

Bariatric surgery tourism in the COVID-19 era

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Key words:

Bariatric surgery, Socioeconomic deprivation

ABSTRACT

Background

Since the start of the Covid-19 pandemic primary and secondary health care services in Northern Ireland have observed an increase in the number of patients who have had bariatric surgery outside of the UK. This study sought to estimate the frequency of bariatric surgery tourism and to audit indications, blood monitoring and medical complications.

Methods

All primary care centres within the Western Health Social Care Trust (WH SCT) were invited to document the number of patients undergoing bariatric surgery between January 1, 2017 and December 31, 2022. For one primary care centre, patients who underwent bariatric surgery were assessed against the National Institute of Health and Clinical Excellence (NICE) guideline indications for bariatric surgery. In addition, the blood monitoring of these patients was audited against the British Obesity and Metabolic Surgery Society (BOMSS) guidelines for up to two years following surgery. Medical contacts for surgical complications of bariatric surgery were recorded.

Results

Thirty-five of 47 (74.5%) GP surgeries replied to the survey, representing 239,961 patients among 325,126 registrations (73.8%). In the six year study period 463 patients had reported having bariatric surgery to their GP. Women were more likely to have had bariatric surgery than men (85.1% versus 14.9%). There was a marked increase in the number of patients undergoing bariatric surgery with each year of the study ($p < 0.0001$ chi square for trend). Twenty-one of 47 patients (44.7%) evaluated in one primary care centre fulfilled NICE criteria for bariatric surgery. The level of three-month monitoring ranged from 23% (for vitamin D) to 89% (electrolytes), but decreased at two years to 9% (vitamin D) and 64% (electrolytes and liver function tests). Surgical complication prevalence from wound infections was 19% (9 of 44). Antidepressant medications were prescribed for 23 of 47 patients (48.9%).

Conclusions

The WH SCT has experienced a growing population of

patients availing of bariatric surgery outside of the National Health Service. In view of this and the projected increase in obesity prevalence, a specialist obesity management service is urgently required in Northern Ireland.

Introduction

Obesity, defined as body mass index (BMI) greater than 30 kg/m², is becoming more prevalent and is the cause of an increasing burden of disease.¹ Obesity is associated with increased risk of type 2 diabetes mellitus, hypertension, obstructive sleep apnoea, certain cancers, fatty liver disease, gallstones, gastro-oesophageal disease, pregnancy complications² and idiopathic intracranial hypertension.³ Individuals with obesity often experience stigma and bias, leading to increased risk of psychological and psychiatric morbidities. In addition, cultural blame, shame and assumptions about personal responsibility may influence the quality of health care for individuals living with obesity.⁴ Worldwide age-standardised prevalence of obesity increased from 3.2% in 1975 to 10.8% in 2014 in men, and from 6.4% to 14.9% in women.⁵

In the UK, where a quarter of the adult population is obese there are four levels of tiered pathway in the management of obesity. Tiers 1 and 2 focus on population and preventive measures. Tier 3 is a multidisciplinary weight management service,⁶ which may then result in referral to a tier 4 service for consideration of bariatric surgery.⁷

Bariatric surgery involves procedures such as gastric banding, gastric (Roux-en-Y) bypass and sleeve gastrectomy. Benefits of bariatric surgery include sustained weight loss, resolution or improved outcome from metabolic comorbidities as well as improved life expectancy.⁸ It has also been associated with improved employment prospects.⁹ Benefits are not equally distributed however; individuals who experience social isolation,⁹ immigrants and urban populations achieve less weight reduction than others.¹⁰

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In the UK the National Institute of Health and Clinical Excellence (NICE) guideline on obesity management recommends that surgery is the option of choice for adult patients who have not responded to other measures and have a BMI of 40 kg/m² or more, or have a BMI between 35 kg/m² and 39.9 kg/m² with other significant disease such as hypertension or type 2 diabetes mellitus.¹¹ Detailed guidelines for perioperative care to enhance recovery after surgery have emerged to reduce perioperative stress and maintain postoperative physiological functioning.¹²

The NICE guideline on obesity also recommends that for a minimum of two years the bariatric surgery team provide a follow-up care package which should include regular post-operative dietetic management and blood monitoring.¹¹ The National Bariatric Surgery Registry, which was established in 2009 facilitates the audit of bariatric surgery outcomes.¹¹

There is no commissioned bariatric service in Northern Ireland, i.e. no tier 3 or 4 specialist obesity management service, which is a requirement of the NICE clinical guideline for obesity. As patients have increasingly learned of the weight loss potential of bariatric surgery, many have sought bariatric surgery outside the UK, finding cheaper alternatives to private procedures that are available in the UK. After bariatric surgery, these patients may return to the NHS primary care services seeking follow-up or, if required, emergency care. We and others have observed an increase in the number of Northern Irish patients returning from Turkey following bariatric surgery particularly since 2020.

