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Original Research

Evaluation of a Patient-Care Planning Intervention to Improve Appointment Attendance by Adults After Bariatric Surgery

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Key Messages

- Bariatric surgery is recognized as a durable treatment for severe obesity.
- Low postoperative attendance rates and patient engagement remain challenges.
- This quality-improvement intervention decreases postoperative cancellations and increases attendance at nonroutine and preoperative appointments.
- This intervention improved clinic efficiency and patient-centred care and saved $21,251 over 10 months of data collection.

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ABSTRACT

Objectives: Bariatric surgery is recognized as a durable treatment for severe obesity; however, high rates of nonattendance and patient engagement during the postoperative period remain challenges. This pre/post study evaluates a quality-improvement initiative to improve attendance at bariatric surgery program appointments and to heighten program efficiency, as measured by appointment attendance, cancellations and new assessments.

Methods: Patients and staff were consulted in order to identify causes for patient attrition after surgery. The ideas for change that were implemented were advance care-planning calls and e-mails in order to tailor appointments to patients' needs and an online application of follow-up care information. Online surveys were used to assess patient satisfaction. After several plan-do-study-act cycles, appointment attendance rates for 5,676 appointments between April 1, 2014, and May 29, 2015, were compared pre- and post-quality improvement intervention. For the intervention, 1,294 patients were called, representing 4,124 appointments. Both preoperative and postoperative attendance rates and costs were examined.

Results: Although postoperative attendance and no-show rates changed by only 1.8% postintervention, advance cancellations increased by 6%; indications of special-cause variation were attributable to the intervention. With advance cancellations increasing, time was available for preoperative and nonroutine postoperative appointments, refilling 6.6 appointments per week. As a result, cost savings were $21,251 based on unused clinician time. The contact rate of patients was 45%, and patient satisfaction was high.

Conclusions: In summary, this quality-improvement intervention was able to improve patient-centred care and clinic efficiency through the use of advance-care planning as evaluated by appointment attendance data and patient satisfaction surveys.

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RÉSUMÉ

Objectifs : La chirurgie bariatrique s'est avérée un traitement durable de l'obésité grave. Toutefois, les taux élevés d'absence et l'engagement des patients au cours de la période postopératoire posent problème. La présente étude qui porte sur les périodes préopératoire et postopératoire a pour objet l'évaluation d'une initiative d'amélioration de la qualité visant l'accroissement de la présence aux rendez-vous du programme de chirurgie bariatrique, et l'efficience du programme, qui est mesurée par la présence aux rendez-vous, les annulations et les nouvelles évaluations.

Méthodes : Les patients et le personnel ont été consultés pour déterminer les raisons de l'attrition des patients après l'intervention chirurgicale. Les propositions de changement mises en œuvre concernaient les appels et les courriels de planification préalable des soins pour offrir des rendez-vous qui correspondent aux besoins des patients et une application en ligne pour obtenir des informations sur les soins de suivi. Des enquêtes en ligne ont été utilisées pour évaluer la satisfaction des patients. Après plusieurs cycles penser-démarrer-contrôler-agir, les taux de présence aux rendez-vous de 5 676 rendez-vous entre le 1er avril 2014 et le 29 mai 2015 ont été comparés avant et après les interventions sur l'amélioration de la qualité. En ce qui concerne les interventions, 1 294 patients ont reçu des appels, soit l'équivalent de 4 124 rendez-vous. Les taux de présence et les coûts avant et après l'intervention chirurgicale ont été examinés.

Résultats : Bien que les taux de présence et de rendez-vous manqués après l'intervention chirurgicale aient montré une variation de seulement 1,8 %, les annulations ont augmenté de 6 %; les indications de variations liées à des causes particulières étaient attribuables aux interventions. Avec l'augmentation des annulations, des plages horaires étaient vacantes pour des rendez-vous préopératoires et des rendez-vous non systématiques postopératoires, et ont été comblées par 6,6 rendez-vous par semaine. En conséquence, les économies s'élevaient à 21 251 $ en se basant sur le temps inutilisé des cliniciens. Le taux de contact avec les patients était de 45 %, et leur satisfaction était élevée.

Conclusions : En résumé, ces interventions sur l'amélioration de la qualité pouvaient améliorer les soins axés sur le patient et l'efficience clinique par l'intermédiaire de l'utilisation de la planification préalable des soins selon les données sur la présence aux rendez-vous et les enquêtes sur la satisfaction des patients.

Introduction

Bariatric surgery is now recognized as a durable treatment for severe obesity. Long-term studies stretching to 10 years postsurgery demonstrate sustained weight loss and health benefits for patients, including resolution of diabetes mellitus (1–4). Current bariatric surgery guidelines highlight the importance of regular postoperative follow up, especially for metabolic and nutrition monitoring (5). Follow up is intended to further support patients' behavioral changes and to maintain weight loss and health benefits after bariatric surgery. In addition, postsurgery follow up is critical to monitoring long-term complications, such as ulcerations and nutrient deficiencies (6,7). However, postsurgery follow-up appointment adherence can be problematic; 1-year attrition rates range from 0% to 53%, depending on patient sample and type of surgical procedure (8–11), and overall, missed appointment rates rise to 72% at 2 years after Roux-en-Y gastric bypass surgery (RYGBS) (12).

Several studies have shown improved weight-loss outcomes with increased adherence to postsurgery appointments after both RYGBS and laparoscopic adjustable gastric banding procedures (13–15). In a sample of 51,081 patients with follow-up data in the Bariatric Outcomes Longitudinal Database (BOLD) study, patients who attended all 3 postsurgery follow-up appointments within the first year after surgery had greater excess weight loss and total weight loss at 12 months postsurgery compared to patients who missed at least 1 appointment (16). Moreover, a study of 85 patients who underwent laparoscopic RYGBS showed that patients who attended all scheduled follow-up appointments postsurgery had greater weight loss at 3 years postsurgery compared to patients who were lost to follow up within or after the first year postsurgery (13). Additionally, scores of measures of problematic eating behaviours (i.e. binge eating, emotional eating, loss-of-control eating and night eating) increased in 1 study after the first or second year following bariatric surgery (17), suggesting the need for long-term psychosocial follow up to curb these behaviours. Furthermore, higher scores on an eating-pathology measure taken after bariatric surgery were associated with decreased weight loss (18). In contrast, patients who adopted positive eating changes after bariatric surgery (e.g. stopping eating when full) exhibited greater weight loss after surgery compared to those who did not (19).

