Experiences of Indigenous People with Bariatric Surgical Care in Manitoba

By

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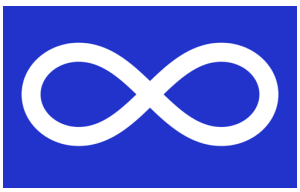
Land Acknowledgement

This research was conducted on Treaty 1 territory, the Traditional, ancestral lands of the Anishinaabeg, Cree, Ojibwe-Cree, Dakota, and Dene people and the homeland of the Red River Métis. We recognize Indigenous Peoples as stewards of this land and respect the relationship that exists between Indigenous Peoples and their Traditional Territories. We respect the Treaties that were made on these territories. We acknowledge the harms and mistakes of the past and the present, and we are dedicated to moving forward together with Indigenous people in the spirit of friendship and reconciliation.



Contributions of Authors

Dr. Marta Whyte:	Study conceptualization and design, data collection and abstraction, data analysis, manuscript writing and editing.
Elder Geraldine Shingoose:	Study conceptualization and design, ceremony leader, member of the Indigenous Advisory Committee, member of the Masters Thesis Committee, manuscript review.
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For all those working to weave Indigenous ways of being and knowing into Western medicine.

Situating Myself

I am a first-generation white settler Canadian of Polish ancestry. Both my parents are Polish immigrants, and my identity is deeply rooted in maintaining a strong connection to Polish language and culture. I was born in Northern Ontario, but I grew up in Northern BC on the unceded territory of the Lheidli T'enneh First Nation, where I spent most of my life. I am a wife, a mother and a resident General Surgery physician pursuing training in surgical critical care and trauma surgery. I interact with and understand the world through experiences of privilege, cultural pride, motherhood, and the values of Western medicine (including its inherent paternalism). In my professional life, I will provide care to patients who have suffered traumatic injuries or who require emergency surgery. There are intrenched power dynamics in my position, which are present in all my interactions.

Abstract

Background

Obesity and type 2 diabetes mellitus (T2DM) are growing global health concerns associated with significant morbidity, mortality and increasing healthcare expenditures. Indigenous peoples are at higher lifetime risk of both and poorer health outcomes. This work aimed to explore the experiences of Indigenous who had undergone bariatric surgery.

Methods

We established relationships with Indigenous community leaders. A mixed methods scoping review of experiences and outcomes of Indigenous patients undergoing bariatric surgery was conducted. Guided by an Indigenous Elder, we gathered knowledge through Sacred sharing circles, ceremony and Traditional teachings in a decolonized way.

Results

Scoping review found Indigenous patients have poorer access to bariatric surgery with similar weight loss outcomes and strong motivators for pursuing bariatric surgery. Relationship building, community involvement, and honoring tradition are crucial when conducting research with Indigenous communities. Indigenous people undergoing bariatric surgery in Manitoba had positive experiences, strong motivators, and felt that more cultural supports were needed.

Conclusion

Bariatric surgery is an effective treatment for obesity and T2DM. Research with Indigenous communities to close gaps in health outcomes must be done in a good way, rooted in Indigenous methodologies. Indigenous patients have strong motivators for pursuing surgery, and have a desire for non-surgical, culturally relevant supports along the bariatric pathway. Culturally sensitive care is necessary for Indigenous patients in bariatric clinic settings.

Introduction

Obesity and type 2 diabetes mellitus (T2DM) are growing global health concerns associated with morbidity, mortality, and increased healthcare expenditures. One of the most visible and neglected public health problems, obesity increases an individual's lifetime risk of T2DM, cardiovascular disease and all cause mortality[1–3]. Indigenous Peoples across the globe bear a higher burden of both obesity and T2DM, and have poorer health outcomes related to both[1,4–7]. Obesity treatment is typically multimodal consisting of medical management (lifestyle modifications in the form of dietary changes and exercise, and medical therapies), and/or surgical intervention. The outcomes for medical management of obesity alone are quite poor[8]. Surgical intervention, in the form of bariatric surgery, has been shown in many studies to be the most effective treatment in the management and resolution of obesity and T2DM[5,8–16]. While there is a plethora of literature on the experiences and outcomes of patients undergoing bariatric surgery, very few studies focus on the experiences and outcomes of Indigenous patients[17–21].

The Truth and Reconciliation Commission of Canada called on Canadians to identify and address the gaps in health outcomes between Indigenous and non-Indigenous communities[22]. Research with Indigenous communities is crucial to identifying gaps in health access and outcomes, but also in identifying and amplifying Indigenous voices and community needs. Conducting research with Indigenous communities must employ decolonizing methodologies, community engagement, and respect of traditional knowledge[23].

There were several objectives to this work. First and foremost, we aimed to build relationships with Indigenous community members to help inform our research project and ensure our work was done in a good way. Our second aim was to analyze the current available literature examining the outcomes and experiences of Indigenous people undergoing bariatric

surgery. Third, in partnership with Indigenous community leaders, we endeavored to create a safe space to explore the experiences of Indigenous patients who had undergone bariatric surgery in Manitoba. Finally, we aim to use the knowledge shared and learned during this project to develop and implement culturally relevant supports and programs in the bariatric clinic in order to address health inequities and better support Indigenous patients on their healing journeys. Our hope is that the research conducted here will inspire and inform the development and implementation of culturally sensitive care in other healthcare settings as well.

Chapter 1 – Review of the Literature

Article 1

Experiences and Outcomes of Indigenous Patients Undergoing Bariatric Surgery: A Mixed-Methods Scoping Review

Whyte M, Daeninck F, Linton J, Fowler-Woods M, Fowler-Woods A, Shingoose G, Vergis A, He W, Hardy K

(*Obesity Surgery, 2024*)

Abstract

Introduction

Obesity and type 2 diabetes mellitus (T2DM) are growing global health concerns that increase morbidity and mortality. Indigenous people in Canada are at a higher lifetime risk of both. Bariatric surgery is an effective method for remission/cure of T2DM. The aim of this review was to explore the experiences and outcomes of Indigenous people undergoing bariatric surgery.

Methods

Using the PRISMA-ScR guidelines, a search of Medline, Scopus, CINAHL and Embase was conducted under the guidance of an Indigenous health librarian. Studies exploring the experiences/outcomes of Indigenous patients undergoing bariatric surgery were included. Studies were evaluated using GRADE and CASP approaches.

Results

A total of 123 non-duplicate articles were identified in the search. 5 qualitative, 16 quantitative studies were included in the analysis. Quantitative analysis revealed that Indigenous patients had fewer bariatric procedures, similar weight loss outcomes and post-operative complication rates. Qualitative data analysis revealed that Indigenous patients have strong motivators to pursue bariatric surgery and that non-surgeon supports are lacking.

Conclusion

Indigenous people worldwide appear to have poorer access to bariatric care, similar outcomes and strong motivators for pursuing surgery. There is a paucity of literature examining the experiences or outcomes of Indigenous patients undergoing bariatric surgery. Further research must focus on development and implementation of cultural/community-based supports incorporating traditional Indigenous ways of knowing and being.

Introduction

Obesity is a growing global health concern and one of the most visible and neglected public health problems in the developed world[1]. Immediate action is required to reduce the prevalence of obesity and its associated morbidity, mortality and rising health care expenditures[1,2]. Obesity increases the risk for insulin resistance, type 2 diabetes mellitus (T2DM), cardiovascular disease, and all-cause mortality[3]. The multifaceted etiology of obesity includes genetic, hormonal, and environmental factors, all of which contribute to the complex nature of treatment[4].

Globally, Indigenous peoples have high rates of obesity and related comorbidities. Indigenous peoples in North America bear a heavy burden of obesity, T2DM and other comorbidities, with the highest incidence in those populations living on reservation[4,5-8]. The Canadian Community Health Survey found that 16% of non-Indigenous Canadians were obese, whereas 26% of First Nations, 26% of Inuit, and 22% of Métis people were obese[8]. Social determinants of health contribute to the higher rates of chronic disease and health inequity for Indigenous people[9]. In order to create conditions for equitable access to health services among vulnerable populations, unique cultural contexts and histories must be acknowledged[10]. Canada's Truth and Reconciliation Commission (TRC) outlines several 'Calls to Action' aimed at improving the health of Canadian Indigenous peoples. They call for research to identify and address the gaps in health outcomes between Indigenous and non-Indigenous communities, focusing on key indicators including those related to chronic diseases, such as obesity and T2DM[11].

There are several anti-obesity strategies, used in isolation or combination to manage and treat obesity. Non-surgical interventions include dietary/behavior modification, exercise and medications. The effectiveness of obesity management focused on lifestyle and behavior modification is poor[12]. Studies comparing medical management to surgical intervention have demonstrated that bariatric surgery is the most effective treatment for obesity and amelioration of its associated comorbidities[5,13-24.]

The purpose of our study was to explore the experiences and outcomes of Indigenous peoples undergoing bariatric surgery. Given that this topic requires examination of both qualitative and quantitative data, we undertook a mixed methods review. When examining developed countries, Canada, the United States, New Zealand and Australia share a common colonial past and current social climate. All have high standards of living and health yet Indigenous people in these countries have poorer health outcomes than non-Indigenous people. Given these important commonalities, cautious comparison can be made while recognizing the many unique Indigenous groups across these nations[25,26]. We conducted a scoping review of the literature pertaining to the experiences and outcomes of obese Indigenous adults undergoing bariatric surgery in Canada, the United States, Australia, and New Zealand (CANZUS). Given the broad nature of our query, the paucity of data on this topic, and the emerging nature of research in this area, we felt that a scoping review was the most appropriate method to answer our study question. We aimed to describe the experiences and outcomes of Indigenous peoples following bariatric surgery to highlight the challenges and barriers experienced, identify culturally appropriate interventions, and direct future research to respond to Indigenous health inequities and improve Indigenous health outcomes in congruence with the Truth and Reconciliation Commission of Canada's recommendations.

Materials and Methods

We conducted a convergent design mixed methods scoping review (Figure 1). The PRISMA guidelines were used to answer the following research question: "What are the experiences and outcomes of Indigenous people undergoing bariatric surgery?" A search strategy was designed, and searches were executed by an academic health sciences librarian (JL) with over 25 years' experience working in Indigenous health. Searches were carried out to identify articles published and retrievable in various databases from database inception to June 8, 2023. Databases searched were Scopus, Medline (OVID), Embase (OVID), and in CINAHL and Academic Search Complete (EBSCOhost). No publication date limits were set. Search strategy keywords included 'first nations' 'oceanic ancestry group' 'metis' 'native canadian' 'inuits' 'bariatric surgery' 'obes*' and 'bmi' among others. See supplementary file S1 for complete search strategies. A search of the grey literature and spoken word sources was conducted using Google Advanced with "bariatric surgery" as 'exact word or phrase' and "indigenous aboriginal metis "first nations" inuit maori Hawaii Alaska" as 'any of these words'.

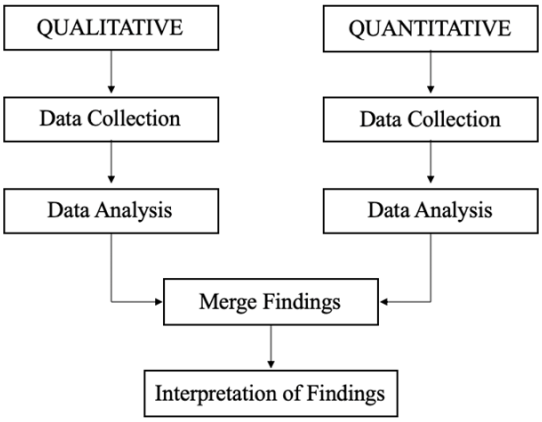

Figure 1: Graphic representation of mixed methods convergent design

Inclusion and exclusion criteria

The inclusion criteria for this review were any English language qualitative or quantitative study examining the outcomes or experiences of Indigenous people undergoing bariatric or metabolic surgery in Canada, USA, Australia and New Zealand (NZ). We excluded any abstracts or review articles. We excluded all papers that did not relate to bariatric surgery, grouped Indigenous patients with other ethnic groups/minorities, or did not focus on Indigenous patients. We did not have a BMI cutoff for inclusion.

Study selection and quality of evidence

Two independent reviewers (MW & FD) performed initial screening by article title and abstract. The screened articles were then reviewed in full and inclusion criteria were applied once again. Disagreements among reviewers were discussed with an adjudicator (KH). The Grades of Recommendation, Assessment, Development and Evaluation (GRADE) approach was employed to assess the quantitative studies identified in the search[27]. The GRADE approach has four levels of evidence, outlined in Table 1, with several factors that would influence whether a study is downgraded to a lower level or upgraded to a higher one. Highest quality ratings are given to randomized studies whereas lower quality ratings are given to observational studies. The Clinical Appraisal Skills Programme (CASP) Qualitative Checklist was employed to assess the qualitative studies identified in the search[28]. Themes identified in these studies were compared between studies to assess for commonalities and differences, and larger, overarching themes were identified in an inductive fashion.

Table 1: Levels of evidence based on the GRADE approach [a].

Methodology	Quality rating
Randomized trials; double-upgraded observational studies	High
Downgraded randomized trials; upgraded observational studies	Moderate
Double-downgraded randomized trials; observational studies	Low
Triple-downgraded randomized trials; downgraded observational studies; case series or reports	Very Low

[a] Factors that upgrade quality of evidence include a large magnitude of effect or a dose-response effect. Factors that downgrade the quality of evidence include limitations in study design, risk of bias, inconsistency of results, publication bias, and imprecision[27].

Data collection & synthesis of results

The data extracted from eligible qualitative studies included methods, sample, analysis, main themes, conclusions, and limitations. The data extracted from eligible quantitative studies included study design, sample, outcomes, results and major findings, limitations, and GRADE recommendation.

Results

The initial literature search identified 246 articles. There were 123 articles when duplicates were removed. After abstract/title screen, 35 articles remained to which the inclusion/exclusion criteria were applied. A total of 20 articles were included, as well as 1 article identified by searching the references of included studies. Of the 21 included studies, 16 were quantitative and 5 were qualitative. There were many different Indigenous groups represented in the selected studies including Canadian Indigenous, American Indian, Alaska Native, Māori, Pacific Islander, Native Hawaiian, and Australian Indigenous peoples. There was significant heterogeneity among the studies included in this analysis. The oldest study identified was

published in 2010 with the majority published between 2018-2020. The search results are presented in Figure 2.

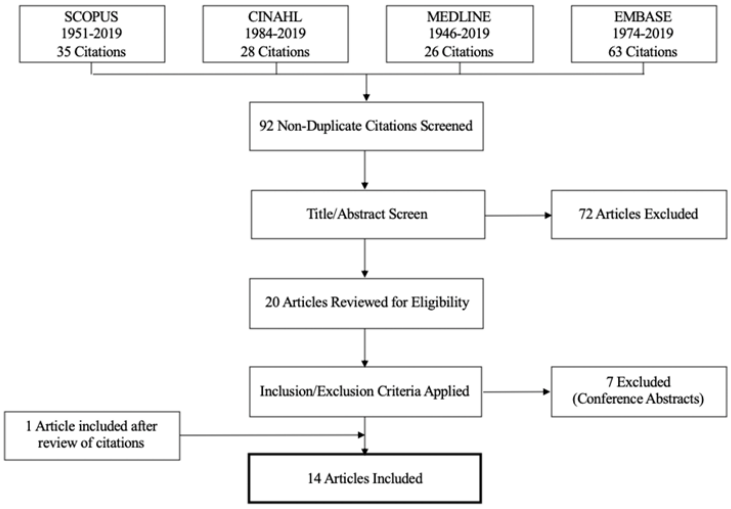

Figure 2: Representation of our search results.

Qualitative Study Results

We included 5 qualitative studies in our analysis (Table 2). All studies were from New Zealand and included Māori and Pacific Island peoples. All studies met the guidelines outlined by the CASP qualitative critical appraisal approach. Several overarching themes were identified, including accessibility of bariatric surgery, motivators for pursuing bariatric surgery, presence of patient supports, life after surgery, and proposed solutions for improving access and outcomes.

Table 2: Summary of data extracted from qualitative studies.

First Author, Year, Title	Methods	Sample	Analysis	Main Themes	Conclusions	Limitations
Rahiri, 2020 Maori experiences of bariatric surgery in South Auckland, New Zealand	Semi-structured individual interviews	Maori who had bariatric surgery at Counties Manukau Health	Inductive thematic analysis	Life before surgery (ie intergenerational obesity), Accepted for surgery (ie peer support, long journey), Surgery (ie anxiety), Follow Up (ie falling through the gaps, cultural barriers), Life after surgery (ie adjustment, family, weight regain), Reflections for others (not a magic cure, thick skin, surgery is a second chance)	Patients who underwent bariatric surgery described largely very positive experiences of life after surgery. They also described discrimination at various levels and sites along the bariatric surgery journey.	Limited recruitment, predominantly female perspective
Rahiri, 2019, Exploring motivation for bariatric surgery among Indigenous Māori women	Semi-structured individual interviews	Māori women who underwent bariatric surgery at their institution 2010 - 2014 (N = 29)	Inductive thematic analysis	Comorbidity alarm bells, A better quality of life, Whānau (family), A lifetime of fattism, Futile attempts at weight loss	Patient motivating factors for pursuing bariatric surgery were largely related to increasing quality of life, futile previous attempts at weight loss, and the desire to be healthy for their family.	Only Māori women accepted for surgery were included in the study
Rahiri, 2019, Enhacing responsiveness to Māori in a publicly funded bariatric service in Aotearoa/New Zealand	Semi-structured individual interviews	Māori patients who had a primary bariatric procedure at their institution 2007 - 2014 (N = 31)	Inductive thematic analysis	Kaupapa Māori standards of health, Bariatric mentors, Bariatric psychologists, Community-integrated support	In order to improve the bariatric pathway for Māori patients the focus should be on inclusion of Māori knowledge and tradition, as well as increased access to psychologists, mentors and Māori based supports	Limited recruitment, primarily female participants
Taylor, 2019, Preoperative bariatric surgery programme barriers facing patients in Auckland, New Zealand as perceived by health sector professionals: a qualitative study	Semi-structured individual interviews	Pacific and non-Pacific health sector professionals who worked with patients in a bariatric program and Pacific health sector workers who work with Pacific patients (N = 21)	Inductive thematic analysis	Confidence negotiating the medical system (emotional safety in clinical setting, relating to non-Pacific health professionals), Appropriate support needed to achieve preoperative goals (cultural considerations, practical support, relating health information).	Pacific patients face many obstacles in accessing bariatric surgery including preop health behavior requirements, health literacy, communication and understanding. Importance must be placed on cultural education of health professionals and increasing non-surgery supports for Pacific patients undergoing surgery.	Majority of participants are non-Pacific, no corroboration from Pacific patients about their experiences
Rahiri, 2018, Media portrayal of Māori and bariatric surgery in Aotearoa/New Zealand	Electronic search of two databases and two New Zealand news media websites	All articles relating to Māori people and bariatric surgery (N = 31)	Williamson's level of reporting scale; Inductive thematic analysis	Attitudes towards bariatric surgery, Access to bariatric surgery, Framing of Māori, Māori advocacy, Complexity of obesity and weight loss	The attitude towards bariatric surgery is largely positive however obesity is framed in a negative way - self-inflicted, result of laziness, etc.	Williamson's scale cannot determine bias against Māori, Searched only 2 sources

Accessibility of Bariatric Surgery for Indigenous People

Several barriers to access were identified for Indigenous peoples when accessing bariatric surgery. First, the stigma surrounding obesity and bariatric surgery in Indigenous populations was found to pose a significant barrier to accessing this resource. One study explored media portrayal of Māori and bariatric surgery[29]. They reported that obesity was perceived as self-inflicted, was more normalized in Indigenous populations, and that bariatric surgery was perceived as the "easy way out" or a "privilege". This normalization of obesity in Indigenous populations was also described as intergenerational obesity in another study and contributed to participants' challenges with their weight throughout their lives[30].

"There is still a huge prejudice against it. The belief that people that have bariatric surgery should be exercising, that they're lazy and stupid."[31]

"My biggest thing was I didn't like peoples' perceptions of those of us who have had bariatric surgery. That was the part that took me the longest to get my head around. It's "oh it's a cheats way", and for a long time I thought the same thing."[30]

"When you live in an environment where everyone has a weight issue or where they are big, that doesn't necessarily correlate to you as there is a problem…why are you going to look for a solution?"[32]

Healthcare systems factors were also identified as barriers to accessing bariatric surgery in Indigenous populations. Cost was noted to be prohibitive in countries with access to private

surgery. In countries with publicly funded procedures, there was a noted lack of public funding to ensure adequate access for Indigenous patients.

"For every patient funded for the surgery, at least another two, whose health would benefit from the procedure, are referred."[29]

Primary care providers (PCPs) were seen as 'gate-keepers' of referral for bariatric surgery, and being accepted was seen as a "privilege" to some patients[29,30]. In some cases there was felt to be a lack of understanding amongst PCPs about available surgical options, creating an additional barrier[29]. The environment in the bariatric clinics, as described by both Indigenous and non-Indigenous healthcare providers, was found to be lacking in supports for Indigenous patients. It was perceived that perhaps Indigenous patients had more difficulty navigating the clinic environment due to a variety of factors including language barriers, lack of emotional connection with non-Indigenous healthcare professionals, limited time to build trust, difficulty attending clinic appointments, and the perception of hospitals/clinics relating to death and disease[32].

