8-17-2017 12:00 AM

Bariatric Surgery Recipients' Needs for Long-Term Health and Well-Being; Perspectives of Patients and Providers

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A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy

Abstract

The overall purpose of this dissertation was to examine what is needed in bariatric surgery programming to support long-term health and well-being from the perspectives of the patient and providers. Study 1 assessed what bariatric surgery recipients perceive they need to best support their long-term health and well-being from a provincial sample (Ontario, Canada), and from an international sample. Study 2 explored the physical, psychological, social, and clinic-related experiences of individuals who underwent bariatric surgery at least two years prior. Study 3 investigated what bariatric clinic staff believe surgery recipients need to best support their long-term health and well-being.

Findings from study 1 identified encouragement from family, friends, bariatric team members, and peers as the most useful sources of support and services over the course of the surgery process. Access to immediate follow-up appointments after surgery for post-surgery concerns was reported as needed but not received. Recommendations to address excess skin and creating a mentorship program were proposed by participants.

The results from Study 2 revealed that in general, participants experienced positive improvements in their physical, psychological, and social states since surgery. However, concerns pertaining to several unanticipated outcomes of the surgery were underscored and informed the recommendations for other patients, including being prepared to re-learn ones' body, utilizing the support services available, and being aware that social relationships may change and/or require tending.

The results from Study 3 identified follow-up appointments, bariatric surgery-related education, and assessing readiness to change as the most helpful aids by bariatric clinic staff for patients. A lack of ongoing counselling, financial support for excess skin

removal, family physicians with expertise in bariatric surgery, and access to allied health professionals were deemed needed but unavailable. Bariatric clinic staff believed that offering one-on-one counselling, and providing education and resources for Family Health Teams and others may be able to address the challenges faced by bariatric surgery recipients.

Overall, these three studies serve as the groundwork for future bariatric programming development, and tailoring components for optimal long-term health outcomes. This summary of work also provides an in-depth understanding of the experiences, insights, and challenges of bariatric surgery recipients and bariatric clinic staff in obesity management.

Keywords: bariatric surgery, bariatric clinic, support, service, bariatric care, weight loss, weight management, obesity.

Co-Authorship

The studies contained in this dissertation are my original work including study design, data analysis, data interpretation, and written work, with invaluable contributions, input, and guidance from my supervisor, Dr. Jennifer D. Irwin, in all three studies. I would like to thank Dr. Chris Lee for his guidance and analytical expertise in Study 1. Lastly, I would like to extend my sincere thanks to Dr. Don Morrow for his continued support and guidance throughout all three studies.

Dedication

I would like to dedicate my dissertation work to my late grandfather Yap Yee Shieh, a beloved math teacher, who greatly valued education and continuously encouraged his five grandchildren in their academic and professional pursuits.

Acknowledgments

To **my supervisor, Dr. Jen Irwin,** I cannot thank you enough for your support and advocacy in the past four years. You gave me independence on my work and provided opportunities to help foster my growth in academia. You are one of the strongest people that I know and I am incredibly grateful for your guidance and mentorship towards the completion of my degree. Thank you for everything Jen!

To my advisory committee (**Dr. Don Morrow and Dr. Chris Lee**), thesis examination board (**Dr. Shauna Burke, Dr. Craig Hall, Dr. Meizi He, and Dr. Chris Lee**), and my comprehensive exam (**Dr. Anita Cramp and Dr. Shauna Burke**). Thank you for your time, encouragement, and advice in service of reaching this milestone.

To **Linda Terrio at the London Bariatric Support Group; Laurie Inkol and Linda Dowling at Guelph General Hospital; Julie Riendeau, Anne Ostrom, Ellen Bright, and Carrie Thompson at Thunder Bay Regional Health Sciences Centre**, who volunteered their valuable time and service of advancing this field of research. Thank you for your support and dedication in our research.

To the **study participants** who contributed their time and enthusiasm, thank you for your openness and honesty. I am truly grateful for your involvement and for affording me the opportunity to share your personal and inspiring experiences.

To my **labmates,** thank you for your encouragement and feedback in my thesis dissertation. I am very thankful to have such supportive labmates and for all of you taking the time to help me prepare for my defense. I look forward to returning the favour when you all defend your PhDs.

To **Dr. Leigh Vanderloo**, I can't believe how intimidated I was when I first met you. I'm so glad that I took the courage to reach out and say hello. You are truly one of the most selfless, considerate and above all brilliant friends in my life. I am incredibly honoured to call you my friend (also a one-time Vanderloo adoptee in Edinburgh) and I am so appreciative of your mentorship and guidance throughout graduate school. I look forward to our continued friendship, outings, and lunches in Toronto.

To **Dr. Ruth Brown**, even though it has been ages since we attended school together, I still consider you one of my pillars in graduate school and I continuously

looked to your work ethic and perseverance for inspiration. Thank you for your friendship, kindness and for always being willing to listen to my problems. I am so glad that we got to overlap some time together at COSM in Waterloo and being on the CON-SNP exec in Toronto. I'm pretty sure if I didn't meet you and Karissa during my Master's, I'm not sure where I would be (maybe running a Froyo or a St.Patrick's Day cupcake business).

To **Mike Fung, Dishay Jhandani, Alana Maltby,** and my other CON-SNP and graduate school friends, I am so glad that I have had the opportunity to meet you. Whether it was bonding over our shared love for Parks & Rec/Master of None, eating Hakka food with my parents, or enjoying popcorn at Panda & Sons, these memories made my time during graduate school a little easier. Thank you for the memories and for your continued friendship.

To **my sister, Jess and brother-in-law, Chris**, thank you for your continued moral support and for allowing me to come over to visit Maya and Haley for some much needed stress relief, even when Haley would reject me. I continuously look to you two as my role models and I am thankful to have you two (plus two) in my life.

To **my parents, Linda and Martin Liu**, there are no amount of words to describe my sincerest gratitude for you two. I am so lucky to have you as my parents. Thank you for always believing in me when it was hard to believe in myself. You've continuously inspired me to work hard and to take advantage of every opportunity that presents itself. Mom, thank you for always being willing to go above and beyond so that I could have a few extra minutes to study. Dad, thank you for joining me on my drives to London; I'm very thankful that we had this time together so that I could listen to your stories growing up in India, even when we weren't always on time. You two are my heroes. I love you both so much!

Last and certainly not least, to **my partner Steve**, I feel like I tricked you when we first met and I said that I was done with school. Hilarious, right? Thank you for your unconditional love and support these past four years. I am so thankful for your patience, your company, and your tornado-like ways. Your ambition and discipline have inspired me to work hard and to be a better person every day. I don't know how I would have done this without you. Thank you for being my best friend. I love you Steve!

Table of Contents

List of Tables

Study 1

Study 2

Study 3

List of Appendices

Study 1

Study 2

Study 3

List of Abbreviations

BMI = Body mass index

GED = General education diploma

GMPP = Generalized Model for Program Planning

HDL-C = High density lipoprotein cholesterol

HRQoL = Health-related quality of life

LAGB = Laparoscopic adjustable gastric band

LBS = pounds

LDL-C= Low density lipoprotein cholesterol

MOHLTC = Ministry of Health and Long-Term Care

OHIP = Ontario Health Insurance Plan

P = Participant

RYGB = Roux-en-Y gastric bypass

SD = Standard deviation

SG= Sleeve gastrectomy

CHAPTER 1: Introduction, Rationale, and Purpose Statement

1.1 Preface

This dissertation focuses on what is needed in bariatric surgery programming to support long-term health and well-being in bariatric surgery recipients from the perspectives of the patient and bariatric clinic staff. This introductory chapter presents the necessary foundational information to prepare the reader for the three studies presented herein. Data regarding the prevalence and impact of obesity are reported, followed by the available obesity treatment options, including bariatric surgery. Thereafter, evidence regarding the impact of bariatric surgery on physiological and psychological outcomes is provided. Lastly, pre- and post-bariatric interventions are described.

1.2 Obesity

Over the past three decades, the prevalence of obesity among adults has more than doubled in over 70 countries and continues to rise [1, 2]. In a recent report by the Global Burden of Disease Obesity Collaborators, nearly 30% of the world's population was found to be affected by obesity [1]. Obesity is defined as an accumulation or excess amount of body fat and is based on an individual's body mass index (or BMI), calculated by dividing an individual's weight in kilograms by their height in metres squared [3]. A BMI score of 25 kg/m^2 or more is defined as having an overweight status, 30 kg/m^2 or more is considered as having obesity, and 40 kg/m^2 or more is defined as living with severe obesity [3]. Having an overweight or obese status increases one's risk for multiple chronic diseases such as cardiovascular disease, type II diabetes, hypertension, musculoskeletal disorders, dyslipidaemia, and some cancers [4]. In fact, nearly 70% of

deaths among adults associated with a BMI score of 25 kg/m^2 or more were due to cardiovascular disease (n = 4 million), globally, with more than 60% of those deaths occurring in individuals living with obesity [1]. Therefore, exploring the effectiveness of obesity treatments has become an important public health priority in reducing the burden of disease.

1.3 Conventional Lifestyle Treatment and Bariatric Surgery

For adults classified as overweight or obese, current treatment guidelines recommend comprehensive lifestyle interventions which include dietary intervention, physical exercise, and cognitive behaviour therapy, along with pharmacotherapy to provide a weight loss of 5-10% initial body weight [3, 5-7], the minimum clinically significant amount of body weight loss needed to incur improvements in obesity-related conditions [8-10]. Although many non-surgical weight reduction therapies and pharmacotherapies are widely available, conventional lifestyle treatments have been successful and sustainable for treating mild-to-moderate diagnoses of obesity [11-16].

For adults living with severe obesity (i.e., BMI of $\geq$ 40 kg/m^2 or, $\geq$ 35 kg/m^2 with one or more obesity-related comorbidities) [17-20], bariatric surgery has proven to be an effective means for long-term sustainable weight loss, when non-surgical options have been exhausted [21-26]. In a systematic review and meta-analysis on bariatric surgery and weight-related outcomes, Buchwald et al. [27] reported improvements or remission of obesity-related comorbidities, along with an average initial weight loss of 61.2% of excess body weight for over 10,000 patients for all bariatric surgery types, which greatly exceeds the recommended 5-10% clinically significant weight loss [8-10].

Findings from Buchwald et al. [27] are consistent with obesity-related comorbidity improvements, coupled with massive weight losses in a prospective, controlled study comparing conventional treatment for weight loss (i.e., dietary intervention, physical exercise, cognitive behaviour therapy, and pharmacotherapy) and bariatric surgery [28]. Sjöström and colleagues [28] determined that weight loss from conventional treatment was associated with a 21% (n = 248) type II diabetes remission after 2 years, compared with a 72% (n = 342) remission in patients who had undergone bariatric surgery. Interestingly, this approximate three-fold difference continued to be sustained after 10 years with a 12% (n = 84) type II diabetes remission for those using conventional therapy versus a 37% (n = 118) remission for those who had bariatric surgery [28].

Sjöström and his team's [28] findings are similar to results presented in Ribaric, Buchwald, and McGlennon's [29] comparative systematic review and meta-analysis of conventional treatment versus bariatric surgery with different blood glucose measures. The authors found bariatric surgery to be significantly more effective at achieving weight loss, HbA1c reduction (glycated haemoglobin or blood glucose levels over a three month period), and diabetes remission [29]. The authors determined the odds of bariatric surgery patients reaching type II diabetes remission ranged from 9.8 to 15.8 times the odds of patients treated with conventional therapy [29]. Indeed, bariatric surgery has a sizeable impact on long-term weight reduction and improving obesity-related comorbidities, in comparison to conventional treatment [27-29]. Currently, several bariatric surgery

procedures exist for weight loss which facilitate improvements in physiological and psychological health outcomes, detailed below.

1.4 Types of Bariatric Surgery

The term 'bariatrics' is described as a branch of medicine that deals with the causes, prevention, and treatment of obesity [30]. Individuals eligible for bariatric surgical treatment must be 18 years of age and older, and have a BMI of ≥ 40 kg/m^2 or, ≥ 35 kg/m^2 with one or more obesity-related comorbidities. It should be noted that bariatric surgery has been slowly emerging as a viable treatment for adolescents with severe obesity [31]; however, for the purposes of this dissertation, the focus will be solely on bariatric surgery for adults (i.e., individuals 18 years and older).

The most commonly performed bariatric surgery procedures include the Roux-en-Y gastric bypass (RYGB), the laparoscopic adjustable gastric band (LAGB), and the sleeve gastrectomy (SG) [32]. The RYGB is a procedure that constructs a small pouch from the top portion of the stomach, attaching it directly to the small intestine, such that food bypasses only part of the stomach and duodenum [32-34]. The LAGB is a reversible procedure in which an inflatable band is placed around the top part of the stomach to create a small pouch [32-34]. This band can be adjusted to increase or decrease food restriction and slow consumption of food according to the patients' needs [32-34]. Finally, the SG, a newer surgical technique, involves removing a large portion of the stomach, where no intestines are removed or bypassed in this procedure [32-34]. On average, RYGB, LAGB and SG patients can expect to lose approximately 70%, 50%, and 60% of their excess body weight, respectively [32-34].

Although the RYGB has been the more commonly performed procedure of the three, and has often been considered the 'gold' standard [35], Hutter et al. [36], and Carlin et al. [37] have determined the SG procedure to be a safer method, and to be associated with fewer complications and a shorter operation time in comparison to the RYGB. However, other researchers that have conducted comparative meta-analyses of the two procedures have found the RYGB procedure to be more effective than the SG technique in improving obesity-related comorbidities [38, 39]. Nonetheless, both procedures offer effective weight loss and improvement in obesity-related diseases [32, 40]. For instance, Buchwald et al. [27] found that more than 75% of bariatric surgery recipients experienced a complete resolution of type II diabetes when considering all bariatric surgery types. Of those who did not experience a complete resolution of type II diabetes (remaining < 25%), approximately 50% of these recipients still demonstrated marked improvements in their condition [27].

1.5 The Impact of Bariatric Surgery on Physiological and Psychological Outcomes

In addition to type II diabetes, researchers have thoroughly investigated the impact of bariatric surgery on other major obesity-related comorbidities, such as cardiovascular disease, hypertension, obstructive sleep apnea, and dyslipidemia [41-49]. Kwok et al. [42] found bariatric surgery to be associated with a reduced risk of myocardial infarction, stroke, and cardiovascular events compared to non-surgical controls. In a systematic review and meta-analysis evaluating the impact of bariatric surgery on cardiovascular events in 29,208 cases of bariatric surgery and 166,200

nonsurgical controls, Kwok et al. [42] reported a 50% reduction in mortality among bariatric cases in comparison to non-surgical controls.

Along with reduced cardiovascular risk, Wilhelm et al. [43] and Vest et al. [44] have investigated the impact of bariatric surgery on hypertension in two separate meta-analyses. Both groups of researchers yielded similar results with approximately 63% of patients experiencing improvements in blood pressure levels or a complete resolution of hypertension [43, 44]. In terms of obstructive sleep apnea, Summers et al. [45] and Peppard et al. [46] have demonstrated modest amounts of weight loss to be associated with improvements in obstructive sleep apnea. Buchwald and colleagues [27] have reported bariatric surgery to be associated with resolved obstructive sleep apnea in 85.7% of their total patient population (n = 22, 096).

Dyslipidemia has also been considered another major obesity-related condition which is characterized by an abnormal amount of lipids in the blood including elevations in total cholesterol, high LDL-cholesterol (LDL-C), low HDL-cholesterol (HDL-C), and/ or elevated triglycerides [47]. Both Bouldin et al. [48] and Buchwald et al. [27] have reported significant improvements in lipid profiles shortly following bariatric surgery. In a long-term study examining the effect of bariatric surgery on dyslipidemia, Quezada et al. [49] observed marked reduction in LDL-C, increased HDL-C, and decreased triglycerides in a sample of 3, 824 surgery recipients. Quezada et al. [49] concluded bariatric surgery to be an effective solution for improving dyslipidemia and even a complete resolution of the condition. Along with improvements in obesity-related comorbidities, Gloy et al. [21] found in a recent meta-analysis, significant reductions in

the use of pharmacotherapy to treat comorbid conditions following bariatric surgery. Overall, the physiological health benefits of bariatric surgery have been well established.

In addition to physiological improvements, the impact of bariatric surgery on psychological outcomes have also been investigated. Bariatric surgery has been shown to lead to improvements in quality of life and psychosocial states within the first year post-surgery [50, 51]. Strain et al. [52] determined significant improvements of health-related quality of life (HRQoL) and depressive symptoms in a sample of 105 bariatric surgery recipients who received one of the different types of bariatric surgery. Interestingly, no correlation between the amount of weight loss and positive changes in HRQoL and mood were observed [52]. The authors hypothesized that this result was due to patients losing and maintaining a sufficient amount of weight (in their own minds) that allowed them to feel in control of their bodies [52]. However, it should be noted that Strain's study was limited to short-term follow-up (up to 3 years) [52].

Beyond the first year after bariatric surgery, researchers have identified predictor outcomes associated with sustainable weight loss to be primarily psychological in nature [51, 53, 54]. In a comparative study of weight loss maintainers using surgical methods versus nonsurgical methods, researchers observed surgical patients (n = 105) to have higher levels of psychological dysfunction than their nonsurgical counterparts (n = 210) at both study entry and after one-year follow-up [55]. Nearly half of the bariatric surgery patients reported depressive symptoms, which exceeded the minimal threshold for clinical significance [55], reinforcing the importance of psychology as a key component of weight loss surgery.

Although bariatric surgery has been widely believed to result in a variety of health benefits, Ramirez et al. [56] argued that several psychological causes for behavioural issues such as binge eating and night eating are the cause of weight regain following surgery. In a review study detailing the psychological impact of bariatric surgery, Kubik et al. [51] identified that not all bariatric surgery recipients experience psychological gains which may be due to unmet expectations such as anticipated weight loss versus realistic weight loss, weight regain, and unwanted excess skin. As a result, patients may experience psychological distress if their needs are left unaddressed [51]. Overall, bariatric surgery improves psychological health in the short-term; however, surgery alone may not be able to address underlying psychological issues in the long-term [51], and may be crucial to consider when planning and/or developing bariatric support and services.

1.6 Pre- and Post- Bariatric Surgery Interventions

In most bariatric surgical centres in Canada and around the world, comprehensive pre- and post-operative care is provided to patients by a multidisciplinary team of health practitioners [34, 57, 58]. As a result, the patient's obesity and obesity-related comorbidities can be treated, along with the provision of safe weight management practices and healthy lifestyle change support. To partake in the bariatric surgical program, patients must meet the eligibility requirements for severe obesity (i.e., BMI of $\geq$ 40 kg/m^2 or, $\geq$ 35 kg/m^2 with one or more obesity-related comorbidities) [17-20] and require a physician's referral to attend the clinic [34, 57, 58]. Typically, patients eligible to participate are contacted by the bariatric clinics to attend an orientation session [34].

Thereafter, comprehensive screening and assessment are conducted by the bariatric team to assess patients' readiness and candidacy for the surgery [34].

To assess patients' candidacy and readiness, patients participate in a pre-bariatric surgery intervention which typically involves intensive education, physical activity recommendations, nutritional counselling, and behavioural therapy [34]. During the pre-bariatric surgery intervention, the surgical team can determine whether potential candidates are able to sustain lifestyle changes that will need to occur post-operatively for weight maintenance [34]. For some clinics, a 5-10% initial body weight loss is mandatory by patients before surgery to receive approval for the bariatric surgical procedure [59]. A growing body of evidence has suggested that pre-operative weight loss among individuals with severe obesity may be beneficial for post-surgical outcomes [60-64]. In a systematic scoping review of eight available studies examining the impact of behavioural interventions pre-surgery, Liu [65] found behavioural interventions utilizing cognitive behaviour therapy with multimodal components (i.e., balanced nutrition plan and exercise regimen, etc.) facilitated improvements in weight-related measures.

With regard to post-bariatric surgery interventions, the long-term psychological impact from surgery has been considered. In Canada, patients are typically required to follow-up with their bariatric surgical teams after one month, three months, six months, one year, and then annually up to five years [34]. Post-operative bariatric interventions have been suggested to provide the much-needed support to improve lifestyle strategies and related psychological factors for optimal health outcomes [66-68]. Authors of three

recent systematic reviews evaluated the impact of post-surgical behavioural interventions alone and in combination with support groups on weight loss [66-68]. Authors of each review observed similar positive trends, such that individualized or group interventions helped to maximize long-term weight reduction and maintenance. However, studies included in the reviews provided short-term follow-up, with a few studies following up to three years [66-68]. Whether or not long-term psychological improvements can be sustained from post-bariatric interventions is still unclear [74-80].

1.7 Rationale

Despite the substantial reduction in excess body weight and other related psychological and physical improvements, not all bariatric surgery recipients are able to maintain long-term weight loss. In fact, Cooper et al. [81] reported that almost 40% of bariatric surgery recipients experience excessive weight regain (≥ 25% of lowest weight) on average after 6 years from surgery. Results from Cooper et al. [81] are consistent with findings from Sjöström et al. [82] and Sugerman [83], both of whom observed excess weight losses diminishing over time (from 66% excess body weight loss at 1–2 years to 50% at 10 years post-surgery), and a significant portion of regain with longer-term follow-up. In addition, some post-surgical patients have reported being dissatisfied after surgery for other reasons, such as conflicts related to their relationships and identity, the presence of skin folds and skin irritation, and the reemergence of psychological conflicts that were hidden by the obesity [84].

Indeed, multiple cases of psychological and emotional distress have been reported among surgical patients [51, 55]. Kubik et al. [51] stated that surgery alone may

not be able to address underlying psychological issues in the long-term, and may be crucial to consider when supporting surgery recipients. Clearly, many bariatric surgery recipients still struggle with long-term weight management, and other post-surgical challenges [14], which suggests that surgery recipients may have important needs that are not being fully addressed.

Given the growing rates of obesity in Canada and abroad, an increasing capacity of bariatric surgeries are needed worldwide. In 2013, an estimated 500,000 bariatric procedures were performed across the globe, with approximately 150,000 of them taking place in the United States and Canada [85]. In Canada, an approximate 63% increase in the volume of inpatient bariatric procedures have been performed from 2004-2005 to 2008–2009 [86]. Therefore, program planners have become increasingly interested in appropriately treating severe obesity for the long-term and to developing rigorous pre- and post-bariatric interventions.

According to McKenzie, Neiger, and Thackeray [87], incorporating the Generalized Model for Program Planning (GMPP) provides a framework for the successful development and delivery of a health promotion program. The GMPP model assists planners to use a systematic planning approach, which is logical and progressive, with each step building upon the previous step. As outlined by Thomas [88], the first step in the GMPP model is to assess the needs of the population. In the context of the current dissertation, the population of interest would be bariatric surgical recipients. Thereafter, program planners can then identify and measure the priorities and the needs of the population of interest, and establish the extent to which their needs are or are not being

met. This has been considered a critical step in program planning as it provides objective data and establishes a baseline measure to which future assessments can be compared [89].

As a follow-up step in program planning and development, determining whether or not the patients' perspectives align with the values and benefits of those heavily involved in the design and decision-making of program components is crucial [87]; here this would be bariatric clinic staff. In health promotion program planning, an emic (i.e., insider's) viewpoint, or in the current context, the bariatric surgery recipient, coupled with an etic (i.e., outsider's) viewpoint, or bariatric clinic staff, are encouraged to facilitate appropriate program development [90, 91]. As described by Gittelsohn et al., "[by] including information from both viewpoints, an intervention can be designed that is both feasible and acceptable to the target population," [90, p. 2]. Together, the perspectives of both bariatric surgery recipients (emic) and bariatric clinic staff (etic) can provide a stronger framework for improving bariatric care program planning and development [87].

1.8 Purpose Statement

What has become inherently evident in bariatric treatment protocols are the need to understand surgery recipients' post-surgical challenges (i.e., fear of weight regain, excess skin from surgery, etc.) and what they believe will ultimately support their long-term health and well-being. The present dissertation provides a timely account of what program planners should consider incorporating into bariatric surgical centres to improve the long-term health and well-being of bariatric surgery recipients, from the perspective

of patients and bariatric clinic staff, themselves [92-94]. Given that the majority of research to date has focused on quantitative, physiological, and psychological outcome measures, additional work is needed to identify the components of pre- and post-bariatric support and services, which have been identified as highly influential in achieving long-term health and well-being.

The purpose of this dissertation was to examine what is needed in bariatric surgery programming to support long-term health and well-being in bariatric surgery recipients from both the perspectives of the patient and the bariatric clinic staff. Three distinct, yet related studies were conducted to achieve this purpose [92-94]. It should be noted that in each study, the terms 'supports' and 'services' were designated to the study participants to define their perspective. Study 1 of this dissertation assessed what bariatric surgery recipients perceive they need to best support their long-term health and well-being from a provincial sample (Ontario, Canada), and from an international sample [92]. Findings from Study 1 addressed gaps in bariatric programing, which may assist clinic teams in efficaciously managing long-term weight loss among surgery recipients [92].

Study 2 explored the physical, psychological, social, and clinic-related experiences of individuals who underwent bariatric surgery at least two years prior in a provincial sample (Ontario, Canada) [93]. Currently, bariatric clinic follow-up assessments in Canada occur one month, three months, six months, one year, and then annually from two years up to five years post-operation [34]. Given the reduced frequency of bariatric clinic follow-up assessments from two years and on, this time point was chosen to explore patients' perspectives when they must presumably manage their

weight and lifestyle changes more independently, and when weight maintenance challenges typically start to occur [95, 96]. These experiences from two years and beyond provided insight on the patient-perceived benefits of and gaps that still need to be addressed in long-term bariatric care [93].

Lastly, study 3 investigated what bariatric surgery recipients need to best support their long-term health and well-being, from the perspective of bariatric clinic specialty staff. Staff perspectives provided a key follow-up step in program planning and development. Gaining an understanding of whether the patients' perspectives aligned with those of bariatric clinic staff was crucial [87]. Together, the perspectives of both patients and bariatric clinic staff has the potential to provide a stronger framework for improving bariatric care program planning and development.

Understanding the services and support needs of bariatric surgery recipients from both viewpoints can serve to identify beneficial support, services, challenges, and recommendations in bariatric care, which might help to support long-term, sustainable obesity management. This dissertation serves to underscore recommendations for enhancing current bariatric surgical practice and tailoring future interventions in bariatric care. It should be noted that an integrated-article format was adopted while writing this dissertation; therefore, some material from the introduction will be repeated in subsequent chapters.

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CHAPTER 2:

Bariatric Surgery Recipients' Needs and Perspectives on Maintaining Long-Term Health and Well-Being[1]

2.1 INTRODUCTION

In 2013, an estimated 500,000 bariatric procedures were performed worldwide, with approximately 150,000 of them taking place in the United States and Canada [1]. According to a 2014 report conducted by the Canadian Institute of Health Information [2], the number of bariatric surgeries performed in Canada has quadrupled over the last six years. This influx has been largely due to the increased capacity for the procedure, specifically in the province of Ontario, which has more than tripled the number of surgeries over the same time period; this is not including bariatric candidates who are waiting for surgery, those who have completed surgery in private clinics across Canada, or those who have paid privately to undergo the procedure in other countries [3, 4]. Bariatric surgery has become a popular option, and it is currently considered the only effective long-term treatment for people living with severe obesity [5, 6]. Individuals who undergo bariatric surgery can experience significant losses of 40% to 75% of their excess body weight, depending on the type of procedure [7]. In fact, some individuals even experience a complete resolution of comorbid conditions such as diabetes, hyperlipidemia, hypertension, and obstructive sleep apnea [5, 7]. Furthermore, when

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[1] A version of this chapter has been published in *Bariatric Surgical Practice and Patient Care*. The copyright permission for the accepted manuscript from this dissertation is included in Appendix E. Reproduced with permission of publisher: Liu RH, Irwin JD. Bariatric Surgery Recipients' Needs and Perspectives on Maintaining Long-Term Health and Well-Being. *Bariatric Surgical Practice and Patient Care*. 2017;12(2):72-84.

compared (over a 10-year span) to conventional treatment, bariatric surgery has been associated with an almost 30% reduction in mortality [8, 9]. Bariatric surgery can also facilitate short-term psychological gains such as improved overall quality of life and increased self-esteem [10, 11].