Challenges involved in post-bariatric surgery follow up have been associated with several factors (20), such as younger age (9,21–23), unemployment or retired employment status (22), and lack of insurance coverage (9,13). Additional psychological risk factors include the presence of symptoms of attention deficit hyperactivity disorder (24), avoidant attachment (relationship) style (25), depression (12), narcissistic personality traits (26), phobic anxiety (27) and impulsivity (28). In several studies, patients reported transportation challenges (23), life stressors (21), scheduling conflicts (23), lack of perceived benefit from appointments and shame as potential reasons for not attending postsurgery follow-up appointments (29).

As a consequence, quality-of-care issues, such as inefficiencies in patient flow in the bariatric program due to unused appointments, reduced clinician availability for presurgery appointments and increased surgery waiting times may ensue. Despite these identified risk factors and patient-reported barriers to attending follow-up appointments, to date, no studies have evaluated an intervention that would improve appointment adherence by patients after bariatric surgery.

We describe a quality-improvement (QI) initiative in which the primary intervention consists of an advance-care planning (ACP) phone call with a trained clinic staff member or patient volunteer who tailored follow-up care for patients based on a standardized review of their needs. Our primary aims were to increase the percentage of patients attending routine post-bariatric surgery follow-up appointments at 6 months to 5 years after surgery and to increase advance cancellations of these types of appointments, as opposed to last-minute cancellations or no-shows, in order to reduce patient-flow inefficiencies. Our secondary aim was to evaluate patients' experiences with the interventions using an online patient-satisfaction survey.

Methods

Setting

This QI initiative was conducted at the Toronto Western Hospital Bariatric Surgery Program (TWH-BSP), an accredited Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program centre. The TWH-BSP is a publicly funded bariatric surgery assessment centre composed of an interdisciplinary team of physicians (surgeons, internists and psychiatrists), psychologists, nurse practitioners, dietitians and social workers. Patients are referred for bariatric surgery through a provincial network and are assessed by clinicians if they meet criteria set by the National Institute of Health: body mass index of ≥40 kg/m^2 or ≥35 kg/m^2 and at least 1 obesity-related comorbidity. Patients are assessed by a minimum of 5 health-care professionals on the team prior to determining patients' readiness for surgery (30,31). The primary surgery provided by the TWH-BSP is the laparoscopic RYGBS. Except for surgery, unless otherwise required, patients are then routinely followed by the interdisciplinary team postoperatively at 1 month, 3 months, 6 months and then annually for 5 years.

Description of bariatric surgery advance-care planning

Two main change ideas were chosen in order to achieve the goal of long-term follow up for patients: 1) ACP calls and e-mails prior to appointments and 2) an online website or application outlining follow-up care (the Toronto Western Hospital Bariatric After-Care application). These ideas were developed after assessing the needs of patients and staff using QI tools, such as Fishbone (Ishikawa) diagrams, Pareto charts and review of the evidence for postsurgery adherence to bariatric surgery appointments (25,32,33). Focus groups, followed by patient surveys, were used to identify lack of individualized scheduling and care as the main causes for appointment attrition. An impact/effort grid was used to determine ideas for change that were perceived as having the greatest benefit while being the most realistic to implement. In order to monitor and improve these ideas, the QI steering team utilized several plan-do-study-act cycles to modify each change idea based on data from each cycle. In order to gain feedback from patients, an online survey was delivered through SurveyMonkey (San Mateo, California, United States) online software.

The primary goals of the ACP calls were to remind patients of their upcoming routine appointments with 4 health-care team members and to use a script to tailor the appointments based on patients' needs. Patients could, for example, opt to see a dietitian but not a psychologist/psychiatrist. Calls were made 4 weeks before the appointment to allow adequate time for changes. A maximum of 2 calls was made to each patient. To ensure patient confidentiality, e-mails or letters were used to confirm appointment changes and to send bloodwork requisitions and links to the patient-satisfaction survey and after-care application.

The patients who were targeted by the ACP intervention were between 6 months and up to 5 years postsurgery. Patients who were in presurgery or early postsurgery status had appointments necessary for comprehensive assessment, and those could not be altered. Additionally, "postop-other" appointments that are created based on patients' needs outside of the routine follow-up appointments (e.g. crisis-care needs) were not included because they were already tailored appointments.

Five months after commencing the initiative, a patient-volunteer was selected to aid in making calls, providing peer-to-peer knowledge of appointments and building sustainability. Also, 2 additional volunteers were recruited and given hands-on training, supplemented by a 19-page training manual, which was piloted with the patient-volunteer. This manual describes the history of the project and process information around conducting calls, sending blood requisitions, canceling and rescheduling appointments using the scheduling software, sending information regarding the online After-Care application, sending patient satisfaction surveys, data collection and analysis.

Ethical considerations

This initiative fell within the University Health Network Research Ethics Board's definition of quality improvement and was not considered human subjects research.

Study of improvement, measures and analysis

The primary outcome measures were the percentages of appointment attendance and nonattendance (no-shows or appointments cancelled with 48 hours' notice) and advance cancellations calculated each week between April 1, 2014, and May 29, 2015. It was hypothesized that the ideas for change would increase postoperative appointment attendance. Balance measures included the responses to online surveys used to gauge patient satisfaction with the initiative and the number of preoperative- and postoperative-other appointments before and after the intervention in order to identify potential unexpected impacts. A final outcome measure was the composite cost of each preoperative- and postoperative-other appointment to determine the money saved by the initiative. This was calculated as a weighted average rate based on the percentage of appointments conducted by each discipline and the monetary rates across the disciplines.

