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Quantitative analysis of bariatric procedure trends 2001–13 in South Australia: implications for equity in access and public healthcare expenditure

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Abstract

Objectives. The aims of the present study were to: (1) identify trends in bariatric surgery in South Australia (SA) from 2001 to 2013; and (2) compare public and private hospitals, and so discuss the implications of these trends as they relate to equity in access to bariatric procedures and public system healthcare expenditure.

Methods. An analysis of retrospective data of all bariatric procedures in public and private hospitals in SA was conducted using all SA public and private hospital administrative records between 2001 and 2013.

Results. Of all procedures conducted in SA, 22.6% were revisions or reversals. The number of revisions or reversals conducted in SA has increased at a rate higher than weight loss procedures (6.4- vs 3.8-fold increase). An increasing proportion of public surgeries are revisions or reversals of weight loss procedures that occurred outside of the SA public system (interstate or in the private system).

Conclusion. Further investigation is necessary to identify the pathways patients navigate to access bariatric surgery, the utilisation of public services following private procedures and why rates of revisions or reversals of bariatric procedures are increasing in SA.

What is known about the topic? Rates of bariatric surgery are increasing internationally as a treatment for obesity.
What does this paper add? Trends in bariatric procedures in SA have not been published. We have identified that: (1) rates of bariatric revisions or reversals in SA far surpass the rate at which bariatric weight loss procedures are increasing; (2) rates of revisions or reversals are increasing in public hospitals; and (3) an increasing number of the revision or reversal procedures in public hospitals are for weight loss procedures that have occurred outside the public system.
What are the implications for practitioners? The data have implications for practitioners caring for patients interested in undergoing bariatric surgery for the treatment of obesity. The data suggest that rates of revisions or reversals are increasing in public hospitals, which suggests that further information is needed regarding the effectiveness of weight loss procedures and the implications of revision or reversal increases on waiting times for patients seeking weight loss treatment in a system with limited resources.

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Introduction

Although there has been notable growth in bariatric procedures in the US and UK, limited research[1] has been conducted in Australia looking at how healthcare structure and funding arrangements impact access to bariatric services. The issue of equity is particularly relevant given the structure of the Australian healthcare system, which straddles the American (for-profit) and Canadian (universal) healthcare systems. Healthcare in Australia is universal in that all Australians receive the same access to healthcare services through Medicare.[2] However, healthcare is also available for private purchase, providing subscribers with reduced waiting times, access to specific doctors and additional services not covered by Medicare.[3] The economy and welfare system in Australia is explicitly modelled on market values and practices (i.e. outsourcing and privatisation), and in its emphasis on supporting the private provision (including family and the individual) and private consumption of welfare services.[4] This has been implemented in healthcare in the form of government rebates to facilitate purchase of private health insurance. Rates of private health insurance in Australia have increased, with 44.5% of the population having hospital coverage and 51.2% having ancillary coverage in 2009.[5] Within South Australia (SA) specifically, there are 24 public hospitals,[6,7] 17 private hospitals and four private designated surgical centres (see http://www.myhospitals.gov.au/).

Obesity is a significant public health challenge in developed countries, including Australia.[1,8] In the past 30 years, rates of obesity have been increasing in Australia and globally, often clustering around socially and economically disadvantaged communities.[9,10] It is also widely accepted that obesity is a complex problem requiring complex solutions and that, to date, interventions around diet, exercise and drug treatments for severe obesity (body mass index (BMI) >40 kg/m^2) in particular, have been suboptimal.[11] Most interventions and a considerable body of research focus on individual-level determinants, such as knowledge, practical skills, attitude and responsibility, to encourage people to maintain a healthy weight.[12] During the same period, bariatric surgery has emerged as an alternative, albeit a more invasive, treatment for those ideally with a BMI >50 kg/m^2 and for whom other interventions have failed.[13] However, additional literature suggests that bariatric surgery is an acceptable weight loss option for patients with a BMI $\geq$40 kg/m^2 or those with a BMI $\geq$35 kg/m^2 who have comorbid conditions.[14]

Bariatric surgery is becoming more common as a treatment for obesity internationally, with data suggesting that more than 344 000 bariatric surgery operations were performed in 2008.[14] Although approximately 63% of the 2008 procedures were conducted in the US and Canada,[15] at this time bariatric surgery has become the most rapidly growing surgical practice in Australia,[11] and SA is no exception. This increase has been driven, in part, by several studies suggesting that bariatric surgery can produce substantial and sustainable weight loss,[16] although evidence also suggests that the efficiency of bariatric surgery remains unproven.[13]

