study indicate that measures of activity limitations and participation restrictions linked with the ICF along with factors of social support, educational achievement and employment status are predictors of satisfaction with participation. The most concise model of predicting satisfaction with participation included a measure of disability status and a social support index or disability status on its own. BMI was not an important factor in predicting participation in a sample of adults living with class III obesity. Additional research should evaluate the effectiveness of interventions that aim to reduce the severity of disability, increase social support and improve weight-related quality of life to determine their impact on satisfaction with participation in the occupations of everyday living. Future research is also needed to determine the best way in which to define and measure participation in the context of obesity.

Chapter 5

Thesis Conclusions

Overall Conclusions

Participation in the occupations of everyday living contributes to health and wellness. This thesis consisted of three articles prepared for publication that summarize findings of one study using qualitative methods and one study using quantitative methods to examine participation in the occupations of everyday living for adults living with class III obesity who are seeking treatment for obesity. The purpose of the study that involved qualitative methods was to describe the experience of living with class III obesity in the context of participating in everyday occupations classified as paid and unpaid work, self-care and recreation. Using the findings from this study, a quantitative survey was developed to identify personal and environmental factors associated with participation.

The results of this line of inquiry have begun to illustrate the experiences of living with class III obesity. These studies are the first to explore participation in the occupations of everyday living from the perspective of adults living with class III obesity who are seeking treatment for obesity.

In chapter two, key findings from the study using descriptive phenomenology (Giorgi, 1985) indicate that adults living with class III obesity experience restricted participation due to the interaction of personal, physical factors associated with obesity and factors in the built and social environments.

Although participation in the occupations of everyday living is experienced, there is tension between what people would like to do and what they are able to do.

Findings from the cross-sectional survey of adults living with class III obesity who were seeking treatment for obesity were presented in chapters three and four. This study explored the participation patterns and factors that are associated with participation in the occupations of everyday living. The distribution of time spent across occupations classified as daily living, work, recreation and rest reported by participants is similar to patterns of time use reported by adults living with chronic health conditions. These results were summarized in chapter three.

In chapter four, the results of a multivariate regression analysis revealed that the severity of disability reported by participants was the most influential factor predicting participation in a model which included social support, weight-related quality of life and employment status. The most efficient predictive model included only the variables of social support and disability severity. The results provide information to practitioners about the types of factors that are most influential to the participation in the occupations of daily living for adults with class III obesity who are seeking treatment for obesity.

Key findings from this thesis are:

- Adults with severe obesity are restricted in their participation in the occupations of everyday living by the personal and physical health

consequence associated with obesity and by factors in the built and social environment.

- Adults with class III obesity have participation patterns similar to adults with chronic health conditions who report more time spent in self-care and less time in recreation and work.
- Level of obesity within a class of severe obesity is not associated with satisfaction with overall participation in daily occupations. However, satisfaction with the performance of self-care activities is associated with a BMI of 50kg/m^2 or more.
- The utilization of social supports including affectionate, tangible and emotional support is associated with satisfaction with overall participation, but this association is less important when disability severity is included in the analysis.
- Disability severity is associated with participation and was the strongest predictor of satisfaction with overall participation.

The purpose of this chapter is to briefly summarize the contents of preceding chapters, highlight the overall conclusions and implications, review the strengths and limitations of each study and make recommendations for practice, policy and research.

Summary of Findings

The Lived Experience

In chapter two, the results of a qualitative study suggest that adults with class III obesity are restricted in their participation by the physical health consequences of obesity that when combined with factors in the built and social environment resulted in restricted participation. Participants described "doing what they can" everyday. However, the quality and diversity of their participation was not at a level with which they were satisfied. Participation was experienced across all types of occupations by adapting the way in which they engaged in activities. Each day required the ability to analyze environments and the tasks associated with occupations, anticipating and avoiding barriers. Adults living with chronic illness described such skills and behaviours related to participation in everyday (Marris, 1996; Moss & Dyck, 2002). Interviews of women living with multiple sclerosis, diabetes and rheumatoid arthritis revealed themes of limitations to freedoms and achievements due to illness compared to "normal" people, as well as a lack of understanding from others about what it is like to live with fatigue associated with a chronic condition and doing what needs to be done to get through the day including planning ahead and anticipating barriers (Marris, 1996; Moss & Dyck, 2002).

Labels such as lazy, intellectually inferior and unmotivated are common (Brownell, Puhl, Schwartz & Rudd, 2005) and were endorsed by participants in this current study. Being treated differently by their family members, friends and

colleagues who did not have obesity were reported by participants. Differences included the expectations to complete tasks of everyday living being lower due to perceptions that they were not capable of performing activities due to their weight. A belief that higher body weights are associated with less intelligence was experienced by participants in the workplace who believed the intellectual demands of their tasks at work were reduced as their weight increased. The results of this study highlighted key factors that contribute to participation from the perspective of adults living with obesity, including attitudes and beliefs about obesity, physical barriers, coping strategies, and the importance and satisfaction with the occupations of daily living. These findings directly informed the selection of measures included in the cross sectional survey.

Participation Patterns

The results of the analysis of time use and associated meanings ascribed by ratings of satisfaction with performance, importance and interest indicate that adults with class III obesity have participation patterns similar to those of adults with chronic illness (Chapter 3). The results confirm the description of the types of occupations that require more time and effort by participants in the qualitative study (Chapter 2). The demands of activities classified in the Occupational Questionnaire as daily living (which included self-care activities such as bathing and dressing) required more time and effort for individuals with obesity and may have taken time away from activities classified as recreation. The imbalance of time spent across various types of occupations can increase the risk for impaired

health and wellness resulting from missed opportunities to develop social networks of support (Christiansen & Matuska, 2006).

Factors Associated with Participation

The majority of participants in this study reported that obesity limited their performance of daily occupations. The mean overall participation score indicated that participants were somewhat satisfied with their participation in the occupations of everyday living. These results imply that participants have expectations associated with participation that are in line with their current abilities to perform activities classified as occupations of everyday living. These results support the finding in the qualitative study that participants put their lives on hold until after they lost weight. A more detailed exploration of limitations as a result of obesity using a standard measure of disability severity (WHO-DAS-II) caused by functional impairments and barriers in the built and social environment resulted in the realization that disability had a strong influence on satisfaction with participation.

Disability status, including domains of self-care, mobility, understanding and communication, interpersonal relations, work and domestic responsibilities and participation in community activities, was the most influential factor contributing to a model of satisfaction with participation. Although disability as a result of functional limitations has been identified as a factor associated with obesity, until now, it has not been directly associated with participation in a population of adults with class III obesity. Reports of populations of persons with

disabilities have not specifically identified obesity as a disability. However, the findings from the studies in this thesis are similar to findings from studies of adults with chronic health conditions such as major depression or rheumatoid arthritis in terms of time use, disability status and quality of life.

Overall social support was a factor controlled for in the development of a model that predicted satisfaction with participation that was developed using the ICF model as a guide. Although social support did not have a strong influence on a model predicting the variance in participation, it was identified as a significant factor associated with participation. It contains important information the types and use of supports that is not included in measures of disability or quality of life.