Appointment attendance frequencies were entered in CHARTrunner v, 3.6 software (Productivity Quality Systems, Dayton, Ohio, United States) to create Control/Shewhart charts of weekly appointment data (Figure 1, Figure 2, Figure 3). The U chart control chart type was selected because the number of appointments differed among weeks and represented an unequal area of opportunity (34). Data points falling outside of the upper and lower control limits, which represent 2 standard deviations above and below the mean, respectively (35), were detected by the software and indicated special-cause variation (SCV) (36) or changes that were likely to be attributed to the intervention if they were present after the intervention was implemented (35). Other signals may indicate SCV, such as 8 data points below the central tendency line (35). A list of rules for determining SCV can be found in Provost and Murray (35). The ACP calls and e-mails were initiated on week 19, or August 4 to 8, 2014, of the QI initiative. The upper and lower control limits and central tendency line were calculated using the baseline data (week 1 to week 18) in order to identify a change from baseline levels (34). Other preoperative and postoperative appointments were entered by week and visualized on line graphs. CHARTrunner software was not used for these appointments because the ACP intervention was not made for tailoring preoperative and postoperative-other appointments. Independent samples t tests were used for these appointments in order to determine whether changes from pre- to postintervention were statistically significant.

Using SurveyMonkey online survey software, 7 questions regarding patient satisfaction with the QI initiative were sent to all patients who provided e-mail addresses between August 1, 2014, and August 24, 2016. The first 5 survey questions were Likert-scale questions that offered response options ranging from strongly disagree to strongly agree (Table 1). The sixth question asked how far before the appointments the phone calls should be; responses varied from no advance calls to 1 week to 3 months in advance. The seventh question was open-ended for any other comments.

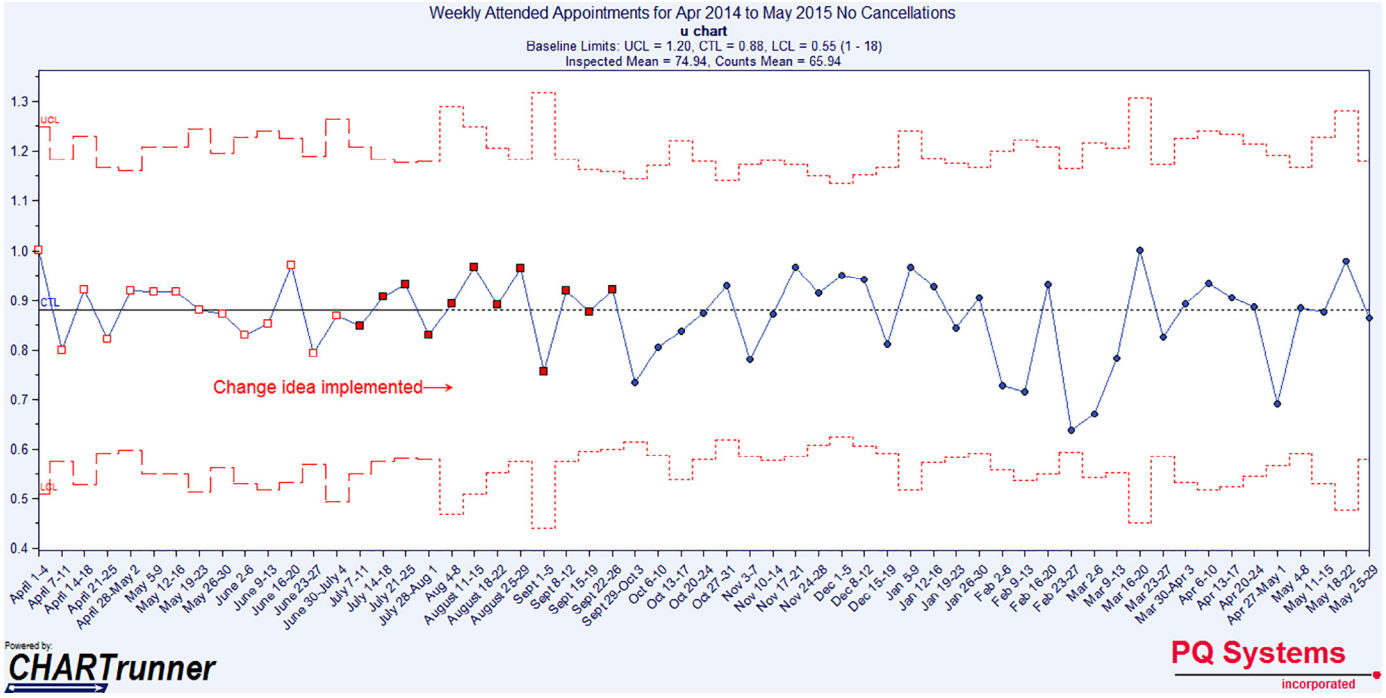

Figure 1. U-chart demonstrating weekly attended postoperative appointments for April 2014 to May 2015 in percentages. Change idea was implemented on August 4, 2014. Hollow red boxes refer to data points that contribute to SCV patterns and filled-in red boxes refer to data points that have detected SCV (35). *CTL,* central tendency line (average); *LCL,* lower control limit; *SCV,* special-cause variation; *UCL,* upper control limit. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