Worldwide, it has been noted that obesity remains unequally distributed across societies and has been reported to be clustered among socioeconomically disadvantaged communities.[17] Healthcare systems in developed countries are established to provide clinical care on the basis of healthcare need, and not the ability to pay, suggesting that rates of bariatric surgery may be higher in lower socioeconomic groups. However, a recent paper by Korda *et al.*[1] identified large socioeconomic inequalities in access to bariatric surgery, implying inequity in healthcare provision. Their findings from a study in New South Wales identified poor access in populations most in need, providing evidence for the 'inverse care law',[18] whereby the groups with the greatest healthcare need receive the lowest levels of service. This finding is well established internationally, with inequity in access to bariatric procedures identified across several empirical studies. This is particularly the case for low-income individuals and individuals who appear to be most affected by extreme obesity.[19] For example, Flum *et al.*[19] argue that the demographic characteristics of patients who have bariatric surgery in the US (higher income, women, White) are not reflective of individuals with severe obesity in the US (low income, men, Black or Hispanic). Supporting data were reported by Martin *et al.*[20] regarding the under-representation of men, lower incomes, lower educational levels, those of non-White race and the under- or uninsured. Indeed, bariatric procedures are largely available to those who can afford private health insurance and associated out-of-pocket costs.[1] In an American study investigating whether socioeconomic factors are an impediment to access to bariatric surgery, not surprisingly the data suggest that for individuals without adequate health insurance, the most likely factor affecting patient eligibility or desire for surgery is the high cost of the procedure.[20] Similarly, a Canadian study identified low income patients as being less likely to be approved for bariatric surgery, although the authors note that their findings may be better explained by unmeasured or unaccounted factors (e.g. social determinants of low adherence and commitment to preoperative programs).[21]

Disparities in access to bariatric surgery as it relates to health status have also been noted. Data from a Canadian study where the healthcare system is comparable to that in Australia (albeit the former having less privatisation) found that 'lower risk' patients were more likely to receive bariatric procedures.[22] Padwal suggests that this may be related to a preference by surgeons to operate on relatively uncomplicated patients.[23] This may be due, in part, to the climate of increased scrutiny of bariatric surgeons and increasing malpractice claims leading to some surgeons becoming less inclined to solicit and recruit higher-risk patients.[19]

Access to bariatric weight loss procedures in Australia is available through the public healthcare system. However, there are limited surgical resources for public bariatric procedures in Australia, restricting numbers conducted annually.[24] For example, data from Queensland indicate an 8-year waiting list for patients who have been referred for bariatric surgery in the public system.[24] Because of the presence of the private healthcare system in Australia, patients with the necessary resources[25] have the option of bypassing public waiting lists and seeking bariatric procedures more quickly through the private healthcare system.[26] Although patients have to wait an allotted period of time following purchase before using their private cover for elective surgery, the wait times are often shorter than those in the public system. Furthermore, from an equity standpoint, Duckett[26] argues that the greater the proportion of time surgeons spend in the private sector, the less time they have available for public sector work. Indeed,

concerns around equity in access are not restricted to bariatric procedures, because private hospital activity is growing at a rate faster than public hospital activity.[26]

Using data on all bariatric surgical procedures conducted in public and private hospitals in SA, the present analysis sought to: (1) identify trends in bariatric surgery in SA from 2001 to 2013; (2) compare public and private hospitals, and so discuss the implications of these trends as they relate to equity in access to bariatric procedures, and public system healthcare expenditure. Novel in our approach was the discrimination of a surgical procedure to facilitate weight loss from a procedure to revise or reverse that original procedure. Importantly we also discriminated between a patient's first visit to a public or private hospital and any subsequent visit by that patient to that hospital. This allowed us to distinguish patients who used a specific SA public hospital to revise or reverse weight loss procedures conducted elsewhere (interstate, in a different public hospital or in the private system). These findings have implications for the funding of public procedures, availability of resources for public patients and extended waiting periods for public bariatric procedures.