We were interested in measuring the level of bariatric surgery tourism within the Northern Ireland Western Health and Social Care Trust (WHST), a geographically defined area with a stable population. In a service evaluation we surveyed primary care centres in the WHST to record annual bariatric surgery frequency over six years. For one urban primary care centre within the WHST, we assessed the NICE indications for bariatric surgery among patients, who had this surgery.¹¹ For the same primary care centre we also measured the quality of care as recommended by the British Obesity and Metabolic Surgery Society (BOMSS) guidelines for management of patients who had undergone bariatric surgery.¹³

Methods

Part A

Patients

A short survey was sent via e-mail to each practice manager of the 47 primary care centres in the WHST, inviting them to search their databases to abstract the annual number and sex of patients who had bariatric between January 1, 2017 and December 31, 2022. The General Practice list size was also requested. A reminder was emailed after two weeks. The survey closed after four weeks. Annual temporal trends were

calculated using the total number of GP registrations in the WHST recorded in 2020.

Part B

Patients

To learn more about bariatric surgery patients, a single urban primary care centre with a population of 11,372 was studied in further detail. The primary care centre was chosen because two of the authors (DM and AML) work there. The population has been previously described.^{14 15} The inclusion criterion for this part of the study was having a bariatric surgery procedure performed between January 1, 2015 and August 31, 2022. A search for patients who had bariatric surgery was performed on EMIS web, a clinical system widely used in primary care in the UK.¹⁶ If bariatric discharge letters were not available in the primary care centre notes, these were requested directly from the relevant patients. Demographic details, pre-operative BMI and whether patients were prescribed antidepressant medication were recorded. Socioeconomic deprivation scores for different areas in Northern Ireland were derived from a ranking score based on multiple deprivation measures.¹⁷ This ranks the super output areas in Northern Ireland from 1 (most deprived) to 890 (least deprived).¹⁷ Surgical complications which required primary or secondary care management were documented.

NICE indication for bariatric surgery

The indication for bariatric surgery was measured against the most recent NICE guideline – BMI >40 kg/m² or BMI >35 kg/m² with co-existent hypertension or diabetes mellitus when other interventions have not been effective.¹¹

Blood monitoring for bariatric surgery

The BOMSS guideline recommendations¹³ assessed adherence to blood monitoring. The BOMSS guidelines were updated in 2020 and included good practice points of annual serum copper and zinc measurement for sleeve gastrectomy patients.¹⁸ In the 2020 guidelines, measurement of parathyroid hormone was changed from annual to baseline checking. For each patient the medical record was reviewed to document the blood monitoring performance against the BOMSS guideline standard.

Statistical analysis

Descriptive analyses were used. Chi square for trend was calculated from Open Source Epidemiologic Statistics for Public Health (http://openepi.com/Menu/OE_Menu.htm).

Ethics

The study was approved as a service evaluation by the WHST Quality Improvement and Audit department.



Results

Part A

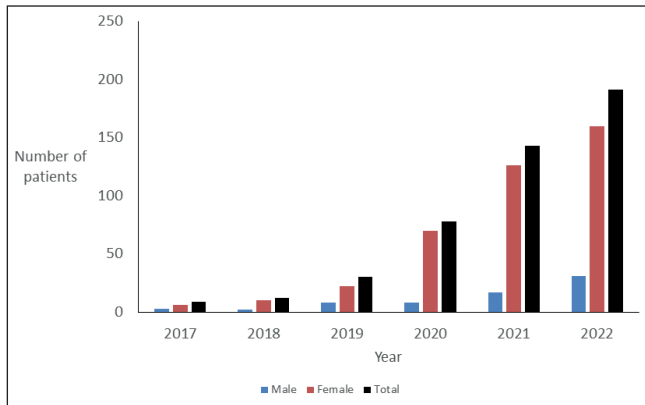


Figure 1. Bariatric surgery in Western Health and Social Care Trust 2017-2022 (N=463)