"…back in the Islands people don't go to the hospital unless they're really really sick and often they don't come out of the hospital. I mean they do, but in a casket so there is a lot of fear around surgery and hospital services and stuff like that."[32]

Importantly, the bariatric pathway is a long journey with many steps and interactions with the healthcare team along the way. In one study, participants described anxiety and apprehension

when attending clinic seminars and, in some cases experiencing overt racist comments from healthcare professionals, which caused damage to the therapeutic relationship.

" The surgeon introduced himself and goes (which really pissed me off) it's so wonderful to meet everybody and whatever excuse you make up for not getting weighed, coming to your sessions, doing as you're told, this is the one that we hear often; "I went to a tangi." I looked around the room and there were probably about, you'd be lucky out of 30 people that were there, 6 of them were Maori. Are you kidding me? That can't be the only reason. And that's exactly what he said. You can't use tangi as an excuse. I'll tell you that now. He said tangi, he didn't say funeral."[32]

Motivators for Pursuing Bariatric Surgery

One study specifically explored the motivators for Māori women to purse bariatric surgery and found that family was identified as an important support and driving factor for succeeding in the bariatric pathway[33]. Participants wanted to be healthier to participate and engage more fully with their families, but another study also found that participants were motivated to break the cycle of intergenerational obesity by modelling better health and a better relationship with food.

"As Maori, that's how we're brought up. Especially in my era you don't waste your kai (food), you know. People starving and so you kind of consume your whole plate.And that sort of went on through my kids as well, 'cos they're big eaters. Now I try to break the cycle with my mom (grandchild), even though I cringe at the waste of food!"[30]

Other important motivating factors included the desire for a better quality of life, previous futile attempts at weight loss, and bearing the stigma and emotional scars of a lifetime of obesity. A final important impetus for pursuing surgery was the threat of impending obesity related comorbidities, such as diabetes and mental health concerns.

"The threat of developing T2DM appeared to propel patients into considering bariatric surgery…comorbidities inhibiting the quality of life of our Māori women were not limited to physical disease. Mental health illness was debilitating and often created a circuitous loop to social isolation and unemployment."[33]

Presence of Patient Supports and Life After Surgery

We identified only one study that explored Indigenous patients' experiences with bariatric surgery and the supports provided by the clinic/team[30]. Participants had many interactions with bariatric services both pre and post operatively and some of the most meaningful and impactful interactions they had were with peer mentors and the Bariatric Nurse.

"Participants viewed the Bariatric Nurse as a "psychologist", "confidant", "friend", and "champion" for their success. They felt understood and never felt judged for their personal circumstances."

"Participants felt they were received with compassion during follow-up. Where some struggled with "sluggish weight loss" or "pain", they felt they could be open and honest about what they were experiencing and felt like they were listened to."

There were challenges identified with the supports provided for patients post operatively. Lack of Indigenous representation in clinic staff, lack of understanding of social and financial constraints of diet changes, disruption in continuity of care caused by inconsistent staffing, and difficulty scheduling/rescheduling appointments were all identified as barriers to accessing follow up care and left patients feeling as though they had fallen through the cracks of the system.

"As for the things that they (dieticians) wanted, they're not things I could introduce with the kids. So, it was about I eat separately which I did for a while. Oh, and seriously financially, I can't afford it."

In terms of how life changed after surgery for participants, there were some significantly positive aspects, but also some negative aspects. Noticeable and rapid health and mobility gains lead to exponential growth in self-confidence, more active participation in their lives, and a sense of liberation. The negative aspects of life after surgery included ongoing body image challenges (still feeling obese, self-conscious about loose skin), jealousy, and spousal insecurity.

"Before I was living, now I'm alive. That's how I put it because I was living. I was processing, I was functioning."

"My mental health, my physical health, my relationships with my family members and my children, my ability to deal with stress. It's so much better, so much more improved."

In order to overcome the challenges after surgery, participants described seeking support and strength from their families. In fact, this support was described as a key factor in success on their weight loss journey.

"They were really supportive, especially my husband. You need that support because I think that it's not just a personal journey but it's a whole family thing. Your whole family is involved because you are not cooking smaller portions and eating smaller. You're eating healthier. So, it's actually benefiting the family as well."

Proposed Solutions for Improving Access and Outcomes

Several studies advocated for a more longitudinal relationship with healthcare providers as well as an increase in non-surgeon supports throughout the bariatric surgery journey. Such supports can be broken down into three categories: cultural supports, health supports and practical supports. Cultural supports include being treated by Indigenous healthcare workers, having translation services readily and widely available, developing community-integrated supports, and incorporating an Indigenous health platform, such as the Kaupapa Māori Standards of Health in New Zealand.

"We relate better to our own. We just need to get information given to us at a different level like "Hey, just go down the road and get this instead." Just have the information delivered to us so we can understand and in language that we can compute in."

Health supports include creating and maintaining more longitudinal relationships with healthcare workers, incorporation of Indigenous health frameworks into the bariatric pathway and integration of bariatric mentors and psychologists into care. Practical considerations include help with scheduling and attending appointments (flexibility, accommodation of multiple family members attending clinic as well, help identifying ways to cover the cost of travel/missing work etc), and help navigating the physical clinic/hospital spaces.

Quantitative Study Results

Of the 16 quantitative studies included in this scoping review, 9 were from New Zealand, 4 from the USA, 2 from Australia and 1 from Canada. Two studies were prospective while the remainder were retrospective in nature. Application of the GRADE approach determined that 1 had moderate grade evidence, 12 studies had low grade evidence while 3 had very low grade evidence (Table 3).

Table 3: Summary of data extracted from quantitative studies.

First Author, Year, Title	Study Design	Sample	Outcomes	Relevant Results and Findings	Limitations and GRADE rating
Murphy, 2022 Effects of Banded Roux-en-Y Gastric Bypass Versus Sleeve Gastrectomy on Diabetes Remission at 5 Years Among Patients With Obesity and Type 2 Diabetes: A Blinded Randomized Clinical Trial	Single-Center Double-Blind Trial	Adults with Type 2 Diabetes and BMI 35-65 kg/m^2 2011 - 2015 (N = 114)	Diabetes remission assessed at 5 years (HbA_{1c} <6% without glucose lowering medications)	Silastic Ring LRYGB demonstrated superior diabetes remission and weight loss compared to LSG. Maori and Pacific peoples had lower incidence of diabetes remission than patients of other ethnicities.	Single center, use of banded RYGB rather than the more standard non banded RYGB, unsure how ethnicity was determined (?self-reported) **GRADE: Moderate**
Bennett, 2021 Variation in publicly funded bariatric surgery in New Zealand by ethnicity: cohort study of 328,739 patients	Cohort Study (PREDICT cohort)	Adults 30-79 years old with an eligible first CVD risk assessment in PREDICT 2010-2018 (N = 328,739)	Receipt of primary publicly funded bariatric procedure	Maori and Pacific peoples were significantly less likely to receive bariatric surgery compared to Europeans. There was an inverse relationship between the likelihood of receiving bariatric surgery and increasing socioeconomic deprivation. Location also impacted access to bariatric surgery.	Non-experimental design, ethnicity self-reported, database may have errors/missing information, excluded people <30, upper age limit (79) likely exceeds many bariatric program criteria **GRADE: Very Low**
Al-Sumaih, 2020 Ethnic Disparities in the Use of Bariatric Surgery in the USA: the Experience of Native Americans	Retrospective Cohort	Patients electively admitted with morbid obesity 2008 - 2016 (N = 1,729,245)	Intervention rate by ethnicity	Native Americans were at least 30% less likely to receive bariatric surgery than White Americans. Native Americans were found to have slower transition to laparoscopic procedures, shorter length of stay, and lower heatlhcare costs.	Non-experimental design, ethnicity is self-reported, database may have errors, many assumptions made in determining covariates, assessed only inpatient encounters, study looks at "encounters" not patients (ie one patient may have multiple encounters). **GRADE: Low**
Garrett, 2020 Private and Public Bariatric Surgery Trends in New Zealand 2004-2017: Demographics, Cardiovascular Comorbidity and Procedure Selection	Retrospective Cohort	Patients who underwent bariatric surgery 2004 - 2017 (N = 9109)	Intervention rate by ethnicity	Pacific people had half the intervention rate of European and Maori. Public sector patients had higher rates of diabetes and cardiovascular disease.	Non-experimental design, ethnicity is self-reported, database may have errors, private database underestimates number of bariatric procedures, differences in coding procedures likely excluded relevant procedures **GRADE: Very Low**
Rahiri, 2020 Ethnic Disparities in Access to Publicly Funded Bariatric Surgery in South Auckland, New Zealand	Retrospective Cohort	Patients accepted for publicly funded bariatric surgery 2011 - 2017 (N = 2519)	Likelihood of proceeding to bariatric surgery once accepted to the program	Maori and Pacific Islanders were significantly less likely to receive bariatric surgery after acceptance into the program, even when controlling for socio-economic demographics, comorbidity, and attrition.	Non-experimental design, ethnicity is self-reported, database may have errors **GRADE: Low**

Amirian, 2019 Racial Disparity in 30-Day Outcomes of Metabolic and Bariatric Surgery	Retrospective Cohort	All patients who underwent LRYGB* or LSG 2016 (N = 106,932)	Post-operative complications, re-admissions, re-operations	Native Hawaiian/Pacific Islanders had higher rates of SSI, American Indian/Alaska Native had increased odds of intervention within 30 days.	Non-experimental design, ethnicity reporting unclear, database may have errors and does not include all important factors. **GRADE: Low**
Lovrics, 2019 Metabolic outcomes after bariatric surgery for Indigenous patients in Ontario	Retrospective Cohort	All patients who underwent bariatric surgery in Ontario, Canada 2010 - 2018 (N = 16,629)	Access to bariatric treatment, Post-operative outcomes (change in BMI and obesity-related comorbidities)	Similar levels of preoperative evaluation between groups. Lower rates of follow up in Indigenous patients. Similar post-operative outcomes between groups.	Non-experimental design, ethnicity is self-reported, database may have errors, short follow-up period **GRADE: Low**
Shilton, 2019 Pre-operative Bariatric Clinic Attendance Is a Predictor of Post-operative Clinic Attendance and Weight Loss Outcomes	Retrospective Cohort	All patients who underwent bariatric surgery at their center. 2013 - 2016 (N = 184)	Excess weight loss, Total weight loss, Clinic attendance (pre- and post-operative)	Pre-op clinic non-attendance was correlated with post-op clinic non-attendance and significantly worse weight loss. Missing 50% or more scheduled post-op appointments was correlated with less weight loss. Māori and Pacific people had poorer clinic attendance than NZ Europeans, similar weight loss.	Non-experimental design. Clinic practice of discharging patients that miss >2 pre-op appointments may under-estimate the effect between pre- and post-op clinic attendance. Small sample size **GRADE: Low**
Rahiri, 2018 A narrative review of bariatric surgery in Indigenous peoples	Narrative Review - PRISMA	Studies describing bariatric surgery in Indigenous peoples. MEDLINE, EMBASE, CINAHL, PUBMED (N = 6)	pre-operative, peri-operative and post-operative outcomes	Pre-operative outcomes: 3 studies found that Indigenous patients had poorer access. Indigenous people had higher BMI at baseline. Post-operative outcomes: Successful weight loss, remission of obesity-related comorbidities. Indigenous people had equivocally larger weight loss	Limited number of studies in this area. Confounding data. **GRADE: Low**
Rahiri, 2018 Ethnic disparities in rates of publicly funded bariatric surgery in New Zealand	Retrospective Cohort	Patients who underwent publicly funded bariatric surgery 2009 - 2014 (N = 2109)	Rates of surgery by ethnicity	The number of publicly funded bariatric procedures is 3 times lower in Maori and 5 times lower in Pacific Islanders than in New Zealand Europeans	Non-experimental design, ethnicity is self-reported, database may have errors **GRADE: Low**
Taylor, 2018 Attrition after Acceptance onto a Publicly Funded Bariatric Surgery Program	Retrospective Cross-Sectional	Patients accepted for publicly funded bariatric surgery 2007 - 2016 (N = 704)	Attrition; Reasons for attrition	Predictors of attrition: Male, Maori, Pacific Islander, Smoker, Younger. Reasons for attrition: disengagement highest in Pacific Islanders	Non-experimental design, ethnicity self-identified **GRADE: Low**
O'Brien, 2016 The Effect of Weight Loss on Indigenous Australians with Diabetes: a study of Feasibility, Acceptability and Effectiveness	Prospective Cohort Study (compared to previous non-	Indigenous Australians (Rumbalara Aboriginal Co-operative) 18-65yo, BMI>30, T2DM. Patients underwent LAGB	Weight loss, Remission of T2DM, Quality of life (SF-36)	Indigenous patients had significant weight loss, remission of T2DM, and increased quality of life. Compared to RCT population, Indigenous patients had similar T2DM remission at 2yrs,	Small sample size, SF-36 Quality of life survey not validated in Australia's Indigenous population **GRADE: Low**

of Laparoscopic Adjustable Gastric Banding	Indigenous RCT)	2009 - 2010 (N = 30)		increased weight loss, reduction in waist circumference, and reduction in DBP	
Treacy, 2016 Is Gastric Banding Appropriate in Indigenous Or Remote-Dwelling Persons?	Prospective Cohort	All patients who underwent private gastric banding by one surgeon 1998 - 2014 (N = 559)	Time to 50% excess weight loss (EWL); Post-operative complications	No significant difference between metropolitan Indigenous and non-Indigenous groups or between non-Indigenous metropolitan and remote-dwelling groups	Non-experimental design, ethnicity is self-reported, one surgeon/clinic, public sector not captured **GRADE: Very Low**
Lam, 2013 Long-term outcomes in gastric bypass patients with and without type 2 diabetes – Waitemata District Health Board experience	Retrospective Cohort	Adults who underwent LRYGB (regular or loop) 2001-2007 (N = 126)	Weight loss and diabetes outcome	Maori and Pacific peoples derived similar weight loss and T2DM benefit when compared to European peoples. LRYGB uniformly results in substantial weight loss that is maintained in the long term. Very favorable T2DM outcomes observed, though durability of remission is low.	Non-experimental design, ethnicity self-reported, small number of patients with T2DM therefore difficult to draw T2DM related conclusions confidently **GRADE: Low**
Lam, 2013 Prescription Drug Cost Reduction in Native Hawaiians After Laparoscopic Roux-en-y Gastric Bypass	Retrospective Cohort	All Native Hawaiian patients who underwent LRYG with at least 1 year follow up 2004 - 2009 (N = 50)	EWL, Changes in number of prescription medications, Prescription drug cost changes	Average EWL was 61%. Post-operatively there was a 67% reduction in number of prescription medications with a 74% reduction in cost of prescription medications	Non-experimental design. Ethnicity is self-reported. Prescription medications were documented by clinic staff and could have errors. Vitamins and supplements were not included in this analysis. **GRADE: Low**
Wallace, 2010 Racial, Socioeconomic, and Rural-Urban Disparities in Obesity-Related Bariatric Surgery	Retrospective Cohort	Patients in their database who had BMI > 40 2006 (N = 88,605)	Association between patient characteristics and undergoing bariatric surgery	Native Americans were half as likely as white Americans to receive bariatric surgery. Rural, non-white, male, low income, >40yo, Charlson score >0 patients with no private insurance were 99 times less likely to receive bariatric surgery than counterparts with opposite characteristics.	Non-experimental design. Ethnicity is self-reported. Limited to BMI > 40. Included patients based on biling codes (may have errors). Limitations with multivariate analysis assumptions. **GRADE: Low**

*LAGB: Laparoscopic Adjustable Gastric Band; LRYGB: Laparoscopic Roux-en-Y Gastric Bypass; LSG: Laparoscopic Sleeve Gastrectomy; T2DM: Type 2 diabetes mellitus

Access to Bariatric Surgery for Indigenous People

Several studies examined markers of access to bariatric surgery, including attrition, clinic attendance pre-and post-operatively, proportion of procedures per ethnic group, and likelihood of proceeding to surgery once accepted into a bariatric program. Indigenous patients had higher rates of attrition than non-Indigenous groups and had lower pre-operative clinic attendance and follow-up appointment rates. Predictors of attrition were found to be: male, younger age, smoker, and Indigenous[34]. Disengagement (non-attendance for appointments and inability to be contacted) was identified as an important reason for attrition and was subjectively felt to be higher in Indigenous patients. Low pre-operative clinic attendance was correlated with low post-operative clinic attendance. Missing 50% or more post-operative appointments also correlated with less weight loss[35]. In terms of pre-operative assessment and work-up, Lovrics *et al.*[36] found that Indigenous patients were more likely to access EKG, physiotherapists, psychologists, nurse practitioners and diabetes nurses than non-Indigenous patient. Indigenous patients were overall found to have poorer access based on the proportion of bariatric procedures performed by ethnic group population distribution, with the exception of Lovrics *et al.*[36-42]. Wallace *et al*. found that patients who were male, non-white, rural, low income, >40yo with no private insurance and a Charlson score >0 were 99 times less likely to have bariatric surgery than patients with the opposite characteristics[42].

Weight Loss and Associated Comorbidity Outcomes in Indigenous Patients

Across all studies included in our analysis, Indigenous patients had significant weight loss, which was found to be similar and sometimes in fact higher than non-Indigenous patients. Metrics for measuring weight loss varied across studies but included change in BMI, % excess

weight loss (EWL), total weight loss (TWL), and time to 50% EWL Indigenous patients had higher BMIs pre-operatively. In terms of comorbidity resolution, Indigenous patients were found to have significant resolution of T2DM and obesity-related comorbidities. While the majority of studies found similar rates of T2DM resolution in Indigenous populations compared to non-Indigenous populations, one prospective randomized study discovered that Maori and Pacific peoples had lower rates of T2DM remission than patients of other ethnicities. One study examining cost of prescription medications found that post-operatively, there was a significant decrease in both number and cost of prescription medications[43]. One study examined changes in quality of life of Australian Indigenous patients using the SF-36 QoL survey and found that while there was a significant positive change in the physical component, the positive change in the mental component was non-significant[44].

Post-Operative Complications in Indigenous Patients

There was variability in post-operative complication results as these were not examined uniformly across the studies included in our analysis. There was no common method of reporting complication occurrence or severity in the studies examined. Amirian *et al*.[45] found that Indigenous patients had higher rates of surgical site infections and re-operation within 30 days, while Treacy *et al*.[46] found no significant difference in post-operative complication rates between Indigenous and non-Indigenous patient groups.

Grey Literature and Spoken Word

A search of grey literature and spoken word sources revealed no additional data to include in our analysis.

Discussion

This mixed-methods scoping review identified that fewer Indigenous patients undergo bariatric surgery than non-Indigenous patients, however, weight loss and post-operative outcomes were found to be largely similar. The latter statement must be interpreted cautiously given the significant heterogeneity identified across analyzed quantitative studies. The measures of weight loss varied between studies as did the measures of postoperative outcomes (complications). In terms of weight loss outcomes, Indigenous patients were found to have a higher preoperative BMI and undergo similar %EWL, time to 50% EWL, and TWL as non-Indigenous patients. This is a significant finding given there is some evidence to suggest that patients with a higher preoperative BMI in fact have lower %EWL despite higher TWL over time[47]. Post operative outcomes were equally heterogeneously reported across analyzed studies. Remission of T2DM was found across multiple studies to be similar between Indigenous and non-Indigenous groups, despite in some cases Indigenous patients having higher rates of T2DM preoperatively. One study found a significantly lower rate of T2DM remission specifically among Maori or Pacific Peoples when compared to other ethnicities[48]. Based on the evidence herein, no definitive statement can be made regarding postoperative outcomes in Indigenous patient populations.

Indigenous people have strong motivators for pursuing bariatric surgery and feel that there are significant barriers to accessing this resource that are not present for non-Indigenous patients. Negative perceptions of Indigenous peoples, the normalization of obesity in Indigenous populations, limited resources in a public system, potential referral bias, and the challenges of navigation of a systemically racist healthcare system were all identified as contributory to lack of

access. This qualitative evidence is supported by the quantitative evidence identified in this study. Indigenous peoples worldwide have higher rates of obesity and related comorbidities, yet have a far lower intervention rate than their non-Indigenous counterparts, despite having largely similar post-operative and disease specific outcomes[38-42,49]. While the reasons behind this apparent inequity are not fully clear, the answers are likely multifactorial including important themes such as systemic racism in Western (colonial) healthcare systems, geographic challenges, and cultural considerations not previously explored.