Linking Findings to Theoretical Models

A diversity of complex personal and environmental factors that define disability status and social support influenced participation for adults with obesity in this study. A model that considers the interaction of personal and environmental factors would therefore be useful to guide interventions to enable participation in the occupations of everyday living. The Person, Environment Occupation (PEO) Model (Law, Cooper, Strong, Stewart, Rigby & Letts, 1996) is a dynamic systems model rooted in environmental-behavioural theories. This model is used by occupational therapists to identify interventions for the purpose of enabling performance in the occupations of everyday living (Law et al., 1998; Cooper & Stewart, 1997). The PEO model views the person and environment as

dynamic in nature and therefore open to change through interventions (Law & Dunbar, 2007).

A tension existing between what is important to adults living with obesity and the opportunities to participate in meaningful occupations was also suggested from the results of the studies in this thesis. The role of occupation as an influence on health is explained by the occupational theory of human nature (Wilcock, 2006). Wilcock argues that health and wellbeing are supported with a focus on occupation. Occupation is defined as "doing culturally meaningful work, play or daily living tasks in the stream of time and in the contexts of one's physical and social world" (Kielhofner, 1995 as cited by Christiansen & Baum, 2005, p. 4). An approach to well-being as discussed in the rehabilitation literature referred to as the capablility approach (Morris, 2009) fits with the occupational theory of human nature.

A persons' capacity to perform an activity in the context of opportunities and an interest in pursuing participation in a life event is considered by the capability approach. The value of freedom of choice is emphasized by the capability approach and has been used as a model to guide discussions by political theorists, philosophers and social scientists about human health and development (Sen, 1984; Sen, 1999; Nussbaum, 2000). A few of the ten capabilities indentified by Nussbaum (2000) include having the right to seek employment on an equal basis with others; being able to enjoy recreational activities; being treated with dignity and being able to move freely from place to place. These have influenced

the Human Development Index (HDI). Effective opportunities and freedom to participate are of key importance to human development are emphasized by the application of the capabilities approach (Sen, 1999).

Results from the studies in this thesis indicate that adults with severe obesity may not have opportunities to exercise their capabilities for the purpose of participating in ways that are meaningful to them. This deprivation could stem from a lack of knowledge and understanding about the experience of living with obesity.

Strengths and Limitations

Study One

This design and analysis in this study was framed by the principles of descriptive phenomenology (Giorgi, 1985). Care was taken to maintain the integrity of the information by having participants read their transcripts and comment on the interpretation of the data collected. Preconceived ideas about the experience of living with class III obesity were identified in a reflective journal and shared with the research supervisor. This strategy was employed to correct for any bias that may result and influence the analysis. The interview questions were developed in conjunction with evidence from the literature and feedback from adults living with class III obesity.

While this study provided a description of the daily experiences of participation for persons with obesity, it did not directly address the meaning of occupation for adults with obesity. The sample for this study included adults who

were seeking treatment for obesity. Therefore, the sample characterizes the experience of living with obesity for persons who have made a decision to change a condition that they perceived as having a negative impact on their health and well-being.

Study Two

The sample of 140 adults with class III obesity was representative of the general population of adults in the community living with obesity and adults seeking treatment for obesity. The analysis for this study was conducted on a comprehensive data set and with methods to handle missing data; the final analysis was conducted on a complete data set. The measures used in the survey were reliable and valid for use with adults and had evidence to support their use with adults who have class III obesity. Participants in this study were seeking treatment for obesity and therefore had likely considered how obesity impacted their health and well-being.

There are a range of factors that contribute to the experience of participation in the occupations of everyday living. This study focused on satisfaction with participation using measures of disability, quality of life and social support to gather information about categories located within the ICF model that contribute to participation. A conceptual model that includes other dimensions of participation including the location of participation, other people involved in participation and the meaning associated with participation and

performance was used. Thus, only one dimension of the complex nature of participation was examined.

Factors of disability status and quality of life were associated with satisfaction with participation and also associated with each other. This is due in part to the overlap of content in the WHO-DAS-II and the IWQOL-Lite. Quality of life has been identified as a predictor of participation (Whiteneck, 2006) in studies of adults with chronic health conditions. It is important that future studies use a method of collecting quality of life data that provides information distinct from disability. It is also important to note that the majority (84%) of participants reported having at least one health concern in addition to obesity. Therefore, conclusions drawn from this study are from a population of adults with class III obesity with additional health concerns, most of which included chronic health conditions known to be associated with obesity.

Recommendations

Implications for Practice

Given the increasing rates of obesity among children and adults in Canada, more people will likely seek treatment for obesity. Participation in the occupations of daily living has not traditionally been considered by researchers and health professionals working in the area of obesity.

Based on the results of the studies in this thesis, consideration of the research in the area of chronic illness and using the principles of the PEO model and

capabilities approach as a guide, the following interventions have been identified that need to be studied for use with adults living with obesity:

Create balance of time spent across occupations

Participants in this study describe patterns of time use and satisfaction with participation that are different from those of the general population but similar to persons living with a disability. Adults with obesity in this study described spending more time in daily activities, particularly in the time spent to get ready for the day. Time is organized around conserving energy for activities that are required in the day. Little time was left for activities classified as recreational or discretionary. The balance of time spent across all four types of occupations is threatened. Interventions that target a shift in the balance of time use in order to create more efficiency and ease in activities, such as self-care, would enable participation in recreation and rest.

Development of skills that address the physical determinants of occupation including endurance, strength and range of motion are best targeted through interventions guided by biomechanical and task-oriented models of practice used in occupational therapy (McColl, Law, Stewart, Doubt, Pollock & Krupa, 2003). Specific interventions include grading activities to meet the functional capacity of the individual by breaking activities down into smaller, manageable tasks that can be completed in stages over time. This approach utilizes energy conservation strategies that include taking breaks at points along task completion and identifying priorities. Such interventions enable the balance of time spent across

occupations (Forhan and Backman, 2009) and may be of use to adults with obesity.

Reduce disability

Weight reduction interventions have been shown to improve the biomedical consequences associated with body weight such as joint pain, fatigue, tolerance and endurance for physical activity (Mathus-Vliegen, deWeerd, & deWit, 2004; Samsa, Kolotkin, Williams, Nguyen & Mendel, 2001). However, the time required before experiencing the benefits of weight loss interventions can be many months or years, particularly for persons who have class III obesity. Even with successful weight loss, some people continue to live with class III obesity. Thus, interventions that focus beyond weight loss and target disability could be provided for adults with obesity.

A strength-based approach in the area of childhood disability views children as assets to be developed and not as problems to be managed (Benson, 2003). Application of this approach to adults seeking treatment for obesity would provide a guide to promote the development of skills and resources required to enable participation in occupations of everyday living rather than waiting until the state of obesity is changed. Results of the studies in this thesis suggest that adults with obesity are aware of their physical abilities and limitations and instinctively adapt tasks associated with necessary activities of daily living and apply the principles of energy conservation. Building on these strengths to enable participation in occupations of interest including discretionary activities in the

area of recreation and enhancing participation in occupations classified as work is worth exploring. Personal skills and self-management support are identified as strategies contributing to chronic disease management in Ontario (Ministry of Health and Long Term Care, 2007). The results of the studies in this thesis indicate that adults with obesity have the skills to participate as active partners in the management of their day to day living. However, self-management support require awareness by health care providers about the needs of persons with obesity and access to resources that enable participation in the occupations of daily living that contribute to health and wellness.