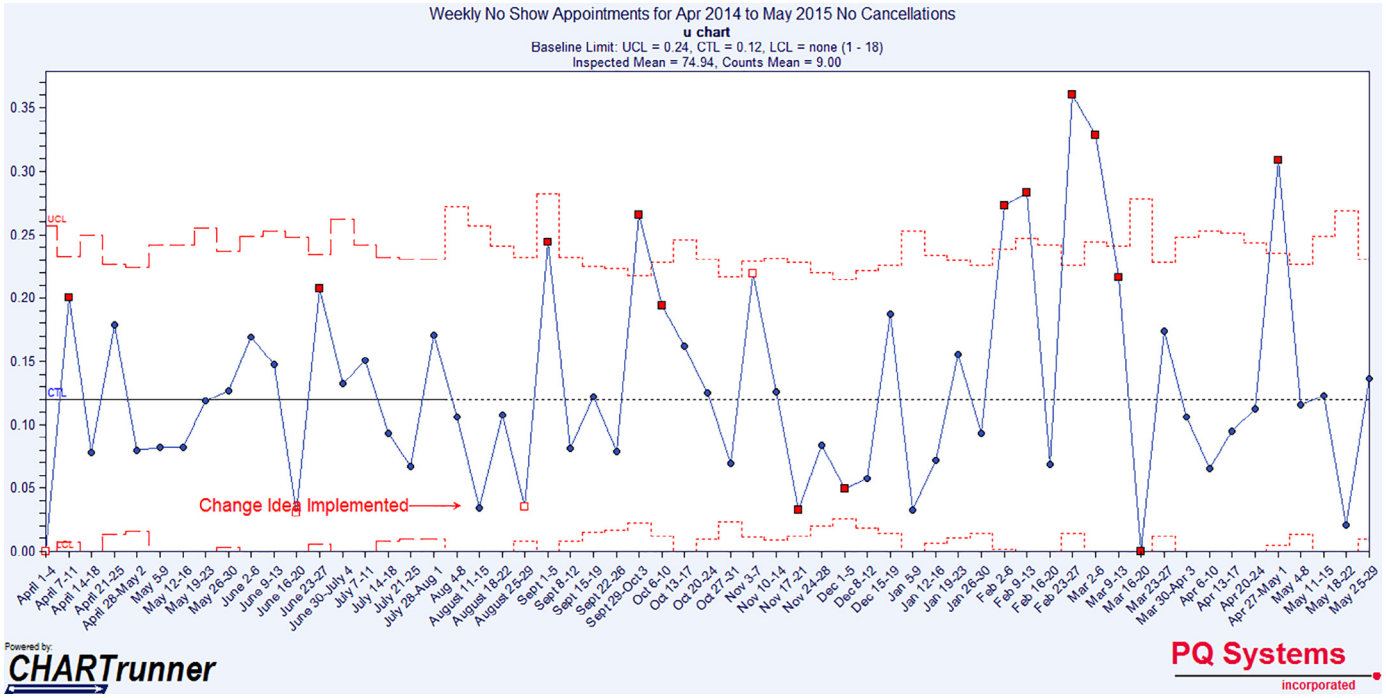

Figure 2. U-chart demonstrating weekly no-show postoperative appointments for April 2014 through May 2015 in percentages. Change idea was implemented on August 4, 2014. Hollow red boxes refer to data points that contribute to special-cause variation patterns and filled-in red boxes refer to data points that have detected special-cause variation (35). *CTL,* central tendency line (average); *UCL,* upper control limit; *LCL,* lower control limit. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Results

A total of 1,294 patients were called between August 4, 2014, and May 29, 2015, representing 4,124 appointments and up to 2,588 calls because patients were called once or twice. Of the 1,294 called, only 580 were reached. Thus, the contact rate was 45%. Before the intervention, 1,552 appointments were counted as baseline data. For the TWH Bariatric After-Care App, there were 1,254 visitors between August 2014 and May 2015 (10 months), for an average of 125 visitors per month.