In developed countries with a colonial past (ie CANZUS nations), the inherent racism and colonial dynamic in healthcare systems is well documented and persistent even to this day[9,26,50,51]. Several recent cases in central Canada of patients being coerced into sterilization, and the tragic death of Brian Sinclair serve as glaring examples of some of the challenges Indigenous Peoples face when trying to access healthcare services[52]. In some qualitative studies, Indigenous patients described feeling that their needs were not important, that they were disrespected, and even that they were an inconvenience[9]. One study identified in this scoping review examined the perspective of healthcare workers treating Indigenous patients and found that there was higher perceived disengagement among Indigenous patients in bariatric clinics than non-Indigenous patients[34]. These results highlight the disconnect between the care Western healthcare models aim to provide, and the care that Indigenous patients truly need - considering all aspects of health and wellbeing, not just the physical aspect. Beginning to understand Indigenous Peoples' experiences in bariatric clinics across the world highlighted a need for healthcare providers to become aware of traditional knowledge, values, and ways of healing that must be respected. Interestingly, there are no studies that examine the existence or extent of

referral bias of Indigenous people for bariatric surgery, however we believe that this may play a role across healthcare jurisdictions that are based in colonial policies.

In addition to systemic racism in healthcare systems, Indigenous Peoples/communities often face geographic challenges when accessing healthcare and food insecurity. These barriers likely make accessing pre/postoperative bariatric care and meeting personal goals even more difficult. Bariatric surgery itself is often one component of a long and arduous journey where patients must attend various healthcare appointments over the course of months to years to qualify for the surgery and succeed afterwards. This centralized model of delivering care can present a significant barrier to individuals who are marginalized, of low socioeconomic status, or those who live remotely/rurally. One study described moving the location of some of these appointments into the communities to facilitate more attendance and lessen financial/social burden on patients[32]. Meeting people where they are is certainly a step in the right direction and if implemented widely this could improve the access for many patients. One concern is that it does not address the challenges faced by patients living hundreds of kilometers away, rather focuses again on a finite area. To our knowledge, there are no studies examining whether Indigeneity or geographic distance affects referral patterns for bariatric surgery, although we feel that this is an important question that must be addressed in future research.

Cultural considerations are important to examine when discussing access and experience with bariatric care in Indigenous communities. The perception of surgery by Indigenous Peoples varies based on community but also on degree of connectedness of an individual to their Indigeneity. As an example of a cultural perspective that may prevent individuals from accessing bariatric care, some Indigenous communities believe that surgery violates the sacred body of a person and throws them out of balance[53]. Perhaps not all Indigenous communities view bariatric

surgery as the solution to obesity, there are many people who use traditional medicines in their healing either alone or in combination with Western medicines. Alarmingly, one study described the normalization of obesity in Indigenous communities "An emergent theme was that obesity and comorbidity burden was a 'normal' experience for Māori" "This was perhaps a 'typical Māori story'…"[29]. This harmful way of thinking marginalizes Indigenous people further and contributes to unwellness in Indigenous communities, both urban and rural.

From a strengths-based perspective, our study did identify many possible solutions to the health inequities identified in bariatric care suggested by Indigenous patients and community members. Several studies from New Zealand highlight the importance of bringing the strength of Indigenous ways of knowing and being into the Western clinical world, particularly through the recognition and adoption of Kaupapa – Māori Standards of Health[33,54]. This way of incorporating Indigenous knowledge into Western settings can be translated to all Indigenous communities, however care must be taken to ensure that each community's unique voice and worldview is integral to the design and implementation of such programs. While Indigenous people in colonized societies do have a certain shared historical narrative, it is important to recognize that each people and community is unique in its ways of being and knowing. These unique traits must be acknowledged, respected, and incorporated into clinical practice with the help of community stakeholders and Elders to truly succeed in this endeavor. Connecting and creating lasting relationships with Indigenous communities will improve healthcare workers knowledge of Indigenous culture, create a safe space for Indigenous patients, and encourage the clinical setting to adapt care delivery models to improve access and outcomes for Indigenous patients. Our scoping review identified that Indigenous patients overarchingly want more longitudinal relationships with healthcare providers (Indigenous or non-Indigenous) who acknowledge and

respect Indigenous culture, and who are willing to be flexible by incorporating translation services, by developing community-based supports, by being accommodating with timing/location of appointments[32,40,54].

There are several important limitations of this study that must be considered. First, the important limitation of the quality of evidence discovered. The majority of quantitative studies described here are low or very low grade evidence. This is largely due to the retrospective nature of these works, and importantly the fact that ethnicity is self-reported. These limitations illuminate the lack of prospective data in this patient population, and further higher quality studies must be conducted in this area. The body of literature available to address the research question is very limited, particularly with respect to spoken word, which is a very important aspect of knowledge translation in Indigenous traditions. Perhaps future studies similar to this one will reach out to Indigenous communities in search of knowledge sharing related to health, obesity, diabetes and perceptions about surgery. In this way, the oral tradition of storytelling could be incorporated into knowledge translation. Further limitations of this study include examining only English language papers. While the primarily spoken language of all 4 countries included in this study is English, this search strategy may have excluded relevant papers. The decision to include studies only from CANZUS nations was strategic and made in consultation with a librarian with Indigenous research methodology expertise, an Indigenous Elder, and Indigenous researcher, and an Indigenous physician. These countries share a similar history of colonization and a similar present day socioeconomic climate and while there may certainly be valuable information from other countries across the globe pertaining to our research question, we felt that limiting our search to these 4 countries was most appropriate for our purpose. Finally, significant heterogeneity addressed in our review precludes conclusions to be made with

confidence, particularly owing to the distinct uniqueness of each Indigenous group. We do however feel that the knowledge gained from research with one people can help to inform (even if only in part) research with other Indigenous peoples, although care must be taken to acknowledge the strengths and unique ways of knowing and being of each group.

It is important in research with Indigenous Peoples to ensure continuity and benefit to the community. This scoping review identified that Indigenous people have poorer access to bariatric surgery, despite similar outcomes. Further, we discovered that Indigenous people have strong motivators for pursuing bariatric surgery, however there are few supports available that are culturally informed. Future research in this area should focus on development and implementation of culturally competent care models in all bariatric and healthcare settings, including community engagement, education of healthcare workers, development of a safe self-identification process, access to culturally relevant supports, and emphasis on patient engagement and satisfaction outcomes. The future of our research in this area will focus on the experiences of Indigenous patients undergoing bariatric surgery at the Center for Metabolic and Bariatric Surgery in Winnipeg, Manitoba. Our aim will be to identify areas for improvement and with the help of community stakeholders, develop and implement a culturally safe model of care for Indigenous patients.

Conclusion

Indigenous Peoples across the globe have higher rates of obesity and obesity-related comorbidities, including T2DM[36]. In this mixed methods scoping review, we found that Indigenous patients had poorer access to bariatric surgery than non-Indigenous patients, however weight loss and post-operative outcomes were largely similar, and patients had strong motivators for pursuing surgery. The experiences of Indigenous patients in bariatric clinics highlighted the

need for healthcare providers to become aware of traditional knowledge and ways of healing that must be respected and incorporated into clinical encounters. There is a paucity of literature on this topic but there has been increased awareness and publications in recent years. In order to create lasting, meaningful change ensuring equitable access and outcomes for Indigenous Peoples, more research needs to be conducted in this area. Specifically, this research should focus on development and implementation of cultural supports/programs focusing on patient experiences and community mentorship to help Indigenous patients access and succeed with bariatric surgery. Furthermore, safe methods must be developed in conjunction with Indigenous communities and Elders to allow patients to self-identify as Indigenous in healthcare settings. While there are still many barriers facing Indigenous patients trying to access bariatric surgical care, with acknowledgement, education, and community support the way forward is bright.

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References

1. Canada S. Body Composition of Canadian Adults, 2009-2011 2012.
2. WHO. Controlling the global obesity epidemic n.d. https://www.who.int/activities/controlling-the-global-obesity-epidemic.
3. Sharma AM, Lau DCW. Obesity and Type 2 Diabetes Mellitus. Can J Diabetes 2013;37:63–4. https://doi.org/10.1016/j.jcjd.2013.03.360.
4. Kaila, B; Maitreyi R. Obesity : A review of pathogenesis and management strategies 2008;22:61–8.
5. Buchwald H, Estok R, Fahrbach K, Banel D, Jensen MD, Pories WJ, et al. Weight and Type 2 Diabetes after Bariatric Surgery: Systematic Review and Meta-analysis. Am J Med 2009;122. https://doi.org/10.1016/j.amjmed.2008.09.041.
6. Rice K, Te Hiwi B, Zwarenstein M, Lavallee B, Barre DE, Harris SB. Best Practices for the Prevention and Management of Diabetes and Obesity-Related Chronic Disease among Indigenous Peoples in Canada: A Review. Can J Diabetes 2016;40:216–25. https://doi.org/10.1016/j.jcjd.2015.10.007.
7. WHO. Obesity and Overweight Factsheet 2017. https://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight.
8. Batal M, Decelles S. A Scoping Review of Obesity among Indigenous Peoples in Canada. J Obes 2019;2019. https://doi.org/10.1155/2019/9741090.
9. Jacklin KM, Henderson RI, Green ME, Walker LM, Calam B, Crowshoe LJ. Health care experiences of Indigenous people living with type 2 diabetes in Canada. Cmaj 2017;189:E106–12. https://doi.org/10.1503/cmaj.161098.
10. WHO. Adelaide Recommendations on Healthy Public Policy 1988.

https://www.who.int/healthpromotion/conferences/previous/adelaide/en/.

11. TRC. Truth and Reconciliation Commission of Canada: Calls to Action. Truth Reconcil Comm Canada 2012:1–20. https://doi.org/10.1111/fire.12129.
12. Yanovski, S; Yanovski J. Obesity. NEJM 2002;346:591–602.
13. Cheng J, Gao J, Shuai X, Wang G, Tao K. The comprehensive summary of surgical versus non-surgical treatment for obesity : a systematic review and meta-analysis of randomized controlled trials 2016;7.
14. Ikramuddin S, Korner J, Lee WJ, Connett JE, Inabnet WB, Billington CJ, et al. Roux-en-Y gastric bypass vs intensive medical management for the control of type 2 diabetes, hypertension, and hyperlipidemia: The diabetes surgery study randomized clinical trial. JAMA - J Am Med Assoc 2013;309:2240–9. https://doi.org/10.1001/jama.2013.5835.
15. Courcoulas AP, Goodpaster BH, Eagleton JK, Belle SH, Kalarchian MA, Lang W, et al. Surgical vs medical treatments for type 2 diabetes mellitus: A randomized clinical trial. JAMA Surg 2014;149:707–15. https://doi.org/10.1001/jamasurg.2014.467.
16. Courcoulas AP, Belle SH, Neiberg RH, Pierson SK, Eagleton JK, Kalarchian MA, et al. Three-year outcomes of bariatric surgery vs lifestyle intervention for type 2 diabetes mellitus treatment a randomized clinical trial. JAMA Surg 2015;150:931–40. https://doi.org/10.1001/jamasurg.2015.1534.
17. Ding, S; Simonson, D; Wewalka, M; Halperin, F; Foster, K; Goebel-Fabbri; Hamdy, O; Clancy, K; Lautz; Vernon, A; Goldfine A. Adjustable Gastric Band Surgery or Medical Management in Patients with Type 2 Diabetes: A Randomized Clinical Trial. J Clin Endocrinol Metab 2015;100:2546–56.
18. Dixon JB, O'Brien PE, Playfair J, Chapman L, Schachter LM, Skinner S, et al.

Adjustable gastric banding and conventional therapy for type 2 diabetes: A randomized controlled trial. Obstet Gynecol Surv 2008;63:372–3. https://doi.org/10.1097/01.ogx.0000314848.71777.69.

19. Mingrone G, Panunzi S, De Gaetano A, Guidone C, Iaconelli A, Leccesi L, et al. Bariatric surgery versus conventional medical therapy for obese patients with type 2 diabetes: A meta-analysis. N Engl J Med 2012;366:1577–85. https://doi.org/10.7507/1672-2531.20130129.
20. Gloy VL, Briel M, Bhatt DL, Kashyap SR, Schauer PR, Mingrone G, et al. Bariatric surgery versus non-surgical treatment for obesity: a systematic review and meta-analysis of randomised controlled trials. BMJ 2013;347:1–16. https://doi.org/10.1136/bmj.f5934.
21. Schauer PR, Bhatt DL, Kirwan JP, Wolski K, Brethauer SA, Navaneethan SD, et al. Bariatric surgery versus intensive medical therapy for diabetes - 3-Year outcomes. N Engl J Med 2014;370:2002–13. https://doi.org/10.1056/NEJMoa1401329.
22. Sanchis P, Frances C, Al. E. Cardiovascular Risk Profile in Mediterranean Patients Submitted to Bariatric Surgery and Intensive Lifestyle Intervention: Impact of Both Interventions After 1 Year of Follow-Up. Obes Surg 2015;25:97–108.
23. Panunzi S, Carlsson L, De Gaetano A, Peltonen M, Rice T, Sjöström L, et al. Determinants of Diabetes Remission and Glycemic Control after Bariatric Surgery. Diabetes Care 2016;39:166–74. https://doi.org/10.2337/dc15-0575.
24. Halperin F, Ding SA, Simonson DC, Panosian J, Goebel-Fabbri A, Wewalka M, et al. Roux-en-Y gastric bypass surgery or lifestyle with intensive medical management in patients with type 2 diabetes: Feasibility and 1-year results of a randomized clinical trial. JAMA Surg 2014;149:716–26. https://doi.org/10.1001/jamasurg.2014.514.

25. Cooke M, Mitrou F, Lawrence D, Guimond E, Beavon D. Indigenous well-being in four countries: An application of the UNDP'S Human Development Index to Indigenous Peoples in Australia, Canada, New Zealand, and the United States. BMC Int Health Hum Rights 2007;7:1–11. https://doi.org/10.1186/1472-698X-7-9.
26. Anderson K, Elder-Robinson E, Gall A, Ngampromwongse K, Connolly M, Letendre A, et al. Aspects of Wellbeing for Indigenous Youth in CANZUS Countries: A Systematic Review. Int J Environ Res Public Health 2022;19. https://doi.org/10.3390/ijerph192013688.
27. Schünemann, H; Brożek, J; Guyatt, G; Oxman A. Handbook for gradind the quality of evidence and the strength of recommendations using the GRADE approach 2013.
28. Programme CAS. CASP Qualitative Checklist 2018. https://casp-uk.net/casp-tools-checklists/.
29. Rahiri J-L, Gillon A, Furukawa S, MacCormick AD, Hill AG, Harwood MLN, et al. Media portrayal of Maori and bariatric surgery in Aotearoa/New Zealand. N Z Med J 2018;131:72–80.
30. Rahiri J-L, Gillon A, Tuhoe J, MacCormick AD, Hill A, Harwood M. Māori experiences of bariatric surgery in South Auckland, New Zealand. Altern An Int J Indig Peoples 2020;16:300–8.
31. Heather B. Big gains in weight loss procedures - surgeons. Dom Post 2014.
32. Taylor T, Wrapson W, Dewes O, Taufa N, Siegert R. Preoperative bariatric surgery programme barriers facing Pacific patients in Auckland, New Zealand as perceived by health sector professionals: A qualitative study. BMJ Open 2019;9:29525. https://doi.org/http://dx.doi.org/10.1136/bmjopen-2019-029525.

33. Rahiri J-L, Tuhoe J, MacCormick AD, Hill AG, Harwood M. Exploring motivation for bariatric surgery among Indigenous Māori women. Obes Res Clin Pract 2019;13:486–91. https://doi.org/10.1016/j.orcp.2019.09.004.

34. Taylor T, Wang Y, Rogerson W, Bavin L, Sharon C, Beban G, et al. Attrition after Acceptance onto a Publicly Funded Bariatric Surgery Program. Obes Surg 2018;28:2500–7. https://doi.org/https://dx.doi.org/10.1007/s11695-018-3195-y.

35. Shilton H, Gao Y, Nerlekar N, Evennett N, Ram R, Beban G, et al. Pre-operative Bariatric Clinic Attendance Is a Predictor of Post-operative Clinic Attendance and Weight Loss Outcomes. Obes Surg 2019;29:2270–5. https://doi.org/http://dx.doi.org/10.1007/s11695-019-03843-2.

36. Lovrics O, Doumouras AG, Gmora S, Anvari M, Hong D. Metabolic outcomes after bariatric surgery for Indigenous patients in Ontario. Surg Obes Relat Dis 2019;15:1340–7. https://doi.org/https://dx.doi.org/10.1016/j.soard.2019.05.035.

37. Bennett EK, Poppe K, Rahiri J-L, MacCormick AD, Tenbensel T, Selak V. Variation in publicly funded bariatric surgery in New Zealand by ethnicity: cohort study of 328,739 patients. Surg Obes Relat Dis 2021;17:1286–93. https://doi.org/https://dx.doi.org/10.1016/j.soard.2021.03.027 PT - Journal Article.

38. Al-Sumaih I, Nguyen N, Donnelly M, Johnston B, Khorgami Z, O'Neill C. Ethnic Disparities in Use of Bariatric Surgery in the USA: the Experience of Native Americans. Obes Surg 2020;30:2612–9. https://doi.org/https://dx.doi.org/10.1007/s11695-020-04529-w PT - Journal Article.

39. Garrett M, Poppe K, Wooding A, Murphy R, M. G, K. P, et al. Private and Public Bariatric Surgery Trends in New Zealand 2004-2017: Demographics, Cardiovascular

Comorbidity and Procedure Selection. Obes Surg 2020;30:2285–93. https://doi.org/https://dx.doi.org/10.1007/s11695-020-04463-x PT - Article.

40. Rahiri J-L, Lauti M, Harwood M, MacCormick AD, Hill AG, J.-L. R, et al. Ethnic disparities in rates of publicly funded bariatric surgery in New Zealand (2009-2014). ANZ J Surg 2018;88:E366–9. https://doi.org/http://dx.doi.org/10.1111/ans.14220.
41. Rahiri J-L, Tuhoe J, MacCormick A, Hill A, Harwood M. A narrative review of bariatric surgery in Indigenous peoples. Obes Res Clin Pract 2019;13:1–5. https://doi.org/http://dx.doi.org/10.1016/j.orcp.2018.11.240.
42. Wallace AE, Young-Xu Y, Hartley D, Weeks WB. Racial, socioeconomic, and rural-urban disparities in obesity-related bariatric surgery. Obes Surg 2010;20:1354–60. https://doi.org/10.1007/s11695-009-0054-x.
43. Lam ECF, Murariu D, Takahashi E, Park CW, Bueno RS, Lorenzo CSF, et al. Prescription drug cost reduction in Native Hawaiians after laparoscopic Roux-en-y gastric bypass. Hawaii J Med Public Health 2013;72:40–3.
44. O'Brien PE, DeWitt DE, Laurie C, et al. The Effect of Weight Loss on Indigenous Australians with Diabetes: a study of Feasibility, Acceptability and Effectiveness of Laparoscopic Adjustable Gastric Banding. *Obes Surg*. 2016;26(1):45-53. doi:http://dx.doi.org/10.1007/s11695-015-1733-4
45. Amirian H, Torquati A, Omotosho P. Racial Disparity in 30-Day Outcomes of Metabolic and Bariatric Surgery. Obes Surg 2019. https://doi.org/http://dx.doi.org/10.1007/s11695-019-04282-9.
46. Treacy PJ, Chatfield MD, Bessell J. Is Gastric Banding Appropriate in Indigenous Or Remote-Dwelling Persons?. Obes Surg 2016;26:1728–34.

https://doi.org/https://dx.doi.org/10.1007/s11695-015-1993-z.

47. Ochner CN, Jochner MC, Caruso EA, Teixeira J, Xavier Pi-Sunyer F. Effect of preoperative body mass index on weight loss after obesity surgery. *Surg Obes Relat Dis*. 2013;9(3):423-427. doi:10.1016/j.soard.2012.12.009
48. Murphy R, Plank LD, Clarke MG, et al. Effect of Banded Roux-en-Y Gastric Bypass Versus Sleeve Gastrectomy on Diabetes Remission at 5 Years Among Patients With Obesity and Type 2 Diabetes: A Blinded Randomized Clinical Trial. *Diabetes Care*. 2022;45(7):1503-1511. doi:https://dx.doi.org/10.2337/dc21-2498 PT
49. Rahiri JL, Coomarasamy C, MacCormick A, Harwood M, Hill A. Ethnic Disparities in Access to Publicly Funded Bariatric Surgery in South Auckland, New Zealand. Obes Surg 2020;30:3459–65. https://doi.org/10.1007/s11695-020-04608-y.
50. McConkey S. Indigenous access barriers to health care services in London, Ontario. Univ West Ont Med J 2017;86:6–9. https://doi.org/10.5206/uwomj.v86i2.1407.
51. Jacklin K, Ly A, Calam B, Green M, Walker L, Crowshoe L. An innovative sequential focus group method for investigating diabetes care experiences with indigenous peoples in Canada. Int J Qual Methods 2016;15:1–12. https://doi.org/10.1177/1609406916674965.
52. Boyer Y. Healing racism in Canadian health care. Cmaj 2017;189:E1408–9. https://doi.org/10.1503/cmaj.171234.
53. Alvord LA. The Scalpel and the Silver Bear. New York: Bantam Books; 1999.
54. Rahiri J-L, Tuhoe J, Gillon A, MacCormick AD, Hill A, Harwood M. Enhancing responsiveness to Maori in a publicly funded bariatric service in Aotearoa New Zealand. ANZ J Surg 2019. https://doi.org/https://dx.doi.org/10.1111/ans.15610.