Despite the immediate physiological and psychological improvements that can result from bariatric surgery, not all recipients are able to maintain these benefits long-term, with approximately one third experiencing excess weight regain over time [12-14]. Maintaining long-term weight loss and the associated health-related benefits requires a lifelong commitment to lifestyle changes that include professional evaluation and rigorous self-monitoring [15-18]. Though pre- and post-bariatric surgery programming and support groups have grown in popularity [19-23], long-term success remains a challenge for many, suggesting that there may be important needs–from the perspectives of bariatric surgery recipients–that are not being fully addressed. A better understanding of patients' perspectives of their own needs and expectations is a critical component of intervention development [24]. The integration of patients' insights may assist clinical teams in efficaciously addressing the gaps in bariatric programing, which could help to improve long-term weight management and the associated physiological and psychological benefits.

As advised by McKenzie, Neiger, and Thackeray, "[b] efore a need can be met, it must first be identified…" [24, p. 68]. Understanding what members of a target population perceive they need to address their health concerns is an essential first step in future program/intervention planning; the subjective views of the target group tend to

provide a fairly accurate barometer of what they are challenged by, struggling to overcome, and believe would help them better meet success [24]. For this particular study, needs were defined as support or services that were essential, required, or very important during the bariatric surgery process. With the exception of a study focused on Australian patients, where most received privately funded surgeries [25], an assessment of bariatric recipients' needs in a publically-funded setting has not been previously conducted. Sharman et al. synthesized patient suggestions to improve the Australian bariatric surgery process and wanted to compare the experiences of publically versus privately funded recipients. However, low numbers of participants who had received a publicly funded surgery (only 22% of the sample) presented meaningful comparisons [25].

Given that 90% of Australian bariatric recipients complete their surgery in a private hospital, and use private health insurance or personal finances to cover the associated out-of-pocket costs for the procedure [26], it is not surprising that Korda et al. [27] found that Australians with a greater need for bariatric surgery had poorer access to receive it than those who could afford privately funded surgeries. The Australian example emphasizes the need to understand whether a region's allocated health care provisions (e.g., public versus privately funded surgeries) impact bariatric surgery recipients' experiences, and their long-term health and well-being.

In Canada, bariatric surgery is covered by the provincial public health care system, with less than 15% of bariatric procedures performed in private clinics across the country [2]. According to a 2014 Canadian report, unlike Australian recipients, Canadian

surgery recipients were more likely to reside in lower-income neighborhoods; specifically, more patients were found in the lowest income quintile (22%) compared with the highest income quintile (14%) [2]. Understanding the needs of a bariatric community similar to the aforementioned and how health care provisions have impacted the community thus far is unknown. Examining the perspectives and needs of those from a publicly funded health care system, like the province of Ontario, Canada may provide a complementary view to Sharman et al.'s study of predominately privately funded surgery recipients [25]. In addition, exploring the experiences of those receiving bariatric surgery internationally and how it varies from a funding-specific lens may help to elucidate whether bariatric surgery recipients' experiences differ based on the type of funding source.

Currently, patient medical programs and surgical services in Ontario are provided by a network of 12 bariatric centres across the province and funded by the Ministry of Health and Long-Term Care (MOHLTC) [2]. What is lacking in the literature is an understanding of the needs and experiences of bariatric recipients with publically funded care (such as in Ontario via the MOHLTC) and international bariatric experiences that could differ widely in terms of funding sources. This information may assist in determining how best to tailor and prioritize weight management support and services, as well as offering insights about the relationship between funding sources and recipients' bariatric experiences. Additionally, given the influx and capacity of bariatric surgery in Ontario in the last six years and worldwide, this study provides a timely account of patients' experiences and perceptions of how to support their long-term health and well-being.

The purpose of this cross-sectional needs assessment survey study was two-fold. Firstly, our aim was to gain an understanding of what individuals who are engaged in the bariatric surgery process provincially (Ontario, Canada) perceive they need before, during, and after bariatric surgery to best support their long-term health and well-being. Secondly, because the provision of health care is unique to the province and country in which is it provided, our second objective was to explore the same question with an international sample, with the intention to explore the extent to which these experiences were unique and/or similar.

2.2 METHODS

Upon approval of the host institution's Office of Research Ethics, the questionnaire for this study was designed in concert with members of the target audience (pilot tested) prior to its provincial and then international administration. All parties involved provided informed consent to participate in the study.

2.2.1 Questionnaire Design

A review of current literature using a keyword-based search in the databases PubMed and PsychINFO was conducted, and focused on uncovering previously established bariatric needs assessment surveys and bariatric surgery-related surveys. The following combinations of keywords were used: *bariatric surgery OR *weight loss surgery AND *survey OR *questionnaire OR *needs assessment AND *patients AND *services OR *support. All search queries were conducted "In all text/In all fields." The search was limited to include subjects over 18 years of age. Twenty-three articles were retrieved from PubMed and fifty-one articles were retrieved on from PsychINFO,

although no previously used surveys were found to fit the current study's purpose. Seven articles related to long-term health and well-being-related outcomes were reviewed and used to carefully create and compile survey questions relating to bariatric surgery-related literature gaps, the study's target population, and the study's purpose.

The initial literature-based questionnaire contained 37 open- and 2 close-ended questions. An email invitation was sent (to those considering, waiting, or who had surgery) to a local bariatric support group known to the researchers. Nine members responded (2 were waiting on surgery, while the rest had already undergone the surgery) and were therefore invited to provide insight and feedback on each question's content, wording, meaning, and whether any questions needed to be removed or added. Amendments to question wording, formatting, order, and content were conducted for the majority of questions to ensure the questionnaire, as a whole, was written in the most comprehensible language possible and covered all aspects of the bariatric process that the target audience deemed suitable (face validity). Members' consensus was sought for each revision made until each question's content and wording satisfied all. Following two 90-minute group-based discussions (hosting three and four participants, respectively) and two 30-minute individual interviews, data saturation was reached as no additional feedback for revision was received [28,29], and as such, the final questionnaire contained 34 open- and 17 close-ended questions and was uploaded into SurveyMonkey® (SurveyMonkey, Palo Alto, CA), an online questionnaire software program.

The final questionnaire took approximately 30-45 minutes to complete and its items pertained to respondents': experiences with bariatric surgery support services; perspectives on which services and information were most useful and needed at different time points (before, during, after surgery, and overall); and perspectives about what information they needed for short-term, long-term, and overall support. Responders were also asked to comment on any support-related gaps that they felt needed to be addressed, and their recommendations on *how* the gaps could be addressed.

2.2.2 Data Collection

Inclusion criteria for participants were those with a body mass index (BMI) of =40, or a BMI of =35 and living with one or more significant obesity-related comorbidity; who were waiting for their surgical date, or who had previously undergone bariatric surgery; aged 18 years and above; able to speak, read and understand English; and who had access to a computer to complete the on-line survey.

Provincial survey. Recruitment to complete the survey was done via e-mail invitations through the lead administrator of a local bariatric support group network, that were sent to various bariatric support groups across the province. The survey was open from May 2015 until July 2015, with biweekly email reminders from the lead administrator. Personal identifiers and IP addresses were not collected; therefore, respondents' identities remained anonymous. Completion of the survey constituted as obtaining explicit consent.

International survey. Following provincial administration, the questionnaire was amended, where applicable, to be distributed to an international sample of the target

population (e.g., removing references to provincial-specific questions, and condensing the number of questions that returned similar responses). The resultant 32 open- and 20 close-ended questions were uploaded using Qualtrics Survey Software (Qualtrics, Provo, UT; the host institution had changed to this survey software platform by the time this survey was administered, with the explanation that Qualtrics offers an easy to use, flexible, scalable, and secure method for gathering data; thus, the researchers were obligated to shift to the new software). To recruit participants, site administrators of three Facebook Pages (representing more than 104,000 international subscribers) and four Facebook Groups (representing more than 58, 000 international members) related to bariatric surgery support were contacted. Upon receiving permission, the invitation with the questionnaire link was posted from May 2016 until July 2016, and re-posted every week until the closing date.

2.2.3 Data Analysis

All provincial and international data were pooled from SurveyMonkey and Qualtrics Survey Software, respectively into Microsoft Excel (Microsoft, Albuquerque, NM). The analysis procedure was identical for the provincial and international data, although run separately for each data set. Descriptive statistics of the clinical characteristics were analyzed. Thereafter, to contextualize the extent to which the two samples were similar with respect to their demographic and clinical characteristics, statistically significant differences between provincial and international samples were calculated using chi-square tests for demographic characteristics in Table 1 and *t*-tests for clinical characteristics (where an alpha equal to or less than .05 denoted statistical significance) in Table 2.

Responses to the open-ended questions were analyzed using inductive content analysis, as described by Patton [28, 29] and facilitated by hand [30, 31]. Burnard and colleagues asserted that it is the responsibility of the researcher(s), and not a data management program, to analyze the data [30], and whether the data is managed by hand or using computer software, the process of inductive content analysis is the same [30]. Therefore, the researchers used their preferred method of analyzing the data by hand [30, 31], which involved allowing the themes to emerge from the data. Inductive content analysis is often used when there are no previous studies focused on the particular research question that has been conducted [28, 29, 32, 33]. Themes were discovered by searching through the data and attempting to verify, confirm, and qualify themes by repeating the process, until themes and categories were exhausted [28, 29, 32, 33].

TABLE 1. Demographic Characteristics of Provincial and International Samples

Demographic Characteristics	Provincial		International	
	n	%	*n*	%
Age*				
18 to 29	1	2%	18	30%
30 to 39	5	8%	16	27%
40 to 49	29	49%	12	20%
50 to 59	17	29%	4	7%
60 to 69	6	10%	0	0%
70+	1	2%	0	0%
No response	0	0%	10	16%
Total responses	**59**	100%	**60**	100%
Sex				
Female	55	93%	56	93%
Male	4	7%	3	5%
No response	0	0%	1	2%
Total responses	**59**	100%	**60**	100%
Ethnicity*				
Caucasian	36	61%	31	52%
Non-Caucasian	7	12%	1	2%
Canadian	10	17%	0	0%
No response	6	10%	28	46%
Total responses	**59**	100%	**60**	100%
Education*				
Less than high school	3	5%	0	0%
High school/ GED	16	27%	2	3%
College or University	28	47%	19	32%
Post-graduate degree/diploma	11	19%	6	10%
Other	0	0%	6	10%
No response	1	2%	27	45%
Total responses	**59**	100%	**60**	100%
Relationship Status				
Single	7	12%	3	5%
Married/Domestic partnership	43	73%	25	41%
Divorced/Separated	8	13%	7	12%
Widowed	1	2%	1	2%
No response	0	0%	24	40%
Total responses	**59**	100%	**60**	100%

Children				
Yes	43	73%	29	48%
No	15	25%	7	12%
Prefer not to disclose	1	2%	0	0%
No response	0	0%	24	40%
Total responses	**59**	100%	**60**	100%
Total Household Income				
<$59,000	25	42%	13	22%
$60,000 to $89,000	11	19%	4	7%
$90,000 +	16	27%	11	18%
Prefer not to disclose	7	12%	5	8%
No response	0	0%	27	45%
Total responses	**59**	100%	**60**	100%
Employment Status				
Retired	6	10%	3	5%
Unemployed	4	7%	0	0%
Disability	8	14%	4	7%
Full-time	38	64%	19	32%
Part-time	3	5%	5	8%
Prefer not to disclose	0	0%	1	2%
No response	0	0%	28	46%
Total responses	**59**	100%	**60**	100%
Stage of Bariatric Surgery Process				
Waiting on a surgical date	5	8%	4	7%
Had bariatric surgery	54	92%	53	88%
No response	0	0%	3	5%
Total responses	**59**	100%	**60**	100%
Type of Bariatric Surgery				
Roux-en-Y gastric bypass	37	63%	25	42%
Vertical sleeve	14	24%	17	28%
Duodenal switch	2	3%	1	2%
Other	0	0%	2	3%
No response	6	10%	15	25%
Total responses	**59**	100%	**60**	100%

Note. * $p < 0.05$, statistically significant difference between provincial and international samples.
GED= General Education Diploma

TABLE 2. Clinical Characteristics of Provincial and International Samples

Clinical Characteristic	Provincial		International		T-test *p*-value
	Mean ± *SD*	Response Rate (%) *N*= 59	Mean ± *SD*	Response Rate (%) *N*= 60	
Highest weight (lbs)	329.9 ± 65.8	98%	311.4 ± 78.5	95%	0.17
Lowest weight (lbs)	171.0 ± 35.1	98%	168.0 ± 43.4	88%	0.61
Current weight (lbs)	221.1 ± 65.1	100%	199.3 ± 45.1	95%	0.04*
Weight on the day of surgery (lbs)	301.6 ± 55.9	91.5%	284.0 ± 54.0	75%	0.11
Length of time since had surgery (months)	1.9 ± 18.8	91.5%	34.3 ± 42.3	75%	0.09
Wait time from MD to bariatric clinic (months)	7.4 ± 4.7	88%	1.9 ± 3.5	73%	<0.001*
Wait time from orientation to bariatric team (months)	5.6 ± 3.9	88%	0.3 ± 0.7	70%	<0.001*
Estimated total wait time from MD to surgery date (months)	18.3 ± 7.9	78%	6.2 ± 4.7	68%	<0.001*

Note. *$p < 0.05$, statistically significant mean difference between provincial and international samples.
MD = medical doctor; *SD* = standard deviation.

To ensure confirmability of the findings [34], open-ended responses were reviewed independently by the authors, followed by a discussion of any discrepancies in emerging themes until an agreement was reached. Both authors identified parallel themes, and the discussion was primarily around determining the most reflective title for each. Using the guidance of Guba and Lincoln [34], additional quality assurance steps were applied throughout data analysis, and are detailed in Table 3.

To gain a comprehensive understanding of the experiences of those engaged in the bariatric surgery process and what might best support their long-term health and well-being, themes from the provincial and international data were categorized by question topic in the following manner:

i. What was most useful (before, during, and after surgery)?

ii. What was needed but not received (before, during, and after surgery)?

iii. What overall expectations were met and not met?

iv. What are the current support and service gaps, and related recommendations?

For the purposes of the study, needs were defined as support or services that were essential, required, or very important during the bariatric surgery process, while expectations were defined as support or services that were anticipated to occur, or regarded as likely to happen, but did not necessarily happen. Themes that emerged within each category were noted, with those common to both the provincial and international data presented together for ease of presentation, and those unique to only one group presented on their own (see Table 4 for summary of themes). Themes presented spanned the entire surgery process (before, during, and after surgery), unless a time point was specified.

TABLE 3. Quality Assurance Steps Followed for Data Collection and Analysis

Measure	Description
Credibility	Honesty demands were utilized to encourage honest responses to each question. Quotations exemplifying each theme were compiled and representative examples included in this paper.
Confirmability	The two research members independently and simultaneously performed inductive content analysis on the open-ended responses. The researchers compared their analyses. Data were examined for similarities and differences across the transcriptions and common emergent themes were identified. A summary of the analysis was prepared and discussed.
Dependability	Research team members met to debrief and summarize their findings. Any biases were considered to ensure that the analyses were not influenced by researcher bias.
Transferability	The research process was documented in detail, thus enabling potentially interested parties with the ability to determine whether the study findings will be transferable to other individuals in other settings.

Note. Based on Guba and Lincoln [34] and adapted from Irwin, He, Bouck, Tucker, and Pollett [35].

TABLE 4. Summary of Provincial and International Sample Themes

Themes	Provincial Sample Themes	International Sample Themes
Most useful support and services	**(1) The expertise and encouragement of the bariatric team members*** **(**Before and after surgery**)** **(2) The experiences and encouragement from a peer or support group (in-person and/or online), and from online resources*** **(**Before and after surgery**)** **(3) The support from their family and friends *** **(**Overall**)** (4) Support from the hospital staff **(**During surgery**)**	**(1) The expertise and encouragement of the bariatric team members*** **(2) The experiences and encouragement from a peer or support group (in-person and/or online), and from online resources*** **(3) The support from their family and friends*** **(**Overall**)**
Needed but not received	**(1) Access to immediate follow-up after surgery for nutrition-specific information and for general post-surgery concerns *** (After surgery) (2) In-person and remote access to nearby professional support (3) Flexibility in arranging appointments with various bariatric team members for the same time and with consistent providers	**(1) Access to immediate follow-up after surgery was needed for their questions to be answered*** (After surgery) (2) More support needed from family and friends, particularly before surgery (Before surgery) (3) There were no other services or support needed in the process

What overall expectations were met and not met	(1) The amount of information was sufficient, with the caveat that additional required information should be easy to access (2) Additional training and education in bariatric care is required by family doctors to improve understanding of bariatric-related concerns (3) More thorough disordered eating assessments and in-depth psychological counselling and support	(1) Weight and health (comorbidities) expectations were met (2) Concerns about the cost for skin removal, and potential skin and body image issues were unmet (3) Concerns about slow weight loss, weight maintenance and weight regain were unmet
Support and service gaps, and related recommendations	**(1) Creating a communication centre and mentorship program between veteran recipients and prospective surgical that is accessible in-person, by phone and/or online *** (2) Misinformation delivered about skin removal and additional Ontario Health Insurance Plan (OHIP) assistance (3) Receiving credible information from a bariatric professional, which can be accessed in-person, by phone and/or online	**(1) Creating a communication centre and mentorship program between veteran recipients and prospective surgical that is accessible in-person, by phone and/or online *** (2) Counselling and support beyond one year after surgery (3) Rigorous post-surgery programming (including education, nutrition instruction)

Note. **Bolded*** terms refer to themes that were identified as common between provincial and international samples.

2.3 RESULTS

2.3.1 Participant Characteristics

Fifty-nine provincial participants (n = 59) completed the survey. They were primarily female (93%), aged 40-49 years old (49%), Caucasian (68%), married or in a domestic partnership (73%), and worked full-time (64%). A detailed summary of participants' demographic and clinical characteristics are provided in Tables 1 and 2, respectively. The sixty international participants (n = 60) who completed the survey were primarily female (93%), aged 18-39 years old (57%), Caucasian (52%), married or in a domestic partnership (42%), and worked full-time (32%). Demographic characteristics that were significantly different between the provincial and international samples were age, ethnicity, and education, $p < .05$. The provincial sample was primarily made up of older, Caucasian participants, and who had attended at least College or University, in comparison with the international sample. Five provincial participants and four international participants were waiting for their surgical date.

It should be noted that for ethnicity and education, the proportion of international participants who provided a response was much lower than the proportion of provincial participants. Therefore, the pattern observed of the actual responses for ethnicity and education should be interpreted cautiously. Of the 45 international participants who provided their geographic residence, 93% were from the United States and 7% were from the United Kingdom. Clinical characteristics that were significantly different between the provincial and international samples were current weight (in lbs) and wait time at various time points (in months), $p < .05$. Provincial recipients were heavier and on average waited longer to be processed for surgery compared with the international recipients. The

study's response rate was approximately 6% from the provincial sample and 0.04% from the international sample.

2.3.2 Themes from Open-Ended Questions

i. What was most useful (before, during, and after surgery)?

The independent analysis of the provincial and international data revealed three identical themes, which are presented together, followed by the one theme unique to the provincial data only. The most useful support and services that participants in both the provincial and international groups reportedly received were the expertise and encouragement of the bariatric team members, the experiences and encouragement from a peer or support group (in-person and/or online), and from online resources.

Provincial participants noted these themes occurring predominantly 'BEFORE' and 'AFTER' surgery, whereas international participants expressed the themes occurring throughout the surgery process. The support from family and friends was described as especially helpful in terms of on-going encouragement and understanding throughout the entire surgical process. For the time point 'DURING' surgery, which was the time between the last appointment with the clinic team and up to the first post-surgical follow-up appointment, provincial participants emphasized the support from the hospital staff as among the most useful service that they received (see Table 5 for illustrative quotations).

TABLE 5. Themes and Reflective Quotations Regarding What Was Most Useful Before, During, and After Bariatric Surgery

Shared Themes	Provincial Sample	International Sample
(1)The expertise and encouragement of the bariatric team members	***Before Surgery*** *"I found my initial appointment with the social worker gave me a clear idea of the process and expectations. This was also true of the nutrition class and my follow-up with the nutritionist."* ***After surgery*** *"I received a lot of post-care literature for after surgery care; including diet plans, post-care of surgical area, medicine prescriptions, medical appointment with family doctor, and a complete procedure [package] sent to [my] family doctor regarding surgical and post-procedures."*	***Before Surgery*** *"…Honestly [the nurses] took great care to get you through the process. They, in my opinion, were the MVPs [most valuable players] for this process both before and after surgery."* ***After surgery*** *"There was peace [of mind] knowing my team [the bariatric clinic team] was on call if anything went amiss."*
(2)The experiences and encouragement from a peer or support group (in-person and/or online), and from online resources	***Before surgery*** *"Research, research, research! Once I decided to make the commitment to surgery it was a quick process. I joined bariatricpal.com and joined the conversations, I attended webinars, I watched countless Youtube videos…"* ***After surgery*** *"… There is a support group on Facebook for post- & pre-op patients. We share information amongst*	***Before surgery*** *"[The most useful support and services that I received were from the] support group both in person and through Facebook, [and] my own reading and research."* ***After surgery*** "*My online support group was a huge help right after my surgery."*

	ourselves, post pictures, and give each other the boost [that] we need to continue on."	
(3)The support from their family and friends	***Overall*** *"I have many friends who have had the surgery way before me and way after, we are just friends and some [I] considered family. I had no gaps [in support], but I'm quite sure there are many people who do need it."*	***Overall*** *"Family support is everything - they will be there and witness bariatric surgery 'weirdness' - things like … being unable to eat more than an appetizer sized meal at a sitting, going out for dinner and ordering an entree with a 'to-go' box at the same time... it's stuff that I could not keep secret from my family if I tried! I needed their support and understanding."*
	(4)Support from the hospital staff ***During surgery*** *"[The] hospital staff was second to none. [They were] very knowledgeable about post-bypass procedures and diet and were emotionally supportive during the initial upheaval and fluid diet, etc."* *"All professionals in the pre-surgery area were friendly. Anesthesiologist was friendly and encouraging. The residents were good at keeping me informed post-surgery. The nurses on the Surgical Ward were supportive and helped prepare me for home."*	

ii. What was needed but not received (before, during, and after surgery)?

Upon separate analysis of provincial and international data, only one theme was found to be similar between both groups, and two themes were unique in each data set. Both the provincial and international groups consistently emphasized as needing access to immediate follow-up for their questions to be answered about nutrition-specific information and for general post-surgery concerns, 'AFTER' surgery. Participants felt that the aftercare information delivered immediately post-surgery would be more applicable, and would better support their recovery and adjustment than when it was delivered prior to surgery.

For provincial participants, in-person and remote access to *nearby* professional support and flexibility in arranging appointments with various bariatric team members for the same time and with consistent providers, were two unique, unmet needs. For international participants, the theme of more support from family and friends was in particular need 'BEFORE' the surgery, otherwise there were no other services or support needed in the process (see Table 6 for quotations reflective of the themes identified).

iii. What overall expectations were met and not met?

All themes regarding participants' met and unmet expectations were unique to the provincial and international samples. Three themes regarding provincial participants' expectations included: (1) the amount of information was sufficient, with the caveat that additional required information should be easy to access; (2) additional training and education in bariatric care is required by family doctors to improve understanding of bariatric-related concerns; and, (3) more thorough disordered eating assessments and

TABLE 6. Themes and Reflective Quotations about What Was Needed but Not Received Throughout the Bariatric Surgery Process

Shared Themes	Provincial Sample	International Sample
(1) Access to immediate follow-up after surgery for nutrition-specific information and for general post-surgery concerns	***Nutritional information*** *"[It] really would have been better to do more with [the] dietician and meal planning, and understanding what eating would look like afterwards before having it done. We talked about no no's and amounts of food, but not really prepar[ing] recipes or foods that are well and not [well] tolerated, etc."* ***General follow-up*** *"It would be nice to have a post-op phone call from someone on the team to just touch base.* *"I think you get so much information before surgery but it doesn't really make sense until after you have had the surgery. Everyone thinks it is an easy way to lose weight but it was harder than I thought it would be."*	***Questions to be answered*** *"I didn't have a full grasp of the changes that were about to take place beforehand and once I [went] through the changes after surgery. I would have random questions about a multitude of things."* *"After care is almost more important than before surgery care. Don't get me wrong the before care is beneficial [when] starting out on the right foot but the after care is critical for the rest of your life. It is easy to get off track."*
	(2) In-person and remote access to <u>nearby</u> professional support *"Local professional dietary support and counselling - traveling to [city where clinic located] in the winter is not pleasant [and] ongoing contact with one dietician. I had 3 involved and they gave me conflicting information…"*	**(2) More support needed from family and friends, particularly before surgery** *"I kept [the surgery] from [my] family members [because] I thought [that I] would have [a] negative response… but my immediate family was great."*

	"The ability to go and see a local specialist that understand[s] what is going on with your body after gastric bypass and knowing you have piece of mind that you do not have to drive to [far away cities where bariatric clinics are located] to get help."	"*I had NO support from my family. In fact, I was sabotaged several times by my children."*
	(3) Flexibility in arranging appointments with various bariatric team members for the same time and with consistent providers *"[The clinic] would not set up all [my] appointments [on] the same day and driving from [resident city] in snow storms… 3 times in one week was not safe but I did not want to miss an appointment. [W]e [were] warned [that] if we missed an appointment, we could wait up to 3 months for a reschedule and given my age, I had already waited far to long for help. It would have been nice to travel to [hospital closer by] and visit with the doctor, nurse, dietician, and psychologist all on the same day, instead of 3 or 4 different trips down and back over a 1 ½ week timetable every 3 months"* *"[There was] no consistency with the nurse or dietician when visits were required. I feel seeing the same staff would [provide] better support because you [could]*	**(3) There were no other services or support needed in the process** *"Honestly none. I feel like I had everything [that] I needed to be successful."* "*Nothing. I felt well supported and informed."*

	build a better rapport with them."	

in-depth psychological counselling and support are needed. Three different themes emerged from the international data concerning participants' expectations: (1) weight and health (comorbidities) expectations were met; (2) concerns about the cost for skin removal, and potential skin and body image issues were unmet; (3) concerns about slow weight loss, weight maintenance, and weight regain were unmet (see Table 7 for quotations that exemplify these themes).

iv. What are the current support and service gaps, and related recommendations?

Provincial and international data revealed one shared current support and service gap, as well as one similar recommendation, followed by two unique themes from each data set. Both provincial and international participants independently recommended the creation of a communication centre and mentorship program between veteran recipients and prospective surgical candidates that is accessible in-person, by phone, and/or online to address current support and service gaps.

Themes about current support and service gaps unique to provincial participants included receiving misinformation about skin removal and requiring additional Ontario Health Insurance Plan (OHIP) assistance (i.e., Ontario's government-run health insurance plan for residents). They also underscored the importance of receiving credible information from a bariatric professional that is accessible in-person, by phone, and/or online. Several participants mentioned the caveats of receiving knowledge and advice from bariatric peers versus bariatric professionals, in which the latter could reliably provide more clinically accurate information. However, participants still recognized that the support and experiences shared by peers were invaluable. For international

participants, the provision of counselling and support beyond one year after surgery, as well as the receipt of rigorous post-surgery programming (including education, nutrition instruction), were identified as two support and service gaps (see Table 8 for quotations supporting themes).

Overall, many of the themes detailing the experiences of those engaged in the bariatric process provincially overlapped with the themes derived from the experiences of international surgery recipients. Although the provision of health care may be unique in different areas, many of the needs and experiences of bariatric surgery recipients were shared regardless of geographical location.

