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Prospective study of psychiatric illness as a predictor of weight loss and health related quality of life one year after bariatric surgery

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ABSTRACT

Objective: Despite a lack of evidence, there is an assumption that patients with more complex psychiatric histories (CPH) prior to bariatric surgery have poor post-surgical weight loss and worsening psychiatric symptoms following surgery. Consequently, those with CPH are excluded from bariatric surgery in many bariatric clinics. This study examines whether psychiatric illness affects post-surgical weight loss and HRQOL, focusing on patients with CPH.

Method: This prospective cohort study investigated 341 patients from a tertiary care centre bariatric surgery program who had surgery between September 2010 and October 2013. Patients were divided into CPH, other psychiatric disorder (OPD), or no psychiatric disorder (NPD) groups based on lifetime psychiatric diagnoses. Groups were compared one year post-surgery in regards to percent total weight loss (%TWL), mental and physical health related quality of life (HRQOL) using a Kruskal–Wallist test. Linear regression analysis was used to determine if mental illness group, gender, age, pre-op BMI, education, employment and relationship status predict change in %TWL and HRQOL.

Results: There was no significant difference in %TWL or physical HRQOL across groups. The CPH group experienced a decrease in mental HRQOL ($p = 0.0003$). Mental illness severity predicted mental HRQOL ($p = 0.002$) but not physical HRQOL or %TWL.

Conclusion: Those with controlled CPH can achieve comparable weight loss compared to those with OPD or NPD. However, CPH may predict post-surgical decline in mental HRQOL. These findings demonstrate a need to reevaluate exclusion criteria to ensure equitable access to care, while continuing to monitor for psychiatric illness following surgery.

1. Introduction

Bariatric surgery is an effective treatment for obesity [1]. In addition to long-term weight loss, it reduces overall mortality, and incidence of diabetes and cardiovascular disease [1]. Conversely, behavioral modifications, such as diet and exercise programs, provide modest weight loss effects at best, and are ineffective for long-term weight loss [2].

Increased rates of obesity and obesity related health conditions are a major concern for individuals with psychiatric disorders. Population based studies indicate that patients with bipolar disorder and schizophrenia are twice as likely to have obesity compared to individuals without psychiatric illness, with prevalence rates as high as 60% in those with severe and persistent mental illness [3]. The prevalence of comorbid metabolic syndrome in those with schizophrenia, bipolar disorder, and major depressive disorder (MDD) is approximately 30%, as compared to 15% in the general population [4]. Comorbid obesity in patients with mental illness is concerning from a physical and psychiatric perspective. Cardiometabolic disorders are the most common cause of premature death in those with psychiatric disorders [4]. Metabolic syndrome has adverse effects on the course of mood disorders including more complex illness presentations, lower probability of recovery, more frequent episodes, and increased number of suicide attempts [4].

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In individuals with major depressive disorder (MDD), obesity is associated with increased odds of suicidal ideation [5].

Despite the efficacy of bariatric surgery for weight-loss and management of obesity-related health issues, individuals with a history of psychiatric disorder are often not considered good bariatric surgery candidates, based on the assumption that poor mental health prior to surgery leads to poor weight loss and worsening psychiatric symptoms post-surgery [6]. While mental illness is more common among those presenting for bariatric surgery than in the general population, Dawes et al. (2016) conclude that individuals "with more severe mental illness are often screened out prior to referral for bariatric surgery and excluded from published studies" [7]. Similarly, of the 199 patients included in the Longitudinal Assessment of Bariatric Surgery-3 Psychopathology (LABS-3) sub-study, a multi-site trial of bariatric surgery outcomes, none had a diagnosis of psychosis [8]. Thus, despite a high level of obesity and obesity related illness in this population, these patients are not receiving bariatric surgery.

Moreover, recent studies have demonstrated an excess of suicide deaths post bariatric surgery as compared to the general population and increased self-harm behavior following surgery [9–11]. Given that the prevalence of past suicide attempts, a risk factor for future suicide attempt, among those presenting for bariatric surgery is approximately 11.2% versus 0.5% in the general population, this issue is of particular concern when determining candidacy for bariatric surgery [12].

Multiple studies have investigated whether psychiatric illness impacts weight loss following bariatric surgery with mixed results [13]. Existing evidence suggests that those with bipolar disorder and schizophrenia achieve comparable weight loss to controls without mental illness [7,14–17].

These studies have considerable limitations, which include: small sample sizes of patients with a history more serious psychiatric disorders, such as psychotic and bipolar disorders; outcomes for those with serious psychiatric disorders being examined solely in post-hoc subgroup analysis; use of self-report questionnaires as opposed to a structured diagnostic interview for the diagnosis of psychiatric conditions; and a failure to explore bariatric surgery outcomes in patients with a history of suicide attempt.