Appendix

Supplementary File S1: Sample Search Strategy

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1 american native continental ancestry group/ or alaska natives/ or indians, north american/ or inuits/ (17354)

2 (first nations or aboriginal or indigenous or native american* or (alaska* adj1 native*) or inuit* or eskimo* or metis or native canadian* or native child* or native teen* or native adolescen* or native people or native adult* or native men or native women or native Indian* or Canadian Indian* or American indian*).ti,ab,kf. (52422)

3 Hawaii*.ti,ab,kf,sh. (12469)

4 Oceanic Ancestry Group/ (9917)

5 (maori or torres strait island* or koori or goori or murri or nyoongah or koorie or yolngu or anangu or palawa or nunga or ngarrindjeri or murray island or mer island).ti,ab,kf. (4769)

6 1 or 2 or 3 or 4 or 5 (76608)

7 bariatric surgery/ or gastric bypass/ or gastroplasty/ or jejunoileal bypass/ (21075)

8 Gastrectomy/ (34446)

9 bariatric surgery.ti,ab,kf,sh. (18005)

10 gastrectomy.ti,ab,kf,sh. (44110)

11 (obes* or bmi).ti,ab,kf,sh. (225405)

12 8 or 10 (44110)

13 11 and 12 (3043)

14 7 or 9 or 13 (27466)

15 6 and 14 (26)

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Chapter 2 – Relationship Building

Chapter 1 described a scoping review of the literature which identified that Indigenous people undergo fewer bariatric surgeries with similar clinical and weight loss outcomes[19,24–32]. Furthermore, chapter 1 revealed that Indigenous patients have strong motivators for pursuing bariatric surgery including the desire for better health and being there to support and encourage their families[18,20,21,33]. Indigenous patients identified the need for currently lacking non-surgical supports in the bariatric clinic setting including Indigenous peer mentorship, flexible appointment times/locations, pathway navigators, and optional translators. There is a lack of research in this area, as is demonstrated by our scoping review, including a paucity of research being conducted by Indigenous scholars using Indigenous methodologies.

In order to develop and implement culturally relevant non-surgical supports in bariatric clinics, research must be conducted in partnership with Indigenous communities to identify and amplify their needs and goals. Research with Indigenous Peoples has a long history, much of which is fraught with deception, mistrust, and harm[34–36]. Conducting research with Indigenous communities must be done in a good way, through relationship building, honoring Ceremony and culture, and respecting the past[23]. In chapter 2, our experiences with relationship building and conducting research with Indigenous people will be described.

Article 2

Facilitating Medical Research with Indigenous Peoples in A Good Way

Whyte M, Fowler-Woods M, Fowler-Woods A, Shingoose G, Vergis A, Hardy K

(Pending Submission for Publication)

Abstract

The history of both quantitative and qualitative research involving Indigenous communities is one of abuse, exploitation, and racism. Western research is often viewed as a mechanism of colonization that is distrusted and not done in a good way that aligns with Indigenous Peoples' ways of knowing. The Truth and Reconciliation Commission of Canada called on the government to identify and close the gaps in health access and outcomes for Indigenous Peoples. In order to conduct culturally sensitive and valid research with Indigenous communities, there must be a focus on self-education, relationship building and cultural respect.

This paper describes the initial learning journey and first research experiences of our institution in collaboration with Indigenous populations. We set out to explore the experiences of Indigenous people living with type 2 diabetes and obesity undergoing bariatric surgery. We began our work by creating connections and building relationships with community stakeholders and a local Indigenous Elder. Self-education, openness, Ceremony, and traditional medicines were crucial to building these relationships. Two-eyed seeing helped create a bridge between Indigenous and Western ways of knowing, strengthening relationships and helping ensure this work was done in a good way.

Introduction

Both quantitative and qualitative research in, on, and with Indigenous communities has historically been rooted in Western methodologies and has involved cases of abuse, exploitation, and racism[1-3]. It has been said that 'research' is the dirtiest word in the English language for Indigenous Peoples[4]. Western research by nature is often deficit-based, focusing on what is lacking or what needs to change, which can cause further harm to already marginalized or stigmatized populations[1]. It is often viewed as a mechanism of colonization, and it is distrusted[5].

The 2015 Truth and Reconciliation Commission of Canada called on the government of Canada "…to identify and close the gaps in health outcomes between Aboriginal and non-Aboriginal communities…" in its 'Calls to Action' report[6]. In response to these calls to action, culturally sensitive, collaborative, and impactful research with Indigenous communities is needed. There must be a focus on community engagement, relationship-building and cultural respect. Decolonized and Indigenous methodologies are invaluable in conducting research with Indigenous communities because they create space for community and Ceremony, and respect Indigenous ways of knowing and being[7].

Humanity and self-education must play an important role for Western researchers to conduct meaningful and impactful research in collaboration with Indigenous communities. In this paper we will discuss the early experiences of our research group and the important lessons we learned using decolonizing methodologies and relationship building in conducting research with urban Indigenous Manitobans undergoing bariatric surgery.

Our Project

To begin, it is important to locate myself as the lead author within this research context so the reader may understand what direction I am speaking from. I am a first-generation white

settler Canadian of Polish ancestry. Both of my parents are immigrants, and maintaining a strong connection to Polish language and culture is vital to me. I was born in Northern Ontario but grew up in Northern BC, where I spent most of my life. I came to Manitoba to pursue medical training in General Surgery in 2017. I am a wife, a mother of young twin girls, and a physician who will be pursuing subspecialty training in surgical critical care and trauma surgery. I joined the research team to complete a Master of Science in Surgery degree during my residency training.

The Centre for Metabolic and Bariatric Surgery (CMBS) was established in Manitoba in 2011 to provide publicly funded bariatric care. Approximately 18% of the population in Manitoba identify as Indigenous (First Nations, Metis, or Inuk) and this population experiences a high rate of living with obesity and metabolic syndrome[8,9]. It was recognized that there was a lack of understanding of how Indigenous people experienced living with obesity and how they perceived bariatric surgery as a possible treatment early after the CMBS was established. The team members had no prior experience in research with Indigenous populations. This initial project sought to explore the experiences of urban Indigenous Manitobans living with obesity and type 2 diabetes undergoing bariatric surgery.

Initially, we approached the University of Manitoba's Indigenous Institute of Health and Healing, Ongomiizwin Health Services, which aims to provide leadership in research, education and health services in collaboration with Indigenous Peoples[10]. The team was provided with suggestions of literature on Indigenous research methodologies and an introduction was facilitated with an Indigenous physician (MFW) and an Indigenous researcher (AFW) who guided the first steps of this project. We were gifted knowledge about passing tobacco and about the important role Ceremony and traditional medicines play in research with Indigenous Peoples.

We learned about Indigenous methodologies and how fundamental relationships are to the way Indigenous people interact with the world.

We were then introduced to an Elder (GS) who accepted our offering of tobacco and became a foundational part of the project. The Elder, Indigenous physician and Indigenous researcher formed an advisory group at the core of the research team. Their insights are invaluable, and the knowledge shared by them has not only enriched the project, but all those involved. Other core team members included a researcher in the Faculty of Community Health Sciences at the University of Manitoba (AH), two bariatric surgeons with research interest in clinical outcomes at the CMBS (KH and AV), one research associate (KC), and one general surgery resident at the University of Manitoba (MW). Our project was grounded in decolonized methodology with a primary strengths-based, rather than deficit-based, focus. We harnessed the power of traditional medicines and Ceremony in the form of Sacred sharing circles guided by the Elder to explore the experiences our participants had with bariatric surgery. The information gathered will be used to inform the development and implementation of culturally relevant supports in the bariatric clinic for Indigenous patients, and we hope it will also inspire change in other healthcare spaces across Canada.

Self-Education

Embarking on a research journey with Indigenous communities should be treated as such – a journey. Non-Indigenous Western scholars hoping to begin a research project involving Indigenous Peoples must first engage in self-education. Specifically, about the history of the land upon which the researcher/institution resides, upon which the proposed research is to occur, as well as the people(s) who call that land home. It has become increasingly common to see land acknowledgements at institutional functions and while this is an important step forward, the

education to which we refer here is a deeper form of self-reflection and personal growth. Colonialism is a *shared* history between non-Indigenous and Indigenous Peoples across the colonized world, benefiting the settler group while simultaneously damaging and oppressing the colonized group. Colonization has had profound and lasting negative effects on Indigenous Peoples around the globe and as living memory, the loss, trauma and grief have shaped all aspects of their lives[11]. Many Indigenous people have lost their connection to culture, Ceremony, and Indigeneity as a result of assimilatory techniques commonplace in the colonial mechanism. The harm caused by colonialism continues to affect the health of Indigenous Peoples as evidenced by lower life expectancies and higher rates of chronic illnesses such as obesity, type 2 diabetes, heart disease, depression, and poorer access to health resources[12]. While this statement is deficits-based, it is important to acknowledge the profoundly negative impact that colonial policy had, and continues to have on the health and well-being of Indigenous Peoples in Canada.

Research Methodologies

Further to education around shared colonial history and self-reflection, one must examine the framework of Western research as it relates to work with Indigenous communities. The language used in Western research can be alienating, overly clinical, and create a power dynamic between the researcher and the 'subject'. In order to conduct safe and meaningful research there are a few subtle but powerful changes that need to be made to research language. First and foremost, research is conducted *with* Indigenous people, not *on* or *about* Indigenous people. There are historical accounts of research being conducted in Indigenous communities and on Indigenous individuals without consent or explanation. This is unethical and harmful[7,13]. Using language that places power in the hands of Indigenous people is important to show respect and help foster *partnership*. Secondly, the general language used in research must be decolonized.

Language such as ‘subject’ or ‘focus group’ or ‘data’ can take away from the meaning and Sacred nature of Ceremony, tradition, and knowledge that is central to Indigenous methodologies. Finally, it is important to consider Indigenous languages and their impact on any proposed research. Speaking one’s own mother tongue provides a deep connection to identity, community, and culture[7]. The depth of knowledge shared is invariably different when shared in English rather than a person’s mother tongue.

Research with Indigenous communities should be grounded in Indigenous methodologies which can inform both quantitative and qualitative research processes. There is no single definition of Indigenous methodology however it is almost universally based in relationality. Relationships (with self, family, community, land, spirit, traditions, Ceremony, etc) inform both the ontology and epistemology of Indigenous methodologies and as such are crucial to the fabric of identity and community[7,14]. It is important to understand that while Indigenous Peoples are united in some shared colonial experiences, each community has its own history, culture, and traditions[15,16]. Care should be taken to ensure that the research is founded in the unique perspective of the participating community. Indigenous methodologies and ways of conducting research are in many ways separate from Western concepts and ideas. It is possible to somewhat locate Indigenous methodologies within qualitative research, primarily for academic dissemination and acceptance. However, the current Western understanding of research cannot fully appreciate the nuances of Indigenous methodologies[7]. This not the only path to conducting research with Indigenous communities but researchers must understand the intricate importance of the various relationships in order to do the research in a good way.

Some methods commonly employed by Indigenous researchers or those conducting research with Indigenous communities include story gathering (interviews), sharing circles/story

circles (focus groups), digital storytelling, photo elicitation, body mapping, and Ceremony (dreams, visions/visits)[7,14]. The method chosen is less important than involving the Indigenous community in decision-making, honoring traditional ways/teachings, and being accountable to the community for the research you conduct and its effects[17].

Another tool that can be employed in Indigenous research is two-eyed seeing, a concept that was first introduced by Mi'kmaq Elders Albert and Murdena Marshall in 2004[18]. The guiding principle of two-eyed seeing is to simultaneously view the world through Western and Indigenous ways of knowing and being. One acknowledges the strengths of Indigenous ways of knowing as equal to the strengths of Western ways of knowing, accepting that there are instances where one perspective may lead to a better understanding than the other. The ability to see with the strengths of both worlds allows for multiple perspectives to exist in one person or group. This creates a larger understanding of the value an interconnectedness of both views[18,19].

Traditional Medicines and Ceremony

The knowledge and teachings shared in this section were gifted to me by the Indigenous founding members in our research team.

Traditional medicines and Ceremony are foundational to culture and identity for Indigenous Peoples. Learning and respecting this knowledge ensures the work is done in a good way. This honors research as Ceremony, lending sacredness to the knowledge and experiences shared, as well as the relationships formed. Every community has its own traditions that must be respected. Approaching community stakeholders such as Elders and Knowledge Keepers is an important first step in honoring these traditions[3,7,14].

Along with sage, cedar, and sweetgrass, tobacco is one of the 4 sacred medicines in Canada's Indigenous cultures. Tobacco must be passed to Elders when asking for guidance,

knowledge-sharing, or teachings. The passing of tobacco opens communication and carries the intention of the request as a prayer to Creator. This is a sacred Ceremony and forms a commitment between the person passing the tobacco and the person receiving it. There is a ceremonial responsibility on each party to fulfil the terms of this commitment. The person passing the tobacco must have good intentions and truly be open and humble to the teachings they will receive. It is essential to be honest, clear, and specific with what you are asking of the Elder and what you anticipate their role will be when passing tobacco. The tobacco should be placed in front of the Elder (sometimes in the left hand of the person offering the tobacco) and the full request must be communicated. The Elder then has the right to ask questions, ask for more time to consider the request, accept, or decline[20]. The Protocols for passing tobacco may vary between Indigenous communities and it is imperative to seek guidance in this process from community members, Indigenous researchers, or local University research centers. It is also important to note that while passing tobacco may be acceptable in First Nations communities, Inuit and Métis communities may have different traditions, which must be respected. Asking for guidance and clarity is very appropriate before making requests or passing medicines.

Ethical Considerations

As discussed here, the foundation of successful and meaningful research with Indigenous communities is the building of strong relationships grounded in trust and respect[21]. Research informed by Western methodologies alone can lead to exploitation of Indigenous communities[5]. Researchers have an ethical responsibility to honor commitments made during the research process, to ensure openness and transparency, and to guard against any harm that may potentially befall the community as a result of the work being done. Although the benefit to researchers may be obvious (in the form of publication or academic advancement), the benefit to Indigenous

individuals/communities *must not* be overlooked. Discussing appropriate acknowledgement in the form of honoraria, gifts, and academic recognition (ie: authorship where appropriate) is important prior to embarking on a research project.

Personal Reflections

Being a part of this work has had a profound and lasting impact on me personally and while I have learned so much, it really is just the first step on a long journey. I still don't think I fully realize how much the teachings that have been shared with me over the past few years have changed the way I practice medicine or interact with Indigenous patients. I have had more than a few colleagues ask about this work from a place of curiosity, asking specifically about resources to learn more and change their own practice. Some have asked me point blank "how do you do it?" referring to my ability to quickly establish rapport with Indigenous patients who are often alone and far from their home communities, undergoing emergency surgery. I have been able to share small pieces of knowledge with these colleagues, advocate for resources for these patients, and (I hope) make the experience of being a patient a little less difficult.

Importantly, I have found that being a part of this project, and the deep introspective thought that goes along with it, has given me the confidence to question, re-frame and redirect comments or conversations that are stereotypical or frankly racist. It is amazing how effective coming from a place of love and curiosity is at breaking down walls.

The final big thing I have learned from being a part of this work is the overwhelming impact colonization has had on Indigenous Peoples. It's one thing to read about history in a book, it's another to hear people's stories and our Elder's teachings and realize that these are the

stories of cultural genocide. Just because a person is disconnected from their culture, doesn't mean they don't yearn for and need those traditions and medicines for healing.

Lastly, I have to say Chi Miigwetch to Gramma Shingoose, Melinda, Amanda, our study participants, and the research team for all the teaching, guidance and support. There is so much still to learn but these teachings and experiences will truly make me a better trauma surgeon than any residency or fellowship training program alone could have.

Conclusion

Our group set out to examine the experiences of Indigenous patients undergoing bariatric surgery in Winnipeg, Manitoba. We focused on building relationships and decolonizing methodology to ensure the work was done in a good way, guided by traditional teachings, medicines and Ceremony. Decolonized research with Indigenous communities is vital in order to identify and close the gaps in health outcomes between Indigenous and non-Indigenous peoples. Two-eyed seeing, Indigenous methodologies, community involvement, Elder guidance, and incorporation of Ceremony are important to allow Indigenous ways of knowing and being inform the work being done. Understanding the importance of relationship-building, knowledge sharing, and respecting tradition and Ceremony are crucial elements to the overall success and validity of research studies within Indigenous communities. Our research team is grateful for the guidance of the Advisory Group members. We have all grown from the experience and still have much to learn in this ongoing journey.

"Indigenous research is a life-changing ceremony"[22]

Acknowledgement

This research was conducted on Treaty 1 territory, the Traditional, ancestral lands of the Anishinaabeg, Cree, Ojibwe-Cree, Dakota, and Dene people and the homeland of the Red River Métis. We recognize Indigenous Peoples as stewards of this land and respect the relationship that exists between Indigenous Peoples and their Traditional Territories. We respect the Treaties that were made on these territories. We acknowledge the harms and mistakes of the past and the present, and we are dedicated to moving forward together with Indigenous people in the spirit of friendship and reconciliation.

References

1. Hyett S, Gabel C, Marjerrison S, Schwartz L. Deficit-based indigenous health research and the stereotyping of indigenous peoples. Can J Bioeth 2019;2:102–9. https://doi.org/10.7202/1065690AR.
2. Hyett S, Marjerrison S, Gabel C. Improving health research among indigenous peoples in Canada. Cmaj 2018;190:E616–21. https://doi.org/10.1503/cmaj.171538.
3. Hayward A, Sjoblom E, Sinclair S, Cidro J. A New Era of Indigenous Research: Community-based Indigenous Research Ethics Protocols in Canada. J Empir Res Hum Res Ethics 2021;16:403–17. https://doi.org/10.1177/15562646211023705.
4. Smith LT. Decolonizing Methodologies. New York 1999:28–74. https://doi.org/10.1097/NAQ.0b013e318258ba14.
5. Datta R. Decolonizing both researcher and research and its effectiveness in Indigenous research. Res Ethics 2018;14:1–24. https://doi.org/10.1177/1747016117733296.
6. TRC. Truth and Reconciliation Commission of Canada: Calls to Action. Truth Reconcil Comm Canada 2012:1–20. https://doi.org/10.1111/fire.12129.
7. Kovach M. Indigenous methodologies: Characteristics, conversations, and contexts. Toronto, Ontario: University of Toronto Press; 2009.
8. Canada S. Indigenous identity population by gender and age: Canada, provinces and territories, census divisions and census subdivisions. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=9810029301&pickMembers%5B0%5D=4.3&pickMembers%5B1%5D=2.1&pickMembers%5B2%5D=3.1. Published 2023.
9. Batal M, Decelles S. A Scoping Review of Obesity among Indigenous Peoples in

Canada. J Obes 2019;2019. https://doi.org/10.1155/2019/9741090.

10. University of Manitoba. Faculty of Health Sciences. Ongomiizwin - Indigenous Institute of Health and Healing. https://umanitoba.ca/ongomiizwin/#who-we-are. Published 2023.
11. Rink E, Bird EAR, Fourstar K, Ricker A, Runs-Above/Meyers W, Hallum-Montes R. Partnering with American Indian communities in strength-based collaborative health research: Guiding principles from the fort peck Ceremony of Research project. Am Indian Alaska Nativ Ment Heal Res 2016;23:187–205. https://doi.org/10.5820/aian.2303.2016.187.
12. Matheson K, Seymour A, Landry J, Ventura K, Arsenault E, Anisman H. Canada's Colonial Genocide of Indigenous Peoples: A Review of the Psychosocial and Neurobiological Processes Linking Trauma and Intergenerational Outcomes. Int J Environ Res Public Health 2022;19. https://doi.org/10.3390/ijerph19116455.
13. MacDonald N, Stanwick R, Lynk A. Canada's shameful history of nutrition research on residential school children : The need for strong medical ethics in Aboriginal health research. Paediatr Child Heal 2014;19:64.
14. Kovach M. Indigenous Research Methods and Interpretation. Indig. Methodol. Charact. Conversations, Context., 2010, p. 121–40.
15. Cooke M, Mitrou F, Lawrence D, Guimond E, Beavon D. Indigenous well-being in four countries: An application of the UNDP'S Human Development Index to Indigenous Peoples in Australia, Canada, New Zealand, and the United States. BMC Int Health Hum Rights 2007;7:1–11. https://doi.org/10.1186/1472-698X-7-9.
16. Anderson K, Elder-Robinson E, Gall A, Ngampromwongse K, Connolly M, Letendre A, et al. Aspects of Wellbeing for Indigenous Youth in CANZUS Countries: A Systematic

Review. Int J Environ Res Public Health 2022;19. https://doi.org/10.3390/ijerph192013688.