Methods

This paper reports aggregated individual-level retrospective administrative data from the SA central repository of health records (the Integrated South Australian Activity Collection). Data were accessed through (Author PH), a data analyst and clinical epidemiologist in South Australia Health. The SA central repository started in 2001 and houses medical records regarding bariatric procedures occurring in all public and private hospitals across SA. The dataset includes the medical records of three weight loss procedures referred to in this paper as 'bariatric surgery', namely gastric bypass, gastric reduction and laparoscopic gastric reduction. Data are also provided for the revision of gastric bands and surgical reversal of procedures. The coding of administrative data does not permit identification of bariatric repairs (as distinct from revision or reversal). All three procedures are collectively referred hereafter as 'revisions/reversals'.

Variables identified for the present analysis consisted of year of procedure, type of procedure and hospital type (public or private). Coding of the data also allowed for discrimination between procedures that occur in a hospital as a first-time visit (the patient's first procedure conducted in a specific hospital) or as a repeat visit (a patient's second or subsequent procedure in the same hospital). Analyses were conducted using Microsoft Excel 2010 (Microsoft, Bellevue, WA, USA) and consisted of descriptive statistics. Data were analysed to identify trends in procedures over the 13-year period. Data were also analysed to compare the number of procedures conducted in public and private hospitals during the study period. Because the analysis comprised procedures rather than individual case records, individual patients could be represented multiple times if they had more than one procedure or had the same procedure more than once during the study period.

Ethics approval was obtained from the Flinders University Social and Behavioural Research Ethics Committee (project no. 5857) and the Southern Adelaide Clinical Human Research Ethics Committee (project no. 382.12).

Results

Of the 12 951 admissions for bariatric surgery between 2001 and 2013, 81.2% (10 515) were female. The mean age at admission was 43.58 years and 2943 admissions (22.7%) were patients residing in a rural location. Both rural and urban admissions were similarly split between the public and private health systems, approximately 11% being public admissions.

Table 1 provides the number of procedures between 2001 and 2013. Data analysis identified that between 2001 and 2013, 12 951 bariatric procedures were conducted in SA: 22.6% (2927) revisions/reversals and 77.4% (10 024) weight loss procedures. The number of procedures increased over 400% between 2001 and 2013. Over the 13-year period, a 3.8- and 6.4-fold increase in weight loss and revision/reversal procedures, respectively, was identified.

Table 2 provides the number of procedures according to public or private hospital. An increase in the rate of all procedures was identified for both public and private hospitals, although the relative increase in procedures was higher for public hospitals (5.9- vs 4.2-fold increase in private hospitals).

When comparing the number of all procedures in public versus private hospitals, it was identified that over 89.3% of all procedures in the past 13 years ($n = 11\,559$) were conducted in private hospitals. This was consistent until 2009, when the percentage of private procedures declined progressively until 2012 (~10%).

The data were further analysed to compare weight loss and revision/reversal procedure trends across public and private, in comparison with all procedures, which is inclusive of both.

The approximate overall ratio of 9 : 1 for private versus public hospital procedures was consistent when looking at weight loss procedures until 2009. However, the number of

Table 1. Number of weight loss procedures and revisions/reversals conducted in South Australia (2001–13)

'Revisions/reversals' are inclusive of procedure codes indicating either revision of gastric band and surgical reversal procedure for morbid obesity. 'All procedures' is inclusive of the revisions/reversals in addition to procedure codes for gastric bypass, gastric reduction and laparoscopic gastric reduction. All weight loss procedures exclude procedures identified in patient records as revisions/reversals. Data show the number of procedures, with the percentage of total procedures given in parentheses

Year	All procedures	Weight loss procedures	Revisions/ reversals
2001	323	260 (80.5%)	63 (19.5%)
2002	394	330 (83.8%)	64 (16.2%)
2003	480	390 (81.25%)	90 (18.75%)
2004	482	367 (76.1%)	115 (23.9%)
2005	739	586 (79.3%)	153 (20.7%)
2006	882	709 (80.4%)	173 (19.6%)
2007	1153	967 (83.9%)	186 (16.1%)
2008	1451	1226 (84.5%)	225 (15.5%)
2009	1513	1268 (83.8%)	245 (16.2%)
2010	1364	983 (72.1%)	381 (27.9%)
2011	1375	961 (69.9%)	414 (30.1%)
2012	1385	970 (70%)	415 (30%)
2013	1410	1007 (71.4%)	403 (28.6%)

Table 2. Number of bariatric procedures (weight loss and revisions/reversals) conducted in South Australia (2001–13) across public and private hospitals