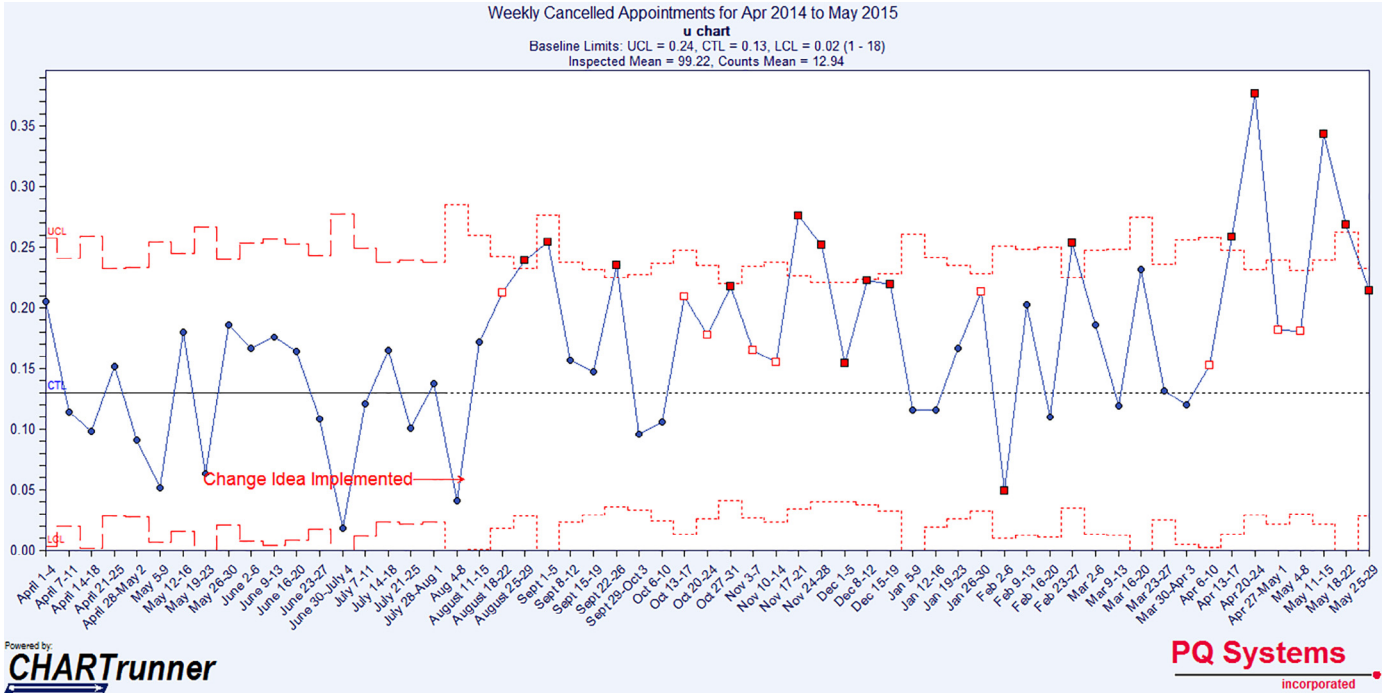

Figure 3. U-chart demonstrating weekly advance postoperative cancellations for April 2014 through May 2015 in percentages. Change idea was implemented on August 4, 2014. Hollow red boxes refer to data points that contribute to special-cause variation patterns and filled-in red boxes refer to data points that have detected special-cause variation (35). *CTL,* central tendency line (average); *LCL,* lower control limit; *UCL,* upper control limit. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Table 1
Responses to the first 5 questions of the QI ACP patient satisfaction survey

Statement	Percentage of respondents that agreed or strongly agreed
1. I was able to choose the clinician discipline(s) I wanted to see for my appointments (such as nutrition, psychology, social work).	73.8%
2. The phone call occurred far enough in advance that I could make changes to my own schedule to attend the appointment (work, school, home).	84.6%
3. I felt better prepared for my appointments (by having bloodwork requisition sent, reminder of appointment, etc.).	79.0%
4. Being able to choose which clinician discipline(s) I see (such as nutrition, psychology, social work) makes me more likely to attend my appointments.	65.3%
5. I would like to choose the clinician discipline(s) I see (such as nutrition, psychology, social work) for all future appointments.	82.1%

ACP, advance-care planning; *QI,* quality improvement.

Table 2
Total number of appointments attended, cancelled and no-shows per week from April 1, 2014, to August 1, 2014 (preintervention) and August 4, 2014, to May 29, 2015 (postintervention)

Total number of appointments/week	Preintervention	Postintervention
Attended	M=65.9, SD=11.8	M=70.1, SD=18.5
No-show	M=9.00, SD=4.9	M=11.0, SD=7.90
Cancelled	M=11.3, SD=4.85	M=19.4, SD=9.39

M, mean; *SD*, standard deviation.

In terms of postoperative appointments, the mean attendance rates per week were 88.3% during the 18 weeks preintervention, and they decreased to 86.5% during the 41 weeks postintervention (Figure 1). For no-shows, the mean rates per week were 11.7% during preintervention, and they increased to 13.5% postintervention (Figure 2). The mean cancellation rates were 12.8% per week before the intervention and increased to 18.8% after the intervention began (Figure 3). In this figure, 15 points are above the central tendency line postintervention and indicate SCV and change that is attributable to the intervention. Total numbers of appointments attended, cancelled or were no-shows per week before and after the intervention are shown in Table 2.

Lower attendance in February and early March may have been due to poor weather. This corresponds with no-shows who qualify as SCV points falling above the upper control limits during these times. Weather data from 2015 in Toronto note that February was the month with the lowest average temperature and greatest amount of snow in that year (37,38). The influence of holidays is less likely because attendance rates were predicted to decrease due to vacations, but attendance was actually above average, and no-shows were below average in 5 of 9 of the holiday weeks. Cancellations were above the baseline average in 32 of 41 of the weeks postintervention and do not suggest seasonal effects.

Weekly average preoperative and postoperative-other appointments attended increased in the 41 weeks postintervention (Figure 4). Preoperative appointments increased from mean (M)=50.5 (SD=9.18) to M=70.5 (SD=17.3) per week, which was statistically significant: $t(55)=-5.76$; $p<0.001$. Postoperative-other appointments increased from M=10.4 (SD=4.97) to M=16.8 (SD=5.23) per week, which was also statistically significant, $t(57)=-4.40$; $p<0.001$. The average weighted cost for both types of appointments was $79.00 per appointment. This was based on the hourly rates of each clinician's discipline, the proportion of each discipline conducting appointments based on actual clinic volumes and the proportion of preoperative (81%) and postoperative-other (19%) appointments. Thus, ACP cancellations leave open slots that are refilled by these 2 types of appointments that otherwise would have been paid for and unused. A refill rate of ACP cancellations was determined