TABLE 7. Themes and Reflective Quotations About What Overall Expectations Were Met and Not Met

Shared Themes	Provincial Sample	International Sample
	(1) The amount of information was sufficient, with the caveat that additional required information should be easy to access "*There really was not a lot of information missing. I felt and still feel very well informed. One aspect of the whole experience that has been helpful though is having a heightened sense of COMMUNITY. A sense that I am not alone or isolated in my bariatric surgery, and that the decision I have made for myself is one that regardless of weight loss surgery method- this for me has been immensely helpful."* *"I don't believe [that] I needed any more information or support, however I suggest the following; a communication centre for bariatric patients, i.e. teleconferencing centre should be set up in [city] and would save time, money and [would] be a convenience to all parties."*	**(1) Weight and health (comorbidities) expectations were met** "*I was off all my meds two weeks after surgery, and my diabetes and high blood pressure has been in remission since I had my surgery 3 years ago."* *"It totally gave me my life back! I really did not believe that I could lose all of my excess weight. I did believe I would lose a lot but I never really thought [that] I could actually make it to a healthy weight for my age and height. I look great and feel great. All of my comorbidities are gone and I am healthy."*
	(2) Additional training and education in bariatric care is required by family doctors to improve understanding of bariatric-related concerns	**(2) Concerns about the cost for skin removal, and potential skin and body image issues were unmet**

	"Family physician[s] do not know anything about bariatric surgery. I have been seeing a counsellor for a few years to help me deal with emotions and how to deal with these issues, and not eating them away." *"…There is not enough contact with the clinic [post-surgery]. Family doctors are not yet well educated enough about bariatric surgery and nor is the general public."* *"Family doctors could undertake some education about the benefit of surgery for long-term weight loss success."*	*"Reconstructive surgery is not covered to deal with all the skin issues. We go through a lot to have the surgery and lose weight, but are left with a hideous amount of excess skin. This is both physically and psychologically damaging. The program needs to include support for [excess skin removal]. Insurance needs to consider a more holistic coverage for this process."* *"I think plastic surgery should be included in the overall bariatric surgery plan. The weight coming off may make someone physically healthier but mentally we still struggle with appearance. Also with the extra skin and sweating, we are more prone to rashes."*
	(3) More thorough disordered eating assessments and in-depth psychological counselling and support *"Definitely an assessment of your eating habits and mental understanding of your food disorder is very important in order to be successful in keeping the weight off after the surgery."* *"Although you are prepared for surgery, I believe that more immediate emotional and mental assistance [are needed] right after surgery. Nothing could have prepared me for divert but a visit from a social*	**(3) Concerns about slow weight loss, weight maintenance and weight regain were unmet** "*I did not realize how slowly the weight loss would be or about stalls. More education could have been given regarding the process…"* *"I still second guess my diet, my exercise program, [and I am] terrified of regain."*

	worker immediately after surgery to talk to about struggles would have been great." *"Examine eating disorders or all mental health issues in greater depth to try and resolve/get control of them before surgery. Surgery is a tool, so if you don't fix the underlying issues then it won't work for someone."*	

TABLE 8. Themes and Quotations Supporting Themes About Current Support and Service Gaps, and Related Recommendations for Addressing the Gaps

Shared Themes	Provincial Sample	International Sample
(1) Creating a communication centre and mentorship program between veteran recipients and prospective surgical that is accessible in-person, by phone and/or online	*"I think we should be set up a buddy system, with someone who has had the surgery, like in AA [Alcoholics Anonymous]. Then this person could be your contact if you [have any] questions [or] issues. I did this with a few friends of mine who have had the surgery and it really helped them a lot."* *"I think having a person who has had the surgery [that can] answer questions at the general meetings, and any follow-up group meetings. I always find it hard to take direction from people who had not had weight issues and the surgery… I would love to do something like this."* *"Sitting in a room or a conference call with people that are at the same time frame with me [comforted me]. Understanding that they are going through and experiencing some of the same things I am [helped me]."*	*"Develop a mentoring program so those who have gone before can support those behind them."* *"I would recommend that each person going through the process be given 1 person's name and number as their 'go to person.' This person would take them through the process."*
	(2) Misinformation delivered about skin removal and additional Ontario Health Insurance Plan (OHIP) assistance "*I think they need to let patients know and understand*	**(2) Counselling and support beyond one year after surgery** *" [A current support/service gap is] [h]ands down it is*

	how much loose skin [that] you will have. No amount of exercise and weight training will improve [the loose skin]. [Y]ou still feel even after you have lost the weight that you are heavy with the skin. They need to work more closely with plastic surgeons and OHIP to have procedures covered." *"A better understanding and truthful information pertaining to the aftermath of any form of the surgery i.e., obsessi[ng over] hanging skin and whether or not you [will] be eligible to have it removed, as well as the cost factors involved if not covered."* *"More OHIP assistance with skin removal after weight loss goals achieved. Currently, only panni surgery is covered under specific circumstances."*	*counselling. WAY too many people say they just need a "tool" and don't have an eating problem. No one got to 300 pounds without having food addiction issues. Those folks are still in denial and will likely not be successful long term."* *"…many [surgery recipients] don't receive any post-op counselling."*
	(3) Receiving credible information from a bariatric professional, which can be accessed in-person, by phone and/or online *"One-on-one interaction with a medical professional [is recommended]. [Providing] phone or email flexibility. [Also], telemedicine."* *"...I attended the [city] support group but when I [received] information that I knew was clearly wrong, I stopped going."*	**(3) Rigorous post-surgery programming (including education, nutrition instruction)** *"I think that there should be follow-up meetings with the dietician and psychiatrist to address aftercare and body image issues that occur."* *"There is very little support or education for aftercare except outside the program. The same robust services offered pre-surgery should continue for at least three years after. More*

	"A call centre that answers questions may be helpful or a 24hr help line."	*attention needs to be paid to the health risks both physically and psychologically to the post-op group because of all that needs to be faced."*

2.4 DISCUSSION

The purpose of this cross-sectional needs assessment study was to gain an understanding of what individuals who are engaged in the bariatric surgery process believe they need before, during, and after bariatric surgery to best support their long-term health and well-being, both provincially in Canada and internationally. Themes for what was most useful included encouragement from family, friends, bariatric team members, and peers. Access to immediate follow-up appointments after surgery for nutrition-specific and general post-surgery concerns was reported as needed, but not received. Recommendations to address excess skin and creating a mentorship program were proposed.

Age, ethnicity, education, current weight, and wait time at various time points were significantly different between the provincial and international samples. Generally, the provincial sample was made up of older, Caucasian participants who had attended College or University compared with the international sample, who were made up of more younger, non-Caucasian and with a smaller proportion that had College or University. However, given the lower proportion of international respondents who provided their ethnicity and education compared with the provincial respondents, the pattern observed of the actual responses for the two demographic characteristics should be interpreted cautiously.

In terms of clinical characteristics, provincial participants had a higher current weight, and generally waited longer throughout the surgery process. Although it was anticipated that more unique insights between the provincial and international samples

would be observed – given the assumed differences in, and influence of, culture including health care funding – many of the needs and experiences of bariatric surgery recipients were shared between both samples.

The initial step of the needs assessment was to identify themes regarding what served the respondents the most in the bariatric surgical process; which is an essential first step in future program planning [24]. Both provincial and international participants noted the expertise and encouragement from bariatric team members as one of the three most useful support and services received. In fact, communication between a health professional and patient in a care setting has been shown to be associated with patient satisfaction, adherence to treatment, and improved health outcomes for various conditions [36, 37]. Provincial and international participants' appreciation for the encouragement received by their peer and support group members was another useful support and service in their surgery process. This theme complements Song et al.'s finding of regular support group attendance potentially providing bariatric patients with a greater chance of achieving maximal weight loss [23]. Similarly, in Sharman et al.'s Australian perspective of bariatric needs, dietetic and peer support were identified as important factors, which could help to influence weight reduction and health improvements [25].

Another shared theme that served the target population was the support from family and friends. In Zwickert and Rieger's report examining women living with obesity experiences of social support and weight management, the researchers found that participants felt their significant others' behaviours interfered with their weight control

efforts, and in turn, negatively compounded their weight management behaviours [38]. Some participants experienced loved ones' weight-related comments to be unhelpful because they tended to take the form of criticism or unsolicited advice [38]. Zwickert and Rieger's study highlights the importance of receiving positive and adequate support from family and friends, which the current study's participants reported as the most useful support and service in the bariatric surgery process [38]. Themes involving what served the respondents the most in the bariatric surgical process assisted in completing the first step in future program planning; the next step was to identify what concerns or requirements were not received to proceed with the program planning process.

Most of the themes regarding what was needed, but not received, were unique between provincial and international participants. Provincial participants expressed the need for in-person and remote access to nearby professional support, and the need for flexibility in arranging appointments with the same providers. Despite conflicting results in the literature about whether accessibility and travel distance were potential contributors to non-compliance [39, 40], it was hard to ignore provincial participants' desire for greater access and flexibility in arranging appointments. Both provincial and international survey respondents expressed their overwhelming need for access to immediate follow-up services after surgery for nutrition-related issues and for general questions. Participants felt that a review of the aftercare information closer to post-operative recovery, which mirrored the information received pre-operatively, would better support their recovery and weight management goals.

In a large cohort study assessing the effect of post-operative follow-up on 12-month weight loss by Spaniolas et al., the authors found patient adherence to post-operative follow-up guidelines was independently associated with improved 12-month weight loss outcomes after surgery, such that complete follow-up (i.e., appointments at 3, 6, and 12 months) was associated with excess weight loss ≥ 50 %, and total weight loss ≥ 30% [41]. Spaniolas and colleagues concluded that bariatric programs should strive to achieve complete follow-up for all patients, which would be useful for future program planning [41]. As discussed by Sharman et al., bariatric health professionals should discuss recipients' needs to ensure gaps in support and services are addressed and resolved [25]. The aforementioned research also coincided with provincial and international participants' desires for more immediate follow-up, which could in turn, lead to improved long-term health and well-being outcomes among this population.

A common issue shared between both groups was related to skin removal costs and concerns post-surgery. All participants were especially bothered by and concerned with how to deal with excess skin and skin folds, which are common in bariatric surgery patients following significant weight loss [42]. According to Lier, Aastrom, and Rørtveit, hanging skin can be problematic in daily life for those experiencing it post-surgery [43]. The authors mentioned that it is possible for former surgery recipients to feel a constant reminder of their former selves which can impact their body image [43]. In addition, according to Gilmartin, body image can influence a patient's emotional well-being following significant weight reduction, and these concerns can last over time and further contribute to psychological stress [44]. Currently, skin removal is only partially covered by some public and/or private insurance companies depending on certain qualifications

and under special circumstances, thus participants must cover the remainder cost of the procedure, if required. Therefore, addressing concerns about skin removal openly and honestly in bariatric programs with the bariatric team may alleviate potential post-surgery and financial stress experienced by provincial and international patients.

Provincial and international participants also shared an interest in establishing a mentorship program that could be accessible in-person, by phone, and/or online. Respondents proposed the idea of being paired up with someone who had already gone through the surgery and who could voluntarily provide them with one-on-one support. All participants felt that their questions and concerns could be more easily answered and their expectations could be better defined when speaking to a bariatric 'veteran'. According to Zwickert and Rieger's, the majority of bariatric recipients are more receptive to a 'support person' who is able to balance acceptance and genuine care in pursuance of weight loss goals [38]. A bariatric mentor may be a potential 'support person' who can provide encouragement and sympathize with the bariatric recipient, having gone through the same process already, along with sufficient knowledge about the bariatric process.

Participant recruitment from a local support group to pilot test the survey questions may have reduced the generalizability of the results to all bariatric surgery recipients (in Ontario and worldwide). The small size of the provincial and international study samples was another limitation in the current study. Our response rate was approximately 6% from the provincial sample and 0.04% from the international sample; it is unknown whether all support group members listed were active, and/or whether or

not the members saw the recruitment posting, opened our invitation, and chose not to participate from our various support group and online forum sampling. With regard to survey responses, 32% of provincial participants and 42% of international participants completed less half of the survey, along with 12% and 5% of provincial and international samples, respectively completed only demographic information. These proportions are similar to those found in Reja et al.'s [45] study comparing the proportion of responses to open-ended questions and similarly worded close-ended questions. Reja et al. [45] found that questionnaires with open-ended responses produced more missing data such that 41% of participants provided missing data to open-ended questions, in comparison to 0.8% of participants providing missing data to similarly worded close-ended questions. Moreover, Reja et al. [45] found that there were more inadequate answers for open-ended questions in comparison to close-ended questions [45]. Therefore, the design of the current study's questionnaire, which was predominantly filled with open-ended questions may have limited the proportion of data completeness in each participant's questionnaire. However, given that many of the themes overlapped between both samples, the meaning and richness of information provided in the surveys was of greater significance than the number of those who participated. The survey responses accumulated from each study sample provided a greater understanding of surgery recipients' perceptions of their met and unmet needs. To our knowledge, this was the first study examining bariatric-related needs and experiences in both groups detailing themes that were unique provincially (from a publicly funded health care system point of view) or internationally, and themes that were shared among all bariatric surgery recipients. Whether or not bariatric programming and health care funding allocation differs around the world, a majority of

the experiences and perceptions that were expressed in the current study were shared among recipients, regardless of their geographic locations.

2.5 CONCLUSIONS

Necessitating the implementation of a support system in the bariatric process may be required in future surgical programming. Moreover, ensuring more flexibility in scheduling, access to consistent providers, and immediate follow-up may be needed to better support individuals engaged in the bariatric process. The concern about skin folds and costs shared by recipients may require additional preparation and education during the orientation for future bariatric services. What bariatric surgery recipients believe they need before, during, and after bariatric surgery to best support their long-term health and well-being provincially in Ontario, Canada and from around the world are, to an extent, universal, regardless of funding type.

All the aforementioned findings can contribute to medical programs and surgical services provided by the province's bariatric clinics, as well as provide considerations for health care frameworks similar to Ontario's, which is experiencing an increased need and capacity for bariatric surgery. This study provides a summary of patient needs and expectations, which can ultimately assist clinical teams in efficaciously addressing the gaps in bariatric programing, and help to prevent weight regain among surgery recipients. Future research and program planning should consider incorporating the findings of what bariatric recipients perceive they need for optimal health outcomes from the current study into bariatric surgical practice. In doing so, these bariatric programs can more efficiently provide effective prevention and treatment to surgery recipients in bariatric care settings.

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CHAPTER 3:

Understanding the Post-Surgical Bariatric Experiences of Patients Two or More Years After Surgery[2]

3.1 INTRODUCTION

Over the past 30 years, the worldwide prevalence of overweight and obesity has increased at an alarming rate [1]. Approximately 1.5 billion people are overweight, and a third of them are obese [2]. For those with more severe obesity and related comorbidities, non-surgical treatments are generally ineffective in achieving substantial and long-term weight loss [3]. Bariatric surgery has been identified as the most effective treatment option for sustainable weight loss among individuals living with severe obesity [4-6]. Physiologically, bariatric surgery is associated with improvements in obesity-related comorbidities such as type II diabetes, hypertension, and sleep apnea [7-11]. Psychologically, it has been correlated with improvements in quality of life and mental health within the first-year post-surgery [12-14]. Despite the positive outcomes, 30-50% of patients experience weight regain by 1.5 to 2 years after bariatric surgery [15-18] and even without weight regain, some patients are dissatisfied post-surgery for other reasons, including excess skin folds, conflicts with sexuality, and challenges adjusting to new eating habits [19].

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[2] A version of this chapter has been published in *Quality of Life Research*. The copyright permission for the current manuscript from this dissertation is included in Appendix J. Reproduced with permission of publisher: Liu RH, Irwin JD. Understanding the Post-Surgical Bariatric Experiences of Patients Two or More Years After Surgery. 2017; 1-12. [Epub ahead of print]. DOI: 10.1007/s11136-017-1652-z.

Understanding the lived experiences of those who have gone through the bariatric process may shed light on what is needed to help others prevent post-surgical dissatisfaction and weight regain challenges [19, 20]. In fact, a number of researchers have tapped into several specific aspects of patients' accounts post-surgery to better understand trials associated with their bariatric processes [19-22]. For instance, Geraci and colleagues [21] looked at the "meaning and essence of experiences" of nine American women from North Dakota who had undergone surgery at least two years prior, with a particular focus on their social support. The authors found that although typically recommended by their surgeons, only half of the women attended support groups, and instead, support came from family, friends, work colleagues, and bariatric-specific groups [21]. That said, no standardized support group guidelines exist and as such, attendance may vary from clinic to clinic; and additional barriers (such as time and/or location) to attending support groups may exist for different clients [21].

Magdaleno et al. studied the psychology of seven Brazilian women between 1.5 to 3 years post-surgery [21], focusing on body image and the possible psychological difficulties that can diminish recipients' positive experiences and perceptions of the surgery's overall success. The researchers found that the women experienced challenging interactions with their bodies post-surgery, such as displeasure with scars and skin folds, which led to dissatisfaction, the perception that the surgery was unsuccessful, and the desire for continual plastic surgery fixes.

In Natvik and colleagues' phenomenological study [22], the experiences, sensations, and changes attached to eating after surgery were thoroughly explored among

four men and four women from Bergen, Norway, who had surgery between 5 to 7 years prior to being interviewed. The authors highlighted the discrepancy between surgery-related physical improvements and a lack of change in long-term health behaviours. They also noted that emotional stress, shame, and self-contempt were the experiences of those who had regained their weight. Collectively, these studies reflect a myriad of challenges associated with what it is like for some individuals going through the bariatric process.

While valuable, the findings from the above-noted studies focus on specific aspects of surgical recipients' experiences, and may not be transferable to those in other countries and of both sexes. Given that the provision of health care has both large and subtle differences between and among countries, a study to gain an in-depth understanding of the overall lived experiences of Canadian bariatric recipients' who had surgery two or more years ago was needed to provide insights that would: (a) allow for a fuller understanding of current recipients' experiences; and (b) help other Canadians meet long-term 'success' post-surgery. Therefore, the four-fold purpose of this grounded theory [23] study was to explore the perspectives of a sample of Canadians of either sex who underwent bariatric surgery at least two years ago, with specific respect to their views about: (1) how the surgery has impacted/is impacting them physically; (2) psychologically; and (3) socially; and (4) the clinic-related services and supports that have been particularly influential. Findings from this study could provide valuable insights to those Ontarians/Canadians who are considering, awaiting, or have recently completed surgery on what to expect and how best to prepare themselves for long-term success following bariatric surgery.

3.2 METHODS

3.2.1 Design and Procedure

Participants were formally invited to participate in the study by their bariatric clinic using postal mail. Two-hundred and thirty postal mail invites were sent to eligible participants. Eligible participants were: Ontario residents, 18-years old or older; able to speak and read in English; and recipients of bariatric surgery at least two years prior to the study beginning. This time point was chosen given that bariatric clinic follow-up assessments become less frequent from two years and on [24], and when patients must presumably manage their weight and lifestyle changes more independently (currently, bariatric clinic follow-up assessments in Canada occur one month, three months, six months, one-year, and then annually from two years up to five years post-operation [24]). It is also the time point when weight maintenance challenges typically start to occur (1.5 to 2 years from surgery) [15-18]. Interested individuals contacted the researchers to be interviewed, and explicit verbal and informed consent were obtained from all participants included in the study. Telephone interviews were chosen to allow participants to respond anonymously, and communicate their views over the phone more openly and candidly in an environment of their choosing [25]. Office of Research Ethics approval was received by the host institution and associated hospitals.

Semi-structured telephone interviews lasted approximately 45 to 60 minutes and were conducted from February 2016 until May 2016. Interviews followed a semi-structured interview guide that included questions about how bariatric surgery has impacted various facets of participants' lives (i.e., *How has bariatric surgery impacted*

your personal relationships? How has bariatric surgery impacted your social or working environment?), what services and supports have influenced and impacted their health (i.e., *What services, strategies, and/or supports have positively influenced your health, two years post-surgery? What services, strategies, and/or supports have not influenced your health outcomes, two years post-surgery?*), and advice they would share with other prospective surgical recipients (i.e., *If you were to offer advice to those starting the bariatric process, what would you tell them?*). It should be noted that the terms 'supports' and 'services were designated to the study participants to define from their perspective/experiences. Demographic questions about participants' age, gender, ethnicity, marital status, employment status, and weight-related dates and measurements were also included (Table 1). Prompts and reflective responding (e.g.,"*What's an example?"; "Say more."; "How is this concern connected to the issue you just spoke about?"*) were used to explore responses further or if the participant needed encouragement to talk. The first author, RHL, conducted the interviews. Interviews were digitally recorded and transcribed verbatim.

Interview sampling was guided by the recommendations from Marshall et al. [27], and Fusch and Ness [28]. Specifically, Marshall and colleagues advised that grounded theory studies should generally include between 20 to 30 interviews to reach data saturation [29]. They suggested that studies with over 30 interviews do not yield a more significant impact [28]. Moreover, Fusch and Ness [28] suggested that data saturation for one study may not be a 'one size fits all.' Instead, they recommend examining whether there is enough information to replicate the study [29, 30], whether further coding is no longer feasible [31], and whether the ability to obtain additional new information has

been attained [31]. Data saturation appeared to take place after the 20th interview. To help ensure completeness of the data set, all 28 interviews were analyzed.

3.2.2 Data Analysis

Inductive content analysis to identify the themes that emerged from the data was utilized, as described by Patton [32] and facilitated by hand [33, 34]. Although there are computer-assisted qualitative data analysis software packages that exist to manage and handle the data, it should be noted that such programs are merely instruments and do not 'analyze' data; ultimately, it is the responsibility of the researcher(s) to analyze the data [34]. In support of the data's confirmability, the authors, RHL and JDI, each reviewed the transcripts separately and then came together to compare and negotiate discrepancies until agreement about the themes was reached [35]. Using the guidance of Guba and Lincoln [35], additional quality assurance steps were applied throughout data collection and data analysis, and are detailed in Table 2.

TABLE 1. Participant Characteristics (*N* =28)

Characteristic	**Mean ± *SD***
Age (years)	49.7 ± 12.7
Highest weight (lbs)	336.7 ± 84.4
Lowest weight (lbs)	177.6 ± 36.3
Weight on day of surgery (lbs)	293.2 ± 62.9
Current weight (lbs)	199.5 ± 39.9
Length of time since surgery (months)	42.6 ± 8.4
Sex	***N* (%)**
Female	21 (75)
Male	7 (25)
Ethnicity	
Caucasian	20 (71)
South Asian	3 (11)
Caribbean	1 (4)
Hispanic	1 (4)
Marital Status	
Single	4 (14)
Married/Domestic relationship	22 (79)
Divorced	2 (7)
Professional Status	
Full time	17 (60)
Part time	1 (4)
Retired	8 (28)
On disability	1 (4)
Unemployed	1 (4)
Surgery Type[a]	
Gastric bypass	23 (82)
Gastric sleeve	5 (18)

lbs = pounds; *SD*= standard deviation

[a]*Note*. It should be noted that the experiences from those who had the gastric bypass and gastric sleeve were combined. The gastric bypass (or Roux-en-Y gastric bypass surgery) involves cutting the stomach to create a smaller pouch, which is then reattached further down the small intestine [24]. In comparison, the gastric sleeve is a newer procedure being performed with increasing frequency for the treatment of obesity and obesity-related diseases. The gastric sleeve involves a lateral cut along the stomach, resulting in a smaller pouch (which is stapled), and the rest of the stomach is removed [24]. The gastric sleeve has been associated with fewer complications and a shorter operation time in comparison to the gastric bypass [26]. Given the potential difference in treatment experiences from the different procedures, our study findings should be interpreted cautiously.

TABLE 2. Quality Assurance Steps Followed for Data Collection and Analysis

Measure	Description
Credibility	Member-checking was done between each question and at the end of each interview, to ensure the responses recorded were accurate representations of the information provided by participants. Honesty demands were utilized to encourage honest responses to each question. Quotations exemplifying each theme were compiled and representative examples were included in this paper.
Confirmability	The two researchers independently and simultaneously performed inductive content analysis on the open-ended responses and then compared their analyses. Data were examined for similarities and differences across the transcriptions and common emergent themes were identified. A summary of the analysis was prepared and discussed.
Dependability	Research team members met to debrief and summarize their findings. Any biases were considered to ensure that the analyses were not influenced by researcher bias.
Transferability	The research process was documented in detail, thus enabling potentially interested parties with the ability to determine whether the study findings will be transferable to other individuals in other settings.

Note. Based on Guba and Lincoln [35] and adapted from Irwin, He, Bouck, Tucker, and Pollett [36].

3.3 RESULTS

3.3.1 Participant Characteristics

A total of 28 bariatric recipients responded to the study invitation and were interviewed. Our response rate was 12% and data saturation was reached after the 20th interview. Of the 28 participants, seven identified as male and 21 as female, ranging in age from 31 to 70 years (mean: 49.7 ± 12.7 years). Participants had surgery approximately three-and-a-half years prior to being interviewed (mean: 42.6 ± 8.4 months), were primarily Caucasian (71%), married or in a domestic relationship (79%), and worked full-time (60%). Twenty-three participants had undergone gastric bypass surgery, while five participants had undergone the gastric sleeve procedure. At the time of the interview, participants were, on average, approximately 100 lbs lighter than they were on their date of surgery, and about 20 lbs heavier than their lightest weight. A detailed summary of participants' demographic characteristics is provided in Table 1.

3.3.2 Physical, Psychological, Social, and Clinic-Related Experiences and Reflections

The findings fell naturally into the four primary themes of physical changes and challenges, psychological experiences, social functioning and support, and clinic-related experiences and reflections. Upon further reflection, sub-themes were apparent for each primary theme and are detailed below, with quotations that best exemplify each theme presented in Tables 3 to 6. In total, there were 10 sub-themes.

i. Physical Changes and Challenges

While reflecting on the physical impacts of having gone through bariatric surgery, many participants shared positive and negative physical and physiological changes that they encountered from the two-year mark and onward. Four sub-themes emerged involving participants' physical benefits and some of the challenges faced, thus far. With regard to positive outcomes, participants identified a reduction in the number and quantity of prescription medications needed to treat obesity-related comorbidities such as high blood pressure, diabetes, and high cholesterol. In fact, many reported a complete resolution of their comorbidities and no longer required any medications. Respondents also expressed gratitude over their increased sense of mobility and reduced pain in their legs and knees following the surgery.

In terms of physical obstacles, numerous participants underscored their concerns about excess skin, with their primary concerns being their need for provincially-funded reconstructive surgery, conflicting information received from the clinic about which types of post-operative plastic surgery would be covered, and how the excess skin aggravated body dysmorphia. Finally, surgical recipients described the challenges about re-learning and understanding what to eat, what foods irritated their stomachs, and adjusting to reduced portion sizes. Illustrative comments for each sub-theme are presented in Table 3.