A supportive environment is also a strategy identified in Ontario's chronic disease management framework (Ministry of Health and Long Term Care, 2007). Supportive environments, according to the chronic disease framework, involve the removal of barriers to healthy living and the promotion of safe, enjoyable living and working conditions. Efforts to enable participation for adults with severe obesity also need to consider barriers in the built environments in which adults live, work and play. Interventions that target barriers in the built environment are grounded in environmental theories that guide the principles of universal design and adapting environments to meet the needs of persons with disabilities (McColl, Law, Stewart, Doubt, Pollock & Kruppa, 2003). In the context of obesity, this approach would involve designing seating on public transit, airplanes, theatres, restaurants and other places in which participation takes place that accommodate the weight requirements of persons with class III obesity. Adaptations to the built

environment would also include changes to public washrooms that have private stalls available with door widths and clearances around sinks and toilets that accommodate mobility equipment designed for use by persons with obesity and also to accommodate the body size of adults with class III obesity. Institutional and medical environments could adapt seating and examination rooms to meet the needs of persons with obesity. Principles of ergonomics are useful to promote the design of assistive devices such as canes, walkers and wheelchairs for use by persons with obesity. Knowledge about the use and availability of these devices is reaching clinicians through literature targeting clinicians (www.rehabmagazine.com).

Utilization and access to social support

Interventions that aim to enable satisfaction with participation, as conceptualized in this study, can target factors that increase access and utilization of social support for adults with obesity. Models of practice guided by sociocultural theories are useful to identify interventions that target the beliefs about obesity and the attitudes toward persons with obesity. The utilization of supports is associated with satisfaction with participation and therefore encouragement to identify and to use supports is necessary. Education about the factors associated with participation for adults with obesity and the similarities with chronic health conditions has the potential to reduce the stigma associated with obesity.

Recommendations for Policy

Body Mass Index (BMI) is reported in most obesity studies as a primary outcome associated with health and wellness. However, results from the quantitative line of inquiry in this thesis determined that BMI was not a significant factor associated with overall satisfaction with participation. Treatment programs and policy that use BMI as the sole criteria to make decisions about the allocation of resources may be excluding people who could benefit from services that support participation. The current focus in the obesity literature is representative of the political perspective of obesity as a health condition that needs to be fixed or cured (Lau, Douketis, Morrison, Hramiak, Sharma, & Ur, 2007). Therefore, resources are going to those efforts which include an emphasis on diet and physical exercise. In the meantime, people will continue to live with obesity. Findings from this research support strategies to enable participation for persons with obesity. Such strategies can involve creating opportunities in which persons with obesity have options in the areas of self-care, work, recreation and social interaction. Healthy public policy is an important strategy in the framework used to guide the management of chronic disease in Ontario (Ministry of Health and Long Term Care, 2007). Such policies aim to make choices for health possible for all citizens. These policies also guide the development of social and physical environments that promote health.

Recommendations for Research

BMI was associated with less satisfaction with the performance of self-care activities by participants who had a BMI of 50kg/m^2 or more. Details about the types of self-care activities and the challenges associated with self-care were not explored in this study. The performance of self-care activities includes bathing and dressing. These activities are necessary to enable participation in other types of occupations such as work and recreation. Additional research is needed that involves individuals with a BMI of 50kg/m^2 or greater to determine if this is a specific area which interventions need to target.

This research demonstrates that persons living with obesity have significant limitations in satisfaction with participation in daily occupations. The most important factor influencing their satisfaction with participation is level of disability. While current treatment focuses primarily on reducing or eliminating obesity, enabling satisfactory participation for persons living with obesity has the potential to improve their day to day living experience while undergoing treatment for weight loss. Research exploring other potential factors influencing participation and strategies to enhance the participation experience for persons living with obesity is needed.

The line of inquiry in this thesis focused on the distribution of time spent in occupations and the identification of factors associated with satisfaction with participation. The way in which activities were performed and the amount of assistance required was not measured. Participants in the qualitative study

(Chapter 2) described the use of coping strategies, such as taking frequent breaks. The majority (75%) of participants surveyed used assistive devices and/or human physical support. Further detail about the level and types of support utilized by person living with obesity will inform clinicians and industry about specific needs for mobility devices and aids for daily living as well as consideration of the role of social supports.

Future research about the participation of adults with obesity would benefit from the use of a comprehensive measure of participation that includes areas identified as important in everyday living by adults living with obesity (as found in this current study). The Life Habits Questionnaire (Life-H) (Fougeyrollas, Noreau, & St-Michael, 2002) provides an ethnographic description of what people do. This questionnaire would provide a description of the lives of persons living with obesity. The Life-H is rooted in the Disability Creation Process (DCP) (Fougeyrollas, Noreau, Bergeron,et al., 1998) in which social participation or life habits are dependent on personal and social factors. The DCP is an explanatory model that can be used to explore the causes and consequences of obesity to an individual's integrity or development. In keeping with the concepts included in the DCP further research on the utility of the Life-H Questionnaire with persons seeking treatment for obesity is needed.

Additional research in the areas of participation for persons with obesity is needed to gather information about additional personal and environmental factors that may contribute to the participation in everyday occupations. Such information

will inform clinical decision making and policies that aim to protect human rights. Results will inform clinicians to consider the interaction of personal and environmental factors that influence participation in everyday occupations for adults living with obesity and adjust the expectations, resources and supports available to their clients.

Although the intervention strategies discussed in this chapter are proven effective for use with individuals with chronic health conditions research developing and evaluating intervention strategies to enhance participation for adults with obesity is needed.

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APPENDICES

Appendix A
Information Sheet and Consent Form, Study 1

Information Sheet

Study Title:	Exploring Meaning for Persons with Class III Obesity as Participants in Everyday Living

Local Principle Investigator:
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You are being invited to participate in a research study. Before you decide to be part of this study, you need to understand the risks and benefits so

that you can make an informed decision about taking part in the study. By giving informed consent your are agreeing to take part in this study.

Read the consent form carefully. Please ask Mary Forhan to explain any words or information that you do not clearly understand. If you agree to participate in this study, please sign one copy of the consent form and return by mail using the postage paid, addressed envelope enclosed. If you decide not to participate in this study, no action is required.

You are being asked to participate in this study because you have been identified as a person who has experience with class III obesity You are being asked to give consent to participate in an interview with Mary Forhanto be evaluated in a research study. You are also being asked to participate in the data analysis section of this study.