Thirty-five of 47 primary care centres (74.5%) in the WHSCT responded and reported the number of patients who had undergone bariatric surgery for the period between January 1, 2017 and December 31, 2022. This represented a surveyed population of 239,961 of the total GP registrations of 325,126 (73.8%) in the WHSCT.¹⁹ From the surveyed population, 463 patients had reported bariatric surgery to their GP (Figure 1). More women (394 or 85.1%) than men (69 or 14.9%) had bariatric surgery. The frequency of bariatric surgery increased between 2017 and 2022 with a 10-fold increase in bariatric surgery in men (chi square for trend $p < 0.0001$) and more than a 25-fold increase in bariatric surgery in women (chi square for trend $p < 0.0001$).

Part B

The primary care centre study recorded bariatric surgery in 47 patients between January 1, 2015 and August 31, 2022. Forty-five patients had sleeve gastrectomies, one patient had gastric banding and one patient had a gastric balloon insertion. Only two of the 47 patients had their surgery performed in Northern Ireland, both in a private hospital.

The baseline characteristics of these 47 patients are highlighted in Table 1. There was a steep increase in the number of patients undergoing bariatric surgery from 2020

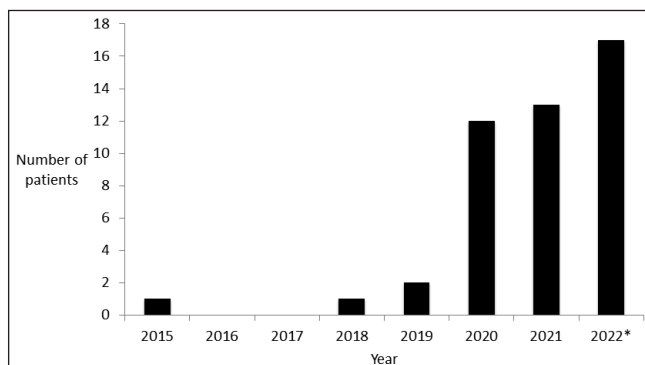


Figure 2. Annual number of patients undergoing bariatric surgery in one General Practice 2017-2022 (N=47, *until August 2022)

Table 1. Baseline pre-operative characteristics of bariatric patients in one primary care centre in the Trust

Patients	Number	Percentage
Number	47	
Female:Male	42:5	89:11
Mean age at surgery (SD) years	39.2 (10.3)	
Mean BMI (SD) kg/m ²	41.8 (7.8)	
Median multiple deprivation measure (range)	130 (6 to 808)	
Number with BMI > 50 kg/m ²	7	14.9
Number with BMI ≥ 40 and BMI < 50 kg/m ²	13	27.7
Number with BMI ≥ 35 and < 40 kg/m ² with hypertension or a diagnosis of diabetes mellitus in previous 10 years	1	2
Number fulfilling NICE criteria for bariatric surgery	21	44.7

onwards (Figure 2), reflecting the pattern seen throughout the Trust. Similar to the overall Trust population study, the majority of the patients were women (n=40 or 85.1%). The mean age at the time of surgery was 39.2 years (SD 10.3), range 21.0 to 64.0 years. Thirty-two of the 40 women (80%) were under 50 years of age at the time of bariatric surgery.

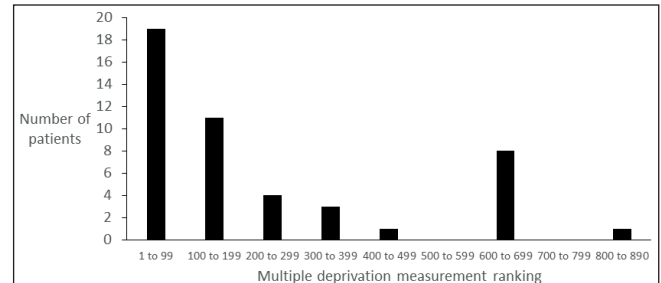


Figure 3. Ranking of multiple deprivation measurements for bariatric patients in one General Practice (N=47)

The median ranking for a multiple deprivation measure was 142 (range 6 to 808, Figure 3). Twenty-one of 47 patients (44.7%) fulfilled current NICE indications for bariatric surgery.

Blood monitoring

After bariatric surgery, patients were followed up for a mean of 1.3 years. Monitoring of blood investigations was analysed for patients who had sleeve gastrectomy (n=45) using the BOMMS guideline standard. All patients had at least some blood monitoring during the follow-up period. The proportion of appropriate blood monitoring decreased with time from surgery and common blood tests were more frequently monitored (Table 2).