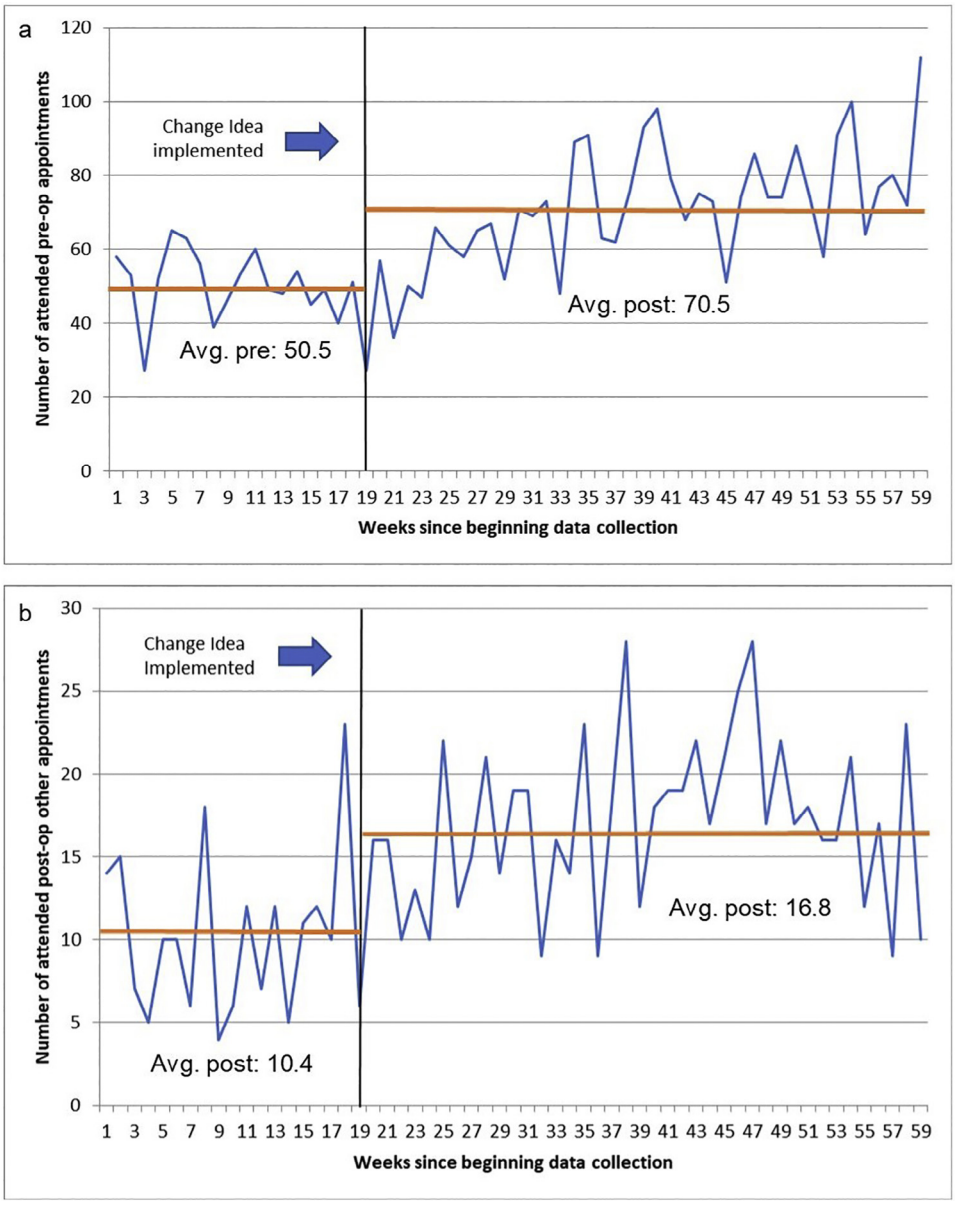

Figure 4. Line charts demonstrating total numbers of weekly attended preoperative (a) and postoperative-other (nonroutine) appointments (b) for April 2014 through May 2015. Change idea was implemented on August 4, 2014, or 19 weeks after data collection began (vertical line). Average attendance numbers/week preintervention and postintervention are labeled and demarcated by the thick horizontal lines.

by tracking how many ACP cancellations were actually refilled by these appointments over the span of 12 months. The refill rate of ACP cancellations of routine postoperative appointments was calculated as 81%, and the baseline level of routine postoperative cancellations (11.3 per week) was not due to the intervention, so calculating the difference with the postintervention cancellation rate (19.4 postintervention cancellations per week – 11.3 baseline cancellations per week=8.1 ACP cancellations per week) and determining the amount refilled (8.1 cancellations/week×.81) results in an estimate of the refilled cancellations attributed to the QI intervention: 6.56 appointments per week. This is a conservative estimate; refill rates for non-ACP cancellations would likely have been lower because they are more likely to occur at short notice. Using the 6.56 appointments per week refill rate, at a mean cost of $79.00 per appointment, this was estimated as $518.32 per week. For the 41 weeks of data collection postintervention, it was estimated that the TWH-BSP saved $21,251.08 on used appointment slots that would have otherwise been left empty or used by patients who might not have needed them. This initiative was incorporated into standard operations at TWH-BSP, so projections for August 2014 to August 2016 (102 weeks, subtracting clinic holiday weeks) were estimated at $52,868.54.

A total of 326 respondents took part in the patient satisfaction survey (Table 1). The top 3 responses to the sixth question, regarding the preferred time for the call, were: 1 month (29.6%), 2 weeks (24.4%) and 1 week (23.3%) before appointments. The final question, regarding other comments, received 111 responses, including patients' describing the tendency to forget appointments that were booked a year in advance, liking the option of seeing the clinicians they felt they needed to see, being busy during the times of their appointments and liking the ability to make the changes in advance.

Discussion

This is the first published study outlining an intervention to improve postoperative adherence and follow-up efficiency after bariatric surgery. As outlined by the American Society for Metabolic and Bariatric Surgery, greater postoperative follow up is associated with greater loss of excess body weight, and an interprofessional approach to postoperative care is critical for reassessing patients experiencing weight regain after surgery (5). Our study provides data concerning a multimodal improvement initiative aimed at increasing patient engagement in postoperative follow up and improving the efficiency of bariatric surgery programs.

The increase in advance appointment cancellations significantly increased the number of preoperative- and postoperative-other (nonroutine) appointments, resulting in more than $50,000 in cost savings over 2 years. The improvements in efficiency of follow-up appointment utilization and cost savings are significant benefits resulting from this intervention and warrant further exploration in other sites. Moreover, patient-volunteers trained to deliver the intervention addressed sustainability concerns. According to responses to the patient-satisfaction survey, a majority of patients favoured these ACP calls in terms of wanting and being able to use the service for tailoring their appointments to their needs. Nearly 80% of patients felt better prepared for their appointments and more than half felt that the ability to choose the clinician they would see during follow up made them more likely to attend their appointments. The majority noted that the phone calls occurred far enough in advance to make changes in their own schedules and preferred that these calls occur 1 month before their scheduled appointments.