Description of the study

Mary Forhan is a PhD student in the school of rehabilitation science at McMaster University, Hamilton, ON. She is asking your consent to participate in an interview with her. The interview will be taped using a digital voice recorder. The purpose of this study is to interprate what it means to live with class III obesity. The aim of the study is to better understand what it is like to participate in daily activities with obesity. The overall goal of the study is to better understand the daily challenges of persons with obesity who are seeking obesity treatment. It is anticipated that with a better understanding of the lived experience of obesity that healthcare professionals will be better prepared to meet the needs of persons with class III obesity as they participate in treatment for obesity. Mary Forhan will be Conducting up to 10 interviews with patients from the Canadian Bariatric Clinic.

What does this study involve?

You will be asked to schedule at interview at a time that is convenient to you. The interview will take place in an office at the Canadian Bariatric Clinic with Mary Forhan. Your interview will be audio taped. Your taped interview with Mary Forhan will be typed word for word by a transcriptioninst. The typed script of your interview will be sent to you for the purposes of accuracy and also for you to identify any parts of the script that you would like deleted from the study. You will be asked to send back any changes to the script to Mary Forhan within one week of receiving the script. If after one week, Mary has not heard back from you regarding the script, the original transcription will be used for data analysis. All returned, edited scripts will also be used for analysis. All approved and coded

scripts will be analysed to identify themes and categories related to the what it is like to live with obesity. A final analysis will be completed and each participant will be mailed a draft of the final results. Each participant will be asked to review the final analysis and asked to comment on accuracy of the interpretation. Comments and feedback will be collected using a summary sheet and mailed back to Mary Forhan within one week of receiving the analysis.

What are my responsibilities as a participant in this study?

- You are being asked to participate in an interview at the Canadian Bariatric Clinic with Mary Forhan. The interview will take up to one hour. You are being asked to review the transcript of your interview for accuracy. This will take approximately 40 minutes based on a one hour interview. You are being asked to return the transcript with or without edits in a pre-paid envelope to Mary Forhan.
- You are being asked to review the final analysis and provide feedback on the accuracy of the interpretations made. The final analysis will be an interpretive summary of all of the interviews and will describe what is it like to live with class III obesity. This will be an interpretation based on all of the interviews reviewed. No identifying information will be included in this analysis. You are being asked to return the final analysis with or without edits to Mary Forhan in a pre-paid envelope.

What are the benefits of participating in this study?

There are no direct benefits to you to participate in this study.

What are the risks of participating in this study?

There are no anticipated risks to participate in this study. Some people may experience and increased awareness of their experience living with obesity.

Do I have to stay in this study?

You have the right to leave this study at any time. If you decide to leave this study you need to inform Mary Forhan by telephone, email or mail of your decision to leave. Informing Mary Forhan of your decision to leave this study in no way changes the treatment or services that you will receive from the Canadian Bariatric Clinic.

Who will have access to the information collected in this study?

The person hired to type the interviews, Mary Forhan and her PhD supervisor, Dr. Mary Law, will have access to the information collected in this study. You have a right to privacy and everything that we learn about you in this study will remain confidential as far as possible within law. Your name will not appear on any written doccuments. You will be assigned a research code that will appear on all documents in place of your name. A master list of participant names and research codes will remain with Mary Forhan saved on a password protected computer file. All data will be password protected. The results of this study will be shared with the Canadian Bariatric Clinic, published in professional journals and presented at conferences. Your name and identifying information will not be used.

Consent Form

I participant surname participant first name agree to be a participant in the study entitled "Exploring Meaning for Persons with Class III Obesity as Participants in Everyday Living". I understand that my participation is voluntary and that I may revoke my consent at any time in the study. I understand that I am being asked to participate in an interview at the Canadian Baratric Clinic with Mary Forhan and that this interview will be audio taped, transcribed and evaluated. I understand that my name and any identifying information will be kept confidential through the use of codes and removal of identifying data in transcripts, reports, presentations and published articles and that the transcribed interviews will be stored in a locked office and password protected computer file. I understand that I will be contacted by Mary Forhan after the transcription of my taped interview for the purpose of clarification and development of the research data. I also agree to have a report sent to me for review of accuracy as part of the research study and that I will be asked to respond to the interviewer with my comments within one week of receiving the report. All mailing costs or long-distance telephone charges will be covered by the research study.

I understand that I have nothing to gain by directly participating in this study and that the only benefit may be to help increase the body of knowledge about what it is like to live with class III obesity. No change in my medial care at the Canadian Bariatric Clinicwill result due to my participation or withdrawal from participating in this study.

This study has been approved by the Hamilton Health Sciences Corporation Medical Ethics Review Board. Should I have any concerns or questions regarding the ethics of this study I should contact the Office of the Chair of the Hamilton Health Science/Faculty of Health Sciences Research Ethics Board at (905) 521-2100 x 42013. Should I have any questions or concerns about the study in general I should contact Mary Forhan directly at forhanm@mcmaster.ca or (905) 525-9140 x 22666.
I agree that I have read this consent and have had all of my questions answered to my satisfaction and that I have retained a copy of the consent for my records.

Participant Name (Please Print) _____

Participant Signature _____

Date_____

Witness Name (Please Print) _____

Witness Signature_____

Date_____

Principal Investigator Signature _____

Date_____

Appendix B
Interview Guide

Exploring Meaning for Persons with Class III Obesity as Participants in Everyday Living

- ✓ Check that consent form has been completed.
- ✓ Ensure participant is comfortable and ready to begin, re-ask permission to record
- ✓ Place tape recorder and microphone on table between or beside the participant and interviewer, turn recorder on.

Interview Guide:

Bulleted items are probes intended to encourage expansion of participant responses, and will be used if necessary.

The Obesity Experience

1. Orient participant to research study

Occupational therapists are interested in those activities people do that occupy their time. Occupational therapists use the term occupation to describe these activities. An occupation is everything people to occupy them. To help understand why some people may experience difficulties in performing certain activities, occupational therapists have divided these activities into three categories: self-care, productivity, and leisure.

The first category, self-care, refers to all the occupations that people do to look after themselves. These occupations include personal care activities such as bathing, dressing, exercise and eating. This category also includes occupations that involve taking care of personal responsibilities such as attending medical appointments, banking, and managing medications.

Productivity, the second category, refers to all occupations that make a social or economic contribution to their community such as their employment, volunteer work and parenting.

Leisure, the final category, refers to occupations that people do for enjoyment such as socializing, hobbies, outdoor activities, and sports.

In this study I am interested in learning about how obesity affects the occupations you do and how you feel as a person with obesity about your health and wellness. The overall goal of the study is to better understand the

daily challenges of persons with obesity who are seeking obesity treatment. The information you share in this interview will be used to describe the experience of persons with obesity).

2. Grand Tour Question: Given your experience with obesity, can you share with me how obesity affects (impacts) your participation in the typical activities you do everyday.

- What activities are you participating in at you home?
- What activities are you participating in outside of the home?
- Do you experiences any challenges in your occupations related to the obesity?
- Do you think your participation in daily activities would be different if you did not have obesity? If so, how?
- Are there things you would like to do but don't?
- If not, what prevents you from doing these things?