'Revisions/reversals' are inclusive of procedure codes indicating either revision of gastric band and surgical reversal procedure for morbid obesity. 'All procedures' is inclusive of the revisions/reversals in addition to procedure codes for gastric bypass, gastric reduction and laparoscopic gastric reduction. All weight loss procedures exclude procedures identified in patient records as revisions/reversals

Year	All procedures[A]		Weight loss procedures[B]		Revisions/reversals[C]	
	Public	Private	Public	Private	Public	Private
2001	37 (11.5%)	286 (88.5%)	29 (11.2%)	231 (88.8%)	8 (12.7%)	55 (87.3%)
2002	30 (7.6%)	364 (92.4%)	17 (5.2%)	313 (94.8%)	13 (20.3%)	51 (79.7%)
2003	46 (9.6%)	434 (90.4%)	32 (8.2%)	358 (91.8%)	14 (15.6%)	76 (84.4%)
2004	49 (10.2%)	433 (89.8%)	33 (9%)	334 (90%)	16 (13.9%)	99 (86.1%)
2005	75 (10.1%)	664 (89.9%)	54 (9.2%)	532 (90.8%)	21 (13.7%)	132 (86.3%)
2006	79 (8.9%)	803 (91.1%)	57 (8.1%)	652 (91.9%)	22 (12.7%)	151 (87.3%)
2007	72 (6.2%)	1081 (93.8%)	42 (4.3%)	925 (95.7%)	30 (16.1%)	156 (83.9%)
2008	100 (6.9%)	1351 (93.1%)	72 (5.9%)	1154 (94.1%)	28 (12.4%)	197 (87.6%)
2009	101(6.7%)	1412 (93.3%)	64 (5%)	1204 (95%)	37 (15.1%)	208 (84.9%)
2010	161 (11.8%)	1203 (88.2%)	90 (9.2%)	893 (90.8%)	71 (18.6%)	310 (81.4%)
2011	193 (14%)	1182 (86%)	108 (11.2%)	853 (88.8%)	85 (20.5%)	329 (79.5%)
2012	230 (16.6%)	1155 (83.4%)	157 (16.2%)	813 (83.8%)	73 (17.6%)	342 (82.4%)
2013	219 (15.5%)	1191 (84.5%)	135 (13.4%)	872 (86.6%)	84 (20.8%)	319 (79.2%)

[A]Data show the number of procedures, with the percentage of total procedures given in parentheses.
[B]Data show the number of procedures, with the percentage of total weight loss procedures given in parentheses.
[C]Data show the number of procedures, with the percentage of total revision/reversal procedures given in parentheses.

public procedures rose from 5% in 2009 to 16.2% in 2012. A higher proportion of revisions/reversals occurred in public hospitals than expected based on overall trends (Table 2). When comparing the percentage of revision/reversal procedures conducted in public and private hospitals, the pattern is distinct with over 20% of all revisions/reversals being conducted in public hospitals in 2013 compared with approximately 13% of all weight loss procedures in 2013.

The above results suggest a differential pattern in the rates of procedures in public and private hospitals across SA, the former conducting a higher number of revisions/reversals than would be expected compared with the percentage of weight loss procedures conducted in public hospitals.

In order to investigate the unexpected pattern of revisions/reversals in public hospitals, first-time procedures were isolated to compare the number of weight loss procedures and revisions/reversals occurring for the first time in public or private hospitals (see Table 3). As noted, this allowed us to distinguish patients who used the public system to revise/reverse weight loss procedures conducted outside of the SA public system (interstate, in a different public hospital or in the private system).

When isolating the data so that only procedures conducted on the first visit were included in the analysis, the results identified a 10% increase from 2001 to 2012 in revisions/reversals conducted as first-time procedures in public hospitals (25.9%), with an additional approximate 10% increase from 2012 to 2013 (35.4%). This is distinct from the percentage of weight loss procedures that occurred in public hospitals as first-time procedures, whereby the increase across the time period was approximately 4%.