TABLE 3. Sub-Themes, and Reflective Quotations Regarding Primary Theme of Physical Changes and Challenges

THEMES	SUPPORTIVE EVIDENCE
(1) Improvements or complete resolution in comorbidities; reduced or no more medications needed to treat obesity-related conditions (20 of 28 participants)	P10: *"Before my surgery, I was on 6 different kinds of blood pressure meds [medications], blood thinners, the whole works. The only medication that I wasn't on was Digoxin, which is for my atrial fibrillation... Everything else has improved because of the surgery. I had diabetes and that is gone now too. If I hadn't had the surgery, I'm pretty sure I would have been dead by now, eh?"* P5: *"I was on 2 diabetes medication and since my surgery, I am no longer on any meds [medication]...There were increases of physical activity and improvements in my cardiovascular health. I used to have bouts of asthma and I haven't taken a puffer in 10 years. I don't get that feeling anymore. I no longer have high blood pressure."* P12: *"They said I had fatty liver and I don't have it anymore. I was on the high side for blood pressure and cholesterol. I was on a few medications before for those conditions but after the surgery I'm in normal zones now."* P15: *"I initially went to my family doctor; I was concerned about my health. I was borderline diabetic, my blood pressure was high, I was overweight and had tried many other avenues and hadn't succeeded…[Now], everything has reversed, I am very healthy and [I] can participate in every aspect of life. Reversed blood pressure, diabetes and I'm more mobile."* P4: *"I feel really good and the other big positive is that my sleep apnea is gone. I was contemplating a knee surgery but I haven't had to."*
(2) Increased mobility, energy, and reduced pain in knees and legs conditions (18 of 28 participants)	P21: *"I used to have severe knee and back pain and now all gone...we [my partner and I] can do more together, we can be more active, and I can play with my daughter on the playground which I wasn't able to do before."* P3: *"If I went for a walk, I would be huffing and puffing. My knees would hurt, everything just hurt. [Now] I go to the rec centre in town and I do 4 laps. I wasn't able to do that before and I have done that ever since my surgery."* P13: *"I have way more energy… I breathe easier, I can get around, just more positive all around. I'm playing ball again; I went skating for the first time in 15 years. Yes, it's been a great experience. This was very preventative and not curative medicine."* P16: *"I was having difficulty walking or getting out of bed in the morning because of all the pain that I was having. After the surgery, all the pain went away."*

(3) Concerns about excess skin (18 of 28 participants)	P2: *"They told me at orientation, you can get your breast lift covered and your tummy tuck. But then when I met the plastic surgeon for my breasts, I had to pay for my arms and because I had lost so much tissue going to B's from triple E's… In the end, he [the surgeon] said my breasts would not be covered…so it was very misleading for the clinic to say it was covered. I have all this excess skin hurting my knees, I can't imagine anyone with more excess skin weighing on their knees."* P5: *"I wasn't able to get reconstructive surgery and I was lucky enough to have a doctor who went beyond OHIP [provincial funding body] would cover and willing to support me because financially I couldn't afford it. I never saw outside of [my body] in my mental state beyond the obesity until probably [pause], and I still struggle with it, probably some body dysmorphia stuff but not to that extent, I still feel like the largest person in the room when I walk in the room, those kinds of things. I can't advocate enough for the reconstructive surgery at least for the abdominal area because with that it allows you to feel and to maintain. When you gain 10 lbs you can feel it but when you are 335lbs, you don't feel if you've lost 10-15 lbs, you don't feel 50 lbs [because], your skin is sagging, you don't feel bloated, you don't feel stretched.* P13: *"They only thing that I didn't agree with at the orientation and the teaching prior to is that they make you think that you'll lose the weight and you will get a tummy tuck but that is not always the case. I've known a few people who became extremely depressed afterwards when they were turned down for government funded reconstructive surgery. That's the only thing I would get them to caution people about the tummy tucks."* P18: *"The only downside is dealing with the skin after the fact. The only way to get it covered is if you end up with infection and you have to have multiple infection before you can have it covered. I don't think it is fair. I know myself, under my legs and arms, it bothers me not very much but my stomach it does. If I am being a little more active in the summer in the heat, I can get an infection (it is smelly and yucky) which still does not qualify me for skin removal. The way they charge skin removal, it needs to be re-thought. It is not just the infections; it is everything that comes along with. They had told us about the skin removal, I just didn't realize how many infections you had to have before you could get it done. I've already had 3 or 4 and I was quietly suffering putting baby powder on it. Then when it was not working, I told my doctor about it. It doesn't take much for it to start sweating there and being very itchy there."* P20: *"Skin removal. I think OHIP should consider covering portions more. Right now, it is only in special circumstances. Not all of it but at least some of it. There are so many people having the surgeries these days. I know in the States they cover half of it but you have to be 600lbs plus or something like that. It would be nice to have at least some coverage here. It would make a huge difference. I can't run or do jumping jacks without the pain and sweat from the excess skin, I have to wear compression supports. It hinders people's physical activity."* P21: *"The downfall is all the skin. I put on pants and you have to put your skin in there and that is quite difficult. I still shop in the plus size section… It hasn't registered all there that my body has changed so I automatically go to the plus size section. It sucks the extra skin. This is definitely something that I tell others. I tell them that after the*

	surgery you are going to need a body lift and a body lift is $20,000 so are you ok to live with this skin. That is a major downer for me. My butt, my thighs, my arms- I look like a melted candle. Being overweight vs. the extra skin, of course I would still go with the surgery but it has been a drawback and a daily reminder. P8: *"The only thing is that I am left with is a lot of skin. OHIP will cover some skin removal but it will still be $7000-8000 out of my pocket. At first my skin didn't bother me but now I have lost half my body weight and now that I am done losing the weight and it is just there. It is really there. When I got the final estimate from the plastic surgeon, I realized that was something that it was not possible. That is the only downfall. Now I have to still wear bigger clothes to fit the skin in and tuck things in. There are some days I think that I am still bigger."*
(4) Learning and understanding what to eat, what irritates your stomach, and adjusting to reduced portion sizes (17 of 28 participants)	P10: "*I don't use a dinner plate; I use a salad plate and I keep my portions small and I have kept my stomach small. If I eat from a normal plate, I eat less because otherwise I feel pain."* P26: *"The first year, I found it difficult in what I could and could not eat because there were some foods that I could not tolerate…it got better but in that first year at 6 months, I just couldn't tolerate it, I would bring it back up. They said there would be that type of complication. Even in my 3rd year, spices in sauces or everything that is spicy does not work out."* P4: *"The first year was a learning process, learning what you can and can't do. Knowing that you cheat with some foods and you aren't getting any exercise, it is going to cause you [to gain] weight. You've got to change your lifestyle, you can't each all the rich foods you were before. Now beyond, you know what is protein and what foods work best."* P28: *"The first year is learning and you are always measuring and you are doing your puree and soft diets. You are being monitored more closely so once you hit 2 years beyond, you have to take more responsibility for yourself and your health. The first year is really about learning to listen to your body, when it is full, it is full, don't push it. After that, four years later I am still learning. But I think those first 2 years are key because it's where you learn how to curb your bad habits that you've learned to eat and think differently. Thinking about food differently. I don't feel so restricted now."*

P= participant

Note: This main theme was forwarded by 26 of 28 participants. The number of participants who forwarded each sub-theme are also noted.

ii. Psychological Experiences

During recollections of participants' bariatric journeys, two sub-themes regarding psychological experiences were revealed. Participants shared insights on how the first year following bariatric surgery compared with their current psychological state, now that they are two years and beyond from surgery. For instance, participants underscored the importance of sufficient mental preparation, including adequate wait times for mental adjustments to occur. They also described some struggles getting used to and identifying with their changing/smaller body, and the need for psychological support to adjust to their new body image, such as counselling, once bariatric services concluded at the clinic. Quotations representing the majority of recipients' responses are displayed in Table 4.

iii. Social Functioning and Support

Upon reviewing the relationship of bariatric surgery to participants' social functioning and support, three sub-themes were identified. With regard to positive outcomes, many recipients described their increased energy and their new found ability to participate in more activities with their family, namely their children/grandchildren. Respondents shared their disparate marital dynamics, which ranged from the benefits of having a very supportive partner, to marital dissatisfaction and dissolutions when partners were not supportive or were overtly unsupportive. Improvements in confidence and socializing were reported by many, combined with some mixed emotions as attention from others increased. Quotations are displayed in Table 5.

TABLE 4. Sub-Themes, and Reflective Quotations Regarding Primary Theme of Psychological Experience

THEMES	SUPPORTIVE EVIDENCE
(1) The importance of adequate mental preparation and wait time to make mental adjustments before surgery (14 of 28 participants)	P5: *"The process was very long back then because we weren't doing surgeries within [city] so I had 2 years to prepare myself mentally which you really don't get to do now."* P24: *"The biggest things I see in reflection for me personally is that they don't spend enough time in the head. As much as your body goes through this transition, your mind takes a really long time to catch up. I don't feel that the program that I went through (not sure if it is the same way or somewhat similar), I feel there needs to be more support in this area. There's always on option to speak to a social worker so it's not to say that they don't have it. That was my background. I wasn't there. I almost feel that it should be a mandatory process because sometimes you don't know that you need it."* P28: *"Any opportunity that I had I could learn about other people's experiences, I was absorbed it in. Up to 2 years of waiting, it made me really consider the surgery more because I didn't want to do anything that would jeopardize it because I had waited so long. I don't see that same mindset with people going through surgery now. That concerns me a bit… I see people out of surgery, 6 weeks later drinking alcohol locally and they talk about it or they are already eating a cookie or cake and I'm like what the hell!? It even came to light, there was a group of people who on the day before surgery and had done weeks of the optifast, they went out and had a binge dinner. Ok, are they setting themselves up for failure so I worry."* P7: "*You have to see so many people all the time. I found the process a good experience because you had to learn your psychology, they really want to make sure you are mentally prepared for what could happen and they had you look at yourself in different ways. They wanted to make sure I was physically fit for the operation. Talk to the doctors, talk to psychologist."* P27: *"I wish I had done it earlier and I never thought of going down the route until that doctor suggested it to me and I am so glad he did. Probably at the time of life, I wasn't mentally ready for it so I think it all happened serendipitously because the delay let me mentally prepare for the surgery. I think the timing for it was the right time. I had the positive mindset for it otherwise I wouldn't have been ready for it and put back on the weight. I was able to handle any crisis that came to me, I could deal with it."* P10: *"The one thing I will say is that if you aren't mentally ready to get it done then you're just wasting your time. I know a couple of people who did it and weren't mentally ready for it and they have nothing but uncomfortable since they had it. It took me 2 ½ years before I had my surgery so I had plenty of time to think about it so when I saw the doctor I was ready. I think you need at least 1 year or so for prep work and getting ready for it mentally, that is the most important."*

(2) Getting used to and identify with changing body and body image (12 of 28 participants)	P13: *"There were times that I would look in the mirror but I didn't recognize myself because I was used to buying these large sheet clothes and there was a bit of an identity crisis for a while. I was still me but I was in a different body. It took some time for me to get over it but with my [partner] and friends, I was able to [adjust to the changes more easily]. There is still that body image change and you need to get used to it."* P1: *"I still struggle with the mind because I think you go into this thinking you are going to be size small. The idea of the goal weight is unrealistic. I think it is the bigger body image stuff, those kinds of things, I think they should talk about those things and I don't think they ever did."* P19: *"To this day now, when I look in the mirror I still see myself as 260, 270 lbs. I don't see that. I see the roll here and there. I don't have the full confidence."* P11: *"It's been a roller coaster; you go to a social worker obviously but one thing they don't prepare you for is body dysmorphia. After you lose so much weight, you don't recognize yourself. I walk by a store, see my reflection and don't recognize myself. The first two years were the hardest not seeing myself as I am but it gets easier with time. Not sure if it is something that you can prepare for…"*

P= participant

Note: This main theme was forwarded by 19 of 28 participants. The number of participants who forwarded each sub-theme are also noted.

TABLE 5. Sub-Themes, and Reflective Quotations Regarding Primary Theme of Social Functioning and Support

THEMES	SUPPORTIVE EVIDENCE
(1) Ability to participate in more activities with partners/family (12 of 28 participants)	P4: *"I have been more mobile with my grandchildren and a lot livelier with them. I am having a lot of fun with them. It has allowed me to feel like I'm back in my 40's."* P6: *"My grandson was my main instigator. I couldn't keep up with him. I figured that I had to do something, he went up and down...The operation changed my life, I'm doing things that I wasn't doing before. I'm golfing, I'm camping. I used to just sit around. I got to the gym quite often. It was a great lifestyle change. Pain and inactivity, it was a vicious cycle. Now it's nice, you go to the gym, you go for a walk, you feel excellent."* P26: *"I am more confident and I have a young granddaughter and we can go out in the yard and play soccer. I don't have to sit down quite as much. I am able to ride a bicycle and it was something that I wasn't able to do before without it hurting."*
(2) Disparate marital dynamic outcomes (16 of 28 participants)	P5: *"For me, I made that decision without [them], we had separated when I got the referral. We decided to reconcile after a 9 months separation and [then they] said I love you no matter what."* P17: *"[The bariatric surgery] has led to a divorce. When I was getting close to my goal weight, my [partner] told me that it was enough and to stop losing. I really didn't have control and I wasn't happy…I wasn't willing to settle anymore."* P18: *"At first it was hard because my [partner] wasn't on board when I decided to have the surgery. When I was going through the process, and waiting, it was very tough…I can definitely say that [they haven't] been my strong[est] supporter so things have definitely gotten better from while going through the process and now."* P21: *I am very lucky that my [partner] is a very supportive [person] and loves me in whatever size. It helped our relationship because we can do more together. I would say my [partner] has been the only support that I need at this point."* P22: *"My marriage is still intact and there were problems before surgery and now. This conversation needs to happen during the process because the last thing you want to paint is that it is a marriage ender. That is a huge piece that isn't discussed enough in preop [before surgery] and postop [after surgery]. There's a lot that needs to be unpacked. I think a psychologist should be mandatory to talk about relationships. There needs to be 15 minutes to talk about marriage and [it] can't be brushed under."*

(3) An increased sense of confidence, socializing, and mixed emotional (22 of 28 participants)	P9: *"I think it has been positive for self-confidence but I think there is a real mix of emotions like you are now not used to getting attention from [others] or if that is what you desire, attention from anyone."* P12: *"Now I like to go out. Before I never wanted to go anywhere, I was always nervous about chairs and if they had sides on them or trying to get a booth instead of a table. I hated walking in the mall with a passion but now I like doing it. I never wanted to go out to the bar with friends and now I look forward to it."* P14: *"Everything I used to do, I do now. Just more social. Definitely emotional health is much better, more confidence and I go out a little more."* P20: *"Definitely a self-esteem booster, 100%. I had nothing before and my confidence and esteem levels were very low. I'm more outgoing."*

P= participant

Note: This main theme was forwarded by 26 of 28 participants. The number of participants who forwarded each sub-theme are also noted.

iv. Clinic-Related Experiences and Reflections

Participants shared their perspectives on the clinical services and support that they received. One positive sub-theme was evident in that participants felt that they received very strong support and services from the clinic team before and after surgery. Participants underscored the value of the staff support and notably, a book provided by the clinic, which included post-surgical guidelines, sample meal plans, and what to anticipate moving forward. Many participants referred to this book as their 'bible.' Illustrative comments are displayed in Table 6.

TABLE 6. Sub-Themes, and Reflective Quotations Regarding Primary Theme of Clinic-Related Experiences and Reflections

THEMES	SUPPORTIVE EVIDENCE
(1) Receiving great support and services from the clinic team (26 of 28 participants)	P14: *"They were always on top of it and if I needed to go see them [the bariatric clinic], they would make the appointment and I would be there and I even seen the dietician and I had to see a surgeon one time when I was down there and [they] said [name of patient] you don't need to see me anymore because you are doing great."* P23: *"I've just always followed what they have asked me to do, they asked me to read their book, used it as my bible for 2 years and I never deviated from the book, not ever."* P25: *"You've got to follow the book to a tee, as time goes on, you can only eat a bit in the beginning and then as time goes on, you end up [eating] a lot more. So, you have to stay on track and follow the book.* P4: *"Well the bariatric clinic we have here is a tool if you need it. ...The clinic is well set up, full access to psychiatrist and all the other people you need. Their follow-up system was good and they told me that any time you need someone to talk to, they are there and can make an appointment. I haven't had any problems emotional or any other. While I know, they are there, I haven't had to make use of them. They are very encouraging."* P9: *"If I ever run into trouble I feel that I am able to call to make an appointment. They are very accessible and accommodating."* P13: *"It's a bit scary after two years because then they tell you see you in a year and you have to learn to trust yourself and make those decisions differently. At the same time, you know that they are there, you can pick up the phone and they will take you in."* P7: *"The greatest tool they [the bariatric clinic] gave me was the book [bariatric surgery guide], you read it and in the first year it was my bible I followed what to eat and what not to eat. It talked about dumping, what could happen and if I wasn't feeling up to par, it helped let me know what to do. It was very helpful."* P1: *"The support of the clinic has been wonderful, to go there all the time and to hear their support in me and how well I am doing. They've told me that anytime I need to go back, I can just make an appointment. If something has happened my life and I want to over indulge, they will get me an appointment. They tell me they are always there for me."*

P= participant

Note: This main theme was forwarded by 26 of 28 participants. The number of participants who forwarded each sub-theme are also noted.

3.4 DISCUSSION

Overall, participants in our study could be considered ‘maintainers’ of most of their surgery-related weight loss, given that 3.5 years after surgery, they remained, on average, nearly 100 lbs lighter than their surgical date weight [37]. Bariatric surgery recipients shared mostly positive improvements in their physical, psychological, and social changes since having bariatric surgery. That said, participants provided valuable insights about what they perceive needs to be improved and strengthened to best support the long-term needs of bariatric surgery recipients.

Participants’ concerns involving excess skin were not unexpected given previous researchers’ findings that excess skin is a common issue following significant weight loss [38, 39]. Hanging skin can be problematic in daily life for those experiencing this post-surgery, as it becomes a constant reminder of patients’ former selves and, which can impact their body image [39]. In Staalesen et al.’s excess skin questionnaire, most post-bariatric patients reported physical and mobility-specific hindrances, difficulties with daily living, and an altered body image as the most common issues associated with their excess skin [40]. Specifically, more than half of post-bariatric sample with massive weight loss reported problems participating in sports, and difficulties in physical activities like running [40, 41]. As a result, 75% of the patient population with no previous body contouring surgery desired reconstructive surgery [42]. The desire for, versus the cost of, surgery means not all recipients can afford to have their excess skin concerns permanently addressed [42, 43].

Similar to what was found in previous research, participants in our study also desired plastic surgery to address the above-noted issues and found cost to be prohibitive. However, it is possible that the need to pay out-of-pocket was particularly startling for the participants in the current study, whom receive Canada's publicly funded system of care, with the primary aim to "protect, promote, and restore the physical and mental well-being of residence of Canada…without financial or other barriers" [44]. Respondents in the current study strongly emphasized the need for body contouring surgery to be (financially) included as part of their bariatric surgery process. Otherwise, they felt the cost would continue to be a financial barrier for those facing excess skin challenges. Clarity about government-funded plastic surgery eligibility criteria and the need for clinic personnel to be fully informed before providing this type of information to patients were underscored as needed to avoid the confusion and disappointment felt by several participants. Excess skin is a substantial issue for individuals who have gone through the bariatric surgical process; participants in this study completed their surgeries an average of 3.5 years prior to being interviewed, yet addressing concerns about excess skin were still at the forefront of their minds.

Many participants described how having surgery had improved their obesity-related health conditions and their abilities to 'keep up' with their family members. This finding is especially important when contextualized within the recent finding by Liebl's team [45]. The researchers found that successful weight loss maintainers after bariatric surgery targeted improving health and quality of life as the primary motivators for going through the bariatric surgical process [45]. Similar to Liebl's group [45], our study

participants felt they were taking their life back and were able to be more active and present as a parent or grandparent. In addition, participants from Liebl's study felt an increase in energy and physical abilities once they could maintain their weight losses long-term [45]. Although the focus of our study was not on who maintained or did not maintain their losses, our respondents expressed their success as including a reduction in the number and quantity of prescription medications to treat their comorbidities, with some even experiencing a complete resolution of their obesity-related comorbidities and no longer requiring any prescription medication. Many of the participants described their increased mobility, energy, and reduced pain in knees and legs which allowed them to participate in more activities with their partners and family members. Participants were enthusiastic to share all the health benefits and successes they had achieved at the two year and beyond mark.

Similar to the disparate marital dynamics reported by participants in the current study, Liebl et al. [45] suggested that some partners end their relationship following weight loss surgery because they believe the negative relationship impedes their ability to adopt a healthy lifestyle and maintain weight loss. However, the impact of a spouse's level of involvement on initial weight loss and how a relationship impacts weight loss maintenance is still unclear [46]. According to a narrative review by Ferriby et al. [47], relationship quality of married couples appears to decline following weight loss surgery of one of the spouses. It is believed that the spouses of the surgery recipients may not feel like they have been a part of the treatment or recovery process, which in turn can lead to feelings of isolation or a desire for control; yet research is still limited in this area of

bariatric surgery. Regardless of the underlying reasons, it is clear that spouses and partners may be an important resource for better long-term health outcomes and weight management [47] based on the limited research and personal stories shared from participants in the current study.

Despite the disparate marital dynamics, participants from the current study felt that they received very strong support and valuable services from the clinic team before and after surgery. In Peacock and Zizzi's survey on post-surgical behavioural and psychological services, participants also expressed high satisfaction with their surgery and clinic services [48]. The authors found that surgical recipients who utilized clinic services (i.e., behavioural, psychological, nutrition, and exercise programs) more frequently experienced more weight loss in comparison to those who did not complete the programs [48]. Participants from our study also commented on particularly valuable resources, such as a guidebook provided by the clinic, which helped them to stay on track. Respondents seemed to recognize that the clinic was a tool that they could access whenever they needed, especially when they felt that they were reverting to old habits.

Although findings from this study uncovered important and useful information about the lived experiences of Ontario, Canadian men and women two-years post bariatric surgery, there are limitations to be addressed. First, although data saturation was reached, as with any qualitative research study, the relatively small sample may have been considered a limitation to the current study. Also, more women than men participated in the study. That said, while our aim was to gain a balance of Canadian men

and women who were at least two years post-surgery, our sample of 21 women and seven men was reflective of the approximate proportion of women and men who undergo bariatric surgery in Canada; and 80% of bariatric surgery recipients in Canada are women [49]. Participant recruitment was limited to two regional hospitals in Ontario, Canada, which may further limit the transferability of findings to other settings and participants. Lastly, given surgery recipients had to contact researchers if they were interested in participating, it is possible the study was subject to volunteer bias. For instance, while a very positive reality for the participants of our study, their collective abilities to maintain post-surgical weight loss could be considered a study limitation given they were a highly homogenous group in terms of maintaining weight loss, and those who were unable to maintain substantive weight loss post-surgery may have provided other insights not shared by our study participants. Thus, the experiences of those who chose not to participate in the study may have been missed in the current study.

Regardless of the above-noted limitations, the current study adds to the growing body of research focused on understanding the experiences, challenges, and insights of those who have undergone bariatric surgery and are now two or more years post-surgery. In fact, to the authors' knowledge, this is the first study focusing on a Canadian population. The findings from this study highlight the personal struggles and successes involved in managing surgery recipients' health and well-being more independently since their bariatric surgery (two or more years ago). Additionally, the study provides insights into the patient-perceived benefits and gaps that still need to be addressed in long-term bariatric care. Future research and bariatric programming should consider addressing

concerns with body contouring surgery and the impact of excess skin on the long-term health and well-being of surgery recipients. In addition, further research exploring the impact of spousal/partner involvement in the surgery process may be an important resource that is currently overlooked. Overall, the majority of participants shared positive outcomes in their physical, psychological, and social functioning health and were grateful for the opportunity to have the surgery. In conclusion, the following summary of recommendations emanate from our study's findings and are categorized by theme.

3.5 RECOMMENDATIONS

Recommendations, Expectations, and Advice to Patients from Patients:

(1) Physical changes and challenges:

a. Obtain clarity beforehand about the cost of excess skin-related plastic surgery, and the coverage or partial coverage for which you may be eligible;

b. You are likely to experience many physical and physiological health benefits from the surgery including increased energy and mobility, fewer and less medication(s), and an improvement in obesity related conditions;

c. After surgery you will need to relearn your body and your food limitations (quantity and quality).

(2) Psychological experience:

a. A longer wait time may be more beneficial to allow you to sufficiently prepare mentally before having the surgery;

b. Meet with formalized support personnel and peers to help with body image and other transitions, throughout the process.

(3) Social functioning and support:

a. Be aware that partnerships can be both sources of support or sources of angst, and relationship counselling may be needed. Try to include your partner in as much of the process (orientation, appointments, counselling, etc.) as possible;

b. You may benefit from receiving support as you go through emotional adjustments that may result from an increased sense of self-confidence and receiving attention from others.

(4) Clinic-related services and supports:

a. Use the clinic services and resources, they are excellent sources of support and the personnel want you to be successful.

The above-noted participant-driven recommendations can be used as a preliminary guide when considering bariatric surgery, or for those who are newly post-bariatric surgery. More research is required to determine the extent to which the findings from the current study represent the views of other bariatric surgery recipients throughout the province, country, and other parts of the world.

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CHAPTER 4:

What is Needed to Support Bariatric Surgery Recipients' Long-Term Health and Well-Being? Bariatric Clinic Staff's Perspectives[3]

4.1 INTRODUCTION

Obesity is a major global health problem, which increases the risk of a wide range of associated conditions including, cardiovascular disease, type II diabetes, hypertension, musculoskeletal disorders, obstructive sleep apnea, and various cancers [1]. According to a 2014 global status report by the World Health Organization, the proportion of those living with excess weight has been increasing in all countries, with almost 40% of adults, aged 18 years and older classified as overweight (body mass index, or BMI $\geq$ 30 kg/m^2< 35 kg/m^2), and approximately 15% of adults classified as obese (BMI $\geq$ 35 kg/m^2< 40 kg/m^2) [2]

Various recommendations and a variety of weight management interventions have been proposed to reduce the burden of obesity [3]. For individuals classified as overweight or obese, comprehensive lifestyle/behavioural interventions focused on diet, physical activity, and behaviour therapy can provide reductions of 5-10% initial body weight [3]. For those classified as living with *severe* obesity (i.e., BMI of $\geq$ 40 kg/m^2 or,

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[3] A version of this chapter has been accepted to *European Journal of Person-Centered Health Care*. The copyright permission for the accepted manuscript from this dissertation is included in Appendix O. Reproduced with permission of publisher: Liu RH, Irwin JD. What is needed to support bariatric surgery recipients' long-term health and wellbeing? Bariatric clinic staff's perspectives. 2017. (Accepted at *European Journal of Person-Centered Health Care*).

≥ 35 kg/m^2 with one or more obesity-related comorbidities) [4-7], researchers have deemed these behavioural therapies to be unsustainable in the long-term and have actually found them to be correlated with some gradual weight regain [3]. Instead, bariatric surgery is currently the most effective treatment for sustainable weight loss among individuals living with severe obesity, when non-surgical options have been exhausted [8-12].

Although bariatric surgery is currently the only successful long-term treatment for those living with *severe* obesity [8-12], not all bariatric surgery recipients are able to maintain long-term weight loss. In fact, almost 40% of bariatric surgery recipients experience excessive weight regain (≥ 25% of lowest weight) years after their surgery [13], while others are dissatisfied post-surgery for other reasons, such as conflicts related to their relationships and identity, the presence of skin folds and skin irritation, and the reemergence of psychological conflicts that were hidden by the obesity [14]. It is evident that many bariatric surgery recipients still struggle with long-term weight-related success and other post-surgical challenges [14], which suggests that there may be important needs that are not being fully addressed.

As advised by McKenzie, Neiger, and Thackeray, "[b]efore a need can be met, it must first be identified," [15, p. 68]. Therefore, to identify the needs of the priority population, a study was conducted to examine what bariatric surgery recipients perceived they needed to best support their long-term health and well-being [16]. In that study, a summary of patients' needs and recommendations were provided to assist bariatric clinic

teams in efficaciously addressing gaps in bariatric programming and to prevent excess weight regain long-term. Moreover, it provided an understanding of what members of the target population of interest perceived they needed to address their health concerns; which is an essential first step in program planning and development [15].

While the aforementioned needs assessment study [16] served as an important first step in program planning and development [15], whether or not the findings of the study are practical in a bariatric care setting is unknown. A crucial follow-up step in program planning and development is determining whether the patients' perspectives align with the values and benefits of the bariatric clinic staff [15]. In health promotion program planning, an emic (insider's) viewpoint, coupled with an etic (outsider's) viewpoint is encouraged to facilitate appropriate program development [17, 18]. As described by Gittelsohn et al., "[by] including information from both viewpoints, an intervention can be designed that is both feasible and acceptable to the target population," [17, p. 2]. As those heavily involved in bariatric care, bariatric clinic staff may be able to provide expert insight, in addition to patients' perspectives, on the most effective and feasible components for patients to experience long-term weight loss and success. Together, the perspectives of both patients and bariatric clinic staff can provide a stronger framework for improving bariatric care program planning and development.

Therefore, to complement the views and experiences of bariatric surgery recipients (the emic viewpoint) [16], the current study sought to investigate the perspectives of bariatric clinic staff (the etic viewpoint). Understanding the service/aids

and support needs of bariatric surgery recipients from an etic viewpoint can serve to identify beneficial support, services/aids, challenges, and recommendations in bariatric care, which can lead to long-term, sustainable obesity management. Additionally, bariatric clinic staff have comprehensive knowledge and expertise in bariatric care.

The purpose of the current study was to explore what bariatric clinic staff perceive is needed to best support the long-term health and well-being of bariatric surgery recipients. Given that health care allotment is provincially determined and the patient population from the previous study [16] underwent the program in Ontario, Canada, only bariatric team members in Ontario were considered for this study. Several researchers have investigated the perspectives and practices of health care providers regarding obesity management (surgical and non-surgical) [19-24], however to our knowledge, this is the first study detailing the perspectives of bariatric care-specific providers on bariatric patient needs.

4.2 METHODS

4.2.1 Study Design

The researchers of the current study positioned themselves from a post-positivist stance, which involves examining "how phenomena are understood by relevant players and how these different understandings and values play out," [25]. Glaser adds that when using a post-positivist approach, "the participant not only tells [the researcher] what is going on, but tells the researcher how to view it correctly – his or her way," [26]. A post-positivist approach seeks to gain an in-depth description of the phenomenon under study based on the assumption that the meaning is embedded in the experiences [27]. The

intention of the researchers was to uncover meaning associated with the experiences of individuals by using semi-structured, brief interviews, and using multiple coders in "an attempt [to] identify a single approximate reality of collective client experiences," [28]. However, through conversations with bariatric clinic staff known to the researchers, it was clear that requesting interviews or focus groups would be unlikely to yield responses due to bariatric clinic staff's scheduling and logistical/time constraints. Neville, Adams, and Cook emphasize the importance of utilizing a data collection method that is acceptable to the intended participants, and feasible within the available project resources and the time constraints of the project [29]. As a result, an online questionnaire was chosen as an alternative to collect the participants' responses.

Although not ideal, the researchers posited that an online questionnaire was the next best option, after interviews and focus groups, for several reasons. Firstly, questionnaires with open-ended questions make it possible for the collection of qualitative data from a much larger sample than is generally realistic when using other qualitative methods [30]. Given the logistical constraints, using an online survey expanded the researchers' reach in participant recruitment, allowed participants to respond at their convenience, in whatever location they preferred, and still permitted researchers to collect rich, in-depth qualitative data from the target population.