Treatment Expectations

1. What are the reasons that you are seeking treatment for obesity?
   - Are these reasons connected to your participation in occupations?
2. What are your expectations from participating in obesity treatment?
   - Do you expect your health to change? If so in what ways?
   - Do you expect the quality of your life to change? If so, how?
   - Do you expect your participation in occupations to change? If yes, how?
3. What do you think contribute to meeting your expectations of treatment?
   - Are there factors in the environment to consider?
   - Are there factors of the occupation to consider?

- Are there factors with your ability or health to consider?

4. What factors do you think hinder meeting your expectations of treatment?

- Are there factors in the environment to consider?
- Are there factors of the occupation to consider?
- Are there factors with your ability or health to consider?

Review/Closure Questions

Review information obtained during the interview to confirm accuracy and to clarify any points of confusion.

1. Were there any questions during this interview that were difficult to answer?
   Which ones?
   How so?

2. Is there anything else that you would like to share that may highlight some issues we have discussed?

Thank you for your time and participation in this study. You will have the opportunity to review the transcript of this interview for accuracy of interpretations in about two week's time.

Turn the digital voice recorder off.

Appendix C
Request to Review Transcript, Study 1

Date:_____

Dear_____

Thank you for participating in the studied entitled "Exploring Meaning for Persons with Class III Obesity Participating in Everyday Living". I have included a written copy of the taped interview that you participated in with Mary Forhanat the Canadian Bariatric Clinic.

Please read through the transcript for the following:

- Accuracy of the script- does it reflect what you believe you said in the interview?
- Information that you do not want to have included in the research- please note that once you approve the transcript it will be assigned a unique code and your name will not be attached to any information included in the research study from this point on.

Please make any changes directly on the transcript. If you have any additional comments please include them on the comments sheet included with this package.

A return envelope has been provided complete with the cost of return postage. Please place the transcript and comment sheet into the envelope and return withing 1 week of receiving this package. If you have not made any comments on the transcript or comment sheet we still need to have them returned for our files.

If you have any questions or concerns please contact me by telephone, email or mail. My contact information is found below.

After all of the transcripts have been reviewed an overall research report will be completed. If you do not wish to receive the overall research report for review

please check this box □ otherwise the report will be mailed to you for your review shortly.

Sincerely

Mary Forhan MHSc.O.T. Reg(Ont). PhD student
School of Rehabilitation Science, IAHS room 403
McMaster University
1400 Main St. W.
Hamilton, ON L8S 1C7
forhanm@mcmaster.ca
(905) 525-9140 x 22666

Appendix D
Information Sheet and Consent Form, Study 2

Information Sheet

Study Title: The impact of obesity on participation in daily occupations
Local Principle Investigator: Dr. Mary Law Faculty of Health Sciences School of Rehabilitation Science McMaster University (905) 525-9140 x 27837 lawm@mcmaster.ca
Principle Invesitgator: Ms. Mary Forhan PhD Candidate School of Rehabilitation Science McMaster University (905) 522-9140 x 22666 forhanm@mcmaster.ca

You are being invited to participate in a research study. Before you decide to be part of this study, you need to understand the risks and benefits so that you can make an informed decision about taking part in the study. By giving informed consent your are agreeing to take part in this study.

Read the consent form carefully. Please contact Mary Forhan to explain any words or information that you do not clearly understand. If you agree to participate in this study, please sign one copy of the consent form and return by mail using the postage paid, addressed envelope enclosed. If you decide not to participate in this study, please indicate that you are not interested in the study by placing an "X" in the appropriate box on page 3 of this form and return by mail using the postage paid addressed envelope enclosed.

You are being asked to participate in this study because you have been identified as a person who has experience with class III obesity and you meet the age and body mass requirements of the study. However, in the past 6 months if you have had any major surgery that would impact your participation in daily activities and/or you have been diagnosed with a major mental illness you are not eligible to participate in this study. If this is the case, please check the appropriate box on page 3. Provided you meet this criteria,you are being asked to give consent to participate in self-administered survey that will be mailed to you.

Description of the study

Mary Forhan is an occupational therapist and a PhD student in the School of Rehabilitation Science at McMaster University, Hamilton, ON. She is asking your consent to participate in a self-administered survey that will be mailed to you. The purpose of this study is to describe the impact of having class III obesity on the participation in everyday occupations. The aim of the study is to better understand what it is like to participate in daily activities with obesity. The overall goal of the study is to better understand the daily challenges of persons with obesity who are seeking obesity treatment. It is anticipated that with a better understanding of the lived experience of obesity that healthcare professionals will be better prepared to meet the needs of persons with class III obesity as they participate in treatment for obesity. It is anticipated that 336 people will participate in this study from different obesity treatment programs in Central Western Ontario.

What does this study involve?

If you provide consent to participate in this study Mary Forhan will mail a survey package to the address you provide. You will be asked to fill out the questionnaire as best you can within one week of receiving the survey. You can choose not to answer some questions. You will return the completed survey to Mary Forhan using a pre-paid return envelope that will be provided in your survey package. A letter of reminder will be sent to you by Mary Forhan after one week of receiving the survey. Your name will not appear on any surveys. You will be assigned a code after you consent to participate in the study. The only people who will have access to the master list of participant names, codes and mailing addresses is Mary Forhan and her supervisor, Dr. Mary Law. All responses to the survey questions will be coded and entered into a data base. This data will not include any identifying information. It is this data that will be used for analysis. After the receipt of your survey a letter of acknowledgement will be sent to you. Your physician or health care providers at the obesity treatment program from which you were invited to participate in this study will not be made aware of your participation in this study.

What are my responsibilities as a participant in this study?

- You are being asked to complete and return a survey that will be mailed to you. This will take approximately 40 minutes to one hour.

What are the benefits of participating in this study?

There are no direct benefits to you to participate in this study.

What are the risks of participating in this study?

There are no anticipated risks to participate in this study. Some people may experience and increased awareness of their experience living with obesity.

Do I have to stay in this study?

You have the right to leave this study at any time. If you decide to leave this study you need to inform Mary Forhan by telephone, email or mail of your decision to leave. Informing Mary Forhan of your decision to leave this study in no way changes the treatment or services that you will receive from the obesity treatment center that you are a patient at.

Who will have access to the information collected in this study?

Mary Forhan and her, PhD supervisor Dr. Mary Law will have access to the information collected in this study. You have a right to privacy and everything that we learn about you in this study will remain confidential as far as possible within law. Your name will not appear on any written doccuments. You will be assigned a research code that will appear on all documents in place of your name. A master list of participant names and research codes will remain with Mary Forhan saved on a password protected computer file. All data will be password protected. The results of this study will be published in professional journals and presented at conferences. Your name and identifying information will not be used. Please indicate your interest and eligibility to participate in this study by checking the appropriate box below.

[ ] No, I am not interested in participating. (Please do not include your name).

[ ] No, I am not eligible to participate in this study. (Please do not include your name).

[ ] Yes, I am interested in participating. (Please proceed to the next page to complete the consent form).

Consent Form

I agree to be a participant in the study entitled "The impact of obesity on participation in daily occupations". I understand that my participation is voluntary and that I may revoke my consent at any time in the study. I understand that I will be asked to complete a survey and that my responses to the questions on the survey will be used for this study. I understand that my name and any identifying information will be kept confidential through the use of codes and removal of identifying data in the survey, reports, presentations and published articles and that the completed survey will be stored in a locked office and data will be stored in a password protected computer file. All mailing costs or long-distance telephone charges will be covered by the research study.