17. Weber-Pillwax C. Indigenous Researchers and Indigenous Research Methods: Cultural Influences or Cultural Determinants of Research Methods. Pimatisiwin A J Aborig Indig Community Heal 2004;2:77–90.
18. Bartlett C, Marshall M, Marshall A. Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing. J Environ Stud Sci 2012;2:331–40. https://doi.org/10.1007/s13412-012-0086-8.
19. Wright AL, Gabel C, Ballantyne M, Jack SM, Wahoush O. Using Two-Eyed Seeing in Research With Indigenous People: An Integrative Review. Int J Qual Methods 2019;18:1–19. https://doi.org/10.1177/1609406919869695.
20. Manitoba U of. Univeristy of Manitoba Indigenous Culture and protocols n.d.
21. Canadian Institutes of Health Research. Cihr Guidelines for Health Research 2007.
22. Wilson S. Progressing toward an Indigenous research paradigm in Canada and Australia. Can J Nativ Educ 2003;27:161–78.

Chapter 3 – Sacred Sharing Circles

Chapter 2 described our experiences in developing a research project using decolonizing methodology. We outlined the importance of building relationships with Indigenous community stakeholders such as Elders and Knowledge Keepers, and what it means to conduct research in a good way. Self-education about shared colonial history and learning about Indigenous methodologies prior to engaging in research are essential to creating an internal foundation for Western researchers to conduct meaningful research with Indigenous Peoples. Passing tobacco as appropriate, incorporating Ceremony into the research being done, and honoring tradition are important ways to ground the work in Indigenous methodologies.

Building on the scoping review from chapter 1 and the knowledge on relationship building from chapter 2, a study was designed to begin addressing the gaps in access to bariatric surgery for Indigenous Peoples. In chapter 3 a sharing circle study, conducted using decolonizing methodology and Ceremony, will explore the experiences of Indigenous Manitobans undergoing bariatric surgery.

Article 3

Sacred Sharing Circles: Urban Indigenous Experience with Bariatric Surgery in Manitoba

Whyte M, Fowler-Woods M, Fowler-Woods A, Shingoose G, Hatala A, Daeninck F, Vergis A, Clouston K, Hardy K
(Submitted for publication)

Abstract

Introduction

Obesity and type 2 diabetes (T2DM) are growing global health concerns. Indigenous Peoples bear a disproportionate burden of both. Bariatric surgery is superior to medical management for weight loss and comorbidity resolution. There is limited literature on experiences and outcomes of Indigenous Peoples undergoing bariatric surgery. This study employed a decolonizing methodology to explore the experiences of Indigenous Manitobans undergoing bariatric surgery.

Methods

An Indigenous Advisory Committee guided the conception and design of the study. Urban Indigenous bariatric surgery patients with T2DM were recruited to participate in two sequential sharing circles and individual interviews facilitated by an Elder. Audio transcripts were analyzed for emerging themes using inductive thematic analysis.

Results

Sequential sharing circles were led by an Elder and the Indigenous Advisory Committee members. Themes included: (1) Experiencing hardship or challenges; (2) Reflecting on the importance of supports; (3) Understanding relationships with food; and (4) Healing and recovery. Participants described varied connectedness to their Indigenous identity but uniformly expressed interest in more culturally diverse supports.

Conclusions

Indigenous Peoples have strong motivators for pursuing bariatric surgery and desire access to culturally relevant supports. Suggestions for program improvement included offering sharing circles, opportunity to speak with an Elder, and Indigenous peer mentorship. This study is the first to qualitatively explore the bariatric surgery experiences of Indigenous Peoples in Canada.

Introduction

Obesity is a growing global health concern associated with significant morbidity, mortality, and increasing healthcare expenditures[1]. Obesity increases the risk of type 2 diabetes mellitus (T2DM), cardiovascular disease, and all cause-mortality[2,3]. While medications, lifestyle modification, and surgery are used in isolation or in combination to treat obesity, bariatric surgery remains the most effective treatment for this disease and its associated comorbidities[4-18].

Indigenous Peoples experience a disproportionate burden of obesity and T2DM with worse overall health outcomes[1,2,19-21]. The evidence exploring bariatric surgery in Indigenous populations is quite limited and mostly focuses on quantitative surgical outcomes[22-31]. There are a handful of studies comparing Indigenous and non-Indigenous patients with obesity who underwent bariatric surgery. These studies largely find no significant difference between the groups in terms of weight loss and comorbidity resolution[32-35].

Indigenous Peoples in Canada, Australia, New Zealand, and the USA (CANZUS) share a similar colonial past and current social climate[36]. CANZUS nations have high standards of living and health, yet Indigenous populations are marginalized and face multiple barriers to accessing care, resulting in markedly poorer health outcomes[37]. There are many Indigenous groups across CANZUS nations, each with a unique cultural identity and worldview. Shared experiences of colonization such as displacement, discrimination, and genocide allow for cautious comparison of research methodology and findings among CANZUS nations[36]. Reviewing the literature reveals a paucity of data on Indigenous experiences and outcomes with bariatric surgery. In New Zealand, Maori People have described strong motivators for pursuing bariatric surgery including improvement of health, connections with family, and comorbidity alarm bells[33,38]. Several studies describe the desire for improved access to bariatric surgery as well as help with

navigating the bariatric pathway[34,35]. Many of the qualitative studies examining the experiences of Indigenous Peoples undergoing bariatric surgery employ Indigenous Methodologies or a decolonizing approach[33-35,38]. Two-Eyed seeing is a concept described by Mi'kmaq elders Albert and Murdena Marshall which refers to seeing with the strengths and knowledges of both Traditional Indigenous and Western world views[39]. This concept is important in conducting research with Indigenous Peoples to ensure respectful collaboration that acknowledges the value of multiple perspectives to enrich the work.

The aim of this study was to employ Two-Eyed seeing and a decolonizing approach to explore the experiences of urban Indigenous bariatric surgery patients living with T2DM in Manitoba. The secondary aim of this project was to generate and contribute new knowledge to inform future research and improve bariatric program development.

Methods

Study conceptualization was guided in partnership with an Indigenous Elder (GS), Indigenous physician (MFW), and an Indigenous researcher (AFW) who formed an Indigenous Advisory Committee (IAC). The wisdom and knowledges of the IAC members, as well as the University of Manitoba's *Framework for Engagement of First Nations, Metis and Inuit Peoples*, informed the use of Sacred Traditions and Ceremony to support the ongoing development of a respectful and collaborative partnership including passing tobacco to Geraldine Shingoose (IAC Elder) prior to study conceptualization. The protocol guiding this research has been established in detail in a previous publication[40].

Inclusion criteria & recruitment

Adult urban Indigenous Manitobans (>18yo) living with obesity and T2DM who had undergone bariatric surgery through the Centre for Metabolic and Bariatric Surgery (CMBS) in

Winnipeg, MB were recruited for this study. An urban sample of convenience was chosen due to the in-person nature of the research with plans to conduct future sharing circles with non-urban participants.

'Permission to Contact' and 'Community Membership' forms (Appendix A) were mailed to all active CMBS patients (N= 2,301) in the spring of 2019. Patients had the option to voluntarily self-identify as Indigenous on the 'Community Membership' form. In consultation with the IAC, the research team aimed to recruit 4-6 participants who had self-identified as Indigenous. This small study size was felt to be appropriate to facilitate safe, trauma-informed and culturally-sensitive/respectful discussion around the topics of obesity and accessing healthcare. The two sequential sharing circles (SSC) were scheduled approximately six weeks apart. This allowed sufficient time to conduct thematic analysis to identify the major themes, and to summarize the information to facilitate member-checking during the second sharing circle. This was done to confirm shared understanding during the second circle and verify that the interpretations and identified themes reflected participants' experiences and contributions and were culturally appropriate. The IAC collaborated to create the script of guided questions for both SSCs (Appendix B).

Sacred Sharing Circles

The Sacred sharing circles were conducted in the circle room at the University of Manitoba's Indigenous Student Center, Migizii Agamik. These sharing circles were facilitated by a community Elder (GS) and attended by the IAC (GS, MFW, AFW). Each Sacred sharing circle gathering was opened with a smudge and a song by Elder Shingoose and incorporated Sacred items, traditional medicines, and feasting. All food and beverages for the feast were selected in conjunction with the IAC and CMBS dietitian to honor the tradition of feasting and

support a post-bariatric surgery diet. The food was provided by Indigenous-owned and operated local restaurants.

Analysis

The sharing circles and individual interviews were audio-recorded and transcribed by a medical transcriptionist familiar with confidentiality requirements. The transcripts were analyzed in Dedoose software (V.8.3.17, 2021) using inductive thematic analysis[41]. A single coder who was present at all data collection meetings (MW) coded all transcripts and a second coder with experience in inductive thematic analysis and research with Indigenous communities (AH) reviewed and guided the analysis. The IAC provided guidance on data analysis and assisted with member-checking that occurred at the beginning of the second Sacred sharing circle.

Results

Two thousand three hundred and one patients were contacted in the initial mail-out. 648 (28.1%) gave permission to contact for future research and 98 (15.1%) of those self-identified as Indigenous. Of the 98 Indigenous patients, 14 had been discharged from the program for a variety of reasons (including self-discharge, non-compliance, lost to follow up), 39 were in the post-operative phase, and 45 were in the pre-operative phase. Of the 39 patients in the post-operative phase, 16 were noted to have T2DM at the time of referral (Figure 1).

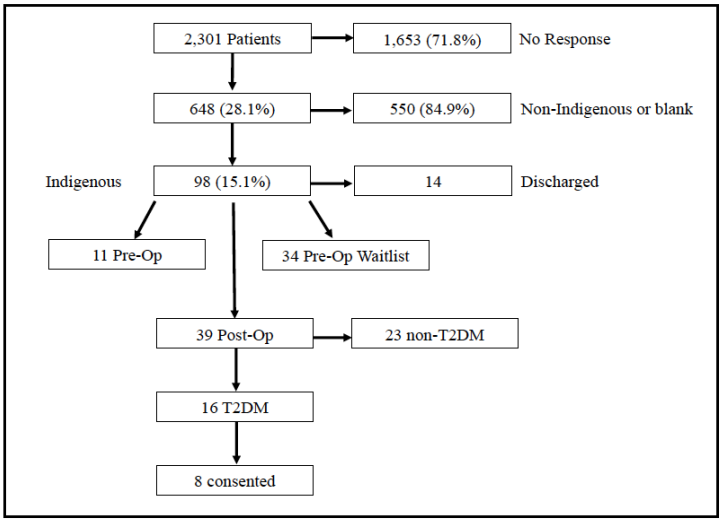

Figure 1: Participant flow diagram

Informed consent was obtained from eight patients (seven female and one male, mean age 54.9 years). Four individuals ultimately participated in the SSC, three women and one man with a mean age of 52.7. Full participant characteristics can be found in Table 1. The four participants who had consented and ultimately did not participate in the study had several barriers including unrelated healthcare appointments/surgeries and date conflicts. Data collection was interrupted due to the COVID-19 Pandemic restrictions for in-person research. As such, only two of the participants (one woman and one man) had the opportunity to participate in the individual interviews.

Table 1: Participant characteristics. Participants 1-4 participated in Sacred Sharing Circles.

Participant	Sex (M/F)	Age	BMI	Diabetes pre-op (Y/N)	Diabetes post-op (Y/N)
1	M	63	47.7	Y	N
2	F	49	42.5	Y	Y
3	F	43	44.0	Pre-diabetes	N
4	F	56	36.7	Y	N
5	F	55	39.9	Y	N
6	F	62	45.1	Y	N
7	F	60	49.5	Y	N
8	F	51	47.3	Y	N
	Mean 1-4	52.8	42.7		
	Mean 1-8	54.9	44.1		

Inductive thematic analysis of the transcripts revealed four larger themes: (1) Experiencing hardship or challenges; (2) Reflecting on the importance of supports; (3) Understanding relationships with food; and (4) Healing and recovery (Table 2 and Figure 2).

Table 2: Quotes from participants representative of each identified theme

Experiencing hardship or challenges	Before surgery	"[Being obese] definitely affected my life, my marriage, did some harm in raising my daughters." "It's a pretty tough place to be. You don't like yourself. You don't like who you're becoming. You don't like who you are. It's not good." "[Obesity] definitely defined me. Probably not to other people, maybe I did it more to myself. I don't think I felt like I was worthy or deserved some things." "Pre-surgery relationship [with myself] was dismal." "I didn't want to be the 'fat mom'" "Being out in public and people will make comments and not very nice ones. So that makes your self-esteem go down and they don't even know you." "It's the culture. Pick on fat people. Society keep reminding you what you are, who you are. They define you."
	After surgery	"I kind of label myself as just fat now. Like not an alarming medical amount of fat. Just straight up regular fat. I don't think that goes away." "I still consider myself fat. I always will be." "My body has been through a lot. It's still a struggle." "I was disappointed in myself when I was diagnosed with prediabetes and I didn't make the necessary changes."
Understanding relationships with food	Before surgery	"We do this. I didn't get like this by accident. I got like this because I ate, you know." "[I did use food as a] coping mechanism. I think everybody does to a certain extent." "I woke up thinking about what I was going to eat for breakfast… I'm not even finished breakfast and I'm thinking about what I'm going to have for lunch. And then supper. I was totally addicted to fast food. I had stashes of food hidden all around the house so nobody knew how much I was eating." "I always thought it was important or was significant that I participated in the feast and partook of the food…The animals that gave themselves, the food that was on the table – these are all gifts and it's just out of respect that would eat a lot of it." "Was it cravings or was it again trying to go back to the comfort kind of foods and things that, brought me back to doing stuff with my dad from our culture – the Bannock and venison and meats. You know good food. Eating a lot of good food…Was I craving for the food or was I craving for my culture? Trying to get back to my origins I think I was craving on both ends of the spectrum. Food and culture and spirituality."
	After surgery	"I still get the cravings but definitely treat them differently now." "We are adapting our traditions because, you know, typically was always gigantic food orientation a family thing. Lots of food. Way too much food. In excess. It's just. Now we're all trying and eat healthier and leading better lifestyles." "Sometimes I feel a little disconnected because I eat different foods than my family." "It was tough right after surgery. The most challenging I found was finding out things that at one time I used to love to eat, that I couldn't anymore." "In your brain you're still the fat person with the big stomach and so you pile on your plate and you eat two mouthfuls and you're full. It took a long time to sort of retrain your brain."
Reflecting on the importance of supports		"That's where I get my strength. I want to be here for my family." "Making 68annock or Christmas cookies: I can still participate, the kids make it and we're still there for it. I'm still doing it but in a different way." "The [bariatric clinic] team has been wonderful, wealth of information, very supportive and prepared you well for everything." "After my surgery I haven't really had too many opportunities to really participate in any feasts or sharing of the harvest or anything like that because of the diet. I feel like I wouldn't be able to use the gifts of food properly."
Healing and recovery		"This is a reset button, but if you don't make changes you're going to end up back where you started." "This was a decision I could make to take a little control back for me." "This year I was able to join my kids up on stage at Metis harvest so that was huge for me." "I wouldn't change having the surgery for anything." "I can do fun stuff now that I am smaller, that I couldn't do when I was bigger." "I'm sort of coming out of my shell and my marriage has turned around." "[Bariatric surgery] changed my life in so many ways." "I have more energy, you know, I do things." "I had kind of gotten lost. I was really floundering on my own. If I had a chance to do [sharing circles] like this or speak to an Elder and just kind of get re-grounded again maybe that would have helped." "If somebody were to have asked if I wanted to speak to somebody either pre-surgery or after surgery I think it might have been helpful."

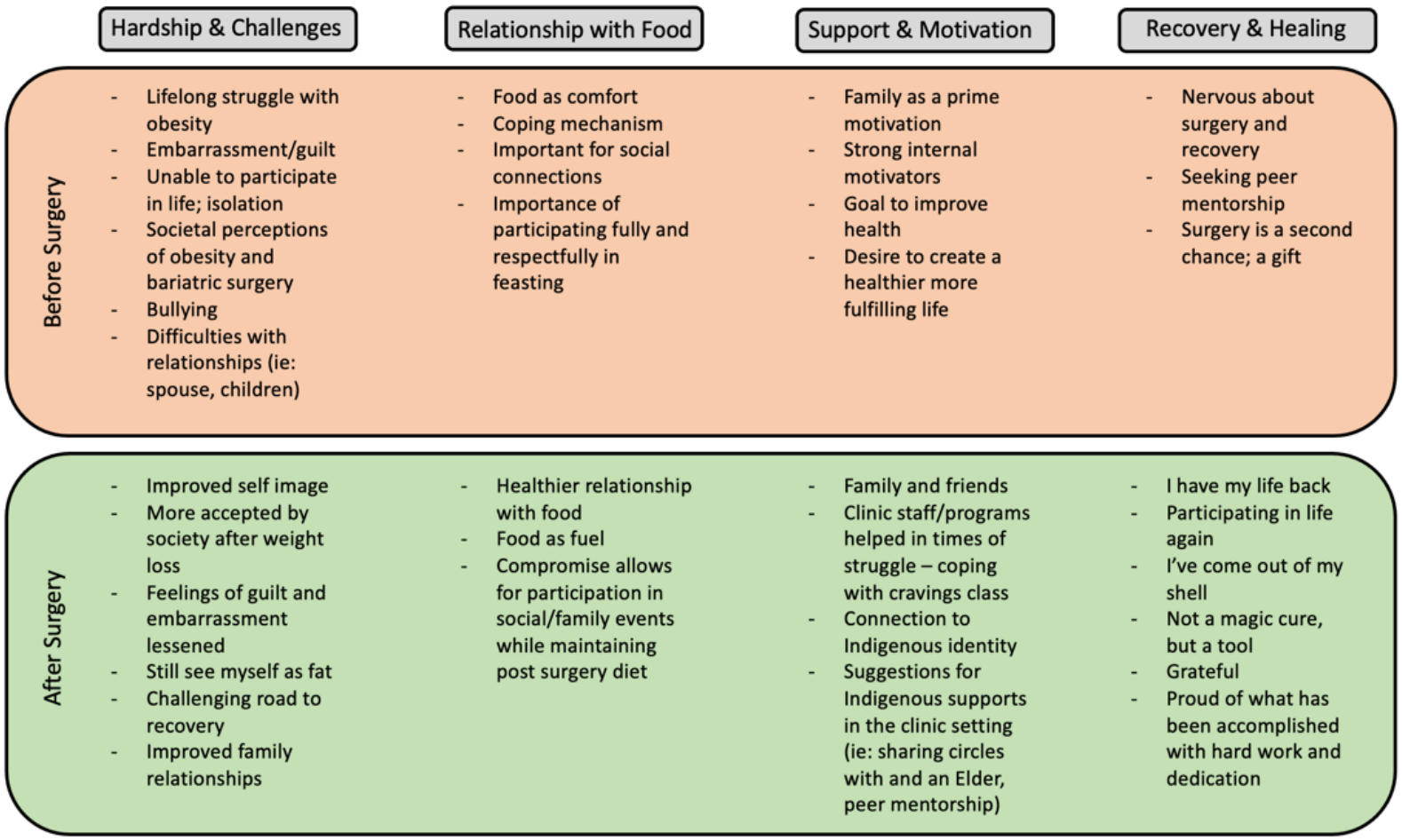

Figure 2: Themes describing experiences of participants on their bariatric surgery journey.

1. *Experiencing hardship or challenges*

All participants described struggling with their weight most, if not all, of their lives. The emotional hardship associated with obesity was largely related to self-image and societal pressures. However, significant impacts on personal relationships were described. All participants expressed feelings of embarrassment, shame, or guilt when discussing their lives prior to embarking on their bariatric surgery journey. There was palpable regret at not being able to participate fully in their lives before surgery. The decision to pursue surgery was fundamentally based on trying to create a healthier, more fulfilling life for themselves and their families.

After bariatric surgery and weight loss, most participants stated that the feelings of guilt and shame lessened although did not completely subside, and they perceived themselves to be more accepted by society. While self-image had improved overall, participants described pervasive pre-existing negative emotions associated with being obese . They still viewed themselves as obese post-operatively, regardless of how much time had passed or how much weight they had lost.

2. *Understanding relationships with food*

A complex relationship with food was identified as a major component of participants lives, both positively and negatively. Food was recognized as providing comfort and as a coping mechanism. The resultant weight gain and obesity perpetuated increased emotional suffering and feelings of worthlessness. All participants acknowledged the harmful relationship they had with food prior to entering the bariatric program.

Food was also identified in a positive way as a means of connecting with friends and family. Participants described the importance of feasting and Traditional Teachings, as well as the value of relationship building with children and other family members through cooking or baking together. Food was described as central to most social gatherings.

The importance of addressing the negative relationship with food in the bariatric clinic was emphasized by participants. By identifying and addressing this negative relationship and providing guidance on coping with cravings, participants felt that they were better able to understand the behavior and feelings that contributed to their obesity. After completing the bariatric pathway (including mandatory sessions with a psychologist, dietitian and kinesiologist), all participants expressed feeling they had a healthier relationship with food overall. However, many described feelings of sadness or regret in not being able to connect with family or community through food in the same way they did before surgery. In all examples presented, participants were eventually able to find an adequate compromise which allowed them to participate in these important social and relationship-building events, while adhering to the new restrictions imposed by the post bariatric surgery diet.