Neville, Adams, and Cook note that collecting qualitative data through online means has been useful for encouraging participation by groups who are hard to reach (e.g., busy health care providers) [31], and can increase accessibility to potential

participants [29] in comparison to traditional qualitative data collection methods. Secondly, similar to interviews, participants were able to use their own language (contextualize their experiences with their choice of words) when responding to the questionnaire. Jensen, Dewey, and Taylor stress that the language participants use to tell their stories is crucial for researchers in interpreting participant perspectives and "a way of constructing meaning of events" [32-34]. Thus, participants had the opportunity to use their own words while describing their in-depth experiences in an online medium. Participants' responses were not produced in interaction with a researcher (as in interview methods) or with other participants (as in focus groups) [30], and therefore were less likely to be subjected to external influences and biases. For all the above noted reasons and constraints, an online questionnaire was used. Ethical approval was received by the host institution's Office of Research Ethics.

4.2.2 Survey Instrument

To ensure comparable foci were explored among bariatric clinic staff, as were assessed with bariatric surgery recipients, the previously employed recipients' perspective tool [16] was adapted for the current study. The revised tool was then evaluated by three bariatric clinic team members known to the researchers. By including information from both (emic and etic) viewpoints using the same tool, a more rigorous and focused context can be provided for future program planning and development [17, 18]. The three bariatric clinic health professionals provided insight and feedback on each question's content, wording, meaning, and whether any questions needed to be removed or added. Only one amendment was suggested and consequently integrated into the tool. The tool was pilot tested to ensure it was written in the most comprehensible language

possible and covered all aspects of the bariatric process that the target audience deemed suitable (i.e., to establish face validity).

The final questionnaire consisted of five close-ended demographic items and six open-ended questions focused on what bariatric clinic staff perceive is needed to best support the long-term health and well-being of bariatric surgery recipients. The tool was uploaded into Qualtrics Survey Software (Qualtrics, Provo, UT). Demographic items included questions pertaining to respondents' professional role on the bariatric team, years working in the area, age, and primary work residence. The remaining open-ended questions asked the bariatric clinic staff to discuss: services/aids they thought were the most helpful to bariatric surgery recipients for their long-term health and well-being, both before and after surgery; services/aids they perceived were needed yet not currently available to support bariatric surgery recipients' success, both before and after surgery; the challenges involved in addressing the current service/aid gaps noted in the previous question, both before and after surgery; recommendations they would make to address the challenges identified in the previous question, both before and after surgery; what they need to better support the long-term health and well-being of bariatric surgery recipients, both before and after surgery, if applicable; and anything else they wanted the researchers to know about what they believe is needed for bariatric surgical recipients to achieve long-term health and well-being, in general, and both before and after surgery.

4.2.3 Participant Recruitment

Participant recruitment was done via email, from September 2016 until November 2016, through Ontario-based bariatric managers and bariatric clinic staff known to the

researchers through previous collaborations. Participant sampling was purposive, in that participants were chosen because they were knowledgeable about or experienced with the topic of interest [35]. Bernard and Spradley note that purposive sampling considers availability, willingness to participate, and the ability to communicate experiences and opinions in an articulate, expressive, and reflective manner [36, 37]. Therefore, eligible participants included: any health/medical personnel involved with the care of bariatric surgery patients at a recognized bariatric clinic in Ontario, which performs insurance-covered bariatric surgeries; 18 years of age or older; able to speak, write, and read in English; and with access to a computer to complete the online questionnaire. The letter of information and the bariatric clinic staff questionnaire were included as links, and the questionnaire itself took approximately 30 to 45 minutes to complete. Personal identifiers and IP addresses were not collected; therefore, respondents' identities remained anonymous. Completion of the survey constituted as providing explicit consent.

4.2.4 Data Collection

Data saturation was guided by recommendations from Guest et al. [38], and Fusch and Ness [39]. Specifically, Guest and colleagues advise that studies using purposive sampling should generally only require six to twelve interviews to reach data saturation [38]. Studies with a relatively homogeneous population and a similar set of questions asked to all participants require a fewer number of participants to provide an understanding of the phenomenon of interest [38]. Guest et al. suggest that when "the aim is to understand common perception and experiences among a group of relatively homogeneous individuals [then], twelve interviews should suffice," [38]. Moreover, Fusch and Ness suggest that data saturation for one study may not be a 'one size fits all,'

[39]. Instead, they recommend examining whether there is enough information to replicate the study [40, 41], whether further coding is no longer feasible [38], and whether the ability to obtain additional new information has been attained [38]. For the current study, data saturation appeared to take place after the 10th questionnaire, using Guest et al., and Fusch and Ness' guidelines [38, 39]. To help ensure the completeness of the data set, all 13 returned questionnaires were analyzed.

4.2.5 Data Analysis

The collection of responses for each open-ended question were read multiple times by each researcher, separately. Characteristics of the language used and the content or contextual meaning of the text were examined to identify the most prominent themes through inductive content analysis [32-34, 42, 43] and completed by hand [43, 44]. Hsieh et al. defines qualitative content analysis as "the subjective interpretation of the context of text data through the systematic classification process of coding and identifying themes or patterns" [44].

Although there are computer-assisted qualitative data analysis software packages that exist to manage and handle the data, it should be noted that such programs are merely instruments and do not 'analyze' data; ultimately, it is the responsibility of the researcher(s) to analyze the data [45]. When using a post-positivist data analysis approach, the process tends to be both iterative and circular [27]. Greenfield et al. describes the process to be "iterative because the researchers are constantly rechecking emerging themes and categories against new data and making modifications," and that, "the process is circular because the researchers move back and forth between old data

and newly developed data to check and re-check themes and sub-themes," [27]. In support of the data's confirmability, the authors RHL and JDI each reviewed the survey responses separately and then came together to compare and negotiate discrepancies until an agreement about the themes was reached [46]. Using the guidance from Greenfield et al. [27], Guba and Lincoln [46], and Irwin et al. [47], additional quality assurance steps were applied throughout data collection and data analysis, and are detailed in Table 1.

TABLE 1. Quality Assurance Steps Followed for Data Collection and Analysis

Measure	Description
Credibility	Peer checking was conducted to ensure that some level of interpretation of the same data was conducted by more than one researcher until an agreement was reached, concerning the creation of categories and sub-categories to explain the data. Quotations exemplifying each theme were compiled and representative examples were included in the paper.
Confirmability	Closely related to credibility, the two research members independently and simultaneously performed inductive content analysis on the open-ended responses. The researchers compared their analyses. Data were examined for similarities and differences across the transcriptions and common emergent themes were identified. A summary of the analysis was prepared and discussed.
Dependability	Research team members met to debrief and summarize their findings. Any biases were considered to ensure that the analyses were not influenced by researcher bias.
Transferability	The research process was documented in detail, thus enabling potentially interested parties with the ability to determine whether the study findings will be transferable to other individuals in other settings.

Note. Based on Greenfield et al. [27], Guba and Lincoln [46], and adapted from Irwin, He, Bouck, Tucker, and Pollett [47].

4.3 RESULTS

4.3.1 Participant Characteristics

Thirteen bariatric clinic staff (all female), representing seven different professional roles, responded to the study invitation and completed the survey. Participants ranged from 45-59 years of age and worked in the field of bariatric surgery for approximately three years and three months (± 32.2 months). A summary of participants' demographic characteristics is provided in Table 2.

TABLE 2. Participant Characteristics (*N* =13)

Characteristic	***N* (%)**
Age	
30 to 39	2 (15)
40 to 49	4 (31)
50 to 59	6 (46)
60 to 69	1 (8)
Sex	
Female	13 (100)
Role on Bariatric Staff Member	
Bariatric Program Manager	1 (8)
Medical Director	1 (8)
Nurse Practitioner	1 (8)
Registered Nurse	3 (22)
Registered Social Worker	4 (30)
Registered Dietitian	1 (8)
Support Group Facilitator	1 (8)
Prefer not to disclose	1 (8)
	Mean ± *SD*
Length of service in field of bariatrics (in months)	39.8 ± 32.2

SD = standard deviation

4.3.2 Bariatric Clinic Staff Findings

Themes from the collected survey data were categorized by question, and as such fell into four areas, namely: (i) most helpful service(s)/aid(s) before and after surgery; (ii) unmet service/aid needs before and after surgery; (iii) challenges to addressing unmet needs; (iv) recommendations to address unmet needs. Themes that emerged within each category spanned the entire surgery process (before and after surgery), unless a specific time point was noted. Although some quotations were relevant for more than one theme, they are presented only within the theme that represented the best fit.

i. Most helpful services/aids from bariatric clinic staff point of view

Based on thematic analysis, bariatric clinic staff identified three of the most helpful services/aids to bariatric surgery recipients' long-term health and well-being. Firstly, bariatric clinic staff believed that the check-ups and follow-up appointments at the bariatric clinic were very helpful for bariatric surgery recipients. Appointments with dietitians and social workers were particularly emphasized as being essential for patients in making lifestyle changes to ensure weight loss was maintained. These appointments were also viewed as an opportunity for the dietitians and social workers to monitor progress from surgery and assess behaviour change in their patients. Secondly, bariatric-related education focused on adapting and learning to live post-surgery was another helpful service/aid mentioned by bariatric clinic staff. Lastly, respondents underscored the importance of patients' readiness to change and being committed to lifestyle changes, along with the bariatric clinic staff being respectful and empathetic to their needs. Illustrative comments of the three themes are presented in Table 3.

TABLE 3. Quotations Supporting Themes of Most Helpful Services/Aids

Check-ups and follow-up appointments to monitor progress

- "*All 1 month, 3 month, 6 month, 1 year, and annual post-op[erative] visits with an RD [Registered Dietitian], RN [Registered Nurse]/ NP [Nurse Practitioner], RSW [Registered Social Worker], etc. [and] ability to contact centre between visits if required [were the most helpful services/aids].*"
- "*Access to a Registered Dietitian with specific knowledge about bariatric surgery and what changes need to be made and maintained [was one of the most helpful services/aids]. [With a] Social worker/psychologist, an assessment of readiness and ability to maintain change [was another helpful service/aid.]*
- *"[Having a] Registered Dietitian to ensure they [bariatric surgery recipients] are capable of making lifestyle changes and maintaining a healthy lifestyle [was the most helpful service/aid]. Social workers can determine and work on changing behaviours that have prevented the maintenance of previous success weight loss attempts."*
- *"[It is] very important [for patients] to connect with an RD [Registered Dietitian to ask] questions and concerns with specifics to bariatric surgery, and staying connected to emotional and mental health supports."*

Bariatric-related education for post-surgery

- *"Education through orientation with dietitian, nurse, social worker [was most the helpful service/aid]."*
- *"Health teaching from medical staff, dietitians, and social workers; therapeutic empathy from all staff; and respect from the staff [were the most helpful services/aids]."*
- *"Education is about: the physical changes and its consequences, how to manage the consequences of the surgery, nutrition and making healthy choices, dealing with emotions, and responses to eating [was the most helpful service/aid for bariatric surgery recipients]."*

Readiness to change and commitment to long-term lifestyle changes

- *"[What was most helpful were the] initial assessments to determine readiness for surgery… Follow-up after initial assessments to determine if progression towards goals is being accomplished [were also helpful services/aids]."*
- *"[A] willingness to make lifestyle changes as requested by the bariatric team of nurses, dietitians, and social workers that can be maintained lifelong…commitment to following the program [by] attending appointments [was the most helpful service/aid]."*

ii. Most needed but unavailable services/aids from bariatric clinic staff point of view

Four themes were identified by bariatric clinic staff regarding supports and services/aids that were needed, but were not available to bariatric surgery recipients. Ongoing counselling and professional support for patients, and financial support to pay for excess skin removal were underscored as needed but not available. Bariatric clinic staff noted that it was important for bariatric patients to have continued counselling and professional support long after their bariatric clinic services/aids had concluded. They also noted that additional financial support from the government/province was needed to support excess skin removal costs for bariatric surgery recipients; however, this was not necessarily available to recipients post-surgery. Bariatric clinic staff also mentioned a lack of family physicians with knowledge and expertise in bariatric surgery. Respondents believed that bariatric surgery recipients were not afforded the necessary information and advice that patients needed to guide them through the bariatric surgery process. Finally, respondents expressed concern by the lack of access to other allied health professionals by bariatric surgery recipients to support their post-surgical lifestyle changes. Illustrative comments for the four themes are provided in Table 4.

TABLE 4. Quotations Supporting Themes about What Was Most Needed, but not Available to Bariatric Surgery Recipients

Ongoing counselling and professional support

- *"On-going counselling [was needed but not available]."*
- *"Counselling 1:1 for addictions is very important so that patients are not hiding in a group program. If you can't overcome your addictions [i.e. food, alcohol, drugs, etc.,] you can't keep the weight off for the long haul."*
- *"General counselling program similar to medical weight management to help assist patients with looking at lifestyle and nutrition [was needed but not available]."*
- *"Psychological preparedness is essential-not all patients have access in their communities to [cope] with the changes that happen with relationships including personal and relationships with food."*
- *"Interdisciplinary professional led support groups throughout the cities [are needed but not available]."*
- *"More social work and doctor follow-up is needed [but not available to patients]."*
- *"Ongoing Registered Dietitian availability with bariatric surgery understanding [is needed but not available]. Social work/mental health [support] is very limited and unavailable to our patients for ongoing therapy and support."*

Financial support to pay for excess skin removal

- *"Availability of skin reconstruction surgeries covered by Provincial Health care [are needed but not available]."*
- *"Access to OHIP [Ontario Health Insurance Plan] covered panniculectomy [is needed but not available]."*
- *"More support for excess skin removal [is needed but not available]."*

Family physicians with knowledge and expertise in bariatric surgery

- *"Family physicians cannot [/do not] provide the needed expertise and support required to guide the bariatric client through the process; [it is not available]. It's a big struggle trying to balance vitamin deficiencies, mood and body image issues."*
- *"Family physicians do not know who to refer for plastics, they do not know who covers what and how to navigate the waters."*
- ***"****Family doctors with knowledge of bariatric surgery and specialized needs of these patients [are needed but not available]."*

Access to other allied health professionals

- *"Exercise/ physical therapy support [is needed but not available]."*
- *"I feel that they also need some type of OT [Occupational Therapist] or PT [Physical Therapist] [but it is not currently available to patients]. We have*

some patients that are not very mobile, and can use some type of help in that way."

- *"For patients that are very much able to move, they need some kind of exercise specialist or KIN [Kinesiologist] to help them start an exercise regimen or even a walking schedule, etc."*
- *"[An] assessment from kinesiologist/physiotherapist [is needed] to develop an exercise/ activity plan that is specific for each patient [however, it is currently not available]."*

iii. Challenges involved in addressing current service gaps from bariatric clinic staff point of view

Bariatric clinic staff noted that the time consumed to attend the bariatric clinic (i.e., booking time off work, multiple appointments on different days, distance to specialty bariatric clinic) was one of the main challenges involved in addressing current service gaps. Bariatric clinic staff acknowledged that bariatric surgery recipients had a lack of accessibility to local care (i.e., clinic location requiring travel to receive services) and, therefore, added additional time consumed to attend a bariatric care specific clinic. The second challenge mentioned by bariatric clinic staff was the lack of financial support for additional post-bariatric surgery services/aids (e.g., funding for bariatric surgery recipients to meet with individual health professionals). Moreover, when bariatric surgery recipients were not involved with a Family Health Team, recipients would not have access to additional post-bariatric surgery services/supports, once provincially-funded services at the bariatric clinic concluded. Illustrative comments that represent the two themes are displayed in Table 5.

TABLE 5. Quotations Supporting Themes of Challenges Involved in Addressing Current Service Gaps

Time consumed to attend clinic

- *"[Patients] must take time off work for appointments [which is a challenge they must face]."*
- *"No local bariatric knowledge base if complications arise [is a challenge for bariatric surgery recipients]."*
- *"[The challenge for bariatric surgery recipients is] finding service providers in the community that will* see *patients free of charge for counselling."*

Lack of financial support for additional post-bariatric surgery services/supports

- *"Lack of funding and lack of staff [is a challenge for bariatric surgery recipients in achieving long-term health and well-being]. Lack of government's understanding of bariatric successes and the support that is required on an individual level."*
- *"Patients are unable to afford [the additional bariatric services/supports] if [they are] not part of the Family Health Team and Mental support."*
- *"Patients having to pay out of pocket for Registered Dietitian services if [they are] not [part of a] Family Health Team. Mental Health supports availability and wait times for the services [are also a challenge for bariatric surgery recipients]."*

iv. Recommendations in addressing current service gaps from bariatric clinic staff point of view

To address the service gaps noted above, participants recommended the provision of one-on-one (versus group) counselling, to ensure each bariatric surgery recipient (and family members, where appropriate) received adequate time and personalized focus. The second recommendation was to provide bariatric-specific education to Family Health Teams and other health professionals, in service of bariatric surgery recipients receiving appropriate care once they are no longer meeting with bariatric clinic staff. See Table 6 for illustrative comments.

TABLE 6. Quotations Supporting Recommendations to Address Service Gaps

One-on-one counselling

- *"Increasing government funding for counselling support in the community for bariatric patients not connected to a Family Health Team [is recommended to address the service gaps]."*
- *"Provide more one to one support sessions [is recommended to address service gaps]. Not everyone does well with group interaction. Many need individual attention."*
- *"The ability to work individual with clients and families to support them on the psychological and emotional changes ahead. More than 60 minutes for initial meetings [is recommended to address service gaps]."*
- *"More time to spend with the patient during appointment [is recommended to address service gaps]."*

Education and resources for Family Health Teams and others beyond the bariatric program

- *"Education to Family Health Team about the surgeries and post-op[erative] risk and complications. Complete assessment from all disciplines involved in the patient's process to determine potential for success."*
- *"Have more resources available to Family Health Team to access and on website from Ontario Bariatric Network [is recommended to address service gaps]."*
- *"Information about the process and criteria for plastic surgery as well as a list of surgeons who are supportive of bariatric surgery [is recommended to address service gaps]."*
- *"Family doctor involvement with open communication channels for complete patient support and prompt ordering of tests/therapy needed to properly prepare patient for surgery and life-long changes [is recommended to address service gaps]."*
- *"[Additional] training and education (from unspecified health-related professional/support) regarding how to assist patients with the return of cravings, hunger, loss of food (emotional eating) [is recommended to address service gaps]."*
- *"[Additional] training and education in mental health assessments and refinement of skills, [is recommended to address service gaps]."*

4.4 DISCUSSION

The purpose of the current study was to explore what bariatric clinic staff perceived was needed to best support the long-term health and well-being of bariatric surgery recipients. This was study was conducted to complement previous work examining the same focus among bariatric surgery recipients themselves [16]. After identifying the needs of the target population (bariatric surgery recipients), the etic viewpoint, those of the bariatric clinic staff was sought to strengthen the framework for future program planning and development [17]. In total, there were four primary themes and 11 sub-themes describing what bariatric clinic staff believed was useful, needed but not available, and challenging with respect to bariatric treatments; along with recommendations to improve long-term post-surgical health outcomes for bariatric surgery recipients. Along with findings from bariatric surgery recipients [16], the current study provides insight into existing bariatric care support and services, and what else is needed to provide optimal care for patients.

Bariatric clinic staff believed that patients' readiness to change and commitment to long-term lifestyle changes were critical for long-term success. It is possible that integrating an assessment of these variables could be an important and currently missing component of successful programs. In fact, previous researchers have found weight control programs that provide a framework designed not to convince patients to commit to changes, but to identify the stage of readiness of a patient, which have shown positive outcomes [48, 49]. Several weight control studies have demonstrated successful health outcomes utilizing Prochaska's Stages of Change model [50-52], a model used for matching/tailoring intervention components to an individual's level of readiness to

change [48]. The Stages of Change Model involves five stages: pre-contemplation, contemplation, preparation, action, and maintenance [48], which allows health practitioners to identify a patient's position in the change process and therefore, suggest appropriate next steps [49]. Providing bariatric clinic staff with appropriate tools to assess patients' levels of readiness and commitment to make behaviour changes may contribute to the provision of stage-appropriate support.

What bariatric clinic staff believed to be the main challenges for bariatric surgery recipients were the time consumed to attend appointments, and the lack of financial support for ongoing post-bariatric surgery services and support. These challenges were consistent with what bariatric surgery recipients noted as gaps in support and services from their personal experiences going through the surgery process [16]. Several bariatric surgery recipients underscored the importance of receiving credible information from a bariatric clinic professional that was accessible in-person, by phone, and/or online to address this challenge [16]. Both bariatric clinic staff and patients noted the lack of financial support for excess skin removal post-surgery available to patients, which emphasizes the importance of addressing this need both from an etic (outsider's) and emic (insider's) point of view. Researchers have stressed how excess skin serves as a constant reminder of patients' former selves and how this can impact patients' body image [53]. More than two-thirds of bariatric surgery recipients consider their excess skin to be a negative consequence of surgery [54]. In fact, conflicts with excess skin continue to be a substantial issue at the forefront of recipients' minds long-term [55]. In a prospective cohort study of 98 women, Mondarressi et al. found that post-surgical bariatric recipients who received excess skin removal, despite visible scars, displayed

significantly improved satisfaction and HRQoL long-term, in comparison to bariatric surgical recipients who did not have body contouring procedures [56]. Based on the findings, Mondarressi et al. suggested that bariatric clinics should consider plastic surgeons during the pre-operative phase and clarify that the goal of post-surgical contouring is not to obtain the 'perfect' silhouette for the patient, but rather, to eliminate physical or psychological restrictions due to the excess skin [56]. Support from both emic [16] and etic viewpoints strongly suggest that future program planning should consider the costs and benefits analysis of incorporating body contouring post-surgery into health insurance coverage to improve long-term health and well-being for bariatric surgery recipients.

To address the challenges and service gaps in the bariatric process, bariatric clinic staff recommended providing patients with ongoing one-on-one counselling. In addition, bariatric clinic staff believed that interdisciplinary health providers, such as physical therapists, kinesiologists, and occupational therapists were needed but were not available to support patients' long-term health and well-being, once the services at the bariatric clinic concluded. Typically, bariatric surgical recipients in Ontario are provided access to bariatric clinic services for up to five years [57]. Afterwards, patients must follow-up with their family physicians (and any other health care providers, if needed) regarding their progress. Consistent with bariatric clinic staff recommendations in the current study, bariatric surgery recipients' responses also reflected the need for counselling and support beyond one year after surgery; although, their recommendation was more specific to the type of service and from whom they would like to receive the support and counselling [16]. Consistent with staff's concerns about the time required to attend appointments

(along with the lack of locally accessible care for patients), bariatric surgery recipients previously proposed the value of being able to connect with the bariatric clinic through options that included attending in-person, by phone, and/or online [16]. Consequently, it is clear that finding creative, efficient, and easily accessible ways for bariatric recipients to connect with the health care professionals they need is required to optimize patients' long-term health and well-being.

Bariatric clinic staff recommended improving services and supports outside the bariatric program by developing bariatric surgery-related education and resources for Family Health Teams and other allied health professionals. This recommendation was made to ensure primary care providers had the resources to deliver suitable post-bariatric care to surgery recipients, once bariatric program services had ceased. In a cross-sectional survey study of 255 family physicians in the United States of America (USA), Ferrante and colleagues found that primary care physicians felt ill-equipped to provide sufficient knowledge and resources in obesity management, due to a lack of weight management training in medical school and residency [19]. Moreover, Salinas et al. found in their survey study of 298 of primary care physicians from the USA, that physicians who reported to be knowledgeable in obesity management, had positive attitudes toward weight management, and had access to obesity-related resources were more likely to feel confident to initiate discussions about weight management support [22].

Findings from the current study, in concert with those by Ferrante et al. [19] and Salinas et al. [22], underscore the importance of developing rigorous education and

resources for Family Health Teams (and/or other allied professional health) outside of the bariatric program. Whether or not incoming patients are prospective candidates for bariatric surgery or post-surgical bariatric recipients, it is evident that knowledge and expertise in obesity management are paramount for health care providers, outside the bariatric program to feel confident to deliver high quality obesity-related care, and resources for patients living with obesity. Overall, the development of rigorous education and resources for Family Health Teams and/or other allied health practitioners may be a practical addition to program planning and development in ensuring bariatric surgery recipients' long-term health and well-being.

Although findings from the current study provided important insights on the perspectives of bariatric clinic staff, there are limitations to be addressed. Firstly, a relatively small sample, and qualitative nature of the study prevents the generalizability of the findings to others. Participants were all female, and primarily nurses or social workers. Therefore, the homogeneous makeup of the sample may have impacted the diversity of the results. Secondly, participant recruitment was limited to hospitals in Ontario, Canada, which may have further limited the transferability of findings to other settings and participants. Thirdly, qualitative data collection was limited to an online questionnaire for the reasons previously outlined.

Regardless of the above-noted limitations, the current study adds to the growing body of research focused on understanding the experiences, challenges, and insights of those who are health care providers in the field of obesity management. In fact, to the authors' knowledge, this is the first study focusing on insight provided by specialized

bariatric care providers about bariatric surgery recipients' needs. The findings from this study highlight the challenges and recommendations involved in managing bariatric surgery recipients' health and well-being. Additionally, the study provides insight from an etic perspective about the gaps that still need to be addressed within and outside bariatric clinic services.

4.5 CONCLUSIONS

Future research and bariatric programming should consider incorporating a tool to assess patients' readiness to make needed behaviour changes and corresponding intervention responses, address financial costs and benefits of body contouring surgery, and engage family physicians and allied health providers with the education and resources needed for managing the long-term health and well-being of bariatric surgery recipients. Additionally, further research exploring the impact of Family Health Teams in post-surgical patients may be an important resource that is currently overlooked. Overall, the majority of bariatric clinic staff shared some consistent experiences with bariatric surgery patients on what was helpful, what was needed but was not received, what challenges exist, what recommendations are required, all of which may ultimately strengthen the framework for effective future bariatric program planning and development.

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CHAPTER 5: Summary, Discussion of Implications, Future Directions and Next Steps, Conclusions

5.1 Summary

The overarching purpose of this dissertation was to examine what is needed in bariatric surgery programming to support long-term health and well-being in bariatric surgery recipients. To achieve this goal, three independent studies were undertaken. Study 1 aimed to understand what individuals who are engaged in the bariatric surgery process, provincially (Ontario, Canada) [$n = 59$], perceive they need before, during, and after bariatric surgery to best support their long-term health and well-being [1]. Given that the provision of health care is unique to the province and country in which it is provided (i.e. public or private health care funding), the same question was examined with an international sample ($n = 60$), with the intention of exploring the extent to which these experiences were unique and/or similar.

The findings of Study 1 indicated that the needs of bariatric surgery recipients in Ontario, Canada and from around the world were to an extent, universal, regardless of the surgery funding source. In fact, both samples mentioned the need for the implementation of a support system in the bariatric process, ensuring more flexibility in scheduling with consistent providers, and that immediate follow-up for answering post-surgical questions were essential for individuals engaged in the bariatric process. Most importantly, issues with excess skin and the financial costs associated with its removal were highlighted in participants' responses, which may be indicative of future bariatric surgery orientation

programs needing to include more focus on patients being prepared for and educated about what to expect after surgery.

To the author's knowledge, this was the first study examining bariatric-related needs, and experiences in both groups detailing themes that were unique provincially (from a publicly funded health care system point of view) or internationally (from a variety of health care funding views), and themes that were shared among all bariatric surgery recipients. Additionally, this study represented an important contribution to bariatric care research, and as an initial step in health promotion programming. Understanding bariatric surgery recipients' experiences and perspectives can more efficiently provide effective prevention and treatment to surgery recipients in bariatric care settings.

Study 2 explored the perspectives of a sample of Canadians who underwent bariatric surgery at least two years ago. Specifically, participants' views (n= 28) about (1) how the surgery has impacted them physically, (2) psychologically, (3) socially, and (4) the clinic-related services and supports that have been particularly influential in their long-term health and well-being were examined [2]. After two years from surgery, bariatric clinic follow-up assessments become less frequent [3]. Currently, bariatric clinic follow-up assessments in Canada occur one month, three months, six months, one year, and then annually from two years up to five years post-operation [3]. Subjects eligible to participate were required to have had surgery at least two years prior, so that patients' perspectives could be explored when patients must presumably manage their weight and

lifestyle changes more independently, and when weight maintenance challenges typically start to occur (1.5 to 2 years post-surgery) [4-7].