I understand that I have nothing to gain by directly participating in this study and that the only benefit may be to help increase the body of knowledge about what it is like to live with class III obesity. No change in my medial care at the obesity treatment program I attend will result due to my participation or withdrawal from participating in this study.

This study has been approved by the Hamilton Health Sciences/Faculty of Health Sciences Research Ethics Board. Should I have any concerns or questions regarding the ethics of this study I should contact the Office of the Chair of the Hamilton Health Sciences/Faculty of Health Sciences Research Ethics Board at (905) 521-2100 x 42013. Should I have any questions or concerns about the study in general I should contact Mary Forhan directly at forhanm@mcmaster.ca or (905) 525-9140 x 21454.

I agree that I have read this consent and have had all of my questions answered to my satisfaction and that I have retained a copy of the consent for my records.

Participant Name (Please Print)

_____

Participant Signature _____

Date_____

Person obtaining consent (Please Print)

_____

Person obtaining consent _____

Date_____

Principal Investigator (Please Print)

_____

Principal Investigator_____

Date_____

Appendix E
Survey Package

Dear Valued Study Participant

Thank you for your interest in participating in this study which aims to explore the experience of living with obesity. I received your written consent to participate and have enclosed a survey for you to complete.

Please take some time over the next few days to complete the survey. Instructions for completing the survey are found throughout the survey booklet. Once you have completed the survey, please return it to me using the enclosed envelope that has the postage included. You will notice a letter and number code on the top right hand corner of the survey. This is a study code and is used to protect your identity in the study. Your name is not included on any pages of the survey that will be returned to me.

If you have any questions or concerns please do not hesitate to contact me by email forhanm@mcmaster.ca or by telephone (905) 525-9140 x 21454.

Sincerely

Mary Forhan MHSc.BSc.OT Reg(Ont) PhD candidate
School of Rehabilitation Science, McMaster University

McMaster University
Health Sciences

McMaster University: School of Rehabilitation Science

The Impact of Class III Obesity on Participation in Daily Activities

- **Thank you** for taking the time to participate in this research study. Because everyone's experience with obesity is different, your responses to this survey are important. This survey will take 40-60 minutes to complete.

- **The purpose** of this study is to describe the types of activities that adults with obesity participate in on a daily basis and to identify the types of successes and challenges experienced in a typical day. The results will help improve treatment and education programs aimed at assisting people with obesity to improve quality of life and well-being.

- **In this study...**

  Occupation refers to all types of paid and unpaid work, self-care and leisure activities.

  Obesity refers to a body mass index of 30 or more. Body mass index (BMI) is determined by the calculation using your height in meters and weight in kilograms. Class III obesity is determined by a BMI of 40 or more.

Please turn the page to begin the survey.

❖ Section 1: Questions about daily occupation

In this next section you will be asked to record your usual daily activities, and to answer some questions about these activities.

Please select a usual day of the week (do not use a Saturday or Sunday to complete this questionnaire). Using the worksheet that begins below, record your activities from the time you wake up. Each row represents a one-half hour slot. For each half-hour record the main activity that you would be doing during that half-hour. An activity can be anything from talking to a friend, cooking, eating or bathing. If you do an activity for longer than one-half hour, write it down again for as long as you continue to do that activity (see example).

For each activity answer the four questions located at the top of the columns in the table. Notice that the questions ask you to consider whether your activities are work, daily living tasks, recreation, or rest and to consider how well you do the activities, how important they are to you, and how much you enjoy them (see example).

In the first question, work does not necessarily mean that you are paid for the activity. Work can include productive activities that are useful to other people, like volunteering at a school, caring for a relative, and housekeeping. Daily living tasks are activities that are related to your own self care, such as meal preparation, grooming and running errands. Recreation refers to activities such as socializing with friends, hobbies, sports, games, traveling, and watching television. Rest includes taking a nap and not doing anything in particular. Even if a question does not seem appropriate for some of your activities, please try to respond to each one as accurately as possible. Your answers to every question are important!

Activity	Question 1 I consider this activity to be: 1-work 2-daily living	Question 2 I think that I do this: 1-Very well 2-Well 3-About average	Question 3 For me this activity is: 1-Extremely important 2-Important 3-Take it or leave it	Question 4 How much do you enjoy this activity: 1-Like it very much 2-Like it

For the half hour beginning at:	3-recreation 4-rest	4-Poorly 5-Very poorly	4-Rather not do 5-Total waste of time	3-Neither like it nor dislike it 4-Dislike it 5-Strongly dislike it
7:00am Shower	2	3	1	4
7:30am Getting dressed	2	4	2	4

Occupational Questionnaire
Today's date: _____

Activity For the half hour beginning at:	Question 1 I consider this activity to be: 1-work 2-daily living 3-recreation 4-rest	Question 2 I think that I do this: 1-Very well 2-Well 3-About average 4-Poorly 5-Very poorly	Question 3 For me this activity is: 1-Extremely important 2-Important 3-Take it or leave it 4-Rather not do 5-Total waste of time	Question 4 How much do you enjoy this activity: 1-Like it very much 2-Like it 3-Neither like it nor dislike it 4-Dislike it 5-Strongly dislike it
5:00 am				
5:30 am				
6:00 am				
6:30 am				
7:00 am				
7:30 am				
8:00 am				
8:30 am				
9:00 am				
9:30 am				

10:00 am				

Activity For the half hour beginning at:	Question 1 I consider this activity to be: 1-work 2-daily living 3-recreation 4-rest	Question 2 I think that I do this: 1-Very well 2-Well 3-About average 4-Poorly 5-Very poorly	Question 3 For me this activity is: 1-Extremely important 2-Important 3-Take it or leave it 4-Rather not do 5-Total waste of time	Question 4 How much do you enjoy this activity: 1-Like it very much 2-Like it 3-Neither like it nor dislike it 4-Dislike it 5-Strongly dislike it
10:30 am				
11:00 am				
11:30 am				
12:00 pm				
12:30 pm				
1:00 pm				
1:30 pm				
2:00 pm				
2:30 pm				
3:00 pm				
3:30 pm				
4:00 pm				

4:30 pm				

Activity For the half hour beginning at:	Question 1 I consider this activity to be: 1-work 2-daily living 3-recreation 4-rest	Question 2 I think that I do this: 1-Very well 2-Well 3-About average 4-Poorly 5-Very poorly	Question 3 For me this activity is: 1-Extremely important 2-Important 3-Take it or leave it 4-Rather not do 5-Total waste of time	Question 4 How much do you enjoy this activity: 1-Like it very much 2-Like it 3-Neither like it nor dislike it 4-Dislike it 5-Strongly dislike it
5:00 pm				
5:30 pm				
6:00 pm				
6:30 pm				
7:00 pm				
7:30 pm				
8:00 pm				
8:30 pm				
9:00 pm				
9:30 pm				
10:00 pm				
10:30 pm				

11:00 pm				

Activity For the half hour beginning at:	Question 1 I consider this activity to be: 1-work 2-daily living 3-recreation 4-rest	Question 2 I think that I do this: 1-Very well 2-Well 3-About average 4-Poorly 5-Very poorly	Question 3 For me this activity is: 1-Extremely important 2-Important 3-Take it or leave it 4-Rather not do 5-Total waste of time	Question 4 How much do you enjoy this activity: 1-Like it very much 2-Like it 3-Neither like it nor dislike it 4-Dislike it 5-Strongly dislike it
11:30 pm				

How well does this day represent an ordinary day? Circle a number.