Table 3. Bariatric procedures conducted on a patient's first visit split according to public or private hospitals (South Australia, 2001–13)

'Revisions/reversals' are inclusive of procedure codes indicating either revision of gastric band and surgical reversal procedure for morbid obesity. All weight loss procedures exclude procedures identified in patient records as revisions/reversals

Year	Revisions/reversals[A]		Weight loss procedures[B]	
	Public	Private	Public	Private
2001	8 (15.4%)	44 (84.6%)	28 (11%)	226 (89%)
2002	13 (24.1%)	41 (75.9%)	15 (4.6%)	312 (95.4%)
2003	8 (14.5%)	47 (85.5%)	31 (8%)	356 (92%)
2004	16 (23.5%)	52 (76.5%)	32 (8.9%)	326 (91.1%)
2005	12 (20.3%)	47 (79.7%)	51 (8.9%)	521 (91.1%)
2006	15 (25%)	45 (75%)	55 (7.9%)	637 (92.1%)
2007	17 (24.3%)	53 (75.7%)	41 (4.3%)	907 (95.7%)
2008	19 (23.5%)	62 (76.5%)	69 (5.8%)	1129 (94.2%)
2009	20 (21.1%)	75 (78.9%)	63 (5.1%)	1174 (94.9%)
2010	53 (35.8%)	95 (64.2%)	88 (9.1%)	875 (90.9%)
2011	56 (34.4%)	107 (65.6%)	101 (11.1%)	813 (88.9%)
2012	42 (25.9%)	120 (74.1%)	138 (16.6%)	693 (83.4%)
2013	62 (35.4%)	113 (64.6%)	118 (13.7%)	746 (86.3%)

[A]Data show the number of procedures, with the percentage of total revision/reversal procedures as first visit procedures given in parentheses.
[B]Data show the number of procedures, with the percentage of total weight loss procedures as first visit procedures given in parentheses.

Discussion

The results demonstrate that the number of surgeries conducted in SA from 2001 to 2013 increased 5.9- and 4.2-fold in public and private hospitals, respectively. Of central importance to our objectives are that: (1) bariatric surgeries occur predominantly in private hospitals; (2) of all procedures conducted in SA, 22.6% are revisions/reversals; (3) the number of revisions/reversals conducted in SA has increased at a rate higher than weight loss procedures (6.4- vs 3.8-fold increase); and (4) an increasing proportion of public surgeries consists of revisions/reversals that occur as a patient's first visit in the public system.

Overwhelmingly, both weight loss and revision/reversal procedures occur predominantly in private hospitals, a trend that is consistent from 2001 to 2009, followed by a slight decrease in the number of private hospital procedures. The increase in the number of public procedures following 2009 may be due, in part, to the development of new bariatric facilities at Flinders Medical Centre in 2009–10.[27] The SA results mirror national data, which report a 34-fold increase in bariatric procedures from 1998–99 to 2007–08, 90% of which were conducted privately.[28] This raises issues around equity in access for Australians who cannot afford private health insurance or out-of-pocket expenses for the procedure and associated costs.

The findings also suggest that over 20% of bariatric procedures in SA are revisions/reversals, which raises issues with regards to the cost-effectiveness of this form of treatment for obesity. This is consistent with recent data suggesting that within Australia almost 20% of gastric band patients will require revisional surgery within 3 years.[29] Failing gastric banding leads to requirements for further surgical procedures[30] that are costly to the public healthcare system and introduce additional risks to patients. The findings suggest the need for further research to investigate why revisions/reversals are becoming more prevalent. This may require further investigations into the effectiveness of different types of bariatric weight loss procedures and related ongoing medical care provided in SA.

The data also suggest that a significant proportion of the revisions/reversals occurring in public hospitals are for the correction of procedures conducted privately, interstate or in a different public hospital. As noted above, there are limited surgical resources for public bariatric procedures in Australia, restricting the number of procedures conducted annually.[24] Due to the limited budget for public bariatric procedures, these findings have implications for equity in accessing weight loss surgery and bariatric resource allocation in public hospitals, echoing the findings from New South Wales.[1] Given the epidemiological evidence of higher obesity rates in lower socioeconomic groups,[17] if access to bariatric surgery is being limited in public hospitals because of an increasing number of revisions/reversals from surgery originally undertaken in private hospitals or interstate, the socioeconomic inequality in obesity is only likely to increase. There are several potential explanations for these findings requiring further discussion.