Generally, participants in Study 2 were considered ‘maintainers’ [8], in that participants remained on average, nearly 100 lbs lighter than their surgical date weight, over 3.5 years post-surgery. Participants shared mostly positive improvements in their physical, psychological, and social changes since having bariatric surgery. Still, participants felt that there were several components of the process that could be improved and continued to go unaddressed. Participants emphasized the desire for body contouring surgery for excess skin left from the surgery, but found the cost to be prohibitive. Therefore, participants still felt strongly about financially including body contouring surgery as part of their bariatric surgery process. Participants also felt that their relationship with their significant other was impacted by the surgery. For most participants, the level of involvement from their partner was associated with their own ability to adopt a healthy lifestyle and maintain weight loss, which could impede or sustain their long-term success [9]. This area of research is still relatively new and may require a more in-depth investigation into the marital dynamics that evolve throughout the surgery process.

In Study 2, several positive outcomes were noted by bariatric surgery recipients. For example, marked improvements in obesity-related health conditions led bariatric surgery recipients at the two-year mark to engage in physical activities with their family members, which they were unable to do prior to their surgery. Participants were also

grateful for the support and services provided by the bariatric surgery specialty clinic. Study 2 provided insights into the various personal struggles and successes involved in managing surgery recipients' health and well-being more independently since bariatric surgery (two or more years ago). Additionally, this study provided recommendations on the patient-perceived benefits and gaps that still need to be addressed once bariatric follow-up assessments become less frequent.

Finally, Study 3 focused on the perspectives of bariatric clinic staff (n = 13) on what is needed for bariatric surgery recipients to support their long-term health and well-being [10]. Results from this work demonstrated several complementary findings to bariatric surgery recipient perspectives. Bariatric clinic staff were aware of the burden of cost associated with body contouring surgery, and the physical and psychological issues associated with excess skin suffered by the subset of the post-bariatric surgery population. Bariatric clinic staff also noted the gap in bariatric-related education among family physicians and other allied health professionals in supporting bariatric surgery recipients beyond the bariatric specialty clinics. In addition, bariatric clinic staff recommended surgery recipients to align with Family Health Teams prior to engaging in the surgery process. Bariatric clinic staff were aware of the lack of financial support for additional post-bariatric surgery services (e.g., funding for bariatric surgery recipients to meet with individual health professionals) once their follow-up assessments with the bariatric clinic were complete. Therefore, the recommendation for bariatric surgery recipients to become involved with a Family Health Team prior to surgery allowed

recipients to be treated and supported by a multidisciplinary staff post-surgically, long-term, and without additional personal costs (covered by the public health care system).

Overall, the findings of Study 3 highlighted the bariatric clinic staff viewpoint on what is needed for bariatric surgery recipients to be successful in their health and well-being long-term, which, when combined with the patient perspective, can ultimately strengthen the framework for effective future bariatric program planning and development.

5.2 Discussion of Implications

Although each study described its inherent methodological limitations (refer to Chapters 2-4), the overall findings of the body of work provided unique insights from the point-of-view of bariatric surgery patients and bariatric-specific health care providers on the support and services provided in bariatric care.

First, as the prevalence of obesity increases [11, 12], so does the demand for bariatric surgery [13]. Given a large proportion of bariatric surgery recipients (almost 40%) have experienced excessive weight regain following surgery [15], exploring important modifications to bariatric care programming was needed to incur more favourable long-term outcomes. Neff and Roux [14] underscored the importance of long-term follow-up with patients as bariatric surgery best practice to assess progress and complications from surgery. However, even in the best bariatric clinics, long-term follow-up with patients in bariatric surgery has been poor [15]. Neff and Roux have speculated that patients who have experienced excess weight regain, or who have

experienced complications post-surgery, have discontinued their clinic attendance because they feel that they had done something wrong [14].

Findings from Studies 1 and 2 provided a timely outlet for provincial and international participants to share their experiences and perspectives on what has been most beneficial, and what is most needed to support surgery recipients to maintain surgical weight loss and the health benefits incurred [1, 2]. In Study 1, bariatric surgery recipients' beliefs regarding the support and services received did not differ substantially based on the type of surgical funding source from their geographic region. This noteworthy finding indicated that the needs and recommendations of various bariatric surgery communities were, for the most part, consistent and relevant within the general bariatric surgery community [1]. In Study 2, a more long-term account of bariatric surgery recipients' experiences was provided on overall health (i.e. physical, psychological, social, and clinic-related components), which allowed for a more in-depth understanding of patients' challenges and successes [2]. Gaps and recommendations highlighted in both studies [1, 2] have the potential to provide health care providers with an awareness of how best to tailor and prioritize weight management support and services during follow-up assessments. Consequently, patients may feel more willing to attend follow-up appointments, even when weight loss has not been maintained.

A second implication of the study findings is that while the long-term physiological outcomes from bariatric surgery are substantial [16], in that on average, patients can experience almost 70% of their excess weight to be lost and remission of

various obesity-related conditions from two years and beyond [16], what is still required are bariatric surgery recipients' perceptions of their long-term overall health (i.e. physiological, psychological, social, and clinic-related components from two-years and on). Specifically, the long-term psychological impact from surgery is still under review [17, 18]. Whether or not bariatric surgery recipients' expectations and perceived benefits have extended beyond two years from their surgery, or beyond the 'honeymoon' period [19, 20] is unclear. The 'honeymoon' period in bariatric surgery has been considered a phase in which participants experience drastic and rapid weight loss immediately after surgery, for up to two years [19, 20]. Following this period, weight stabilization may occur when weight loss has either stopped or reduced to a few pounds a month [19]. Once weight has stabilized, Lynch considers this period to be when "the work begins," when participants must engage in cognitive and behavioural efforts and strategies to be rigorous in their lifestyle changes [19].

Results from Study 2 provided in-depth accounts of personal struggles and successes involved in managing health and well-being more independently, since their bariatric surgery (two or more years ago, beyond the 'honeymoon' phase [19, 20]). Although weight management during this time involves an acceptance of small regains and weight fluctuations [18], participants' reflections provided valuable suggestions for bariatric programming, which could support their cognitive and behavioural efforts to manage their weight at this stage. For instance, in Study 2, a longer pre-surgical wait time (approximately 1-2 years) was suggested, as it allowed bariatric candidates to sufficiently prepare mentally for the long-term lifestyle changes, before surgery [2]. As a result,

several participants from Study 2 acknowledged that surgery was a tool and not a cure for their obesity [2].

Although bariatric surgery is the only sustainable treatment for those with severe obesity [21-25], findings from De Zwann et al. [17] and Canetti et al. [18] underscore the potential long-term psychological impact of bariatric surgery, which is in line with data observed in Study 2. De Zwann et al. [17] conducted a prospective study about anxiety and depression among weight loss surgery patients prior to surgery, at 6-12 months after surgery and 24-36 months post-operatively [17]. De Zwann et al. [17] found preoperative depression predicted depression at 24-36 months, but not at 6-12 months. The authors hypothesized that the lack of association between depression and weight loss at 6-12 months to be a result of the 'honeymoon' phase [19, 20], when massive weight loss may override patients' depressive symptoms. As a result, reoccurring depression might emerge only later when weight has stabilized or when more rigorous cognitive and behavioural efforts must be initiated to manage weight [19, 20].

Even more concerning are results from a 10-year follow-up study of bariatric surgery patients' deterioration of mental health, despite successful weight loss [18]. Canetti et al. [18] reported a decline in mental health at the 10-year mark post-surgery to a level lower than patients' mental health at pre-operation. Results from Study 2 provided insights into patients' perspectives of different areas of their health (i.e. physiological, psychological, social, and clinic-related) [2] at a point when weight loss had waned

[19,20], and when bariatric clinic services were still available and could still intervene to support surgical recipients' health and well-being (up to five years) [3].

Along with the psychological implications of the dissertation findings, similar findings from different viewpoints (patient and provider) and from different time points[4] from all three studies insinuates that common gaps and recommendations still remain unaddressed [1, 2, 10]. For example, distress about excess skin from surgery was a reoccurring topic not only shared by participants in the short- and long-term [1, 2] but also by bariatric clinic staff [3]. Although a growing body of research detailing the experiences of bariatric surgery recipients and post-surgical excess skin concerns have been documented [26-30], taken together, the three studies have underscored the extent of the issue of excess skin by providing consistent evidence from short- and long-term surgery recipients, and direct evidence from experts in the field of bariatric care.

Quantitative studies have demonstrated the long-term benefits of body contouring surgery following bariatric surgery [31, 32]. Modarressi et al. [31] found health-related quality of life (HRQoL) improvements were greater in patients who received bariatric and body contouring surgery versus patients with bariatric surgery alone, and this finding continued to be sustained 8 years later. Balagué et al. [32] found that after 7 years from bariatric surgery, 75% of those who received bariatric and body contouring surgery were able to sustain excess body weight loss of more than 50%, in comparison to 29.2% of

[4]*Note:* Short-term in Study 1 [mean ± standard deviation, time since surgery: 1.9 ± 18.8 months for provincial and 34.3 ± 42.3 months for international participants] vs. Long-term in Study 2 [mean ± standard deviation time since surgery: 42.6 ± 8.4 months)

those who received bariatric surgery alone. Clearly, there have been added physiological and psychological benefits to receiving body contouring surgery along with weight reduction surgery.

Although the above-noted findings point to the value of body conturing surgery, the financial burden to acquire that procedure may be challenging. Balagué et al. [32] reported that more than 80% choose to forego the bariatric surgical procedure because they cannot afford the body contouring surgery afterwards (54.7%) or because they need to establish a payment plan before committing to the weight reduction surgery (28.5%), even though it is the only treatment that can alleviate their severe obesity [21-25]. Findings from all three studies [1, 2, 10] of the dissertation support the long-term impact studies conducted by Mondarressi et al. [31] and Balagué et al. [32] by providing personal anecdotes on the impact of excess skin post-surgery, and direct support from bariatric clinic staff expressing the need to address this issue in the bariatric surgery process.

5.3 Future Directions and Next Steps

The collection of studies presented in this dissertation provide insight on the benefits and challenges experienced by patients throughout the bariatric surgery process. This body of work also enables the provision of study recruitment recommendations and opportunities for future research.

Although several bariatric surgery recipients and staff participated and provided rich data in all three studies, participant recruitment and data collection for the studies

were challenging. The first recruitment challenge involved the researchers identifying early on that strategizing a method to engage patients and clinic staff without the burden of distance/travel, scheduling, and maintaining privacy for all our participants were crucial for sample recruitment. Therefore, the researchers were limited to online questionnaires for two of the three studies.

A second recruitment challenge seemed to result from a lack of personalized invitations to participate. Specifically, two of our studies were advertised through key bariatric administrators and support staff, and data were collected via online questionnaires. However, the researchers believed that due to the flexibility and lack of accountability associated with an online questionnaire, this data collection method may have limited the number of responses and details provided in Studies 1 and 3. Conversely, in Study 2, participants were recruited through personalized mailed invites from participants' bariatric clinics, and data collection was conducted using one-on-one telephone interviews.

Study 2 recruitment and data collection strategies proved to be more successful than the strategies utilized in Studies 1 and 3 (see Chapter 2 and 4). Although the 28 participants in Study 2 may be considered a smaller sample in comparison to the 119 participants in Study 1, it appeared to the researchers that completing a 15 to 30 minute online questionnaire was more burdensome and/or less inviting than participating in a 45 to 60 minute telephone interview, based on the amount of details provided for comparable questions among the three studies. Though purely speculative, the researchers would still advise incorporating more personalized approaches in participant

recruitment and data collection strategies for future applicable studies. Several groups of researchers [33-35] have found using a respondent's name in a salutation to be a proven technique for increasing response rates in mail surveys, which may also provide further reinforcement for using personalized approaches.

A third study recruitment challenge involved the type of environment in which participants completed scheduled telephone interviews and the online questionnaire. The type of environment may have impacted participants' response rates and answers. In Study 2, participants had the ability to schedule their telephone interviews at a time and day of their choosing. It is plausible that telephone interviews were taken in a physical space environment of participants' choosing [36], which facilitated more open and candid responses. While online questionnaires could provide similar flexibility and openness, email users are often overloaded with online survey requests [37], not accustomed to completing an online questionnaire [38], or survey requests are sent directly to a spam folder. Sheehan [37] has suggested that the low response rates may be due to the increase in surveying, coupled with the increase of unsolicited emails to Internet users. Nua Internet Surveys [39] demonstrated that some Internet users receive more than 39 unsolicited emails per day at the workplace alone. Kaplowitz, Hadlock, and Levine [38] found in their comparative web and mail survey response rates significant age differences in response to mail and web surveys. Any of these reasons, and the lack of personalization in participant recruitment as previously mentioned, may have further added to the challenges related to response rates and detailed responses. Overall, future

research in bariatric surgery support and services can learn from the limitations and study recruitment recommendations provided in this dissertation.

Regardless of the collection of limitations, the findings from all three studies serve as a foundation for enhancing bariatric program development and planning. According to McKenzie, Neiger, and Thackeray [40], incorporating the Generalized Model for Program Planning (GMPP) provides a framework for the successful development and delivery of a health promotion program, or in this case, refining current bariatric surgery programming to reflect patient needs. As outlined by Thomas [41], the first step in the GMPP model is to assess the needs of the population (through a needs assessment). This is a critical step in program planning as it provides objective data and establishes a baseline measure against which future assessments can be compared [42]. Therefore, the needs that patients provided through the first two studies of this dissertation can be used by program planners to assess the extent to which their offerings are suitable for facilitating bariatric surgery recipients' long-term post-surgical health and well-being.

Along with the initial step noted above, a crucial follow-up step in program planning and development can elucidate whether the patients' perspectives aligned with bariatric clinic staff [40]. As those involved with designing and decision-making of bariatric care components [40], findings from Study 3 [10] provide expert insight, in addition to patients' perspectives [1, 2], on the most effective and feasible program-relatedcomponents for patients to experience long-term weight loss and success. When taken together, the perspectives of both patients and bariatric clinic staff can provide a

stronger framework for improving bariatric care program planning and development [1, 2, 10, 40].

Regarding next steps, future research that extends from the current body of work should consider exploring the economic impact of incorporating body contouring into the bariatric surgery process. Additionally, investigating the influence of marital dynamics on post-bariatric surgery outcomes, and exploring how to engage family physicians and allied health professionals in providing continued support to patients, may provide important insights for further supporting bariatric surgery recipients.

5.4 Conclusions

The need for effective bariatric surgery support and services, before and after surgery for long-term health and well-being, is clear based on the current body of work and relevant literature presented in this dissertation. The three studies presented in this dissertation provided a comprehensive perspective on what program components have been most beneficial, what was needed but not received, and what gaps and recommendations can address the needs of bariatric surgery recipients. The results from the three studies are anticipated to have important implications in bariatric programming by providing insights on components that can enhance bariatric programming, and incur more favourable long-term outcomes for surgical recipients. Though additional work is warranted before endorsing the recommendations provided by patients and practitioners, the dissertation findings have the potential to help inform future research in several areas, which staff working in the area and bariatric surgery recipients, themselves, believe merit further investigation.

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APPENDIX A

Ethics Approval for Study 1

Western Research

Research Ethics

Western University Health Science Research Ethics Board
HSREB Delegated Initial Approval Notice

Principal Investigator: Dr. Jennifer Irwin
Department & Institution: Health Sciences,Western University

HSREB File Number: 106187
Study Title: What bariatric surgery recipients need before, during, and after surgery for long-term health and well-being; recipients' perspectives
Sponsor:

HSREB Initial Approval Date: March 09, 2015
HSREB Expiry Date: March 09, 2016

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Letter of Information & Consent	Part 1	2015/02/10
Instruments	Part 1 Telephone discussion questions	2015/02/10
Recruitment Items	Email Script to Lead organizers/administrators/facilitators	2015/02/18
Instruments	Part 2 Online needs assessment questions	2015/02/18
Western University Protocol		2015/02/18
Letter of Information & Consent	Part 2	2015/02/15
Recruitment Items	Part 2 Email Script	2015/02/15

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above named study, as of the HSREB Initial Approval Date noted above.

HSREB approval for this study remains valid until the HSREB Expiry Date noted above, conditional to timely submission and acceptance of HSREB Continuing Ethics Review. If an Updated Approval Notice is required prior to the HSREB Expiry Date, the Principal Investigator is responsible for completing and submitting an HSREB Updated Approval Form in a timely fashion.

The Western University HSREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guideline for Good Clinical Practice (ICH E6 R1), the Ontario Personal Health Information Protection Act (PHIPA, 2004), Part 4 of the Natural Health Product Regulations, Health Canada Medical Device Regulations and Part C, Division 5, of the Food and Drug Regulations of Health Canada.

Members of the HSREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

[redacted]

Ethics Officer, on behalf of Dr. Marcelo Kremenchutzky, HSREB Vice Chair

Ethics Officer to Contact for Further Information

[redacted]

This is an official document. Please retain the original in your files.

APPENDIX B

Participant Recruitment Emails for Study 1

Western UNIVERSITY · CANADA

Health and Rehabilitation Sciences

Part 2- Email/Advertisement Script for Recruitment

Subject Line: Request to distribute to support group members a needs assessment survey. An invitation to participate in research.

Dear Lead Organizer/Administrator,

My name is Linda Terrio and I am the lead organizer/administrator of the London Bariatric Support Group. I am a participating member of your support group and I would like to request to you, to distribute to your support group contacts by email OR within your forum an invitation to participate in research. Full disclosure:

- I am not a member of this research team
- I will not be participating in the research study
- I am not involved in design or the activities of the research project
- I will not know of the results of the research project only once they are published
- I will not be aware of your decision whether to distribute these research materials or not, it is at your discretion to deem whether these materials are appropriate and relevant to your group members
- I am only involved in participant recruitment, which I have voluntarily offered to do without compensation.

Please accept this as a personal invitation to you and your support group members to participate in a study that, Jennifer D. Irwin (Principal Investigator) and Rebecca H. Liu (PhD Candidate-Student Investigator) will be conducting. Briefly, the study will involve an online survey which will last approximately 15-30 minutes. As a participant of the online survey, the Study Investigators will be inquiring about what you feel is needed before, during, and after bariatric surgery. The survey will consist of a series of closed- and open- ended questions. The purpose of this needs assessment study is to gain an understanding of what individuals who are engaged in the bariatric surgery process (those who qualify for surgery and are waiting for their surgical date, or who have undergone surgery) believe they need before, during, and after bariatric surgery to best support their long-term health and well-being.

All information given will be kept confidential. When the results are formulated and presented, no identifying factors will be included to protect your confidentiality.
If you are interested in taking part in this study, please review the email script and letter of information on the first page of the survey to distribute to support group members. The link to the survey will stay open until June 17, 2015.

Thank you in advance for your time. For further information or questions about this study, you are welcome to contact the researcher at the contact information given below. Your participation and distribution of the online survey would be greatly appreciated.

Thank you for considering this request,

Student Contact Info:
Rebecca H. Liu, MSc (PhD Candidate-Student Investigator)
Health & Rehabilitation Sciences- Health Promotion
Western University, London, Ontario Canada.
[redacted]

Western UNIVERSITY · CANADA

Health and Rehabilitation Sciences

Part 2- Email/Advertisement Script for Recruitment

Subject Line: Bariatric candidate and recipient needs assessment survey. An invitation to participate in research.

Dear Participant,

Please accept this as a personal invitation to participate in a study that we, Jennifer D. Irwin (Principal Investigator) and Rebecca H. Liu (PhD Candidate-Student Investigator) are conducting. Briefly, our study involves an online survey to be taken on a date and time at your convenience and will last approximately 15-30 minutes. As a participant of the online survey, we will be inquiring about what you feel is needed before, during, and after bariatric surgery. The survey will consist of a series of closed- and open- ended questions. The purpose of this needs assessment study is to gain an understanding of what individuals who are engaged in the bariatric surgery process (those who qualify for surgery and are waiting for their surgical date, or who have undergone surgery) believe they need before, during, and after bariatric surgery to best support their long-term health and well-being.

All information given will be kept confidential. When the results are formulated and presented, no identifying factors will be included to protect your confidentiality.

If you are interested in taking part in this study, please review the letter of information on the first page of the survey. The link to the survey will stay open until June 17, 2015.

Thank you in advance for your time. For further information or questions about this study, you are welcome to contact the researcher at the contact information given below. Your participation in the online survey would be greatly appreciated.

Thank you for considering this request,
Jennifer D. Irwin, PhD (Principal Investigator) and Rebecca H. Liu, MSc (PhD Candidate-Student Investigator), Faculty of Health Sciences, Western University.

Student Contact Info:
Rebecca H. Liu, MSc (PhD Candidate-Student Investigator)
Health & Rehabilitation Sciences- Health Promotion
Western University, London, Ontario Canada.
[redacted]

APPENDIX C

Participant Letter of Information and Consent for Study 1

Western UNIVERSITY · CANADA

Health and Rehabilitation Sciences

Part 2-Letter of Information for Study Participants

Project Title: What bariatric surgery recipients need before, during, and after surgery for long-term health and well-being; recipients' perspectives

Study Investigators:
Jennifer D. Irwin, PhD, Principal Investigator, Associate Professor, Faculty of Health Sciences, Western University
Rebecca H. Liu, PhD Candidate, Student Investigator, Faculty of Health Sciences, Western University

Purpose of this Study
The purpose of this needs assessment study is to gain an understanding of what individuals who are engaged in the bariatric surgery process believe they need before, during, and after bariatric surgery to best support their long-term health and well-being.

What will happen if I choose to participate this study?
If you agree to participate, you will be asked to complete a short online survey. This survey takes approximately 15-30 minutes to complete. The survey will close June 17, 2015. As a participant of the online survey, we will be inquiring about what you feel is needed before, during, and after bariatric surgery. The survey will consist of a series of closed- and open- ended questions. No personal identifiers will be collected in this survey and your responses will be kept anonymous.

Voluntary Participation
Participation in this study is entirely voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time. There are no right or wrong answers, as we want to hear what you feel about the subject matter. Your decision will not influence your access to bariatric surgery-related support programs or services that you may be currently receiving, or may choose to partake in the future.

Cost and Compensation
There is no cost to participate in this study. No compensation will be given for participation in this study.

Risks & Benefits
There are no known risks for participating in this study. Your participation in this study will provide researchers with valuable information about bariatric surgery candidates and recipients' perspectives of the bariatric surgery process.

Confidentiality
All data obtained will remain confidential. Furthermore, your survey responses will contain no personally identifiable information. Therefore, your identity will remain completely anonymous. Data collected from this study will be entered into a database and used for study purposes. This data will only be accessible by the investigators and will be safeguarded on password-protected devices, which will be destroyed after 5 years.

Please note that the surveymonkey.com servers are located in the United States and are therefore subject to the laws of the United States of America Patriot Act. For more information about the USA Patriot Act, please follow this link: http://www.justice.gov/archive/ll/highlights.html

Contact persons (should you have any further questions about the study):

If you require any further information regarding this research project or your participation in the study, you may contact:

Dr. Jennifer D. Irwin, PhD
Principal Investigator
[redacted]

Rebecca H. Liu, MSc, PhD Candidate
Student Investigator

* If you have any questions about your rights as a research participant or the conduct of the study you may contact the Office of Research Ethics at [redacted] or by email at [redacted]. Representatives of Western's Office of Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

Consent
By clicking on the web link below, you are acknowledging that you have read and agreed to the conditions of this study and completion of the online survey is indication of your explicit consent to participate.

Please click here to begin the survey:
<Survey Link- *using questionnaire results from Part 1*>.

APPENDIX D

Participant Questionnaire for Study 1

Western UNIVERSITY · CANADA

Health and Rehabilitation Sciences

Online Needs Assessment Questions (on Survey Monkey and Qualtrics)

1) What is your age?
    a. 18-24
    b. 25-29
    c. 30-34
    d. 35-39
    e. 40-44
    f. 45-49
    g. 50-54
    h. 55-59
    i. 60-64
    j. 65-69
    k. 70+
    l. Prefer not to disclose

2) What is your gender?
    a. Female
    b. Male
    c. Other
    d. Prefer not to disclose

3) What is your marital status?
    a. Single
    b. In a relationship
    c. Married
    d. Widowed
    e. Common-law
    f. Separated
    g. Divorced
    h. Prefer not to disclose

4) Do you have children?
    a. Yes
        i. If yes, how many?
    b. No
    c. Prefer not to disclose

5) What is your employment status?
    a. Volunteer
    b. Unemployed
    c. Retired

   d. Disability
   e. Part-time
      i. If yes, what is your occupation?
   f. Full-time
      i. If yes, what is your occupation?
   g. Prefer not to disclose

6) What has been your highest weight?

7) What has been your lowest weight?

8) What was your weight on the day of surgery, prior to surgery (if applicable)?

9) What is your current weight?

10) What is your total household income?
   a. Less than $50,000
   b. $50,000-$59,000
   c. $60,000-$69,000
   d. $70,000-$79,000
   e. $80,000-$89,000
   f. $90,000-$99,000
   g. $100,000 or more
   h. Prefer not to disclose

11) What is your highest educational level?
   a. Less than high school
   b. High school or GED
   c. College or University
   d. Post graduate degree/diploma
   e. Prefer not to disclose

12) What is your ethnic background?

13) Please state any health or medical obesity-related conditions you may have had or have been told you may have (i.e. cardiometabolic, psychological, mechanical, respiratory, gastrointestinal, etc.)

14) What stage are you at in the bariatric surgery process? Please select the most appropriate answer.
   a. Waiting on a surgical date
   b. Had bariatric surgery
      i. How long ago did you have your surgery (in years, months)?
      ii. What type of bariatric surgery?
         1. Roux-en-Y Gastric Bypass (RYGB)
         2. Vertical Sleeve Gastrectomy (VSG)

3. Duodenal Switch (DS)
4. Other, please state type:

iii. Where was your surgery performed in Ontario?
iv. If outside of Ontario, please state where:

15) Have you had bariatric surgery more than once?
   a. No
   b. Yes
      i. How long ago (in years, months) since your most recent surgery?
      ii. What type of bariatric surgery?
         1. Roux-en-Y Gastric Bypass (RYGB)
         2. Vertical Sleeve Gastrectomy (VSG)
         3. Duodenal Switch (DS)
         4. Other, please state type:
      iii. Where was your surgery performed in Ontario?
      iv. If outside of Ontario, please state where:
      v. How long ago (in years, months) since your first surgery?
      vi. What type of bariatric surgery?
         1. Roux-en-Y Gastric Bypass (RYGB)
         2. Vertical Sleeve Gastrectomy (VSG)
         3. Duodenal Switch (DS)
         4. Other, please state type:
      vii. Where was your surgery performed in Ontario?
      viii. If outside of Ontario, please state where:

16) At what referral centre were you processed in Ontario?
   a. If outside of Ontario, please state where:

17) How long did you wait for the following (in months, days):
   a. From your MD referral to orientation
   b. From orientation to meeting the referral bariatric surgeon/team
   c. From referral bariatric surgeon/team to hospital site bariatric surgeon/team, (if applicable)
   d. From meeting the hospital site bariatric surgeon/team to the bariatric surgery date
   e. Estimated total wait time from beginning to surgery date:

18) What supports did you receive that were useful **BEFORE** surgery (up to the last appointment with the bariatric team before surgery)?

19) What supports did you need that you did not receive **BEFORE** surgery (up to the last appointment with the bariatric team before surgery)?

20) What supports did you receive **DURING** surgery that was useful (between the last appointment before surgery with the bariatric team and the first appointment after surgery with the bariatric team), (if applicable)?

21) What supports did you need that you did not receive **DURING** surgery (between the last appointment before surgery with the bariatric team and the first appointment after surgery with the bariatric team), (if applicable)?

22) What supports did you receive that were useful **AFTER** surgery, (if applicable)?

23) What supports did you need that you did not receive **AFTER** surgery, (if applicable)

24) What information do you feel you need to support you in the process (Before, during, and after)?
    a. From who would you like to receive this information, for example family physician, bariatric surgeon, bariatric surgery team, psychological professionals, support group, family/loved ones, etc.? (Before, during, and after)

25) When would you prefer to obtain MORE bariatric surgery support? Please select one of the following options.
    a. Before
    b. After
    c. Before and after
    d. Other, please state:

26) Would you be willing to elaborate on the reason for the chosen timing in the previous question?

27) In general, what do you feel are the current support gaps for those undergoing or who have completed the bariatric surgery process, if any?

28) In what ways do you feel these gaps can be addressed or filled from the previous question, (if applicable)?

29) In general, what do you feel helped you the most in the bariatric surgery process?

30) In general, what do you feel helped you the most outside of the bariatric surgery process?
    a. Would you be able to elaborate on the reason this was needed?

31) What do you feel you need to know to support you in **losing weight** after surgery in the short-term?

32) What do you feel you need to know to support you in **maintaining weight loss** after surgery in the long-term?

33) What help do you need that you did not receive to support
    a. Your weight loss goals?

b. Your weight maintenance goals?