1	2	3	4	5
Very Well				Not at All

Questions About Daily Occupations

Questions are listed on the left hand column. Respond in the right hand column, by circling the appropriate rating.

1. To what extent does your obesity impact your ability to <u>perform</u> daily occupations? *Please circle one number.*	1 Does not impact anything I do	2 Impacts less than half of the things I do.	3 Impacts half of the things I do	4 Impacts almost everything I do.	5 Impact everything I do.
2. On a scale of 1 to 5 how satisfied are you in your ability to perform self-care activities? *(circle a number)*	1 Very Dissatisfied	2	3	4	5 Very Satisfied
3. On a scale of 1 to 5 how satisfied are you with the balance of time you spend on work, self-care, leisure and rest? (circle a number)	1 Very Dissatisfied	2	3	4	5 Very Satisfied
4. At the end of the day, how satisfied are you that you have accomplished what you had set out to do? *(circle one)*	1 Very Dissatisfied	2	3	4	5 Very Satisfied

❖ Section 2: How obesity affects the things you do everyday.

In this section we'd like to know about the effects of obesity on you and your ability to do everyday activities.

Please answer the following statements by circling the number that best applies to you <u>over the past week</u>. Be as honest as possible. <u>There is no right or wrong answer</u>. For each item please rate how important this issue is for you during your daily activities.

Physical Function	Always	Usually	Sometimes	Rarely	Never

	True	True	True	True	True
1. Because of my weight I have trouble picking up objects.	5	4	3	2	1

	Always True	Usually True	Sometimes True	Rarely True	Never True
2. Because of my weight I have trouble tying my shoelaces.	5	4	3	2	1
3. Because of my weight I have difficulty getting up from a chair.	5	4	3	2	1
4. Because of my weight I have trouble using the stairs.	5	4	3	2	1
5. Because of my weight I have difficulty putting on or taking off my clothes.	5	4	3	2	1
6. Because of my weight I have trouble with mobility (getting around).	5	4	3	2	1
7. Because of my weight I have trouble crossing my legs.	5	4	3	2	1
8. I feel short of breath with only mild exertion (e.g. climbing a single flight of stairs).	5	4	3	2	1
9. I am troubled by painful or stiff joints.	5	4	3	2	1
10. My ankles and lower legs are swollen at the end of the day.	5	4	3	2	1
11. I am worried about my health.	5	4	3	2	1
Self Esteem	Always True	Usually True	Sometimes True	Rarely True	Never True
1. Because of my weight I am self-conscious.	5	4	3	2	1
2. Because of my weight my self-esteem is not what it could be.	5	4	3	2	1
3. Because of my weight I feel unsure of myself.	5	4	3	2	1
4. Because of my weight I don't like myself.	5	4	3	2	1
5. Because of my weight I am afraid of being rejected.	5	4	3	2	1
6. Because of my weight I avoid looking in mirrors or seeing myself in photographs.	5	4	3	2	1

7. Because of my weight I am embarrassed to be seen in public places.	5	4	3	2	1

Sexual Life	Always True	Usually True	Sometimes True	Rarely True	Never True
1. Because of my weight I do not enjoy sexual activity.	5	4	3	2	1
2. Because of my weight I have little or no sexual desire.	5	4	3	2	1
3. Because of my weight I have difficulty with sexual performance.	5	4	3	2	1
4. Because of my weight I avoid sexual encounters whenever possible.	5	4	3	2	1
Public Distress	Always True	Usually True	Sometimes True	Rarely True	Never True
1. Because of my weight I experience ridicule, teasing, or unwanted attention.	5	4	3	2	1
2. Because of my weight I worry about fitting into seats in public places (e.g. theatres, cinemas, restaurants, cars, or airplanes).	5	4	3	2	1
3. Because of my weight I worry about fitting through aisles or turnstiles.	5	4	3	2	1
4. Because of my weight I worry about finding chairs that are strong enough to hold my weight.	5	4	3	2	1
5. Because of my weight I experience discrimination by others.	5	4	3	2	1
Work (note: For those not in paid employment, answer with respect to daily activities.)	Always True	Usually True	Sometimes True	Rarely True	Never True
1. Because of my weight I have trouble getting things done or carrying out my responsibilities.	5	4	3	2	1
2. Because of my weight I am less productive than I could be.	5	4	3	2	1

	Always True	Usually True	Sometimes True	Rarely True	Never True
3. Because of my weight I don't receive appropriate pay increases, promotions or recognition.	5	4	3	2	1
4. Because of my weight I am afraid to go for job interviews.	5	4	3	2	1
Personal Care	Always True	Usually True	Sometimes True	Rarely True	Never True
1. Because of my weight lose control of my bladder.	5	4	3	2	1
2. Because of my weight I have trouble wiping myself after a bowel movement.	5	4	3	2	1
3. Because of my weight I have trouble bathing.	5	4	3	2	1
4. Because of my weight I have trouble drying my body after bathing.	5	4	3	2	1

❖ Section 3: About your general health status

This section of questions asks about difficulties due to health conditions. Health conditions include diseases or illnesses, other health problems that my be short or long lasting, injuries, mental or emotional problems, and problems with alcohol or drugs.

World Health Organization Disability Assessment Schedule II

H1. How do you rate your overall health in the past 30 days?	Very good	Good	Moderate	Bad	Very Bad

Think back over the last 30 days and answer these questions thinking about how much difficulty you had doing the following activities. For each question, please circle only one response.

In the last 30 days, how much difficulty did you have in:					
S1 Standing for long periods such as 30 minutes?	None	Mild	Moderate	Severe	Extreme/ Cannot do
S2. Taking care of your	None	Mild	Moderate	Severe	Extreme/

	household responsibilities?					Cannot do
S3.	Learning a new task, for example, learning how to get to a new place?	None	Mild	Moderate	Severe	Extreme/ Cannot do

S4. How much of a problem did you have joining in community activities (for example, festivals, religious or other activities) the same way as anyone else can?	None	Mild	Moderate	Severe	Extreme/ Cannot do
S5. How much have you been emotionally affected by your health problems?	None	Mild	Moderate	Severe	Extreme/ Cannot do
S6. Concentrating on doing something for ten minutes?	None	Mild	Moderate	Severe	Extreme/ Cannot do
S7. Walking a long distance such as a kilometer?	None	Mild	Moderate	Severe	Extreme/ Cannot do
S8. Washing your whole body?	None	Mild	Moderate	Severe	Extreme/ Cannot do
S9. Getting dressed?	None	Mild	Moderate	Severe	Extreme/ Cannot do
S10. Dealing with people you do not know?	None	Mild	Moderate	Severe	Extreme/ Cannot do
S11. Maintaining a friendship?	None	Mild	Moderate	Severe	Extreme/ Cannot do
S12. Your day at work? (Paid or unpaid work).	None	Mild	Moderate	Severe	Extreme/ Cannot do

In the last 30 days, how much difficulty did you have in:					
H2. Overall, how much did these activities interfere with your life?	Not at all	Mildly	Moderately	Severely	Extremely
H3. Overall, in the past 30 days, how many days were these difficulties present?	Record number of days _____				
H4. In the past 30 days, for how many days were you totally unable to carry out your usual activities or work because of any health condition?	Record number of days _____				
H5. In the past 30 days, not counting the days that you were totally unable, for how many days did you cut back or reduce your usual activities or	Record number of days _____				

work because of any health condition?	