Table 2. Blood monitoring adherence after sleeve gastrectomy in one General Practice (N=45)

Investigation	3 months	6 months	12 months	24 months
Full blood count	37/45 (82%)	14/31 (45%)	15/21 (71%)	8/11 (73%)
Electrolytes	39/45 (87%)	17/31 (55%)	15/21 (71%)	7/11 (64%)
Liver function tests	34/45 (76%)	13/31 (42%)	14/20 (70%)	7/11 (64%)
Ferritin	35/45 (78%)	14/31 (45%)	12/21 (57%)	3/11 (27%)
B12 & Folate	37/45 (82%)	15/31 (48%)	11/21 (52%)	5/11 (45%)
Bone profile	30/45 (67%)	13/31 (42%)	7/21 (33%)	4/11 (36%)
Vitamin D	10/45 (22%)	3/31 (10%)	0/21 (0%)	1/11 (9%)
Zinc			2/21 (10%)	1/11 (9%)
Copper			0/21 (0%)	1/11 (9%)
PTH		7/44 (16%)		

Complications of bariatric surgery

Nine of the 47 bariatric surgery patients (19%) from the primary care centre had a wound infection. One patient required 15 GP encounters and 28 Practice Nurse attendances (Table 3). Three (6%) patients required hospital admission.

Twenty-three of 47 patients (48.9%) were prescribed an antidepressant at the time of surgery.

Table 3. Bariatric surgery complications and use of post-operative healthcare in one General Practice

Complication/Health care contact	Number of patients N=47 (%)	Number of consultations
Wound issues including infection	9 (19%)	
GP consultations	26 (55%)	56
Treatment Room Nurse consultations	10 (21%)	55
Out of hours attendances	2 (4%)	2
Emergency Department attendances	4 (9%)	5
Hospital admissions	3 (6%)	

Discussion

Study findings

This study has demonstrated that among the WHSCT population of Northern Ireland a growing number of patients are having bariatric surgery abroad, with more than a 20-fold overall increase in the six years from 2017 to 2022. In one urban primary care centre in the WHSCT more than half of the patients who had bariatric surgery did not fulfil current NICE guideline criteria for the surgery. Wound infections were the most frequent immediate complications, occurring

in almost 20% of patients. Nearly half of bariatric surgery patients had been receiving prescriptions for antidepressant medication, more than double the proportion of the population prescribed an antidepressant in Northern Ireland. The rapid rise in the popularity of bariatric tourism has coincided with the emergence of the Covid-19 pandemic.

Bariatric surgery tourism

Medical tourism is unregulated in the UK. In 2010 at least 63,000 individuals travelled abroad for medical treatments.²⁰ Postcode lottery services within the NHS have been just one factor cited among UK patients seeking bariatric surgery outside the UK. Globally the lack of affordable health care and long waiting lists are leading to greater levels of bariatric tourism.²¹

A national registry can provide data on important variables such as complications, long-term outcomes and the benefits of surgery in individuals over 60 years of age.²² Although the NICE guideline for obesity recommends participation in the UK National Bariatric Surgery Registry,¹¹ patients undergoing bariatric surgery abroad are unlikely to be captured by this audit tool.

Patients may have undergone surgery without being aware of the UK NICE guidelines and the importance of having follow-up monitoring. The lack of any commissioned service in Northern Ireland may have prompted our patients to seek bariatric surgery abroad. Even when guidance exists, many patients still travel to circumvent regulations such as the strict BMI cut-off point required to qualify for publicly-funded surgery,²³ a feature that would have applied to more than half of the primary care centre patients in our study. Although not studied in the current study, social media appears to play a pivotal role in making people aware of, and promoting bariatric surgery.²⁴

Surgical complications of bariatric health tourism have been previously reported in Northern Ireland.²⁵ Bariatric surgery tourism also poses important patient safety issues for many health care professionals from obstetricians involved in pregnancy management to pharmacists advising on non-steroidal anti-inflammatory medications. Bariatric surgery is also associated with an increased risk of epilepsy, emphasising the importance of learning more about long term outcomes.²⁶