Although we aimed to improve postoperative follow-up appointment adherence, this outcome was not significantly improved by our QI intervention. Previous research indicates that postoperative attrition rates are as high as 40% to 60% in long-term follow up (39). Our overall postoperative adherence rates were greater than 80%, which is high in comparison to previous studies involving laparoscopic RYGBS. A possible ceiling effect may have limited further improvement. This could have been a result of stringent psychosocial screening prior to surgery and the availability of support after surgery such as appointments with multidisciplinary team members that other programs may be lacking. Furthermore, previous research indicates that patient attrition after bariatric surgery may be due, in part, to patients' confidence that their family physicians could provide further follow-up care (40). Some patients perceive a lack of benefit in attending some or all of their appointments because they are doing well, so the lack of increased routine postoperative attendance rates may not necessarily be a negative outcome. Rather, it may reflect increasing efficiency and flexibility and a patient-centred approach to bariatric aftercare. In contrast, the increase in postoperative other appointments illustrates that urgent and nonroutine postoperative care is still in demand. With Canadian bariatric surgery rates increasing 4-fold between 2006–2007 and 2013–2014 (41), the need for enhanced efficiency in bariatric surgery programs is vital. Interventions such as the ACP calls allow bariatric surgery programs to respond to this demand by freeing up appointment slots and providing more preoperative appointment slots and, thus, greater access to surgery.

Limitations

Although up to 2 calls were made for each patient, the contact rate was only 45%. This may have been because calls were being made during the daytime when patients may have been at work or due to calls being made from a private number. Furthermore, due to confidentiality and lack of designated phone lines or personnel to return calls, messages were not left for patients, contributing to further missed contacts.

This intervention followed a pre-post design, so confounding variables such as weather during the winter may have influenced the results. Changes in staffing and the growth of the TWH-BSP may also have impacted the absolute number of patients being seen over time. Additionally, the erratic nature of the no-shows during postintervention was unexpected. Reminding patients of their appointments in advance can reduce no-shows, but it may, paradoxically, increase no-shows if patients are given greater flexibility, no longer regard the appointments as mandatory and later choose not to cancel in advance.

The majority of survey respondents valued having scheduling options (82.1%), but 3 respondents preferred required visits, and 1 mentioned that leaving the option up to the patient could lead to missing essential visits. Last, there was a substantial portion of survey respondents (34.7%) for whom the ACP calls did not make a difference in motivating their attendance at appointments. Other factors, such as distance from the hospital, dissatisfaction with the services and inability to get time off from work were described in the comments and were not necessarily addressed by the QI change ideas, potentially leading to the lack of change in no-show rates postintervention.

Conclusions

With greater resources, other programs may be able to augment their contact rates by having designated phone lines and personnel and volunteers who contact patients during evenings and weekends. The clerks at TWH-BSP now tailor appointments to patients' needs at the outset of appointment scheduling. Furthermore, increasing the refill rate of postoperative appointments to closer to 100% could be achieved by creating a cancellation list and notifying clerk staff as soon as an opening occurs so that it can be advertised to patients. Other resources such as increased access to telemedicine can address issues (e.g. distance) not solved by the ACP calls. Mental and physical health outcomes were not compared in those who did and did not attend their appointments or were contacted by the QI intervention. Future studies looking at these outcomes, particularly weight loss, could further illustrate the impact of the intervention and replicate previous findings that link increased appointment attendance and greater weight loss (13–15).

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Author Disclosures

Conflicts of interest: none.

Author Contributions

VS contributed to the data collection, data analysis, literature review and writing of the manuscript; KW contributed to the study conceptualization, stakeholder engagement, implementation and design, analysis of data and writing and editing of the manuscript; ShR contributed to data collection, data analysis, literature review and writing of the manuscript; AO contributed to the study design, implementation, data analysis and editing of the manuscript; SR contributed to the study design, implementation, data analysis and editing of the manuscript; SS contributed to the study

design, literature review, implementation, data analysis and writing of the manuscript.