3. *Reflecting on the importance of supports and motivation*

When discussing supports, participants described external and internal support systems that helped them along their bariatric surgery journey. Each participant spoke of their immediate and extended families as being their primary supports preoperatively, post-operatively, and throughout their weight loss journey. Some described feeling initially nervous about sharing their decision to pursue surgery with family members for fear of judgement due to social stigma around bariatric surgery.

A second external support that was highly valued by all participants was the bariatric surgery clinic itself, specifically the staff and programs offered. Several participants explained how short check in appointments were very helpful and motivational during times of struggle. Specific programs aimed at changing perception/response to cravings were also highly valued.

Each participant had strong internal motivators for pursuing bariatric surgery and persisting through challenges on their weight-loss path. A leading motivator was improvement of health in order to be more present and participate more fully in family activities, particularly those including children and grandchildren. External family support helped to validate and fuel internal motivation and focus. For one participant, Indigenous identity and connection to culture, including Traditional Teachings, provided an additional source of internal support on their journey. Of note, when asked about the importance of Indigenous identity in their lives and healing journey, only one participant was able to speak to this. Most of our participants were not raised with the knowledge that they were Indigenous and instead came to this knowledge in adulthood. For the participant who was connected to their Indigenous identity and grew up with Indigenous Teachings and Medicine, the strength of Traditional Knowledges and medicines played a role in their healing journey. One topic that was brought forward was participation in feasting and the challenges of participating/participating fully after bariatric surgery given the post-surgical dietary restrictions. It was felt that in order to participate fully and respectfully in feasting, that all the food should be used/consumed, and there was a fear that the restrictions of a post-bariatric surgery diet would not allow for full participation in feasting.

4. *Healing and Recovery*

All participants expressed feeling unwell physically, emotionally, spiritually, and mentally prior to surgery. The cycle of stress, using food and eating as a coping mechanism, ongoing weight gain, negative self-image and societal pressures, and stigmatization, placed tremendous stress on the individual and their relationships - perpetuating shame, isolation, and harm in all aspects of participants' lives.

Bariatric surgery was seen by each participant as a 'gift' and an opportunity for a new, better life that could be filled with everything they missed out on when they were obese. All participants felt that the decision to pursue bariatric surgery was positive and expressed pride in their accomplishments and weight loss since their surgery.

When asked about additional supports that could have made accessing the bariatric clinic and undergoing bariatric surgery easier for them, participants made several suggestions. These included access to Indigenous peer mentors (some had participated in informal social media-based groups that they found helpful for support, recipe exchanges, clothing exchange, etc.), the opportunity to connect with an Indigenous Elder, and the option to participate in sharing circles with other Indigenous patients.

Discussion

This study used a decolonizing methodology of sharing circles to explore the experiences of several Indigenous patients on their healing journeys through the bariatric surgery pathway at the CMBS. With Elder guidance, incorporation of Ceremony and Sacred Teachings, and Two-Eyed seeing the research team was gifted knowledge of the lived experiences of participants. Participants identified several challenges they faced prior to bariatric surgery, including the struggle of emotional suffering, their harmful relationship with food, and the damaging effects of

obesity on their lives. Despite these many obstacles, participants showed great strength and resilience on their healing journeys. They described strong internal motivation and external support from family, friends and the bariatric clinic itself. They shared their evolving relationship with food and the work they accomplished in order to be approved for surgery and obtain a second chance at a healthier life. Finally, the sense of accomplishment and pride that came with healing in all aspects of health and wellness (physical, mental, emotional, spiritual) was palpable in the group as participants shared their stories and learned from each other. They all felt that living with obesity was physically, mentally, and emotionally challenging.

Throughout the course of the sharing circles and interviews, it was noted that participants varied in their connectedness to their Indigenous identity, culture, and Traditional Teachings. It is important to acknowledge the many harms that colonialism has caused for Indigenous Peoples in Canada, and indeed in all nations with a colonial past. The ongoing cultural genocide that disconnects individuals from their culture, language, Traditional Teachings, and community was demonstrated in this study. In many cases, participants had discovered their Indigenous identity in adulthood, and one shared stories of ancestors hiding their Indigenous identity resulting in later generations having no knowledge of their true roots. While several participants had engaged in cultural Indigenous events since discovering their identity, the majority did not feel strongly connected to their culture.

Healthcare providers must create a person-centered, culturally safe space to allow for expression of culture and tradition that is patient directed. The most powerful way to ensure that culturally sensitive care is accessible and embedded within all aspects of the healthcare system is to follow the Truth and Reconciliation Commission of Canada's Final Report *Calls to Action*. Particularly relevant are the calls to action related to health (#18 to #24) and professional

development and training for public servants (#57)[42]. Dismantling the current disparities in healthcare and building partnerships between Indigenous and non-Indigenous Peoples is an enormous undertaking that can begin with one simple step. Educating healthcare providers on the history and impact of colonization in Canada, and the ongoing legacy of intergenerational trauma experienced by Indigenous Peoples within the healthcare system will encourage respect and understanding – the foundations of any successful and healthy relationship.

There are several limitations to note in this study. The voluntary self-identification process for recruitment involved a mail-out form to all CBMS patients with its inherent limitations. This study did not pursue formal confirmation of Indigenous identity in any form. The fundamental nature of sharing circle research involves limiting the number of participants in order to facilitate a safe environment in which participants feel comfortable engaging in intimate conversation. The study participants represent only a small sample of Indigenous populations in Manitoba undergoing bariatric surgery through CMBS, which were further limited to urban Indigenous patients as an initial sample of convenience for this pilot project.

There were also significant challenges related to the emergence of the COVID-19 global pandemic. Individual interviews for each participant were unable to be completed due to safety concerns and restrictions on in-person research implemented by the institutional research ethics boards. Guided by the knowledge of the IAC, the decision was made not to proceed with virtual interviews given the lack of experience with virtual ceremony and sharing circles early in the pandemic. Since completion of this study, Elder Shingoose has gained experience with virtual ceremony and the research team has employed this methodology with success.

Within Mi'kmaw Elders Marshall and Marshall's *Etuaptmumk* or "Two-Eyed Seeing" approach[39] using a Western scientific lens we conclude that the data gathered from this study is

not generalizable beyond the participants involved. However, the purpose of this study was not to create generalizable data, but to examine the unique and personal experiences of each participant and to create new knowledge to contribute to this field, using Indigenous methodologies. It is through the combination of methodologies that we gain a more holistic understanding of the patient experience and the processes important to providing culturally sensitive and effective treatment for bariatric patients. This knowledge can be used to help guide further research and facilitate the development and implementation of more culturally relevant supports in bariatric surgery programs.

Future directions:

The knowledge gathered from this study has informed future plans for upcoming sharing circle studies with different groups of Indigenous participants, including CMBS waitlist patients, non-urban postoperative patients, and Indigenous individuals living with obesity who are not affiliated with the bariatric clinic. The goals going forward will be to explore the perspectives of individuals from these different groups and to incorporate the shared knowledge to improve the bariatric care delivered to Indigenous patients in Manitoba. We aim to increase supports for Indigenous patients in the clinic space including opportunities to connect with an Elder, participate in sharing circles, and use traditional medicines. We will also explore the changing relationship with food more in the hopes of creating decolonized post-surgery recipes. We hope this will act as a guide for Indigenous patients and help them stay connected with tradition while adhering to the necessary post-surgical dietary changes.

Conclusion

This Sacred Sharing Circle study explored the lived experiences of several urban Indigenous patients living with obesity and T2DM, and who had navigated the bariatric surgery

pathway. Participants had strong motivators for pursuing bariatric surgery. All experienced emotional hardship and deep feelings of shame and guilt before embarking on their bariatric journey. The relationship with food changed, which impacted the ability (actual and perceived) to participate in family and cultural activities. At all stages, family was acknowledged as a vital support for success and motivator. Despite a varied level of connectedness to Indigenous identity among our participants, all expressed gaining value from the sharing circle sessions. Suggestions for program improvement included increased access to culturally specific supports such as sharing circles, Ceremony with an Elder, Indigenous peer mentorship, and the creation of decolonized post-surgery recipes. This study is the first to qualitatively explore the bariatric surgery experiences of Indigenous Peoples in Canada. Further research will explore specific aspects of the health care journey and develop culturally relevant bariatric program materials.

Acknowledgements

This research was conducted on Treaty 1 territory, the traditional, ancestral lands of the Anishinaabe, Cree, Oji-Cree, Dakota, and Dene people, and the homeland of the Métis nation. We recognize Indigenous peoples as stewards of this land and respect the relationship that exists between Indigenous Peoples and their traditional territories. We acknowledge the harms and mistakes of the past and the present and we are dedicated to moving forward together with Indigenous Peoples in the spirit of friendship and reconciliation.

We would like to deeply thank all the participants of this study for sharing their knowledge and trusting us with their stories. We also recognize the invaluable contribution of Elder Geraldine Shingoose in guiding the work in ceremony and ensuring it is done in a good way.

MW, MFW, AFW, GS, CC, KC, KH conceptualization and planning; GS sharing circle facilitation and ceremony guide; MW and AH thematic analysis; MW manuscript writing; MW, MFW, AFW, GS, AH, AV, CC, KC, and KH manuscript revision.

References

1. Canada S. Body Composition of Canadian Adults, 2009-2011.
2. Sharma AM, Lau DCW. Obesity and Type 2 Diabetes Mellitus. *Can J Diabetes*. 2013;37(2):63-64. doi:10.1016/j.jcjd.2013.03.360
3. Whitlock G, Lewington S, Sherliker P, et al. Body-mass index and cause-specific mortality in 900 000 adults: Collaborative analyses of 57 prospective studies. *Lancet*. 2009;373(9669):1083-1096. doi:10.1016/S0140-6736(09)60318-4
4. Wiggins T, Guidozzi N, Welbourn R, Ahmed AR, Markar SR. Association of bariatric surgery with all-cause mortality and incidence of obesity-related disease at a population level: A systematic review and meta-analysis. *PLoS Med*. 2020;17(7):1-18. doi:10.1371/journal.pmed.1003206
5. Buchwald H, Estok R, Fahrbach K, et al. Weight and Type 2 Diabetes after Bariatric Surgery: Systematic Review and Meta-analysis. *Am J Med*. 2009;122(3). doi:10.1016/j.amjmed.2008.09.041
6. Gloy VL, Briel M, Bhatt DL, et al. Bariatric surgery versus non-surgical treatment for obesity: a systematic review and meta-analysis of randomised controlled trials. *BMJ*. 2013;347(October):1-16. doi:10.1136/bmj.f5934
7. Schauer PR, Bhatt DL, Kirwan JP, et al. Bariatric surgery versus intensive medical therapy for diabetes - 3-Year outcomes. *N Engl J Med*. 2014;370(21):2002-2013. doi:10.1056/NEJMoa1401329
8. Sanchis P, Frances C, Al. E. Cardiovascular Risk Profile in Mediterranean Patients Submitted to Bariatric Surgery and Intensive Lifestyle Intervention: Impact of Both Interventions After 1 Year of Follow-Up. *Obes Surg*. 2015;25:97-108.

9. Panunzi S, Carlsson L, De Gaetano A, et al. Determinants of Diabetes Remission and Glycemic Control after Bariatric Surgery. *Diabetes Care*. 2016;39(1):166-174. doi:10.2337/dc15-0575
10. Halperin F, Ding SA, Simonson DC, et al. Roux-en-Y gastric bypass surgery or lifestyle with intensive medical management in patients with type 2 diabetes: Feasibility and 1-year results of a randomized clinical trial. *JAMA Surg*. 2014;149(7):716-726. doi:10.1001/jamasurg.2014.514
11. Yanovski, S; Yanovski J. Obesity. *NEJM*. 2002;346(8):591-602.
12. Cheng J, Gao J, Shuai X, Wang G, Tao K. The comprehensive summary of surgical versus non-surgical treatment for obesity : a systematic review and meta-analysis of randomized controlled trials. 2016;7(26).
13. Ikramuddin S, Korner J, Lee WJ, et al. Roux-en-Y gastric bypass vs intensive medical management for the control of type 2 diabetes, hypertension, and hyperlipidemia: The diabetes surgery study randomized clinical trial. *JAMA - J Am Med Assoc*. 2013;309(21):2240-2249. doi:10.1001/jama.2013.5835
14. Courcoulas AP, Goodpaster BH, Eagleton JK, et al. Surgical vs medical treatments for type 2 diabetes mellitus: A randomized clinical trial. *JAMA Surg*. 2014;149(7):707-715. doi:10.1001/jamasurg.2014.467
15. Courcoulas AP, Belle SH, Neiberg RH, et al. Three-year outcomes of bariatric surgery vs lifestyle intervention for type 2 diabetes mellitus treatment a randomized clinical trial. *JAMA Surg*. 2015;150(10):931-940. doi:10.1001/jamasurg.2015.1534
16. Ding, S; Simonson, D; Wewalka, M; Halperin, F; Foster, K; Goebel-Fabbri; Hamdy, O; Clancy, K; Lautz; Vernon, A; Goldfine A. Adjustable Gastric Band Surgery or Medical

Management in Patients with Type 2 Diabetes: A Randomized Clinical Trial. *J Clin Endocrinol Metab*. 2015;100(7):2546-2556.

17. Dixon JB, O'Brien PE, Playfair J, et al. Adjustable gastric banding and conventional therapy for type 2 diabetes: A randomized controlled trial. *Obstet Gynecol Surv*. 2008;63(6):372-373. doi:10.1097/01.ogx.0000314848.71777.69
18. Mingrone G, Panunzi S, De Gaetano A, et al. Bariatric surgery versus conventional medical therapy for obese patients with type 2 diabetes: A meta-analysis. *N Engl J Med*. 2012;366(17):1577-1585. doi:10.7507/1672-2531.20130129
19. Rice K, Te Hiwi B, Zwarenstein M, Lavallee B, Barre DE, Harris SB. Best Practices for the Prevention and Management of Diabetes and Obesity-Related Chronic Disease among Indigenous Peoples in Canada: A Review. *Can J Diabetes*. 2016;40(3):216-225. doi:10.1016/j.jcjd.2015.10.007
20. WHO. Obesity and Overweight Factsheet. https://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight. Published 2017.
21. Batal M. A Scoping Review of Obesity among Indigenous Peoples in Canada and St ´. 2019;2019.
22. Wallace AE, Young-Xu Y, Hartley D, Weeks WB. Racial, socioeconomic, and rural-urban disparities in obesity-related bariatric surgery. *Obes Surg*. 2010;20(10):1354-1360. doi:10.1007/s11695-009-0054-x
23. Lam ECF, Murariu D, Takahashi E, Park CW, Bueno RS, Lorenzo CSF. Prescription drug cost reduction in Native Hawaiians after laparoscopic Roux-en-y gastric bypass. *Hawaii J Med Public Health*. 2013;72(2):40-43. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med9&NEWS=N&AN

=23467573.

24. P.E. O, D.E. D, C. L, et al. The Effect of Weight Loss on Indigenous Australians with Diabetes: a study of Feasibility, Acceptability and Effectiveness of Laparoscopic Adjustable Gastric Banding. *Obes Surg*. 2016;26(1):45-53. doi:http://dx.doi.org/10.1007/s11695-015-1733-4
25. P.J. T, M.D. C, Bessell J. AO - Treacy PJO http://orcid. org/000.-0002-7624-0591. Is Gastric Banding Appropriate in Indigenous Or Remote-Dwelling Persons? *Obes Surg*. 2016;26(8):1728-1734. doi:http://dx.doi.org/10.1007/s11695-015-1993-z
26. Rahiri J-L, Lauti M, Harwood M, MacCormick AD, Hill AG. Ethnic disparities in rates of publicly funded bariatric surgery in New Zealand (2009-2014). *ANZ J Surg*. 2018;88(5):E366-E369. doi:https://dx.doi.org/10.1111/ans.14220
27. Rahiri J-L, Tuhoe J, MacCormick A, Hill A, Harwood M. A narrative review of bariatric surgery in Indigenous peoples. *Obes Res Clin Pract*. 2019;13(1):1-5. doi:10.1016/j.orcp.2018.11.240
28. T. T, Y. W, W. R, et al. Attrition after Acceptance onto a Publicly Funded Bariatric Surgery Program. *Obes Surg*. 2018;28(8):2500-2507. doi:http://dx.doi.org/10.1007/s11695-018-3195-y
29. H. A, A. T, Omotosho P. AO - Omotosho PO http://orcid. org/000.-0001-8648-2802, Amirian H, Torquati A, Omotosho P. Racial Disparity in 30-Day Outcomes of Metabolic and Bariatric Surgery. *Obes Surg*. 2019. doi:https://dx.doi.org/10.1007/s11695-019-04282-9
30. Lovrics O, Doumouras AG, Gmora S, et al. Metabolic outcomes after bariatric surgery for Indigenous patients in Ontario. *Surg Obes Relat Dis*. 2019;15(8):1340-1347.

doi:https://dx.doi.org/10.1016/j.soard.2019.05.035

31. Shilton H, Gao Y, Nerlekar N, Evennett N, Ram R, Beban G. Pre-operative Bariatric Clinic Attendance Is a Predictor of Post-operative Clinic Attendance and Weight Loss Outcomes. *Obes Surg*. 2019;29(7):2270-2275. doi:https://dx.doi.org/10.1007/s11695-019-03843-2
32. Rahiri J-L, Gillon A, Furukawa S, MacCormick AD, Hill AG, Harwood MLN. Media portrayal of Maori and bariatric surgery in Aotearoa/New Zealand. *N Z Med J*. 2018;131(1479):72-80. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=medl&NEWS=N&AN=30048435.
33. Rahiri J-L, Tuhoe J, MacCormick AD, Hill AG, Harwood M. Exploring motivation for bariatric surgery among Indigenous Māori women. *Obes Res Clin Pract*. 2019;13(5):486-491. doi:10.1016/j.orcp.2019.09.004
34. J.-L. R, J. T, A. G, et al. Enhancing responsiveness to Maori in a publicly funded bariatric service in Aotearoa New Zealand. *ANZ J Surg*. 2019. doi:https://dx.doi.org/10.1111/ans.15610
35. T. T, W. W, O. D, N. T. Preoperative bariatric surgery programme barriers facing Pacific patients in Auckland, New Zealand as perceived by health sector professionals: A qualitative study. *BMJ Open*. 2019;9(11):29525. doi:http://dx.doi.org/10.1136/bmjopen-2019-029525
36. Anderson K, Elder-Robinson E, Gall A, et al. Aspects of Wellbeing for Indigenous Youth in CANZUS Countries: A Systematic Review. *Int J Environ Res Public Health*. 2022;19(20). doi:10.3390/ijerph192013688

37. Jacklin KM, Henderson RI, Green ME, Walker LM, Calam B, Crowshoe LJ. Health care experiences of Indigenous people living with type 2 diabetes in Canada. *Cmaj*. 2017;189(3):E106-E112. doi:10.1503/cmaj.161098
38. Rahiri J-L, Gillon A, Tuhoe J, MacCormick AD, Hill A, Harwood M. Māori experiences of bariatric surgery in South Auckland, New Zealand. *Altern An Int J Indig Peoples*. 2020;16(4):300-308. http://10.0.4.153/1177180120956708.
39. Bartlett C, Marshall M, Marshall A. Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing. *J Environ Stud Sci*. 2012;2(4):331-340. doi:10.1007/s13412-012-0086-8
40. Hardy K, Zmudzinski M, Fowler-Woods M, et al. Decolonising qualitative research to explore the experiences of Manitoba's urban Indigenous population living with type 2 diabetes mellitus, obesity and bariatric surgery. *BMJ Open*. 2020;10(10). doi:10.1136/bmjopen-2019-036595
41. SocioCultural Research Consultants L. Dedoose Version 8.0.35, web application for managing, analyzing, and presenting qualitative and mixed methods research data. 2018. www.dedoose.com.
42. TRC. Truth and Reconciliation Commission of Canada: Calls to Action. *Truth Reconcil Comm Canada*. 2012:1-20. doi:10.1111/fire.12129

Appendix A: Permission to Contact For Research and Community Membership Forms

Centre for Metabolic and Bariatric Surgery
Victoria General Hospital
2340 Pembina Hwy, Winnipeg, MB R3T 2E8

Patient Name: _____
(First, Last)

Date: _____
(dd/mm/yyyy)

Permission to be Contacted for Future Research at the Centre for Metabolic and Bariatric Surgery (CMBS) – Wait List Patients

The Centre for Metabolic and Bariatric Surgery (CMBS) is focused on providing a high quality program through patient-centred care. The shared experience of patients and their healthcare providers make them partners along the bariatric surgery journey.

A goal of The Centre for Metabolic and Bariatric Surgery is to engage patients involved in the bariatric surgery program, including providing opportunities to learn about future research studies and the potential for participation. These are vital to ensuring high quality program delivery that supports patient success and optimal outcomes.

You are being asked for permission to be contacted in the future to inquire about possible interest in participating in future research studies at the Centre for Metabolic and Bariatric Surgery. Please take your time to review this consent form and discuss any questions you may have. You are free to discuss this form with your friends, family and others before you make your decision.