Blood monitoring is important for bariatric patients both within the first two years of bariatric surgery and beyond.²⁷ In our study, blood monitoring was not complete. NICE guidelines which recommend follow-up be co-ordinated by the operative centre for the first two years after surgery require “a structured, systematic and team-based review”.²⁸ As longer-term follow-up (beyond two years) may default to the primary care provider, some have questioned whether GP appointments are the most appropriate follow-up pathway.²⁷ Dietitians embedded within primary care teams may provide the most appropriate long-term follow-up care.²⁷



The National Confidential Enquiry into Patient Outcome and Death report from 2012 found that just 29% of bariatric surgery patients had psychological input for care.²⁹ It is not known if any of our patients had psychological assessment prior to surgery. There is limited guidance on the follow-up psychological and social wellbeing of bariatric patients. Even among patients in publicly-funded National Health Service hospitals, feelings of abandonment and isolation were common in accounts of follow-up care.³⁰

Our discussions with patients who have undergone bariatric surgery also suggested that the Covid-19 pandemic may have played a role in different ways. Potential factors include weight gain during this period and the emerging medical information that obesity was a risk factor for a poor outcome from Covid-19 disease.³¹ Importantly, the lower cost of bariatric surgery abroad compared to private bariatric surgery in a UK institution may have been a major influencing factor.

Strengths and limitations of the study

Nearly three quarters of primary care centres responded to the survey request, a high response rate likely driven by recognition of the importance of the issue in primary care. If applied to the whole of Northern Ireland, the data suggest that there may be at least 2,700 patients who have had bariatric surgery between 2017 and 2022. Since there may have been incomplete ascertainment even for participating GP surgeries, our data possibly underestimate the scale of bariatric surgery in the population. Any ascertainment bias for the outcome of bariatric surgery was most likely a non-differential misclassification, present throughout the study period.

Despite an increase in bariatric surgery frequency during the first three years of the Covid-19 pandemic compared to the three years prior to the pandemic, the association may not be causal. While there are temporality and plausibility factors favouring a causal role for Covid-19 disease, not all of the recognised criteria for causation have been fulfilled.³² Confounders may have at least partially contributed to the association.

The findings of the primary care study indicating that patients undergoing bariatric surgery are more likely to be deprived and be prescribed antidepressant medication are from a centre that provides health care for an urban and socio-economically deprived population and may therefore not be generalisable to the whole Trust or Northern Ireland. Although a Trust-wide study of all primary care centres would be required to determine the specific associations with socio-economic deprivation, the close similarities in the trend in bariatric surgery rates and the sex ratio in the primary care centre and the other primary care centres within the Trust are striking.

Policy/service implications

The prevalence of obesity makes it a current and future

medical and public health care issue. The UK has the highest prevalence of obesity among the European OECD countries. In Northern Ireland the WHSCT has the highest Primary 1-aged childhood obesity rate of all the Health Trusts at 6.2%,³³ with the highest District Council rate of 6.6% for Primary 1-aged children in Derry and Strabane from 2017/18 to 2019/20.³⁴ Among adults in Northern Ireland the prevalence of obesity has risen from 23% in 2010/11 to 27% in 2019/20.³⁵

Management of obesity is required throughout childhood and adulthood. Socioeconomic deprivation is a known risk factor for obesity. Adverse factors within and across generations include gestational stress, poverty and financial insecurity, with weight gain and obesity adding further to the social stress and weight stigma.³⁶ In our primary care cohort, the patients who had bariatric surgery lived predominantly in socioeconomically deprived areas.

Northern Ireland has no bariatric surgery, obesity medicine multidisciplinary teams, or specialist weight management programmes, and there is no post-surgical or annual follow-up for individuals undergoing bariatric surgery abroad. Northern Ireland also remains the only UK nation not offering a primary or secondary care based multidisciplinary team comprising a minimum of a bariatric physician, a dietitian, a specialist nurse, a clinical psychologist, a liaison psychiatry professional and a physical therapist.⁶ Clinical practice guidelines recognise the individual and comprehensive services beyond BMI measurement in managing individuals with obesity.⁴

Conclusions

Our study shows that patients in Northern Ireland have been seeking more bariatric surgery abroad. An NHS-funded specialist medical obesity management service alone would go a long way in helping to reduce the complications of obesity, improve monitoring, de-stigmatise obesity management and enhance patient safety and obesity education. A specialist surgical management service would also help the region meet NICE criteria for this population and would allow pre- and post-surgical support to be put in place to assist in preventing and managing the physical and psychological consequences of bariatric surgery.

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