Ethical Approval

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

References

1. Obeid NR, Malick W, Concors SJ, et al. Long-term outcomes after Roux-en-Y gastric bypass: 10- to 13-year data. Surg Obes Relat Dis 2016;12:11–20.
2. Angrisani L, Cutolo PP, Formisano G, et al. Laparoscopic adjustable gastric banding versus Roux-en-Y gastric bypass: 10-year results of a prospective, randomized trial. Surg Obes Relat Dis 2013;9:405–13.
3. Higa K, Ho T, Tercero F, et al. Laparoscopic Roux-en-Y gastric bypass: 10-year follow-up. Surg Obes Relat Dis 2011;7:516–25.
4. Sjöström L, Narbro K, Sjöström CD, et al. Effects of bariatric surgery on mortality in Swedish obese subjects. N Engl J Med 2007;357:741–52.
5. Mechanick JI, Youdim A, Jones DB, et al. Clinical practice guidelines for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient, 2013 update: Cosponsored by American Association of Clinical Endocrinologists, the Obesity Society, and American Society for Metabolic & Bariatric Surgery. Surg Obes Relat Dis 2013;9:159–91.
6. Coblijn UK, Goucham AB, Lagarde SM, et al. Development of ulcer disease after Roux-en-Y gastric bypass, incidence, risk factors, and patient presentation: A systematic review. Obes Surg 2014;24:299–309.
7. Alexandrou A, Armeni E, Kouskouni E, et al. Cross-sectional long-term micronutrient deficiencies after sleeve gastrectomy versus Roux-en-Y gastric bypass: A pilot study. Surg Obes Relat Dis 2014;10:262–8.
8. Nguyen NT, Slone JA, Nguyen XM, et al. A prospective randomized trial of laparoscopic gastric bypass versus laparoscopic adjustable gastric banding for the treatment of morbid obesity: Outcomes, quality of life, and costs. Ann Surg 2009;250:631–41.
9. Wheeler E, Prettyman A, Lenhard MJ, et al. Adherence to outpatient program postoperative appointments after bariatric surgery. Surg Obes Relat Dis 2008;4:515–20.
10. Lara MD, Baker MT, Larson CJ, et al. Travel distance, age, and sex as factors in follow-up visit compliance in the post-gastric bypass population. Surg Obes Relat Dis 2005;1:17–21.
11. Schauer PR, Kashyap SR, Wolski K, et al. Bariatric surgery versus intensive medical therapy in obese patients with diabetes. N Engl J Med 2012;366:1567–76.
12. Toussi R, Fujioka K, Coleman KJ. Pre- and postsurgery behavioral compliance, patient health, and postbariatric surgical weight loss. Obesity (Silver Spring) 2009;17:996–1002.
13. Gould JC, Beverstein G, Reinhardt S, et al. Impact of routine and long-term follow-up on weight loss after laparoscopic gastric bypass. Surg Obes Relat Dis 2007;3:627–30.
14. Sivagnanam P, Rhodes M. The importance of follow-up and distance from centre in weight loss after laparoscopic adjustable gastric banding. Surg Endosc 2010;24:2432–8.
15. Compher CW, Hanlon A, Kang Y, et al. Attendance at clinical visits predicts weight loss after gastric bypass surgery. Obes Surg 2012;22:927–34.
16. Spaniolas K, Kasten KR, Celio A, et al. Postoperative follow-up after bariatric surgery: Effect on weight loss. Obes Surg 2016;26:900–3.
17. Nasirzadeh Y, Kantarovich K, Wnuk S, et al. Binge eating, loss of control over eating, emotional eating, and night eating after bariatric surgery: Results from the Toronto Bari-PSYCH Cohort Study. Obes Surg 2018;1–8. Epub ahead of print.
18. Devlin MJ, King WC, Kalarchian MA, et al. Eating pathology and experience and weight loss in a prospective study of bariatric surgery patients: 3-year follow-up. Int J Eat Disord 2016;49:1058–67.
19. Mitchell JE, Christian NJ, Flum DR, et al. Postoperative behavioral variables and weight change 3 years after bariatric surgery. JAMA Surg 2016;151:752–7.
20. Hood MM, Corsica J, Bradley L, et al. Managing severe obesity: Understanding and improving treatment adherence in bariatric surgery. J Behav Med 2016;39:1092–103.
21. Vidal P, Ramon JM, Goday A, et al. Lack of adherence to follow-up visits after bariatric surgery: Reasons and outcome. Obes Surg 2014;24:179–83.
22. Larjani S, Spivak I, Hao Guo M, et al. Preoperative predictors of adherence to multidisciplinary follow-up care postbariatric surgery. Surg Obes Relat Dis 2016;12:350–6.
23. Bellows CF, Gauthier JM, Webber LS. Bariatric aftercare and outcomes in the Medicaid population following sleeve gastrectomy. J Soc Laparoendscop Surg 2014;18:e2014, 00280.
24. Won EJ, Tran TT, Rigby A, et al. A comparative study of three-year weight loss and outcomes after laparoscopic gastric bypass in patients with "yellow light" psychological clearance. Obes Surg 2014;24:1117–9.
25. Sockalingam S, Cassin S, Hawa R, et al. Predictors of post-bariatric surgery appointment attendance: The role of relationship style. Obes Surg 2013;23:2026–32.
26. Pontiroli AE, Fossati A, Vedani P, et al. Post-surgery adherence to scheduled visits and compliance, more than personality disorders, predict outcome of bariatric restrictive surgery in morbidly obese patients. Obes Surg 2007;17:1492–7.
27. McVay MA, Friedman KE, Applegate KL, et al. Patient predictors of follow-up care attendance in Roux-en-Y gastric bypass patients. Surg Obes Relat Dis 2013;9:956–62.
28. Marek RJ, Tarescavage AM, Ben-Porath YS, et al. Using presurgical psychological testing to predict 1-year appointment adherence and weight loss in bariatric surgery patients: Predictive validity and methodological considerations. Surg Obes Relat Dis 2015;11:1171–81.
29. Moroshko I, Brennan L, Warren N, et al. Patients' perspectives on laparoscopic adjustable gastric banding (LAGB) aftercare attendance: qualitative assessment. Obes Surg 2014;24:266–75.
30. Pitzul KB, Jackson T, Crawford S, et al. Understanding disposition after referral for bariatric surgery: When and why patients referred do not undergo surgery. Obes Surg 2014;24:134–40.
31. Sockalingam S, Cassin S, Crawford A, et al. Psychiatric predictors of surgery non-completion following suitability assessment for bariatric surgery. Obes Surg 2013;23:205–11.
32. Moroshko I, Brennan L, O'Brien P. Predictors of attrition in bariatric aftercare: A systematic review of the literature. Obes Surg 2012;22:1640–7.
33. Brown WA, Burton PR, Shaw K, et al. A pre-hospital patient education program improves outcomes of bariatric surgery. Obes Surg 2016;26:2074–81.
34. Campitelli M, Croxford R. Chartrunner and SPC Webinar Two Video. Canada: Health Quality Ontario. 2014. https://www.youtube.com/watch?v=WZ0hZ1pn1Q4. Accessed July 30, 2017.
35. Campitelli M, Croxford R. Chartrunner and SPC Webinar One Video. Canada: Health Quality Ontario. 2014. https://www.youtube.com/watch?v=WJLbBTo7BUE. Accessed July 30, 2017.
36. Provost LP, Murray S. The health care data guide: Learning from data for improvement. San Francisco: John Wiley & Sons, 2011.
37. WorldWeatherOnline.com. Toronto, Ontario monthly climate average, Canada. Dubai: WorldWeatherOnline.com. 2017. https://www.worldweatheronline.com/toronto-weather-averages/ontario/ca.aspx. Accessed July 30, 2017.
38. Colbert S. It's official: February was Toronto's coldest month ever. Toronto: The Toronto Star. 2015. https://www.thestar.com/news/starweather/2015/03/it-s-official-february-was-toronto-s-coldest-month-ever.html. Accessed July 30, 2017.
39. Sugerman HJ, Sugerman EL, DeMaria EJ, et al. Bariatric surgery for severely obese adolescents. J Gastrointest Surg 2003;7:102–8.
40. Aarts MA, Sivapalan N, Nikzad SE, et al. Optimizing bariatric surgery multidisciplinary follow-up: A focus on patient-centered care. Obes Surg 2017;27:730–6.
41. Canadian Institute for Health Information. Bariatric Surgery in Canada: Infographic. Ottawa: CIHI, 2015. https://www.cihi.ca/en/bariatric-surgery-in-canada-infographic. Accessed July 30, 2017.