If you agree to be contacted in the future about the possibility of participating in future research projects, this form will be kept in your clinical file and your name and contact information will be stored in our Permission to Contact Database. The clinical files and CMBS-Permission to Contact Database are accessible only to those staff members permitted to have access to this information. All files will be kept in a secure location and maintained by staff at the Center for Metabolic and Bariatric Surgery and the Department of Surgery. All electronic files and the database will be password protected and located on a password protected computer, on an internal/dedicated server, and stored in a secure area. The REDCap Database program is held within in a Secure Research Environment at the University of Manitoba and is PHIA compliant and approved.

Your information will be treated as confidential in accordance with the Personal Health Information Act of Manitoba. This consent form and the information in the database may be inspected by a University of Manitoba Research Ethics Board to ensure that your information is being collected and maintained in an ethical manner. Despite efforts to keep your personal information confidential, absolute confidentiality cannot be guaranteed. Your personal information may be disclosed if required by law.

Your decision to allow your information to be in the database is completely voluntary. While there may be no benefit to you, your information will help researchers to quickly identify individuals who may be suitable for a particular research study. If you change your mind after agreeing to this, your information can be removed from the database. You will not be penalized in any way if you refuse to participate, or if you change your mind and ask that your information be removed.

By signing this form, you are in no way agreeing to participate in any specific research project at this time or in the future. By signing this form, when each opportunity to participate in a specific research study at CMBS arises, you are giving us permission to contact you to provide the details related to each specific study. During that time, you will be able to have your questions answered and take time to decide whether you would like to participate. You will also be required to sign a separate consent form to participate in each specific study.

****** Providing permission to be contacted by The Centre for Metabolic and Bariatric Surgery (CMBS) for future research and/or participation in research at CMBS will in no way influence a patient's eligibility, acceptance, or approval for bariatric surgery in the program ******

The following information will be collected about you:

- Full name (First and last name)
- Mailing address
- Telephone number(s); home and mobile (if applicable)
- Email address/es (if applicable)
- CMBS patient chart number
- VGH MRN chart number

Confidentiality of your information will be maintained in the following manner:

(1) Access to the Permission to be Contacted database will be restricted to those with direct access to clinical files (paper and electronic database) and will include the clinical team and personnel dedicated to specific studies. In the case of research data retrieval, only relevant information will be collected by specific study personnel as per the study protocol.

(2) Information in the Permission to be Contacted database will be shared with lead researcher(s) and research assistants designated to contact patients to inquire about interest in specific research studies that have been approved by the University of Manitoba Biomedical/Health Research Ethics board and the Victoria General Hospital Research and Evaluation Unit. These may include researchers at the CMBS as well as the University of Manitoba or other institutions involved in collaborative research projects with the CMBS.

(3) The information you provide will be retained for the purposes of planning and delivering future CMBS research projects. Your information will only be utilized if you are eligible to participate in the various projects at any given time. When your information is destroyed, it will be done in a manner (outlined and approved by relevant Research Ethics Boards) that protects your security and maintains confidentiality.

If you have any questions about this database, please contact Dr. Krista Hardy at 204-237-2574.

If you have questions about your rights as a research participant, you may contact The University of Manitoba, Bannatyne Campus Research Ethics Board Office at (204) 789-3389.

Do not sign this consent form unless you have had a chance to ask questions and have received satisfactory answers to all of your questions.

Statement of Consent

I have read this consent form and had the opportunity to ask questions and discuss what is involved. I understand that my personal information will be kept confidential. By signing this consent form and/or supplying the requested information, I have not waived any of my legal rights.

If you are interested in learning more about future research opportunities and/or research studies you may be eligible to participate in at The Centre for Metabolic and Bariatric Surgery by (select the method that works best for you):

1. Filling out the section below and returning this form in the postage paid envelope included.

2. Calling 204-258-1479 and providing the information requested below.

3. Emailing us at ummisresearch@gmail.com and providing your first and last name and the best way to contact you [telephone number(s) and/or email address/es].

Contact Information: (Please print clearly)

Name: (First, Last): _____

Home Phone:_____

Mobile/Cell Phone: _____

Work Phone: _____

Email Address #1: _____

Email Address #2: _____

Centre for
Metabolic and Bariatric
Surgery
Victoria General Hospital
2340 Pembina Hwy, Winnipeg, MB R3T 2E8

Patient Name: _____
(First, Last); please print

Date: _____
(dd/mm/yyyy)

Community Membership

One of the goals of the Centre for Metabolic and Bariatric Surgery is to gain a better understanding of the communities our patients belong to and identify with. This will help us ensure optimal program delivery and support patient engagement and success.

Providing the information below and completing this form is completely voluntary.

The information you provide may be used to develop specific strategies to improve quality and delivery of the Centre for Metabolic and bariatric Surgery Program and ensure diverse and equitable patient representation.

Providing program feedback and/or participation in the Centre for Metabolic and Bariatric Surgery research studies will in no way influence a patient's eligibility or acceptance for bariatric surgery in the program*

Please check the boxes that indicate the groups or communities that you belong to or identify with:

☐Male ☐Female

☐Between the ages 18-30 ☐Between the ages 31-50 ☐Over 50 years of age

☐Mother / Father / Caregiver ☐Indigenous (First Nation, Métis, or Inuit ancestry)

Are there any communities or groups not included above that you belong to? Please let us know in the space provided below:

_____ _____

_____ _____

_____ _____

Please return this form to the Centre for Metabolic and Bariatric Surgery by dropping it off in person or sending it back by regular mail.

If you prefer, you can call **204-258-1479** or email **ummisresearch@gmail.com** and leave a message that includes your name and the community groups you identify with.

Appendix B: Sharing Circle Scripts

Sequential Sharing circles as a decolonized approach to investigate the experiences of Manitoba's urban Indigenous population living with obesity and type II diabetes mellitus and awareness of bariatric surgery

Group #1: Post-Operative Bariatric Surgery Patients

Sharing Circle Script for Session #1 (of 2) - Semi-Structured Discussion Questions:

Traditional Territories Acknowledgement:

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota, and Dene peoples, and on the homeland of the Métis Nation. The Winnipeg Regional Health Authority acknowledges that it provides health services in facilities located on the original lands of Treaty 1 and on the homelands of the Metis Nation. WRHA respects that the First Nation treaties were made on these territories and acknowledge the harms and mistakes of the past, and we dedicate ourselves to collaborate and move forward in partnership with First Nation, Metis and Inuit people in the spirit of reconciliation.

Sharing Circle members are asked to keep the information provided in the groups confidential. If there is information you would like to add that you did not have time to share or that is sensitive and you prefer sharing individually, you are encouraged to ask for an individual interview with one of the researchers who is bound by confidentiality.

It is possible that talking about your experiences as an Indigenous person living with obesity and T2DM may be upsetting, emotional, and/or stressful for you. You do not have to answer any question that makes you feel uncomfortable or that you find too upsetting. Should you need any additional help or support, contact information and assistance is available to you.

As an Indigenous person, what was it like to struggle with obesity and live with type II diabetes mellitus (prior to your bariatric surgery)?

a. How did it impact your overall health (body, mind, spirit)

b. Did it impact your perception of yourself as an Indigenous person?

c. Did it impact your ability/interest in participating as an Indigenous person within community?

2. What empowered/inspired you and/or gave you strength regarding your health (obesity/T2DM)?
    a. Community
    b. Elders/Traditional medicines and Sacred Ceremonies/Prayer
    c. Faith-based clergy/Sacraments/Prayer
    d. Family
    e. Friends
    f. Health care providers (doctors, Nurses)
    g. Other? (identify)
3. Before you had bariatric surgery how long had you struggled with your weight?
4. How did you make the decision to have bariatric surgery?
    a. Did you ask your friends?
    b. Did you ask your Family?
    c. Did you ask your Health care providers (Doctors, Nurses; identify who)?
    d. Did you ask Elders?
    e. Did you ask Faith-based clergy?
    f. Through prayer?
    g. Other? (identify)
5. What challenges, if any, did you face and have to deal with in order to be approved for bariatric surgery? (smoking, impact of residential schools)
    a. How did you do it?
    b. What help would you have liked to have?
6. Would you like your health care providers (family doctors, medical specialists, nurses, dietitians, psychologists) to inquire about whether you used traditional medicines, ceremonies, and/or faith-based practices in your daily life?
    a. In your T2DM or obesity management?
    b. Did you feel comfortable telling them? Why? Why not?

7. What empowers/inspires you and/or gives you strength regarding your health post-bariatric surgery?
    a. Community
    b. Elders/Traditional medicines and Sacred Ceremonies/Prayer
    c. Faith-based clergy/Sacraments/Prayer
    d. Family
    e. Friends
    f. Health care providers (doctors, Nurses)
    g. Other? (identify)
8. Did the bariatric surgery diet affect your ability to participate in cultural/traditional/Indigenou practices and ceremonies?
    a. In what ways? (positive and/or negative)

Sharing Circle Script for Session #2 (of 2) - Semi-Structured Discussion Questions:

Traditional Territories Acknowledgement:

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota, and Dene peoples, and on the homeland of the Métis Nation. The Winnipeg Regional Health Authority acknowledges that it provides health services in facilities located on the original lands of Treaty 1 and on the homelands of the Metis Nation. WRHA respects that the First Nation treaties were made on these territories and acknowledge the harms and mistakes of the past, and we dedicate ourselves to collaborate and move forward in partnership with First Nation, Metis and Inuit people in the spirit of reconciliation.

Sharing Circle members are asked to keep the information provided in the groups confidential. If there is information you would like to add that you did not have time to share or that is sensitive and you prefer sharing individually, you are encouraged to ask for an individual interview with one of the researchers who is bound by confidentiality.

It is possible that talking about your experiences as an Indigenous person living with obesity and T2DM may be upsetting, emotional, and/or stressful for you. You do not have to answer any question that makes you feel uncomfortable or that you find too upsetting. Should you need any additional help or support, contact information and assistance is available to you.

Member Checking: this part of Group #1's Sharing Circle Session #2 will involve the sharing of the findings (themes and ideas) from the analysis of Sharing Circle Session #1 and discussing whether they correctly reflect the group's discussion from that session.

1. Do the research findings presented about our first Sharing Circle discussion capture the essence of what you were trying to convey?
    a. How so?
    b. What needs to be changed/added/clarified?
    c. Did we miss anything?
2. Additional open-ended semi-structured questions/topics to be added based on the research findings/analysis from Sharing Circle Session #1
    a. What would you tell Indigenous patients with type II diabetes who were thinking about having bariatric surgery?
        i. Advice?
        ii.

b. Would other types of support be helpful while waiting for bariatric surgery?

    i. What type(s)?

3. Do you think you receive culturally appropriate care from your health care providers?

4. What should doctors and your health care team take into consideration when providing care to Indigenous patients who live with obesity and diabetes, and who are seeking bariatric surgery?

5. Is there anything else you would like to share about our experience with diabetes and/or bariatric surgery?

NOTE: Results of the analysis of Sharing Circle #1 (Sessions #1 and #2) data for emergent themes and topics will inform development of some of the open-ended semi-structured discussion questions for Sharing Circles #2 and #3.

Conclusion

Obesity and T2DM are growing in incidence worldwide and Indigenous peoples bear a disproportionate burden of both[1–3]. Bariatric surgery has a much higher success rate of treating obesity and T2DM than medical management alone[4–7]. Scoping review of the literature performed demonstrated that Indigenous Peoples in Canada, The United States, Australia, and New Zealand undergo fewer bariatric procedures when compared to their non-Indigenous counterparts, despite similar weight loss and comorbidity resolution outcomes[19,21,24,29–32,38,39]. The reasons for this are very likely multifactorial and potentially include referral bias from primary care providers, poorer access to primary care, poorer access to educational resources, food insecurity, systemic racism, ongoing effects of colonialism, and lack of cultural/mental health supports in the bariatric pathway. Further, geographic considerations (specifically travel time to primary care, urgent care, or bariatric care) are particularly relevant in Canada given its size and population density. There are many barriers to overcome at all levels of healthcare and government to close this gap in access to bariatric surgical care for Indigenous Canadians. Scoping review also found that Indigenous patients have strong motivators for pursuing bariatric surgery, including improvement of health and being there for family[18,20,21]. Community and family support were instrumental for success, on top of an internal drive for better health and longevity[18,20]. Several important weaknesses were identified in bariatric pathways for Indigenous patients including lack of non-surgical supports, lack of flexibility in appointment scheduling/location, and difficulty in navigating the system[18,20,27].

In order to conduct valid, meaningful research with Indigenous communities, Western researchers must focus on building relationships and decolonizing methodologies[23,40]. Trust and mutual respect are vital for growing strong relationships, and Two-Eyed seeing can be used as a

tool to help Western researchers to see the value and strength Indigenous ways of knowing bring to the work being done[41,42]. Engaging community leaders (Elders, Knowledge Keepers, etc), passing tobacco as appropriate, and incorporating Ceremony into the research all ensure the work is done in a good way[23].

Our sharing circle study explored the experiences of Indigenous Manitobans with the bariatric surgery pathway. We found strong motivators for pursuing surgery including the desire for better relationships (with self, family, friends), development of comorbidities such as T2DM, and a desire to participate more fully in their own lives. We identified a changing relationship with food as the healing process occurred with the help of resources at the CMBS. The strength to pursue this surgery came from a variety of sources, but mainly from the support of family and community. Importantly, we saw the effects of colonialism in our participants lives. Individuals that are connected to their cultural identity identified traditional practices for health and healing as well as traditional medicines and Ceremony as crucial to their recovery. Participants who, through the lasting effects of colonialism, were disconnected from their Indigenous identities also found significant value in participating in ceremony. All participants expressed feeling that more cultural supports in the clinic space and on the bariatric pathway would be beneficial for Indigenous patients. These non-surgical supports included Indigenous peer mentorship, the opportunity to speak with an Elder, and the opportunity to participate in sharing circles.

Going forward, bariatric clinics across the developed world must work to bridge the gap in access of this resource for Indigenous Peoples. The first step to truly address this inequity is to connect with local Indigenous communities and begin creating relationships. We have here described some considerations for non-Indigenous researchers/clinicians to be aware of when building relationships with Indigenous communities. We believe the key principles are

respecting autonomy, honoring Ceremony/tradition, and ensuring the work is done in a good way guided by Elders and Knowledge Keepers to amplify Indigenous voices. The work done must be driven by the needs of the community and there must be a tangible benefit derived by the community from this partnership[23,43]. Approaching relationship building with an open mind and an open heart is essential to creating a fruitful partnership and ensuring the work is done in a good way.

Throughout this work, we have identified several potential improvements and supports that could be included in the bariatric pathway to help narrow the gap in access for Indigenous patients. As mentioned above, education of healthcare professionals is the necessary first step. Acknowledging and learning shared colonial history and the harms of the past/present create the foundation for further work. The opportunity to connect with an Elder and sharing/healing circles through the clinic were options that all our participants agreed would be beneficial to the bariatric pathway. All participants were very positively impacted by the sharing circles in this study and the Elder who facilitated them. There should be a safe and sacred space for Ceremony, including smudging, in the clinic/facility as Ceremony and the use of traditional medicines are essential cultural practices. Finally, increased flexibility of the bariatric clinic and a shift away from a Western model of healthcare delivery to a more culturally appropriate, patient centered approach is needed. Indigenous clinic navigators/translators, longer appointment times, flexibility of appointment times (ie evenings, weekends), and community visits are all ways to decolonize the clinic environment and make this publicly funded resource more accessible to Indigenous Peoples. The knowledge from this work has begun to be shared with the CMBS clinic group already, with one knowledge translation meeting having already occurred, and more planned for the near future.

The most impactful and important strengths of this research project are the relationships that were built with Indigenous community leaders. The Elder, Indigenous physician, and Indigenous researcher that became the IAC at the core of the research project have ensured that this work was done in a good way, and have personally enriched all those involved in the project. Another strength to note is the use of decolonized methodology through the incorporation of ceremony, medicines, and Traditional teachings.

There are several important limitations to note in this study. The first was related to participant recruitment. There was quite a limited pool of eligible candidates (based on our inclusion criteria) from which to recruit participants. This is in part due to the small number of patients enrolled at the CMBS. Our participants were recruited from a pool of patients who had previously completed a permission to contact form, and self-identified as Indigenous. There are inherent problems with a self-identification process such as this in research with Indigenous Peoples, and there are likely many CMBS patients that either did not respond, or responded but declined to self-identify as Indigenous. Further, our study excluded non-urban Indigenous people. We felt that the power of the sharing circles would be diluted if not done in person. Manitoba has significant geographic challenges with only one bariatric center in the province, and travel to Winnipeg to participate in the study was not felt to be reasonable, thus we chose to limit our study recruitment to those participants who lived within Winnipeg.

We faced significant challenges related to the Covid-19 global pandemic. The sharing circles were able to be completed prior to the initial 2020 Covid-19 lockdown. We were, however, unable to complete all individual interviews due to safety concerns and restrictions on in-person research from the institutional research ethics board. While it would have been possible to conduct these interviews virtually, in discussion with the Elder and IAC, the decision

was made to conduct all our research in person to ensure the full benefit of the Ceremony and medicines, and to ensure the integrity of our data.

Bariatric surgery is superior to medical management for the treatment of obesity and its related comorbidities. Indigenous patients undergo fewer bariatric procedures than their non-Indigenous counterparts despite similar weight loss and comorbidity resolution outcomes, and strong motivators for pursuing surgery. Research is needed to address and close this gap in access. To conduct valid, meaningful research with Indigenous communities, Western researchers must focus on building relationships, self-education, decolonizing methodologies, and respecting tradition. In our sharing circle study, we saw the resilience and strength of Indigenous people. We saw strong motivation to pursue bariatric surgery and the benefits derived from access to this resource positively impacted all aspects of our participants' lives. The knowledge shared in this study will help to inform development and implementation of culturally sensitive supports in the bariatric surgery pathway at CMBS, and we hope across Canada as well.

References

1. Canada S. Body Composition of Canadian Adults, 2009-2011.

2. Sharma AM, Lau DCW. Obesity and Type 2 Diabetes Mellitus. *Can J Diabetes*. 2013;37(2):63-64. doi:10.1016/j.jcjd.2013.03.360

3. WHO. Controlling the global obesity epidemic. https://www.who.int/activities/controlling-the-global-obesity-epidemic.

4. Buchwald H, Estok R, Fahrbach K, et al. Weight and Type 2 Diabetes after Bariatric Surgery: Systematic Review and Meta-analysis. *Am J Med*. 2009;122(3). doi:10.1016/j.amjmed.2008.09.041

5. Rice K, Te Hiwi B, Zwarenstein M, Lavallee B, Barre DE, Harris SB. Best Practices for the Prevention and Management of Diabetes and Obesity-Related Chronic Disease among Indigenous Peoples in Canada: A Review. *Can J Diabetes*. 2016;40(3):216-225. doi:10.1016/j.jcjd.2015.10.007

6. WHO. Obesity and Overweight Factsheet. https://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight. Published 2017.

7. Batal M, Decelles S. A Scoping Review of Obesity among Indigenous Peoples in Canada. *J Obes*. 2019;2019. doi:10.1155/2019/9741090

8. Yanovski, S; Yanovski J. Obesity. *NEJM*. 2002;346(8):591-602.

9. Courcoulas AP, Belle SH, Neiberg RH, et al. Three-year outcomes of bariatric surgery vs lifestyle intervention for type 2 diabetes mellitus treatment a randomized clinical trial. *JAMA Surg*. 2015;150(10):931-940. doi:10.1001/jamasurg.2015.1534

10. Ding, S; Simonson, D; Wewalka, M; Halperin, F; Foster, K; Goebel-Fabbri; Hamdy, O; Clancy, K; Lautz; Vernon, A; Goldfine A, Din, S; Simonson, D; Wewalka, M; Halperin, F; Foster, K; Goebel-Fabbri, A; Hamdy, O; Clancy, K; Lautz, D; Vernon, A; Goldfine A. Adjustable Gastric Band Surgery or Medical Management in Patients with Type 2 Diabetes: A Randomized Clinical Trial. *J Clin Endocrinol Metab*. 2015;100(7):2546-2556.

11. Dixon JB, O'Brien PE, Playfair J, et al. Adjustable gastric banding and conventional therapy for type 2 diabetes: A randomized controlled trial. *Obstet Gynecol Surv*. 2008;63(6):372-373. doi:10.1097/01.ogx.0000314848.71777.69

12. Gloy VL, Briel M, Bhatt DL, et al. Bariatric surgery versus non-surgical treatment for obesity: a systematic review and meta-analysis of randomised controlled trials. *BMJ*. 2013;347(October):1-16. doi:10.1136/bmj.f5934

13. Schauer PR, Bhatt DL, Kirwan JP, et al. Bariatric surgery versus intensive medical therapy for diabetes - 3-Year outcomes. *N Engl J Med*. 2014;370(21):2002-2013. doi:10.1056/NEJMoa1401329

14. Kaila, B; Maitreyi R. Obesity : A review of pathogenesis and management strategies. 2008;22(1):61-68.

15. Jacklin KM, Henderson RI, Green ME, Walker LM, Calam B, Crowshoe LJ. Health care experiences of Indigenous people living with type 2 diabetes in Canada. *Cmaj*. 2017;189(3):E106-E112. doi:10.1503/cmaj.161098

16. WHO. Adelaide Recommendations on Healthy Public Policy. https://www.who.int/healthpromotion/conferences/previous/adelaide/en/. Published 1988.