34) In what areas of life and treatment do bariatric candidates and recipients need that they are not receiving (for example, physical, social, psychological, emotional, mental, and/or other)?

35) In what areas of life and treatment do bariatric candidates and recipients require support (for example, physical, social, psychological, emotional, mental, and/or other)?
   a. From their bariatric surgery team?
   b. From health professionals?
   c. From psychological professionals?
   d. From fitness professionals?
   e. From their family/loved ones?
   f. From their friends?
   g. From support groups?
   h. From others? (Please specify from whom?)

36) What recommendations would you make to improve the bariatric surgery process?

37) What topics about the bariatric surgery process have not been covered that you feel are needed while in the process?

38) In what ways have your needs been met with regards to the bariatric surgery process?

39) In what ways have your needs not been met with regards to the bariatric surgery process?

40) What else would you like us to know?

Thank you for your time and participation!

APPENDIX E

Copyright Release for Study 1

Gmail Rebecca Liu [redacted]

Publication to be included in graduate thesis request

4 messages

Rebecca Liu <[redacted]> Thu, Jun 22, 2017 at 5:00 PM

Dear Karen,
We hope this email finds you well.
Recently, we published **Manuscript ID BARI-2016-0043 "Bariatric Surgery Recipients' Needs and Perspectives on Maintaining Long-Term Health and Well-Being"** in Bariatric Surgical Practice and Patient Care.
We are grateful for your support in publishing our research.

This study was conducted as part of a doctoral graduate thesis.
At this time, we would like to formally request the reproduction of this article to be included in the first author's graduate thesis upon completion.

Please let us know whether this is a possible request.
Thank you for your consideration,
- Rebecca and Dr. Irwin

--
Rebecca H. Liu, MSc., BSc. (Hons.)
PhD Candidate in Health Promotion
Department of Health and Rehabilitation Sciences
Western University
London, Ontario, CANADA

Ballen, Karen <[redacted]> Fri, Jun 23, 2017 at 11:57 AM

Dear Rebecca:

Copyright Permission is granted for the author to include the requested article in her thesis.

Kind regards,

Karen Ballen

Manager, Reprints, Permissions, and Open Access

APPENDIX F

Ethics Approvals for Study 2

Western Research

Research Ethics

Western University Health Science Research Ethics Board
HSREB Delegated Initial Approval Notice

Principal Investigator: Dr. Jennifer Irwin
Department & Institution: Health Sciences,Western University

Review Type: Delegated
HSREB File Number: 107128
Study Title: Understanding the experiences of bariatric surgery recipients who are two or more years post-surgery
Sponsor:

HSREB Initial Approval Date: November 05, 2015
HSREB Expiry Date: November 05, 2016

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Letter of Information & Consent	107128 Letter of information clean Oct 15	2015/10/15
Advertisement	Formal invite to participants	2015/08/26
Advertisement	Email invite to Linda Terrio	2015/08/26
Advertisement	Email invite to clinic managers	2015/08/26
Advertisement	Email invite to facilitators	2015/08/26
Other	Interview questions clean version-revised instrument	2015/09/21
Western University Protocol		2015/11/04

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above named study, as of the HSREB Initial Approval Date noted above.

HSREB approval for this study remains valid until the HSREB Expiry Date noted above, conditional to timely submission and acceptance of HSREB Continuing Ethics Review.

The Western University HSREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guideline for Good Clinical Practice Practices (ICH E6 R1), the Ontario Personal Health Information Protection Act (PHIPA, 2004), Part 4 of the Natural Health Product Regulations, Health Canada Medical Device Regulations and Part C, Division 5, of the Food and Drug Regulations of Health Canada.

Members of the HSREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940

[redacted]

Ethics Officer, on behalf of Dr. Joseph Gilbert, HSREB Chair

Ethics Officer to Contact for Further Information: [redacted]

This is an official document. Please retain the original in your files

Thunder Bay Regional Health Sciences Centre

Research Ethics Board

February 8, 2016

[redacted]

Dr. Jennifer Irwin
Health Sciences Addition, Arthur Labbatt Family school of Nursing
University of Western Ontario
[redacted]

Dear Dr. Irwin,

Re:	Project Number:	TBRHSC REB # 2015153
	Project Title:	Understanding the Experiences of Bariatric Surgery Recipients who are Two or More Years Post-Surgery
	REB Expiry Date:	February 8, 2017,

Thank you for your submission to the Thunder Bay Regional Health Sciences Centre Research Ethics Board (TBRHSC REB). The above noted application has been reviewed and approved through the delegated review process for the TBRHSC REB. **TBRHSC REB approval is granted based on the following documentation:**

- TBRHSC REB Application, dated January 26, 2016, received February 1, 2016,
- Correspondences from research team received January 13, 2016,
- Recruitment Invitation Formal Mail or Email to Participants, dated and received December 23, 2015,
- Study Proposal dated and received December 23, 2015,
- Letter of Information dated and received December 23, 2015,
- Interview Questions dated and received December 23, 2015,
- Data abstraction form dated and received December 23, 2015.

The delegated approval for this study will be reported to the full REB at their next meeting. TBRHSC REB is guided by the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans 2010 & ICH: Good Clinical Practice (GCP) guidelines.

In addition to this TBRHSC REB approval, all projects at TBRHSC require Research Program review. Prior to beginning your REB approved project, research teams must receive written notification for final project authorization from the Research Program.

Research Ethics Office
[redacted]

Continuing ethics review is the responsibility of the Principal Investigator. During the course of your research, any serious adverse events, changes in the approved protocol, consent form or other information needs to be submitted for review to the REB using the appropriate forms. REB approval is required should your project extend beyond the approval period noted above. Upon completion/termination of the study you are required to submit a Study Completion Report. All forms are available at:

http://www.tbrhsc.net/about_TBRHSC/research_ethics/forms.asp

Yours Sincerely,

[redacted]

Scott M. Sellick, Ph.D., C.Psych.
Chair, TBRHSC REB

February 8/16
Date

Thunder Bay Regional Health Sciences Foundation

Research Ethics Board

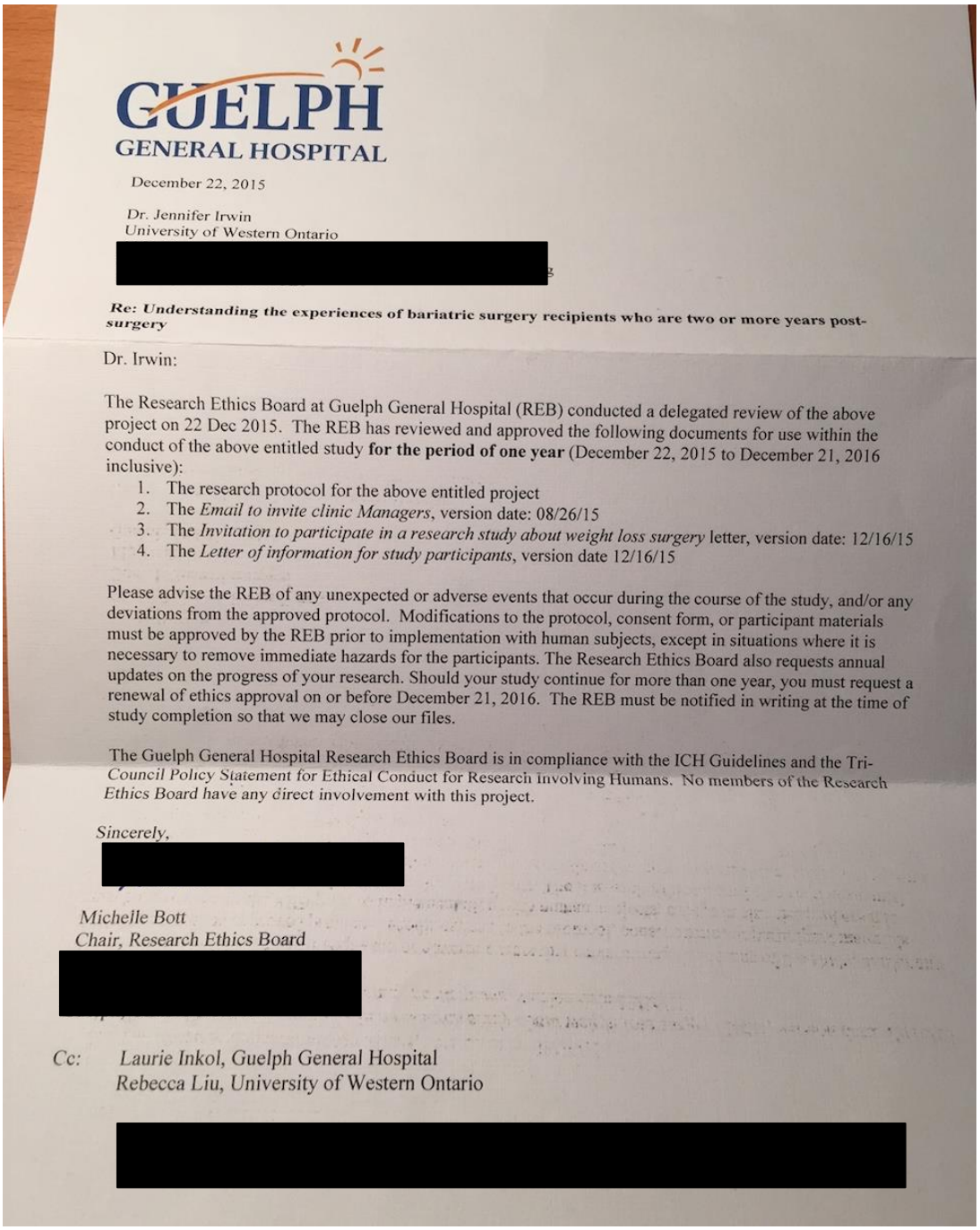
The TBRHSC Research Ethics Board operates in compliance with and is constituted in accordance with the requirements of:

- TCPS 2 – 2nd Edition of the Tri-Council Policy Statement: Ethical conduct for Research Involving Humans,
- ICH Good Clinical Practice: Consolidated Guideline (ICH E6)
- Part C division 5 of the food and drug regulations of Health Canada, and
- The provisions of the Ontario Health Information Protection Act 2004 and its applicable regulations
- TBRHSC REB is registered with the US department of Health and Human services under IRB registration #00004396

Description of Research Team

Principal Investigator:	Dr. Jennifer Irwin [redacted]
Co-Investigator(s):	Ms. Julie Riendeau (University of Western Ontario) [redacted]
Best Contact for Project:	Ms. Rebecca Liu [redacted]

e-copied: TBRHSC Research Program,
Research Ethics Office, TBRHSC



GUELPH
GENERAL HOSPITAL

December 22, 2015

Dr. Jennifer Irwin
University of Western Ontario
[redacted]

Re: Understanding the experiences of bariatric surgery recipients who are two or more years post-surgery

Dr. Irwin:

The Research Ethics Board at Guelph General Hospital (REB) conducted a delegated review of the above project on 22 Dec 2015. The REB has reviewed and approved the following documents for use within the conduct of the above entitled study **for the period of one year** (December 22, 2015 to December 21, 2016 inclusive):

1. The research protocol for the above entitled project
2. The *Email to invite clinic Managers*, version date: 08/26/15
3. The *Invitation to participate in a research study about weight loss surgery* letter, version date: 12/16/15
4. The *Letter of information for study participants*, version date 12/16/15

Please advise the REB of any unexpected or adverse events that occur during the course of the study, and/or any deviations from the approved protocol. Modifications to the protocol, consent form, or participant materials must be approved by the REB prior to implementation with human subjects, except in situations where it is necessary to remove immediate hazards for the participants. The Research Ethics Board also requests annual updates on the progress of your research. Should your study continue for more than one year, you must request a renewal of ethics approval on or before December 21, 2016. The REB must be notified in writing at the time of study completion so that we may close our files.

The Guelph General Hospital Research Ethics Board is in compliance with the ICH Guidelines and the Tri-Council Policy Statement for Ethical Conduct for Research involving Humans. No members of the Research Ethics Board have any direct involvement with this project.

Sincerely,

[redacted]

Michelle Bott
Chair, Research Ethics Board

[redacted]

Cc: *Laurie Inkol, Guelph General Hospital*
Rebecca Liu, University of Western Ontario

[redacted]

APPENDIX G

Participant Recruitment for Study 2

Western UNIVERSITY · CANADA

Health and Rehabilitation Sciences

Greetings,

We, Jennifer D. Irwin (Principal Investigator) and Rebecca H. Liu (PhD Student) would like to invite you to participate in a research study about weight loss surgery.

We would like to understand more about your experiences as someone who has had weight loss surgery at least two years ago. We think sharing your experiences can be useful for those who are considering, waiting, or have recently completed surgery, on what to expect two years after surgery. This includes your successes, challenges, and what coping strategies and support have helped you to maintain your weight losses

We are asking you to participate in one-to-one interviews by telephone or by Skype video conferencing (your preference). The interview will last about 60 minutes. These interviews will be scheduled based on a date and time that will work for both you and the researcher.

To protect your confidentiality, your responses will not contain your name or identity. When the study is complete, there will be no information identifying you in the study. If you are interested in taking part in this study, please review the letter of information.

Thank you in advance for your time. Your participation in the study would be greatly appreciated. For further information or questions about this study, you are welcome to contact the researcher at the contact information given below.

Thank you for considering this request,

Jennifer D. Irwin, PhD (Principal Investigator) and Rebecca H. Liu, MSc (PhD Student),
Faculty of Health Sciences, Western University.

Student Contact Info:
Rebecca H. Liu, MSc (PhD Student)
Health & Rehabilitation Sciences- Health Promotion
Western University, London, Ontario Canada.
[redacted]

APPENDIX H

Participant Letter of Information and Consent for Study 2

Western UNIVERSITY · CANADA

Health and Rehabilitation Sciences

Letter of Information for Study Participants

Project Title: Understanding the experiences of bariatric surgery recipients who are two or more years post-surgery

Study Investigators:
Jennifer D. Irwin, PhD, Principal Investigator, Associate Professor, Faculty of Health Sciences, Western University
Rebecca H. Liu, PhD Candidate, Student Investigator, Faculty of Health Sciences, Western University

Purpose of this Research Study
The purpose of this research study is to gain an understanding of the physiological, psychological, and lifestyle experiences of individuals who have undergone bariatric surgery and are now two or more years post-surgery. You are receiving this letter of information because you were identified as a potential participant either from a support group, a clinic, or from an administrator of a bariatric surgery clinic.

What will happen if I choose to participate in this research study?
If you agree to participate, you will be asked to participate in a semi-structured one-to-one interview by telephone or by Skype video conferencing (your preference). These interviews will be scheduled based on a date and time that will be mutually convenient between the researcher and participant lasting approximately 60 minutes. As a participant of the interview, we will be inquiring about your experiences which have led to your long-term health, wellness or poorer than desired outcomes, now that you are two or more years post-operation. With your explicit verbal consent, we will be audio-recording the discussion so that we do not miss anything. No personal identifiers will be collected in this interview and your responses will be kept anonymous.

Voluntary Participation
Participation in this study is entirely voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time. There are no right or wrong answers, as we want to hear what you feel about the subject matter. Your decision will not influence your access to bariatric surgery-related support programs or services that you may be currently receiving, or may choose to partake in the future.

Cost and Compensation
There is no cost to participate in this study. No compensation will be given for participation in this study.

Risks & Benefits
There are no known risks for participating in this study. Although it is not anticipated, it is possible that some individuals may feel sensitive about the process they have

experienced personally. If, at any time, your participation reveals emotional discomfort, the investigator(s) will provide you with the supportive resources and contact information needed. You may not directly benefit from participating in this study but information gathered may provide benefits to bariatric candidates and recipients engaged in the bariatric surgery process. You will have an opportunity to reflect on and provide guidance about what would help individuals going through the bariatric process experience desired health outcomes.

Confidentiality

All data collected (which includes audio-recordings and digital files) will remain confidential. No names or identifiers will appear on any of the transcripts generated during the course of this study. Furthermore, your interview responses will contain no personally identifiable information. Therefore, your identity will remain completely anonymous. Data collected from this study will be entered into a database and used for study purposes. This data will only be accessible by the investigators and will be safeguarded on password-protected devices, which will be destroyed after 5 years. In addition, any hard copies or written records will be stored in a locked cabinet in a secure office at Western University and will be destroyed after 5 years. If you choose to withdraw from this study, your data will be removed and destroyed (if digital files)/shredded (if written records) from our database.

Contact persons (should you have any further questions about the study):

If you require any further information regarding this research project or your participation in the study, you may contact:

Dr. Jennifer D. Irwin, PhD
Principal Investigator
[redacted]

Rebecca H. Liu, MSc, PhD(c)
Student Investigator
[redacted]

* If you have any questions about your rights as a research participant or the conduct of the study you may contact the Office of Research Ethics at [redacted] or by email at [redacted]. Representatives of Western's Office of Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

Consent

By participating in the telephone or Skype video interview, you are acknowledging that you have read and agreed to the conditions of this study and responding to the questions during the interview is indication of your explicit verbal consent to participate.

This letter is for you to keep for future reference.

APPENDIX I

Participant Semi-Structured Interview Questions for Study 2

Western UNIVERSITY · CANADA

Health and Rehabilitation Sciences

Good morning!
Thank you again for taking the time to speak with me!
Today, I am interested in hearing about your experiences with bariatric surgery that was detailed in the invitation you received from your bariatric clinic
Before we begin I wanted to go over a few key points:

- This process will take about an hour. There are a number of questions to address so some discussion might be cut off in an effort to stay on time.

- As I ask questions, there are no right or wrong answers. I am interested in what you think.
- The discussion will also be recorded by an audio recorder. This is to make sure that no information is missed and we record all information correctly.

- As you read in the consent letter, all information discussed today will remain confidential so your identity will not be disclosed. The things you say will not be tied back to you. If you choose not to participate, it will not in any way change the services or support you are currently receiving

- Do you have any questions?

Semi-structured interview questions and demographic information

1) Tell me about your experience going through the bariatric surgery process

2) How has bariatric surgery impacted your health?

3) How has bariatric surgery impacted your mental and emotional health?

4) How has bariatric surgery impacted your personal relationships?

5) How has bariatric surgery impacted your social or working environment?

6) What services, strategies, and/or support have positively influenced your health, 2 years post-surgery?

7) What services, strategies, and/or supports have not influenced your health outcomes, 2 years post-surgery?

8) What has made it challenging for you to reach your desired health outcomes, beyond 2 years post-surgery?
    a. What experiences have shaped this idea?

9) How has your experience differed between your first year following surgery and now (now that you are ___ years beyond) ?

10) What was the impact of the bariatric surgery support and services you received before surgery?

11) What is the impact of the bariatric surgery support and services you receive now, more than 2 years from your surgery?

12) What type of weight loss support and services have you explored outside the clinic and are still continuing to participate/use?

13) In what ways have your needs been met with regards to the bariatric surgery process? expectations

14) In what ways have your needs not been met with regards to the bariatric surgery process?

15) What do you wish you had known going into the bariatric process, but didn't know?

16) If you were to offer advice to those starting the bariatric process, what would you tell them?

17) What else would you like us to know?

<u>Demographic information</u>

18) What is your age?
19) What is your gender?
    a. Female
    b. Male
    c. Other
    d. Prefer not to disclose
20) What is your marital status?
    a. Single
    b. In a relationship
    c. Married
    d. Widowed
    e. Common-law
    f. Separated
    g. Divorced
    h. Prefer not to disclose
21) Do you have children?
    a. Yes
        i. If yes, how many?

b. No
c. Prefer not to disclose

22) What is your employment status?
   a. Volunteer
   b. Unemployed
   c. Retired
   d. Disability
   e. Part-time
   f. Full-time
   g. Prefer not to disclose

23) What has been your highest weight? wage

24) What has been your lowest weight?

25) What was your weight on the day of surgery, prior to surgery?

26) What was your weight after surgery? First follow up

27) What is your current weight?

28) What is your ethnic background?

29) How long ago did you have your surgery (in years, months)?

30) What type of bariatric surgery did you have?

31) At what referral centre were you processed in Ontario?
   a. If outside of Ontario, please state where:

32) From which centre was your surgery performed in Ontario?
      i. If outside of Ontario, please state where:

33) Have you had bariatric surgery more than once?
   a. No
   b. Yes
      i. How long ago (in years, months) since your most recent surgery?
         1. What type of bariatric surgery did you have?
         2. Where was your surgery performed in Ontario?
            a. If outside of Ontario, please state where:
      ii. How long ago (in years, months) since your first surgery?
         1. What type of bariatric surgery did you have?
         2. Where was your surgery performed in Ontario?
            a. If outside of Ontario, please state where:

Thank you for time and consideration in participating in our study!

APPENDIX J

Copyright Release for Study 2

Copyright Transfer Statement from Quality of Life Research

The copyright to this article, including any graphic elements therein (e.g. illustrations, charts, moving images), is hereby assigned for good and valuable consideration to **Springer International Publishing AG** effective if and when the article is accepted for publication and to the extent assignable if assignability is restricted for by applicable law or regulations (e.g. for U.S. government or crown employees). Author warrants (i) that he/she is the sole owner or has been authorized by any additional copyright owner to assign the right, (ii) that the article does not infringe any third party rights and no license from or payments to a third party is required to publish the article, (iii) that the article has not been previously published or licensed and (iv) that in case the article contains excerpts from other copyrighted works (e.g. illustrations, tables, text quotations) Author obtained written permissions to the extent necessary from the copyright holder thereof and cited the sources of the excerpts correctly.

The copyright assignment includes without limitation the exclusive, assignable and sublicensable right, unlimited in time and territory, to reproduce, publish, distribute, transmit, make available and store the article, including abstracts thereof, in all forms and media of expression now known or developed in the future, including pre- and reprints, translations, photographic reproductions and microform. Springer may use the article in whole or in part in electronic form, such as use in databases or data networks (e.g. the Internet) for display, print or download to stationary or portable devices. This includes interactive and multimedia use as well as posting the article in full or in part or its abstract on social media accounts closely related to the Journal, and the right to alter the article to the extent necessary for such use.

Authors may self-archive the Author’s accepted manuscript of their articles on their own websites. Authors may also deposit this version of the article in any repository, provided it is only made publicly available 12 months after official publication or later. He/she may not use the publisher's version (the final article), which is posted on SpringerLink and other Springer websites, for the purpose of self-archiving or deposit. Furthermore, the Author may only post his/her version provided acknowledgement is given to the original source of publication and a link is inserted to the published article on Springer's website. The link must be provided by inserting the DOI number of the article in the following sentence: "The final publication is available at Springer via http://dx.doi.org/[insert DOI]".

Prior versions of the article published on non-commercial pre-print servers like arXiv.org can remain on these servers and/or can be updated with Author's accepted version. The final published version (in pdf or html/xml format) cannot be used for this purpose. Acknowledgement needs to be given to the final publication and a link must be inserted to the published article on Springer's website, by inserting the DOI number of the article in the following sentence: "The final publication is available at Springer via http://dx.doi.org/[insert DOI]". Author retains the right to use his/her article for his/her further scientific career by including the final published journal article in other

publications such as dissertations and postdoctoral qualifications provided acknowledgement is given to the original source of publication.

Articles disseminated via link.springer.com are indexed, abstracted and referenced by many abstracting and information services, bibliographic networks, subscription agencies, library networks, and consortia.

After submission of the agreement signed by the corresponding author, changes of authorship or in the order of the authors listed will not be accepted by Springer.

APPENDIX K

Ethics Approval for Study 3

Western Research

Research Ethics

Western University Health Science Research Ethics Board
HSREB Delegated Initial Approval Notice

Principal Investigator: Dr. Jennifer Irwin
Department & Institution: Health Sciences,Western University

Review Type: Delegated
HSREB File Number: 107735
Study Title: What are the service needs that will best support long-term weight management among bariatric surgery recipients? Bariatric team members' perspectives.

HSREB Initial Approval Date: April 06, 2016
HSREB Expiry Date: April 06, 2017

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Other	List of references for protocol-Feb6	2016/02/06
Instruments	Survey questions	2016/02/06
Letter of Information & Consent		2016/04/05
Other	Email invitation to participate	2016/04/05
Western University Protocol	107735 Irwin Protocol March 11 clean	2016/03/11
Recruitment Items	107735 Web Advertisement March 11 clean	2016/03/11

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above named study, as of the HSREB Initial Approval Date noted above.

HSREB approval for this study remains valid until the HSREB Expiry Date noted above, conditional to timely submission and acceptance of HSREB Continuing Ethics Review.

The Western University HSREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guideline for Good Clinical Practice Practices (ICH E6 R1), the Ontario Personal Health Information Protection Act (PHIPA, 2004), Part 4 of the Natural Health Product Regulations, Health Canada Medical Device Regulations and Part C, Division 5, of the Food and Drug Regulations of Health Canada.

Members of the HSREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

[redacted]

Ethics Officer, on behalf of Dr. Joseph Gilbert, HSREB Chair

Ethics Officer to Contact for Further Information [redacted]

APPENDIX L

Participant Recruitment Email for Study 3

Email invitation to participate

Subject Line: Bariatric Team Members' Perspectives on Long-Term Health and Well-Being; Short Survey

Please accept this as a personal invitation to participate in a study that we, Jennifer D. Irwin (Principal Investigator) and Rebecca H. Liu (PhD Candidate-Student Investigator) are conducting. Briefly, our study involves an online survey to be taken on a date and time at your convenience and will last approximately 15-30 minutes. You have been invited to participate in a research study because you are a bariatric team member.

As a participant of the online survey, we will be inquiring about what bariatric care members perceive is needed to best support the long-term health and well-being of bariatric surgery recipients. The perspectives of bariatric care members will be integral in identifying beneficial support services, challenges, and recommendations in bariatric care, which can lead to the weight management success of their patients. More specifically, the goal of the online survey will be to establish what the bariatric care team members perceive has been beneficial and what could be improved to meet their patients' long-term health and well-being needs. Given that health care allotment is provincially determined, responses from bariatric team members in Ontario will only be included.

All information given will be kept confidential. When the results are formulated and presented, no identifying factors will be included to protect your confidentiality.
Please take 15-30 minutes and click here to access the letter information on the first page of the survey
This online survey will be open until Saturday November 12th, 2016 12:00 p.m. EST. We encourage you to circulate the survey link to your colleagues and among your networks.

Bariatric Team Members Survey

Thank you in advance for your time. For further information or questions about this study, you are welcome to contact the researcher at the contact information given below. Your participation in the online survey would be greatly appreciated.
Thank you and we look forward to hearing from you,

Jennifer D. Irwin, PhD (Principal Investigator) and Rebecca H. Liu, MSc (PhD Candidate-Student Investigator), Faculty of Health Sciences, Western University.

Student Contact Information:
Rebecca H. Liu, MSc (PhD Candidate-Student Investigator)
Health & Rehabilitation Sciences- Health Promotion
Western University, London, Ontario Canada
[redacted]

APPENDIX M

Participant Letter of Information and Consent for Study 3

**You have been invited to participate in this research study because you are an Ontario-based bariatric team member.*

A bariatric team member is anyone involved in the management, safety, and/or clinical outcomes of a surgery recipient. Typically, a bariatric team member is integrated in the multidisciplinary care team and normally interacts with the surgery recipient throughout their operative experience.

Letter of Information for Study Participants

Study Title: What is needed to best support long-term health and well-being of bariatric surgery recipients? Bariatric team members' perspectives.

Study Investigators:
Jennifer D. Irwin, PhD, Principal Investigator, Associate Professor, Faculty of Health Sciences, Western University
Rebecca H. Liu, PhD Candidate, Student Investigator, Faculty of Health Sciences, Western University

Purpose of this Research Study

The purpose of this study is to explore what bariatric care members perceive is needed to best support the long-term health and well-being of bariatric surgery recipients. As a bariatric team member, your perspective will provide insight as to what is currently working and what still needs to be addressed to advance bariatric care.

What will happen if I choose to participate this study?

If you agree to participate, you will be asked to complete a short online survey. Qualtrics Survey Software will be used to administer the confidential survey. No personal identifiers will be collected and your responses will be kept anonymous. As a participant of the online survey, we will be inquiring about what you believe, as a bariatric team member, is required to best support bariatric surgery recipients' long-term health and well-being. The survey will consist of 6 open- ended and 4-closed-ended questions.

- This survey will take approximately 15-30 minutes to complete.
- The survey will close on July 30st, 2016 at 12:00pm Eastern Standard Time.

Voluntary Participation

Participation in this study is entirely voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time. There are no

right or wrong answers, as we want to hear what you think about the subject matter. Your decision will not influence your involvement with bariatric surgery-related support programs or services that you may be currently affiliated with, or may choose to associate with in the future.