❖ Section 4: About your social support.

People sometimes look to others for companionship, assistance or other guides of support. How often is each of the following kinds of support available to you if you need it? Circle one number on each line.

Emotional Support	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Someone you can count on to listen to you when you need to talk.	1	2	3	4	5
Someone to give you information to help you understand a situation.	1	2	3	4	5
Someone to give you good advice about a crisis.	1	2	3	4	5
Someone to confide in or talk to about yourself or your problems.	1	2	3	4	5
Someone whose advice you really want.	1	2	3	4	5
Someone to share your most private worries and fears with.	1	2	3	4	5
Someone to turn to for suggestions about how to deal with a personal problem.	1	2	3	4	5
Someone who understands your problems	1	2	3	4	5
Tangible Support	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Someone to help you if you were confined to a bed.	1	2	3	4	5
Someone to take you to the doctor if you needed it.	1	2	3	4	5
Someone to prepare your meals if you were unable to do it yourself.	1	2	3	4	5
Someone to help with daily chores if you were sick.	1	2	3	4	5
Affectionate Support	None of the time	A little of the time	Some of the time	Most of the time	All of the time

Someone who shows you love and affection.	1	2	3	4	5

Someone to love and make you feel wanted.	1	2	3	4	5
Someone who hugs you.	1	2	3	4	5
Positive Social Interaction	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Someone to have a good time with.	1	2	3	4	5
Someone to get together for relaxation.	1	2	3	4	5
Someone to do something enjoyable with.	1	2	3	4	5

❖ Section 5: Some background information about you

This information is strictly confidential and remains anonymous because your name will be removed from all documents and replaced with a code.

1. Please mark with an X on the time line the points in your life when you had obesity.

_____

Childhood (0-10 years)	Adolescence (11-17 years)	young adulthood (18-24 years.)	Adulthood (25-64years)

2. Please provide the following information:

Height _____ *(cm/inches, please circle measurement method)*
Weight _____ *(pounds/kilograms, please circle measurement method)*
Body Mass Index (BMI) (*if known*) _____

3. Do you currently have any diseases or disorders? [ ] no [ ] yes, *If yes, please specify by checking all that apply:*

[ ] type II diabetes
[ ] gastro esophageal reflux disorder (GERD)
[ ] osteoarthritis
[ ] hypertension (high blood pressure)
[ ] obstructive sleep apnea
[ ] hyperlipidemia (high cholesterol)
[ ] gout
[ ] other (please specify) _____

4. What year were you born? _____

5. Check one: [ ] Male [ ] Female

6. Your marital status (check one)

[ ] Never married
[ ] Currently married
[ ] Separated
[ ] Divorced
[ ] Widowed
[ ] Cohabiting

7. What is the highest level of formal education you completed?

[ ] Less than grade 9
[ ] Some high school
[ ] High school graduate
[ ] Some college/university or trade school
[ ] Trade or vocational school graduate
[ ] University graduate
[ ] Masters' or doctoral degree

8. Considering all sources, what was your approximate annual household income last year? (This question is being asked because access to obesity treatment may be related to household income).

[ ] less than $10,000
[ ] $10,001 to $20,000
[ ] $20,001 to $30,000
[ ] $30,001 to $40,000
[ ] $40,001 to $50,000
[ ] $50,001 to $60,000
[ ] $60,001 to $70,000
[ ] more than $70,000

9. Employment status *(Select the single best option)*

[ ] Paid employment
[ ] Self-employed
[ ] Non-paid work, such as volunteer
[ ] Student
[ ] Keeping house/homemaker
[ ] Retired
[ ] Unemployed (health reason)
[ ] Unemployed (other reason)
[ ] Other *(please specify)* _____

10. In the past 30 days, have you been admitted to the hospital? [ ] No [ ]Yes. *If yes, please specify reason(s) and for how long*? _____ _____; ___.___.___ days

11. Did you ever have any significant injuries that had an impact on your level of functioning? [ ] No [ ] Yes. *If yes, please specify* _____

12. Do you use any assistive devices such as a wheelchair, walker, shower chair, etc?

[ ] No [ ] Yes. *If yes, please specify* _____

13. Do you have any person assisting you with your self-care, shopping or other daily activities? [ ] No [ ] Yes. *If yes, please specify* _____

14. What types of obesity treatment have you participated in over the past 12 months? *(Please check all that apply)*.

[ ] calorie reduction
[ ] physical exercise
[ ] non-prescription weight loss drug
[ ] behaviour modification
[ ] liquid diet (e.g. Optifast)
[ ] prescription medication (e.g. Meridian,Xenical)
[ ] surgery (e.g. Gastric bypass, gastric banding)
[ ] other *(please specify)* _____

15. Please identify your ethnic origin on the line below. This information will tell us whether all the ethnic backgrounds of people currently living in Ontario are represented in this study. Your responses to this question will not be discussed individually but will be reported as a summary for the entire group. We appreciate your sharing this with us. **You may mark more than one if applicable.** (This question has been adapted from the Statistics Canada 2007 Census Survey.)

[ ]	Caucasian	[ ]	Latin-American
[ ]	Chinese	[ ]	Japanese
[ ]	South Asian (e.g., East Indian, Pakistani, Punjabi, Sri Lankan)	[ ]	Korean
[ ]	Black (e.g. African, Jamaican, Somali)	[ ]	North American Indian
[ ]	Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)	[ ]	Métis
[ ]	South East Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese)	[ ]	Inuit
[ ]	Filipino	[ ]	Other (please specify):
[ ]	European (please specify): _____		

16. Is there anything else that you would like to tell us about your experiences in daily living with obesity?

_____

_____

_____

_____

_____

_____

_____

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Thank you for your assistance. The results of this study will be useful for healthcare professionals to understand what it is like to live with obesity. This information will impact the way in which obesity treatments are designed and discussed with patients.

Please put your completed survey in the envelope provided and mail it as soon as possible.

If you have misplaced the return envelope please mail the survey to:

Mary Forhan
McMaster University
School of Rehabilitation Science
Faculty of Health Sciences
1400 Main Street W-IAHS 402
Hamilton, ON
L8S 1C7

If you have any questions about this research project you can write to me at the above address or telephone (905) 525-9140 x 21454 or email forhanm@mcmaster.ca