Moreover, success after bariatric surgery should not solely be measured by reduction in weight, but also improvement in health related quality of life (HRQOL). While substantial improvements in HRQOL have consistently been observed following surgery, weight loss accounts for only part of this improvement, suggesting that other factors influence changes in HRQOL post-operatively [18]. Some research suggests that a diagnosis of multiple co-morbid psychiatric conditions pre-operatively is associated with poor post-operative HRQOL [18]. However, studies have not specifically investigated the effect of having a complex psychiatric history (CPH), such as a psychotic disorder or past suicide attempt, on post-bariatric surgery HRQOL.

The primary objective of the present study is to investigate the percent total weight loss (%TWL) one year following bariatric surgery in patients with CPH, those with other psychiatric illnesses (OPD), and those with no history of mental illness (NPD). The secondary objective of this study is to explore whether pre-operative mental illness impacts HRQOL following bariatric surgery. Based on the existing research which included patients with CPH, it is hypothesized that CPH will not predict less weight loss following surgery but that those with more severe psychiatric illness will have worse HRQOL outcomes compared to those with less other psychiatric illness. To the best of our knowledge, this is the first study to examine HRQOL in bariatric surgery patients, some of whom are suffering from CPH.

2. Method

We conducted a prospective study of consecutively enrolled patients to the Toronto Western Hospital Bariatric Surgery Program (TWH-BSP). This study was approved by the University Health Network Research Ethics Board.

2.1. Study sample

Study participants were recruited prospectively from TWH-BSP between September 2010 and October 2013. The TWH-BSP is a level 1A bariatric centre accredited by the The Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program and part of the University of Toronto Bariatric Surgery Collaborative. TWH-BSP consists of an interdisciplinary team of surgeons, nurses, dietitians, social workers, psychologists, and psychiatrists. The program has previously been described in the literature [19,20]. Patients are referred to the TWH-BSP through a centralized provincial bariatric surgery registry. Surgery and follow-up care is paid for by the provincial health insurance plan. Patients are referred to the TWH-BSP if they have a BMI ≥ 40 kg/m [2] or ≥35 kg/m [2] with one or more obesity-related comorbidities. All patients undergo interdisciplinary assessment prior to surgery and follow-up care and support is provided for five years. Participant suitability for bariatric surgery follows the National Institute Health (NIH) Guidelines [21]. Patients are excluded from surgery for the following psychiatric reasons: [1] active substance use disorder in the past year; [2] poorly controlled psychiatric illness defined as active suicidal ideation, a suicide attempt or psychiatric hospitalization within the last year, or severe intensity of psychiatric symptoms; or [3] the presence of cognitive impairment affecting their ability to understand surgery and adhere to the post-operative surgical regimen.

For this study, consecutive patients over the age of 18, who provided informed consent and had complete follow-up data available at one year post-surgery were included. All patients received a Roux-en-Y gastric bypass surgery unless a sleeve gastrectomy was surgically indicated. In total 34 patients underwent a sleeve gastrectomy: 3 in the CPH group (6.81%), 19 in the OPD group (11.11%) and 12 in the NPD group (9.52%).

2.2. Measures

Demographic data consisting of gender, age, relationship status, employment status, and education level were collected during participants' pre-surgery assessment appointments. Patients' height and weight was measured during the pre-surgery assessment and at 12 months post-surgery in order to calculate BMI. Percent total weight loss (%TWL) was calculated at 12 months post-surgery [%TWL = (weight post-surgery − weight pre-surgery) / pre-surgery weight].

Patients' HRQOL was measured using the Medical Outcomes Study Short-Form 36 Health Status Survey (SF-36) [22]. The survey was administered pre-surgery and repeated at 12 months post-surgery. The SF-36 measures eight domains of functioning yielding both a physical component score (SF-36-PCS) and mental component score (SF-36-MCS). Scores range from 0 to 100, with a higher score representing a better level of functioning. HRQOL outcomes were measured as the difference in pre and post SF-PCS and SF-MCS respectively (change in SF-36 = post-surgical SF-36 − pre-surgical SF-36). The SF-36 has been used previously in bariatric surgery population and has good construct validity, high internal consistency, and high test–retest reliability [23].

Psychiatric diagnoses were made using the MINI International Neuropsychiatric Interview (MINI) [24]. The MINI was conducted by a psychologist or psychiatrist trained in administering the MINI as part of their psychosocial assessment. The MINI is a structured diagnostic interview with good reliability and validity [24]. Using the data gathered from the MINI, participants were divided into three groups: CPH, other psychiatric illness (OPD) or, no mental illness (NPD). Participants were included in the CPH group if they had a current or lifetime diagnosis of bipolar disorder, schizophrenia, a psychotic disorder, or past suicide attempt. Patients were included in the OPD group if they had a current or lifetime psychiatric diagnosis other than those included in the CPH group (see Table 1). Patients without a current or lifetime