The findings may suggest that the availability of bariatric procedures, as determined by private health insurance provider policies, may be encouraging Australians to purchase private health insurance to accelerate their access to bariatric procedures and then cancelling this coverage following surgery. Although there is a 'waiting period' for hospital coverage following the purchase of private health insurance, this period is much shorter than waiting to have surgery in the public system ($\geq$12 months vs $\geq$2 years). As a result, any follow-up care, including revisions/reversals, would occur in the public system. Although complication rates with bariatric surgery when patients are in hospital are high (~20%), a study in the US reported significantly higher complication rates over the 6 months following surgery, resulting in costly readmissions and emergency room visits.[31] Furthermore, Encinosa *et al.*[31] reported that the rate of readmission of bariatric patients increases 64.5% between 30 and 180 days after surgery. It is plausible that after cancellation of health insurance, private patients require access to public services for treatment and revision/reversal. However, this hypothesis is not supported empirically, indicating the need for research of this nature to identify whether and how private health insurance policies shape consumer use of insurance schemes.

The findings may also suggest poor or limited postoperative management following weight loss procedures. For all surgical procedures, life-long assessment and nutritional support (or life-long band revisions for gastric banding) are required.[32] Long-term monitoring and aftercare, which are recommended in all guidelines, are needed to achieve optimum results and allow early detection of complications.[33] In order to maximise successful outcomes, bariatric patients need to be monitored and managed by a multidisciplinary healthcare team, knowledgeable in bariatric surgical care.[14] It is unclear from the data in the present study whether access or utilisation of services following private hospital procedures, interstate or procedures in different public hospitals result in higher revisions/reversals in public care. The findings suggest a need for clinical audits of out-patient care following weight loss procedures.

The obesity epidemic will continue to disproportionately affect socioeconomically deprived individuals, resulting in avoidable morbidity, mortality and long-term costs to the healthcare system.[20] Our data identify the need for policies aimed at increasing and equalising access to bariatric surgery. Furthermore, our data point to the negative consequences of increasing revision/reversal procedures in public hospitals. Consequences include avoidable costs to the healthcare system and longer wait times for weight loss procedures. Empirically, it has been demonstrated that waiting leads to physical and psychosocial consequences that make it more difficult for patients to stay motivated and engaged in maintaining their current health as they prepare for surgery.[34]

The nature of administrative data with regard to completeness of information and accurate coding of procedures pose limitations in the analysis of our data. When a procedure is conducted in hospital, it is given a particular procedure code for system identification. As such, there is potential for miscoding to occur and, more importantly, the identification of specific procedures is limited to how they are classified. With regard to our work, bariatric repair is not coded as being distinct from revision or reversal. These procedures have different implications for health system expenditure and therefore our picture of the frequency of what we have referred to as 'revisions/reversals' and subsequent implications for spending are hindered by the nature of the data.

The completeness of coding also limits our ability to identify the weight loss procedures most likely to need revision, reversal or repair, and therefore we are unable to comment on financing or effectiveness of such procedures. Furthermore, due to issues of ethics, we cannot reveal the individual surgeons or hospitals where failed procedures occur as a means to determine whether they can be attributed system failures (e.g. a non-bariatric specialist conducting procedures). We have not reported on the specific locations of weight loss procedures (interstate, public or private hospitals) that were subsequently revised/reversed as a first-time visit in a public hospital.

Notwithstanding, the above limitations do not hinder the central message in this paper. That is, all revision/reversal and repair procedures are included in the budgeted quota of bariatric

procedures, which, as we have discussed, has implications for public funding of weight loss procedures. Furthermore, the increased rates of revisions/reversals and repairs suggest that prospective empirical data need to be collected to determine the procedures, and the locations of those procedures, most likely to lead to revision, reversal or repair. To address the above limitations, we suggest that collection of administrative data needs to be centralised, coding procedures need to be updated to allow for more meaningful analysis and coding needs to be monitored for consistency across sites.

Conclusion

Korda *et al.*[1], in their discussion of inequalities in access to bariatric surgery, argue that Medicare should tighten the funding arrangements for access to public bariatric surgery for patients who can afford to go to private hospitals. Our data suggest that the rates of public revisions/reversals as first-time visits in public hospitals, possibly due to the cancellation of private health insurance after surgery or poorly monitored procedures generally, may lead to additional strain on an already overburdened public system. Our data provide a foundation for further investigation into the current trends in bariatric procedures in SA and point to the need for prospective studies to investigate: (1) the pathways patients navigate to access bariatric surgery (e.g. through purchase of private health insurance); (2) the utilisation of public services following private and interstate procedures; and (3) why we are seeing such high revision/reversal rates of bariatric procedures.

Competing interests

None declared.

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