Cost and Compensation

There is no cost to participate in this study. No compensation will be given for participation in this study.

Risks & Benefits

There are no known risks for participating in this study. You may not directly benefit from participating in this study but information gathered may provide researchers with valuable information about needs related to the bariatric surgery process from the perspective of bariatric team members.

Confidentiality

All data obtained will remain confidential. Furthermore, your survey responses will contain no personal identifiable information. Therefore, your identity will remain completely anonymous. Data collected from this study will be entered into a database and used for study purposes. This data will only be accessible by the investigators and will be safeguarded on password-protected devices, which will be destroyed after 5 years.

Please note that Qualtrics Survey Software's privacy and data security policies are compliant with the guidelines of the European Union via the Safe Harbor Agreement. Any data transmitted to the U.S. data centers by a European customer/respondent is processed according to Safe Harbor laws (http://export.gov/safeharbor/)

Contact persons (should you have any further questions about the study):

If you require any further information regarding this research project or your participation in the study, you may contact:

Dr. Jennifer D. Irwin, PhD
Principal Investigator
[redacted]

Rebecca H. Liu, MSc, PhD Candidate
Student Investigator

* If you have any questions about your rights as a research participant or the conduct of the study you may contact the Office of Research Ethics at [redacted] or by email at [redacted].

Consent

By selecting "I Agree", you are acknowledging that you have read and understood the above conditions of this study and completion of the online survey is indication of your explicit consent to participate in this study.

I Agree I Do Not Agree

APPENDIX N

Participant Questionnaire for Study 3

Survey questions

Bariatric surgery recipient = an individual undergoing the bariatric surgical process (either waiting for a surgical date, or has already undergone surgery)

1) What service(s) do you think have been the most helpful to bariatric surgery recipients for long-term health and well-being?

    a. Before surgery:

    b. After surgery:

2) What service(s) do you think are most needed that are currently NOT available to support bariatric surgery recipients' long-term health and well-being?

    a. Before surgery:

    b. After surgery:

3) In general, what are the challenges involved in addressing the current service gaps you noted in question #2?

    a. Before surgery:

    b. After surgery:

4) What recommendations would you make to address the challenges that you identified in question #3?

    a. Before surgery:

    b. After surgery:

5) Please tell us what you, as a bariatric team member, would need to better support the long-term health and well-being of surgery recipients, if applicable.

    a. Before surgery:

    b. After surgery:

6) What else would you like us to know about what you believe is needed for surgical recipients to achieve long-term health and well-being?

    a. Before surgery:

    b. After surgery:

7) Please select the position(s) that best describes your role on the bariatric team.
    a. Bariatric Program Manager
    b. Medical Director
    c. Nurse Practitioner
    d. Psychologist
    e. Registered Social Worker
    f. Bariatric Surgeon
    g. Physician
    h. Registered Dietitian
    i. Clerical Staff
    j. Nutritionist
    k. Other (Not listed)
        i. If 'Other (Not listed)' was chosen, please state your position and describe your role on the bariatric team.
    l. Prefer not to disclose

8) What is your age range?
    a. 18-24
    b. 25-29
    c. 30-34
    d. 35-39
    e. 40-44
    f. 45-49
    g. 50-54
    h. 55-59
    i. 60-64
    j. 65-69
    k. 70+
    l. Prefer not to disclose

9) What is your gender?
    a. Male
    b. Female
    c. Other
        i. If ‘Other’ was chosen, please state your gender.
    d. Prefer not to disclose

10) Given that health care allotment is provincially determined, we are currently studying the perspectives of bariatric team members in Ontario ONLY. Are you a bariatric team member working in Ontario?
    a. Yes
    b. No

APPENDIX O

Copyright Release for Study 3

[redacted] Thu, Jun 22, 2017 at 5:09 PM

Dear Rebecca,

Thank you for your email. Yes of course this is possible as it is part of your work towards your doctoral thesis.

Best wishes,

Andrew.
Sent from my BlackBerry smartphone from Virgin Media

From: Rebecca Liu <[redacted]
Date: Thu, 22 Jun 2017 17:04:12 -0400
To: [redacted]
Cc: Jennifer D. Irwin<jenirwin@uwo.ca>
Subject: Publication to be included in graduate thesis request

Dear Dr. Miles and Mr. Williamson,
We hope this email finds you well.
Recently, our article **"What is needed to support bariatric surgery recipients' long-term health and wellbeing? Bariatric clinic staff's perspectives."** was accepted for publication in your journal, European Journal of Person Centered Healthcare.
We are grateful for your support in our research.

This study was conducted as part of a doctoral graduate thesis.
At this time, we would like to formally request the reproduction of this article to be included in the first author's graduate thesis upon completion.

Please let us know whether this is a possible request.
Thank you for your consideration,
- Rebecca and Dr. Irwin

--
Rebecca H. Liu, MSc., BSc. (Hons.)
PhD Candidate in Health Promotion
Department of Health and Rehabilitation Sciences
Western University
London, Ontario, CANADA

REBECCA H. LIU

[redacted]

SUMMARY OF SKILLS AND TECHNIQUES

- Creative PhD researcher with 6 years of experience studying obesity, health promotion, and weight management
- Expertise in quantitative and qualitative data analysis using Statistical Package for the Social Sciences (SPSS), Statistical Analysis Software (SAS), and NVivo
- Proficient in synthesizing data into oral and written formats tailored to professional and public audiences
- Experience in leading a team (and working within a team) of researchers on multi-site projects while collaborating with stakeholders

EDUCATION

Doctor of Philosophy Candidate, Health Promotion **2013 – Present**
Western University, London, Ontario *Expected Class of 2017
Dissertation (In Progress): Supporting the long-term success of bariatric surgery recipients.
Supervisor: Dr. Jennifer D. Irwin
Area of focus: Health promotion, behaviour change, co-active life coaching, and obesity.

Master of Science, Kinesiology and Health Science **2010 – 2012**
York University, Toronto, Ontario
Dissertation: The effectiveness of a lifestyle-based intervention and its influence on cardiometabolic factors.
Supervisor: Dr. Jennifer L. Kuk
Area of focus: Weight management, cardiometabolic health, and fitness behaviours.

Bachelor of Honours Science, Subject of Specialization Life Science **2005 – 2009**
Queen's University, Kingston, Ontario
Area of focus: Epidemiology, medicine, physiology, and biochemistry.

SCHOLARSHIPS, AWARDS, AND HONOURS

- CIHR Health System Impact Two-Year Fellowship – ($155,000) **2017**
- PSAC Local 610 Academic Achievement Scholarship – ($400) **2017**
- Western University, Faculty of Health Science Travel Award – ($260) **2017**
- Western University, Health and Rehabilitation Science Travel Award – ($400) **2017**
- Canadian Obesity Network Students & New Professionals Chapter Champion Award – ($250) **2016**
- PSAC Local 610 Community Involvement Scholarship – ($400) **2016**
- Faculty of Health Sciences Recognition of Achievement **2015**
  – Given to those with a course evaluation for overall effectiveness of 6.0 or greater from a Western University Instructor
- Canadian Institute of Health Research, Institute Community Support Travel Award **–** ($1,500) **2015**
- Western University, Faculty of Health Science Travel Award – ($500) **2014**
- Western University, Health and Rehabilitation Science Travel Award – ($400) **2014**
- Scholarship to attend the 9th Canadian Obesity Network, Student and New Professionals Summer Boot Camp – ($3,000) **2014**
- Western Graduate Research Scholarship – ($14,268/year) **2013 – 2017**
- Western University, Faculty of Health Science Travel Award – ($500) **2013**
- Western University, Health and Rehabilitation Science Travel Award – ($500) **2013**
- York University, Kinesiology and Health Science Entrance Scholarship – ($10,300/year) **2010 – 2012**
- York University, Mitacs Accelerate Internship – ($15,000) **2010**
- Canadian Millennium Excellence Scholarship – ($16,000) **2009**

WORK AND RESEARCH EXPERIENCE

Food Literacy Research Consultant **2016 – Present**
Locally Driven Collaborative Project, Public Health Ontario

Graduate Research Assistant in Health Promotion **2013 – Present**
Western University, London, Ontario

Group Fitness Instructor in BodyAttack, BodyPump, and CXWorx **2009 – Present**
GoodLife Fitness Club, Toronto, Ontario (Certified CPR & AED Responder)

Health Research Analyst
Wharton Medical Clinic-Weight & Diabetes Management, Hamilton, Ontario **2010 – 2012**

TEACHING EXPERIENCE

Advanced Health Promotion | HS 4200g Course Administrator and Teaching Assistant 2014, 2015, 2017
Western University, London, Ontario – Instructed by Dr. Jennifer D. Irwin/Dr. Marnie Wedlake

Occupational Therapy Ethics and Practice in Context | OT 9612 Teaching Assistant **2016**
Western University, London, Ontario – Instructed by Dr. Lisa McCorquodale

Sessional Lecturer in the School of Health Studies, Advanced Health Promotion | HS 4200g **2015**
Western University, London, Ontario
Faculty of Health Sciences Recognition of Achievement
– Given to those with a course evaluation for overall effectiveness of 6.0 or greater from a Western University Instructor

Determinants of Health and Disease | HS 3071B Teaching Assistant **2014**
Western University, London, Ontario – Instructed by Dr. Anita Cramp

Analysis of Data in Kinesiology | KINE 2049 Teaching Assistant **2011, 2012**
York University, Toronto, Ontario – Instructed by Senior Lecturer Merv Mosher

Research Methods in Kinesiology | KINE 2050 Teaching Assistant **2010, 2011**
York University, Toronto, Ontario – Instructed by Senior Lecturer Merv Mosher

PEER REVIEWED PUBLICATIONS

1. **Understanding the Post-Surgical Bariatric Experiences of Patients Who Are Two or More Years After Surgery (2017).**
   Quality of Life Research. [Epub ahead of print]. DOI: 10.1007/s11136-017-1652-z
   Authors: Rebecca H. Liu, M.Sc., Ph.D. Candidate and Jennifer D. Irwin, Ph.D.
2. **What Is Needed to Support Bariatric Surgery Recipients' Long-Term Health and Well Being? Bariatric Clinic Staff's Perspectives (2017).**
   Manuscript Accepted to the European Journal of Person Centered Health Care
   Author: Rebecca H. Liu, M.Sc., Ph.D. Candidate and Jennifer D. Irwin, Ph.D.
3. **Bariatric Surgery Recipients' Needs and Perspectives on Maintaining Long-Term Health and Well-Being (2017).**
   Bariatric Surgical Practice and Patient Care, 12(2), 72-84. DOI: 10.1089/bari.2016.0043
   Authors: Rebecca H. Liu, M.Sc., Ph.D.Candidate and Jennifer D. Irwin, Ph.D.
4. **Do Behavioral Interventions Delivered Prior to Bariatric Surgery Impact Weight Loss in Adults? A Systematic Scoping Review (2016).**
   Bariatric Surgical Practice and Patient Care, 11(2), 39-48. DOI:10.1089/bari.2015.0047
   Author: Rebecca H. Liu, M.Sc., Ph.D.Candidate

5. **The Parent Trap: Inquiry Regarding The Study of Eugenics and Three-Parent Babies (2015).**
   Health Science Inquiry, 6(1), 37-38.
   Authors: Rebecca R. Fried, M.Sc. and Rebecca H. Liu, M.Sc., Ph.D.Candidate

6. **Health Behaviour Outcomes of Co-Active Coaching Interventions: A Scoping Review (2015).**
   *International Journal of Evidence-Based Coaching and Mentorin*g. 13(1), 15-42.
   Authors: Rebecca H. Liu M.Sc., Jennifer D. Irwin, Ph.D., and Don Morrow, Ph.D.

7. **Closing the Health Gap Among Canadians: Using Co-Active Life Coaching to Address the Challenges to Primary**
   Healthcare (2014).
   Health Science Inquiry. 5(1), 53-54.
   Author: Rebecca H. Liu, M.Sc.

8. **Influence of a Lifestyle-Based Weight Loss on the Metabolic Risk Profile of Metabolically Normal and Abnormal**
   Obese Adults (2013).
   Obesity. 21(8), 1533-1539. DOI: 10.1002/oby.20219
   Authors: Rebecca H. Liu M.Sc., Sean Wharton, MD., Arya M. Sharma, MD., Chris I. Ardern, Ph.D., and Jennifer L. Kuk, Ph.D.

9. **Difference in Weight Loss based on Ethnicity, Age and Comorbidity Status in a Publicly Funded Adult Weight**
   Management Centre: One-Year Result (2012).
   Clinical Obesity. 3 (1-2), 21-31. DOI: 10.1111/cob/12015
   Authors: Rebecca H. Liu M.Sc., Sean Wharton, MD., Arya M. Sharma, MD., Chris I. Ardern, Ph.D., and Jennifer L. Kuk, Ph.D

Forthcoming Publications

10. **The Impact of Post-Bariatric Surgery Behavioral Interventions on Psychosocial Outcomes in Adults: A Systematic Review.**
    Manuscript In Progress. Anticipated Completion: July 2017
    Author: Rebecca H. Liu, M.Sc., Ph.D.Candidate

CONFERENCE PRESENTATIONS

1. Liu, R.H. & Irwin. J.D. What Bariatric Surgery Recipients Need Before, During, and After Surgery for Long-Term Health and Well-Being: Recipients' Perspectives. Poster presentation at the 16th International Society of Behavioral Nutrition and Physical Activity, Victoria, Canada June 7-10, 2017. (International)

2. Liu, R.H. & Irwin. J.D. Understanding The Post-Surgical Bariatric Experiences of Patients, Two or More Years After Surgery. Poster presentation at the 16th International Society of Behavioral Nutrition and Physical Activity, Victoria, Canada June 7-10, 2017. (International)

3. Liu, R.H. & Irwin, J.D. Bariatric Surgery Recipients' Needs and Perspectives on Maintaining Long-Term Health and Well-Being. Oral presentation to the 5th Canadian Obesity Network Summit, Banff, AB, Canada, April 27, 2017. (National)

4. Liu, R.H. & Irwin, J.D. Bariatric Surgery Recipients' Needs and Perspectives on Maintaining Long-Term Health and Well-Being. Poster presentation at the London Health Research Day, London, ON, Canada, March 28, 2017. (Local)

5. Liu, R.H. & Irwin, J.D. Understanding The Post-Surgical Bariatric Experiences of Patients, Two or More Years After Surgery. Poster presentation at the London Health Research Day, London, ON, Canada, March 28, 2017. (Local)

6. Liu, R.H. & Irwin. J.D. What bariatric surgery recipients need before, during, and after surgery for long-term health and wellbeing: Recipients' perspectives. Poster presentation at the Faculty of Health Sciences' Annual Research Day, London, ON, Canada, March 22, 2016. (Local)

7. Liu, R.H. The Impact of Pre-Bariatric Surgery Behavioural Interventions on Body Composition Measures in Adults: A Systematic Review. Poster presentation at the 14th International Society of Behavioral Nutrition and Physical Activity, Edinburgh, Scotland, June 3-6, 2015. (International)
8. Liu, R.H. The Impact of Post-Bariatric Surgery Behavioural Interventions on Psychosocial Outcomes in Adults: A Systematic Review. Poster presentation at the 14th International Society of Behavioral Nutrition and Physical Activity, Edinburgh, Scotland, June 3-6, 2015. (International)
9. Liu, R.H. The Impact of Pre-Bariatric Surgery Behavioural Interventions on Body Composition Measures in Adults: A Systematic Review. Poster presentation to the 4th Canadian Obesity Network Summit, Toronto, ON, Canada, May 1, 2015. (National)
10. Liu, R.H. The Impact of Post-Bariatric Surgery Behavioural Interventions on Psychosocial Outcomes in Adults: A Systematic Review. Poster presentation to the 4th Canadian Obesity Network Summit, Toronto, ON, Canada, May 1, 2015. (National)
11. Liu, R.H. The Impact of Pre-Bariatric Surgery Behavioural Interventions on Body Composition Measures in Adults: A Systematic Review. Poster presentation at the Faculty of Health Sciences' Annual Research Day, London, ON, Canada, March 25, 2015. (Local)
12. Liu, R.H. The Impact of Post-Bariatric Surgery Behavioural Interventions on Psychosocial Outcomes in Adults: A Systematic Review. Poster presentation at the Faculty of Health Sciences' Annual Research Day, London, ON, Canada, March 25, 2015. (Local)
13. Liu, R.H. & Irwin. J.D. What I need to make my bariatric surgery a long-term success (before, during, and after): Recipients' perspectives. Oral presentation at the 8th Health and Rehabilitation Sciences Graduate Research Conference, London, ON, Canada, February 4, 2015. (Local) ***Best Oral Presentation Award***
14. Liu, R.H., Irwin, J.D., and Morrow, D. Health Behaviour Outcomes of Co-Active Life Coaching Interventions: A Scoping Review. Abstract and poster presentation at the Institute of Coaching at McLean Hospital Harvard Medical School's 2014 Coaching in Leadership and Healthcare Conference. Boston, MA, USA, September 12–13, 2014. (International)
15. Liu, R.H., Irwin, J.D., and Morrow, D. Health Behaviour Outcomes of Co-Active Life Coaching Obesity Focused Interventions: A Scoping Review. Abstract and oral presentation at the 4th Canadian Obesity Student Meeting, Waterloo, ON, Canada, June 18, 2014. (National)
16. Liu, R.H., Irwin, J.D., and Morrow, D. Health Behaviour Outcomes of Co-Active Life Coaching Focused Interventions: A Scoping Review. Abstract and poster presentation at the Faculty of Health Sciences' Annual Research Day, London, ON, Canada, March 25, 2014. (Local)
17. Liu, R.H., Irwin. J.D., and Morrow, D. Assessing the views of a racially/ethnic minority adult population struggling with obesity for a tailored co-active life coaching intervention. Oral presentation at the 7th Health and Rehabilitation Sciences Graduate Research Forum, London, ON, Canada, February 3, 2014. (Local)
18. Liu, R.H., Wharton, S., Sharma, A.M., Ardern, C.I., and Kuk, J.L. Effects of a lifestyle-induced weight loss on cardiometabolic risk of metabolically normal, yet obese individuals. Oral and Poster Presentation at the 3rd International Congress On Abdominal Obesity, Quebec City, QC, Canada, July 11, 2012. (International)
    ***This study was nominated to be part of a select moderated oral poster presentation session by the scientific committee. Only 8 of 302 presentations were selected.**
19. Liu, R.H., Wharton, S., VanderLelie, S., and Kuk, J.L. Long-term weight loss success from a publicly funded weight management clinic. Poster presentation at the Canadian Society for Exercise Physiology, Quebec City, QC, Canada October 19, 2011. (National)
20. Liu, R.H., Wharton, S., and Kuk, J.L. Is weight loss treatment detrimental to those who are already metabolically healthy, yet obese? Oral presentation at the Canadian Society for Exercise Physiology, Quebec City, QC, Canada, October 19, 2011. (National)

21. Wharton, S., Liu, R.H., VanderLelie, S., and Kuk, J.L. One year data on the effectiveness of a publicly funded weight management clinic. Poster presentation at the 2nd Canadian Obesity Network Summit, Montreal, QC, Canada, April 28, 2011. (National)

INVITED TALKS AND GUEST LECTURES

1. Liu, R.H. & Vanderloo, L.M. Weight discrimination, Weight Bias and Stigma Presented by the Canadian Obesity Network Student and New Professionals at Western University, KINE2962-Exercise in Special Populations, London, ON, Canada, February 25th . Invited Lecture. (Local)
2. Liu, R.H. & Vanderloo, L.M. Weight Bias and Stigma Presented by the Canadian Obesity Network Student and New Professionals at Western University, HS2090-Physical Activity and Health, London, ON, Canada, November 13, 2015. Invited Lecture. (Local)
3. Liu, R.H. Health Coaching: Co-Active Life Coaching. Heart & Stroke Foundation-Chinese Communities, Toronto, ON, Canada, November 2, 2014. Invited Lecture. (Local)
4. Liu, R.H. The Need for Co-Active Life Coaching in Specialized Populations. The 9th Annual Canadian Obesity Network Summer Boot Camp, Kananaskis, AB, Canada, July 22, 2014. Guest Lecture. (International)
5. Liu, R.H. Health Coaching: Co-Active Life Coaching. Retiring with Strong Minds: Windermere on the Mount Retirement Residence, London, ON, Canada, July 4, 2014. Invited Lecture. (Local)
6. Liu, R.H. & Mahoney, R.H. Social Stigma and Health Promotion, HS9721a-Current Topics in Health Promotion, London, ON, Canada, November 20, 2013. Guest Lecture. (Local)

EXTRACURRICULAR AND VOLUNTEER INVOLVEMENT

a) Community Wide Engagement

- BMJ Reviewer **2017**
- BMC Obesity Reviewer
- Homelessness Connect Toronto Guide Volunteer, Toronto **2016 – Present**
- Outgoing Chair of the Canadian Obesity Network-Student and New Professional National Executive
- Executive Editor of Main submissions of Health Science Inquiry, Toronto, ON
- Judging Panel of the Life Sciences Undergraduate Paper Awards, International
- Networking Events and Activities Coordinator of the Network of Early Career Researchers and Students for International Society of Behavioral Nutrition and Physical Activity (ISBNPA), International
- Pecha Kucha Chair at the Canadian Obesity Summit, Banff, AB
- Heart Health Ambassador for Chinese communities, Heart & Stroke Foundation, Toronto, ON **2012 – Present**
- Society for Teaching and Learning in Higher Education Conference Reviewer, London, ON **2016**
- Abstract Assessor and Moderator at the International Conference on Obesity, International
- Managing Editor of Spotlight on Careers at Health Science Inquiry, Toronto, ON **2015 – 2016**
- Chair of the Canadian Obesity Network-Student and New Professional (CON-SNP) National Executive
- Membership Lead of the Emerging Leaders Forum, Toronto, ON
- Board of Directors of the Canadian Obesity Network-Réseau canadien en obésité (CON-RCO)
- Undergraduate Science Case Competition Judge, London, ON
- Toronto Hakka Helping Hands Festival Volunteer, Toronto, ON

- Special Events Coordinator of the CON-SNP National Executive **2014 – 2015**
- Writing Associate for Spotlight on Careers at Health Science Inquiry, Toronto, ON
- National Pedometer Challenge Committee
- Poster Judge at the Canadian Obesity Network Summit, Toronto, ON

- Canadian Obesity Network, 9th Annual Obesity Research Boot Camp Graduate, Kananaskis, AB **2014**

b) University Focused Engagement

- Outgoing Vice Chair of the CON-SNP Western University Chapter **2016 – Present**
- London Health Research Day Moderator, London, ON

- Health Promotion Field Mentor for the Health and Rehabilitation Science Program at Western University **2014 – Present**

- Elected Member of the Senate Review Board Academic at Western University **2015 – 2016**
- PhD Student and Early Career Research Network Member of ISBNPA, International
- Vice Chair of the CON-SNP Western University Chapter
- Western University Research Blitz Judge, London, ON

- Chair of the Health and Rehabilitation Sciences Graduate Research Conference Committee [organized and lead 1.5 hour weekly meetings, determined focus, task list, organized logistics, etc.] **2014 – 2015**
- Vice-President of Academic Affairs of the Health and Rehabilitation Sciences Graduate Student Society

- Reviewer for the Western Undergraduate Research Journal: Health and Natural Sciences **2013, 2015**

PROFESSIONAL DEVELOPMENT AND TRAINING/CERTIFICATIONS

- Graduate Strategic Management Consulting Association Conference (May 7 – 13), Toronto, ON **2016**
- Networking Skills, Mitacs Step Program (March 30), Toronto, ON
- Writing Strategic Business Reports, Mitacs Step Program (March 1), Toronto, ON
- Practical Tips on Growing your Network Mitacs Step Program (February 18), Toronto, ON
- Communicating Your Research, Mitacs Step Program (January 26), Toronto, ON

- Foundations of Project Management II – 2-day workshop, Mitacs Step Program (December 3 & 4), Toronto, ON **2015**
- Introduction to Dissemination & Implementation Research for New & Junior Investigators webinar (November 12), ISBNPA Policies and Environments
- Influencing obesity in the media webinar (November 12), Nutrition Resource Centre
- Understanding and Changing Health Behaviors From a Self-Determination Theory Viewpoint webinar (November 10),ISBNPA Theories of motivation
- Foundations of Project Management I – 2-day workshop, Mitacs Step Program (November 6 & 9), Toronto, ON
- Scientist Knowledge Translation Training (SKTT™) workshop for Graduate Students, The Hospital for Sick Children (May 19), Toronto, ON
- Canadian Obesity Network- Students and New Professionals Training Seminar: Science Communication (April 3), Toronto, ON
- Canadian Obesity Network- Students and New Professionals Leadership Workshop: Sustainable Strategic Development and Sustaining Success Across Changing (April 2), Toronto, ON
- GradWRITE, Graduate Writing Conference, Western University (March 6), London, ON
- Winter Conference on Teaching, Western University (January 24), London, ON

- Analyzing and Evaluating Healthy Public Policies: Tools and resources webinar (February 13), Public Health Ontario
- Evaluating Healthy Public Policies: A ten step process webinar (February 6), Public Health Ontario

- An Introduction to Implementation Science Webinar 3-Part Series (May-July), Public Health Ontario **2014**
- Foundations of Health Promotion Webinar Series (April 9, 16, 23), Centre for Addiction and Mental Health's Provincial System Support Program, and the Ontario Neurotrauma Foundation
- Mental Health Interactive Learning Module, Western University (April 1), London, ON
- Accessibility at Western (AODA), Accessibility in Service, Western University (April 1), London, ON
- Occupational Health and Safety Orientation, Western University (April 1), London, ON
- Workplace Hazardous Material Information System (WHMIS) training, Western University (January 22), London, ON

- Level 2 certification, Advanced Motivational Interviewing in Resistance, The Monarch System (November 22),Toronto, ON **2013**
- Policy Development at a Glance Seminar (November 28), Public Health Ontario
- Interagency Advisory Panel on Research Ethics' Introductory Tutorial for the Tri-Council Policy Statement: Ethics Conduct for Research Involving Humans (TCPS) (November 17), Canada
- Level 1 certification, Intensive Introduction to Motivational Interviewing, The Monarch System (October 3 & 4), Toronto, ON

- Biosafety Training, York University (September 16), Toronto, ON **2010**
- Can-Fit-Pro Fitness Instruction Specialist (January 3), Toronto, ON

PROFESSIONAL TEACHING DEVELOPMENT

Western Certificate in University Teaching and Learning, **2015 – Present**
Western University, London, Ontario *Anticipated completion by 2017

- Currently working towards completing an in-depth professional development program through the Teaching Support Centre. Completed components include:
  - **Teaching Assistant Training Program (Completed January 2015)**, a 2½-day intensive training program that includes workshops on grading practices, diversity in the classroom, leading discussions, using instructional technology, and giving students feedback on written work.
  - **Teaching Mentor Program (Completed April 2015)**, a semester long program which involves graduate students observing one another in their personal teaching environment, and sharing valuable feedback from peers on both their instruction methods and teaching philosophies.

  - **Teaching workshops attended in the Future Professor Series (Completed July 2015)**
    - "The Graduate Game Plan" January 24, 2015
    - "Don't Be Afraid of Student Evaluations" January 24, 2015
    - "Great Ideas for Teaching: Panel Presentation" January 24, 2015
    - "My Post-PhD Dream Job: Academic or Not" February 9, 2015
    - "Making the Most of your TAship: **Educational Leadership and Transferable Skills**" March 24, 2015
    - "Getting it done: **Strategies for Finding Focus and Overcoming Procrastination in Grad School"** March 24, 2015
    - **"Publish and Flourish: Become a Prolific Scholar" March 27, 2015**
    - **Designing Your Own Course: Components of a Great Syllabus July 6, 2015**
    - **"**Using Social Media Effectively in the University Classroom" **July 6, 2015**
    - **"**Professionalism: Networking at Academic Conferences" **July 6, 2015**
    - **"**Teaching Dossiers: What to Include and Why" **July 6, 2015**

PROFESSIONAL MEMBERSHIP AND AFFILIATION

- Canadian Fitness Professionals (CanFitPro)
- Canadian Knowledge Transfer and Exchange Community of Practice (KTECOP)
- Canadian Obesity Network – Réseau canadien en obésité (CON-RCO)
- Emerging Leader Forum (ELF)
- International Society of Behavioural Nutrition and Physical Activity (ISBNPA)
- Sedentary Behaviour Research Network (SBRN)

LANGUAGES

1. English (Native)
2. French (Proficient, both orally and written)
3. Hakka (Spoken Chinese dialect)