17. Rahiri J-L, Gillon A, Furukawa S, et al. Media portrayal of Maori and bariatric surgery in Aotearoa/New Zealand. *N Z Med J*. 2018;131(1479):72-80. http://www.nzma.org.nz/__data/assets/pdf_file/0014/84101/Rahiri-FINAL.pdf.

18. Rahiri J-L, Tuhoe J, MacCormick AD, Hill AG, Harwood M. Exploring motivation for bariatric surgery among Indigenous Māori women. *Obes Res Clin Pract*. 2019;13(5):486-491. doi:10.1016/j.orcp.2019.09.004

19. Rahiri J-L, Lauti M, Harwood M, et al. Ethnic disparities in rates of publicly funded bariatric surgery in New Zealand (2009-2014). *ANZ J Surg*. 2018;88(5):E366-E369. doi:http://dx.doi.org/10.1111/ans.14220

20. Rahiri J-L, Gillon A, Tuhoe J, MacCormick AD, Hill A, Harwood M. Māori experiences of bariatric surgery in South Auckland, New Zealand. *Altern An Int J Indig Peoples*. 2020;16(4):300-308. http://10.0.4.153/1177180120956708.

21. Rahiri JJ-L, Tuhoe J, Gillon A, et al. Enhancing responsiveness to Maori in a publicly

funded bariatric service in Aotearoa New Zealand. *ANZ J Surg*. 2019;90(4):508-513. doi:https://dx.doi.org/10.1111/ans.15610

22. TRC. Truth and Reconciliation Commission of Canada: Calls to Action. *Truth Reconcil Comm Canada*. 2012:1-20. doi:10.1111/fire.12129

23. Kovach M. *Indigenous Methodologies: Characteristics, Conversations, and Contexts*. Toronto, Ontario: University of Toronto Press; 2009.

24. Lovrics O, Doumouras AG, Gmora S, et al. Metabolic outcomes after bariatric surgery for Indigenous patients in Ontario. *Surg Obes Relat Dis*. 2019;15(8):1340-1347. doi:https://dx.doi.org/10.1016/j.soard.2019.05.035

25. A.H.L. L, D.D.W. K, R. C, et al. Long-term outcomes in gastric bypass patients with and without type 2 diabetes--Waitemata District Health Board experience. *N Z Med J*. 2013;126(1386):21-30. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med9&NEWS=N&AN=24316990.

26. Shilton H, Gao Y, Nerlekar N, et al. Pre-operative Bariatric Clinic Attendance Is a Predictor of Post-operative Clinic Attendance and Weight Loss Outcomes. *Obes Surg*. 2019;29(7):2270-2275. doi:http://dx.doi.org/10.1007/s11695-019-03843-2

27. Taylor T, Wang Y, Rogerson W, et al. Attrition after Acceptance onto a Publicly Funded Bariatric Surgery Program. *Obes Surg*. 2018;28(8):2500-2507. doi:https://dx.doi.org/10.1007/s11695-018-3195-y

28. O'Brien PE, DeWitt DE, Laurie C, et al. The Effect of Weight Loss on Indigenous Australians with Diabetes: a study of Feasibility, Acceptability and Effectiveness of Laparoscopic Adjustable Gastric Banding. *Obes Surg*. 2016;26(1):45-53. doi:http://dx.doi.org/10.1007/s11695-015-1733-4

29. Murphy R, Plank LD, Clarke MG, et al. Effect of Banded Roux-en-Y Gastric Bypass Versus Sleeve Gastrectomy on Diabetes Remission at 5 Years Among Patients With Obesity and Type 2 Diabetes: A Blinded Randomized Clinical Trial. *Diabetes Care*. 2022;45(7):1503-1511. doi:https://dx.doi.org/10.2337/dc21-2498 PT - Journal Article, Randomized Controlled Trial, Research Support, Non-U.S. Gov't

30. Bennett EK, Poppe K, Rahiri J-L, et al. Variation in publicly funded bariatric surgery in New Zealand by ethnicity: cohort study of 328,739 patients. *Surg Obes Relat Dis*.

2021;17(7):1286-1293. doi:https://dx.doi.org/10.1016/j.soard.2021.03.027 PT - Article

31. Al-Sumaih I, Nguyen N, Donnelly M, Johnston B, Khorgami Z, O'Neill C. Ethnic Disparities in Use of Bariatric Surgery in the USA: the Experience of Native Americans. *Obes Surg*. 2020;30(7):2612-2619. doi:https://dx.doi.org/10.1007/s11695-020-04529-w PT - Journal Article

32. Garrett M, Poppe K, Wooding A, Murphy R. Private and Public Bariatric Surgery Trends in New Zealand 2004–2017: Demographics, Cardiovascular Comorbidity and Procedure Selection. *Obes Surg*. 2020;30(6):2285-2293. doi:10.1007/s11695-020-04463-x

33. Taylor T, Wrapson W, Dewes O, Taufa N, Siegert R. Preoperative bariatric surgery programme barriers facing Pacific patients in Auckland, New Zealand as perceived by health sector professionals: A qualitative study. *BMJ Open*. 2019;9(11):29525. doi:http://dx.doi.org/10.1136/bmjopen-2019-029525

34. Hyett S, Gabel C, Marjerrison S, Schwartz L. Deficit-based indigenous health research and the stereotyping of indigenous peoples. *Can J Bioeth*. 2019;2(2):102-109. doi:10.7202/1065690AR

35. Hyett S, Marjerrison S, Gabel C. Improving health research among indigenous peoples in Canada. *Cmaj*. 2018;190(20):E616-E621. doi:10.1503/cmaj.171538

36. Hayward A, Sjoblom E, Sinclair S, Cidro J. A New Era of Indigenous Research: Community-based Indigenous Research Ethics Protocols in Canada. *J Empir Res Hum Res Ethics*. 2021;16(4):403-417. doi:10.1177/15562646211023705

37. Wilson S. Progressing toward an Indigenous research paradigm in Canada and Australia. *Can J Nativ Educ*. 2003;27(2):161-178.

38. Rahiri J-LL, Coomarasamy C, MacCormick A, et al. Ethnic Disparities in Access to Publicly Funded Bariatric Surgery in South Auckland, New Zealand. *Obes Surg*. 2020;30(9):3459-3465. doi:https://dx.doi.org/10.1007/s11695-020-04608-y PT - Article

39. Amirian H, Torquati A, Omotosho P. Racial Disparity in 30-Day Outcomes of Metabolic and Bariatric Surgery. *Obes Surg*. 2019. doi:http://dx.doi.org/10.1007/s11695-019-04282-9

40. Rink E, Bird EAR, Fourstar K, Ricker A, Runs-Above/Meyers W, Hallum-Montes R.

Partnering with American Indian communities in strength-based collaborative health research: Guiding principles from the fort peck Ceremony of Research project. *Am Indian Alaska Nativ Ment Heal Res*. 2016;23(3):187-205. doi:10.5820/aian.2303.2016.187

41. Bartlett C, Marshall M, Marshall A. Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing. *J Environ Stud Sci*. 2012;2(4):331-340. doi:10.1007/s13412-012-0086-8

42. Wright AL, Gabel C, Ballantyne M, Jack SM, Wahoush O. Using Two-Eyed Seeing in Research With Indigenous People: An Integrative Review. *Int J Qual Methods*. 2019;18:1-19. doi:10.1177/1609406919869695

43. Canadian Institutes of Health Research. Cihr Guidelines for Health Research. 2007;(April). http://www.cahr.uvic.ca/nearbc/documents/2009/aboriginal/CIHR-IAPH Guidelines for Health Research Involving Aboriginal People.pdf.

Appendices

Appendix 1: Sample Search Strategy for Scoping Review

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1 american native continental ancestry group/ or alaska natives/ or indians, north american/ or inuits/ (17354)

2 (first nations or aboriginal or indigenous or native american* or (alaska* adj1 native*) or inuit* or eskimo* or metis or native canadian* or native child* or native teen* or native adolescen* or native people or native adult* or native men or native women or native Indian* or Canadian Indian* or American indian*).ti,ab,kf. (52422)

3 Hawaii*.ti,ab,kf,sh. (12469)

4 Oceanic Ancestry Group/ (9917)

5 (maori or torres strait island* or koori or goori or murri or nyoongah or koorie or yolngu or anangu or palawa or nunga or ngarrindjeri or murray island or mer island).ti,ab,kf. (4769)

6 1 or 2 or 3 or 4 or 5 (76608)

7 bariatric surgery/ or gastric bypass/ or gastroplasty/ or jejunoileal bypass/ (21075)

8 Gastrectomy/ (34446)

9 bariatric surgery.ti,ab,kf,sh. (18005)

10 gastrectomy.ti,ab,kf,sh. (44110)

11 (obes* or bmi).ti,ab,kf,sh. (225405)

12 8 or 10 (44110)

13 11 and 12 (3043)

14 7 or 9 or 13 (27466)

15 6 and 14 (26)

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Appendix 2: Permission to Contact for Research Form with CMBS (Center for Metabolic and Bariatric Surgery)

Centre for Metabolic and Bariatric Surgery
Victoria General Hospital
2340 Pembina Hwy, Winnipeg, MB R3T 2E8

Patient Name: _____
(First, Last)

Date: _____
(dd/mm/yyyy)

Permission to be Contacted for Future Research at the Centre for Metabolic and Bariatric Surgery (CMBS) – Wait List Patients

The Centre for Metabolic and Bariatric Surgery (CMBS) is focused on providing a high quality program through patient-centred care. The shared experience of patients and their healthcare providers make them partners along the bariatric surgery journey.

A goal of The Centre for Metabolic and Bariatric Surgery is to engage patients involved in the bariatric surgery program, including providing opportunities to learn about future research studies and the potential for participation. These are vital to ensuring high quality program delivery that supports patient success and optimal outcomes.

You are being asked for permission to be contacted in the future to inquire about possible interest in participating in future research studies at the Centre for Metabolic and Bariatric Surgery. Please take your time to review this consent form and discuss any questions you may have. You are free to discuss this form with your friends, family and others before you make your decision.

If you agree to be contacted in the future about the possibility of participating in future research projects, this form will be kept in your clinical file and your name and contact information will be stored in our Permission to Contact Database. The clinical files and CMBS-Permission to Contact Database are accessible only to those staff members permitted to have access to this information. All files will be kept in a secure location and maintained by staff at the Center for Metabolic and Bariatric Surgery and the Department of Surgery. All electronic files and the database will be password protected and located on a password protected computer, on an internal/dedicated server, and stored in a secure area. The REDCap Database program is held within in a Secure Research Environment at the University of Manitoba and is PHIA compliant and approved.

Your information will be treated as confidential in accordance with the Personal Health Information Act of Manitoba. This consent form and the information in the database may be inspected by a University of Manitoba Research Ethics Board to ensure that your information is being collected and maintained in an ethical manner. Despite efforts to keep your personal information confidential, absolute confidentiality cannot be guaranteed. Your personal information may be disclosed if required by law.

Your decision to allow your information to be in the database is completely voluntary. While there may be no benefit to you, your information will help researchers to quickly identify individuals who may be suitable for a particular research study. If you change your mind after agreeing to this, your information can be removed from the database. You will not be penalized in any way if you refuse to participate, or if you change your mind and ask that your information be removed.

By signing this form, you are in no way agreeing to participate in any specific research project at this time or in the future. By signing this form, when each opportunity to participate in a specific research study at CMBS arises, you are giving us permission to contact you to provide the details related to each specific study. During that time, you will be able to have your questions answered and take time to decide whether you would like to participate. You will also be required to sign a separate consent form to participate in each specific study.

****** Providing permission to be contacted by The Centre for Metabolic and Bariatric Surgery (CMBS) for future research and/or participation in research at CMBS will in no way influence a patient's eligibility, acceptance, or approval for bariatric surgery in the program ******

The following information will be collected about you:

- Full name (First and last name)
- Mailing address
- Telephone number(s); home and mobile (if applicable)
- Email address/es (if applicable)
- CMBS patient chart number
- VGH MRN chart number

Confidentiality of your information will be maintained in the following manner:

(1) Access to the Permission to be Contacted database will be restricted to those with direct access to clinical files (paper and electronic database) and will include the clinical team and personnel dedicated to specific studies. In the case of research data retrieval, only relevant information will be collected by specific study personnel as per the study protocol.

(2) Information in the Permission to be Contacted database will be shared with lead researcher(s) and research assistants designated to contact patients to inquire about interest in specific research studies that have been approved by the University of Manitoba Biomedical/Health Research Ethics board and the Victoria General Hospital Research and Evaluation Unit. These may include researchers at the CMBS as well as the University of Manitoba or other institutions involved in collaborative research projects with the CMBS.

(3) The information you provide will be retained for the purposes of planning and delivering future CMBS research projects. Your information will only be utilized if you are eligible to participate in the various projects at any given time. When your information is destroyed, it will be done in a manner (outlined and approved by relevant Research Ethics Boards) that protects your security and maintains confidentiality.

If you have any questions about this database, please contact Dr. Krista Hardy at 204-237-2574.

If you have questions about your rights as a research participant, you may contact The University of Manitoba, Bannatyne Campus Research Ethics Board Office at (204) 789-3389.

Do not sign this consent form unless you have had a chance to ask questions and have received satisfactory answers to all of your questions.

Statement of Consent

I have read this consent form and had the opportunity to ask questions and discuss what is involved. I understand that my personal information will be kept confidential. By signing this consent form and/or supplying the requested information, I have not waived any of my legal rights.

If you are interested in learning more about future research opportunities and/or research studies you may be eligible to participate in at The Centre for Metabolic and Bariatric Surgery by (select the method that works best for you):

1. Filling out the section below and returning this form in the postage paid envelope included.

2. Calling 204-258-1479 and providing the information requested below.

3. Emailing us at ummisresearch@gmail.com and providing your first and last name and the best way to contact you [telephone number(s) and/or email address/es].

Contact Information: (Please print clearly)

Name: (First, Last): _____

Home Phone:_____

Mobile/Cell Phone: _____

Work Phone: _____

Email Address #1: _____

Email Address #2: _____

Centre for Metabolic and Bariatric Surgery

Victoria General Hospital
2340 Pembina Hwy, Winnipeg, MB R3T 2E8

Patient Name: _____
(First, Last); please print

Date: _____
(dd/mm/yyyy)

Community Membership

One of the goals of the Centre for Metabolic and Bariatric Surgery is to gain a better understanding of the communities our patients belong to and identify with. This will help us ensure optimal program delivery and support patient engagement and success.

Providing the information below and completing this form is completely voluntary.

The information you provide may be used to develop specific strategies to improve quality and delivery of the Centre for Metabolic and bariatric Surgery Program and ensure diverse and equitable patient representation.

Providing program feedback and/or participation in the Centre for Metabolic and Bariatric Surgery research studies will in no way influence a patient's eligibility or acceptance for bariatric surgery in the program*

Please check the boxes that indicate the groups or communities that you belong to or identify with:

☐Male ☐Female

☐Between the ages 18-30 ☐Between the ages 31-50 ☐Over 50 years of age

☐Mother / Father / Caregiver ☐Indigenous (First Nation, Métis, or Inuit ancestry)

Are there any communities or groups not included above that you belong to? Please let us know in the space provided below:

_____ _____

_____ _____

_____ _____

Please return this form to the Centre for Metabolic and Bariatric Surgery by dropping it off in person or sending it back by regular mail.

If you prefer, you can call **204-258-1479** or email **ummisresearch@gmail.com** and leave a message that includes your name and the community groups you identify with.

Appendix 3: Sharing Circle Scripts

Sequential Sharing circles as a decolonized approach to investigate the experiences of Manitoba's urban Indigenous population living with obesity and type II diabetes mellitus and awareness of bariatric surgery

Group #1: Post-Operative Bariatric Surgery Patients

Sharing Circle Script for Session #1 (of 2) - Semi-Structured Discussion Questions:

Traditional Territories Acknowledgement:

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota, and Dene peoples, and on the homeland of the Métis Nation. The Winnipeg Regional Health Authority acknowledges that it provides health services in facilities located on the original lands of Treaty 1 and on the homelands of the Metis Nation. WRHA respects that the First Nation treaties were made on these territories and acknowledge the harms and mistakes of the past, and we dedicate ourselves to collaborate and move forward in partnership with First Nation, Metis and Inuit people in the spirit of reconciliation.

Sharing Circle members are asked to keep the information provided in the groups confidential. If there is information you would like to add that you did not have time to share or that is sensitive and you prefer sharing individually, you are encouraged to ask for an individual interview with one of the researchers who is bound by confidentiality.

It is possible that talking about your experiences as an Indigenous person living with obesity and T2DM may be upsetting, emotional, and/or stressful for you. You do not have to answer any question that makes you feel uncomfortable or that you find too upsetting. Should you need any additional help or support, contact information and assistance is available to you.

As an Indigenous person, what was it like to struggle with obesity and live with type II diabetes mellitus (prior to your bariatric surgery)?

a. How did it impact your overall health (body, mind, spirit)

b. Did it impact your perception of yourself as an Indigenous person?

c. Did it impact your ability/interest in participating as an Indigenous person within community?

2. What empowered/inspired you and/or gave you strength regarding your health (obesity/T2DM)?
    a. Community
    b. Elders/Traditional medicines and Sacred Ceremonies/Prayer
    c. Faith-based clergy/Sacraments/Prayer
    d. Family
    e. Friends
    f. Health care providers (doctors, Nurses)
    g. Other? (identify)
3. Before you had bariatric surgery how long had you struggled with your weight?
4. How did you make the decision to have bariatric surgery?
    a. Did you ask your friends?
    b. Did you ask your Family?
    c. Did you ask your Health care providers (Doctors, Nurses; identify who)?
    d. Did you ask Elders?
    e. Did you ask Faith-based clergy?
    f. Through prayer?
    g. Other? (identify)
5. What challenges, if any, did you face and have to deal with in order to be approved for bariatric surgery? (smoking, impact of residential schools)
    a. How did you do it?
    b. What help would you have liked to have?
6. Would you like your health care providers (family doctors, medical specialists, nurses, dietitians, psychologists) to inquire about whether you used traditional medicines, ceremonies, and/or faith-based practices in your daily life?
    a. In your T2DM or obesity management?
    b. Did you feel comfortable telling them? Why? Why not?

7. What empowers/inspires you and/or gives you strength regarding your health post-bariatric surgery?
    a. Community
    b. Elders/Traditional medicines and Sacred Ceremonies/Prayer
    c. Faith-based clergy/Sacraments/Prayer
    d. Family
    e. Friends
    f. Health care providers (doctors, Nurses)
    g. Other? (identify)
8. Did the bariatric surgery diet affect your ability to participate in cultural/traditional/Indigenou practices and ceremonies?
    a. In what ways? (positive and/or negative)

Sharing Circle Script for Session #2 (of 2) - Semi-Structured Discussion Questions:

Traditional Territories Acknowledgement:

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota, and Dene peoples, and on the homeland of the Métis Nation. The Winnipeg Regional Health Authority acknowledges that it provides health services in facilities located on the original lands of Treaty 1 and on the homelands of the Metis Nation. WRHA respects that the First Nation treaties were made on these territories and acknowledge the harms and mistakes of the past, and we dedicate ourselves to collaborate and move forward in partnership with First Nation, Metis and Inuit people in the spirit of reconciliation.

Sharing Circle members are asked to keep the information provided in the groups confidential. If there is information you would like to add that you did not have time to share or that is sensitive and you prefer sharing individually, you are encouraged to ask for an individual interview with one of the researchers who is bound by confidentiality.

It is possible that talking about your experiences as an Indigenous person living with obesity and T2DM may be upsetting, emotional, and/or stressful for you. You do not have to answer any question that makes you feel uncomfortable or that you find too upsetting. Should you need any additional help or support, contact information and assistance is available to you.

Member Checking: this part of Group #1's Sharing Circle Session #2 will involve the sharing of the findings (themes and ideas) from the analysis of Sharing Circle Session #1 and discussing whether they correctly reflect the group's discussion from that session.

1. Do the research findings presented about our first Sharing Circle discussion capture the essence of what you were trying to convey?
    a. How so?
    b. What needs to be changed/added/clarified?
    c. Did we miss anything?
2. Additional open-ended semi-structured questions/topics to be added based on the research findings/analysis from Sharing Circle Session #1
    a. What would you tell Indigenous patients with type II diabetes who were thinking about having bariatric surgery?
        i. Advice?
        ii.

b. Would other types of support be helpful while waiting for bariatric surgery?

    i. What type(s)?

3. Do you think you receive culturally appropriate care from your health care providers?

4. What should doctors and your health care team take into consideration when providing care to Indigenous patients who live with obesity and diabetes, and who are seeking bariatric surgery?

5. Is there anything else you would like to share about our experience with diabetes and/or bariatric surgery?

NOTE: Results of the analysis of Sharing Circle #1 (Sessions #1 and #2) data for emergent themes and topics will inform development of some of the open-ended semi-structured discussion questions for Sharing Circles #2 and #3.