**Supplemental Table 1** ICPC-2 and ICD-9-CM diagnosis/procedure codes list

| Diseases | ICPC-2 Code | ICD-9-CM Code |
|---|---|---|
| Diabetes mellitus | T89, T90, W85 | 250.x |
| Type 1 diabetes mellitus | T89 | 250.01, 250.03, 250.11, 250.13, 250.21, 250.23, 250.31, 250.33, 250.41, 250.43, 250.51, 250.53, 250.61, 250.63, 250.71, 250.73, 250.81, 250.83, 250.91, 250.93 |
| Type 2 diabetes mellitus | T90 | 250.00, 250.02, 250.10, 250.12, 250.20, 250.22, 250.30, 250.32, 250.40, 250.42, 250.50, 250.52, 250.60, 250.62, 250.70, 250.72, 250.80, 250.82, 250.90, 250.92 |
| Hypertension | K86, K87 | 401.x |
| Mental health problems | P74-P77 | 296-311 |
| hyperlipidaemia | T93 | 272.0-272.4 |
| Obstructive sleep apnoea | P06 | 327.20, 327.23, 780.51, 780.53, 780.57, 786.09 |
| Gallbladder disease | U13 | 574-575.9 |
| Musculoskeletal and chronic orthopaedic disorders | L72-L81, L88-L90, L95-L96 | 710-739.99 |
| Acute myocardial infarction | K75 | 410.x |
| Other ischemic heart disease | K74, K76 | 411-414.9 |
| Congestive heart failure | K77 | 428.0-428.9 |
| Stroke | K89, K90, K91 | 430-438.9 |
| Peripheral vascular disease | K92 | 440.2*, 997.2, 997.6* |
| Severe hypoglycaemia | | 251-251.2, 270.3, 962.3 |
| Chronic lung disease | R79, R95 | 490-496 |
| Chronic renal disease | | 585-586 |

| Procedures | ICD-9-CM Procedure Code |
|---|---|
| Laparoscopic sleeve gastrectomy | 43.89 |
| Laparoscopic gastric bypass | 44.39 |
| Laparoscopic gastric banding | 44.99 |
| Laparoscopic sleeve gastrectomy with duodenojejunal bypass | 43.89 and 45.91 on a same date |
| Laparoscopic plication of greater curve of stomach | 44.69 |
| Duodeno-jejunostomy | 45.91 |

**Supplemental Table 2** Unit cost of healthcare services and bariatric surgery

| Items | Cost (HK$) | Cost (EUR€)[§] |
|---|---|---|
| **Healthcare services**[†] | | |
| Clinic visit | | |
| General outpatient clinic | 445 per visit | 52 per visit |
| Specialist outpatient clinic | 1,190 per visit | 140 per visit |
| Accident and emergency | 1,230 per visit | 145 per visit |
| Allied health professionals | | |
| Clinical Psychologist | 550 per visit | 65 per visit |
| Dietitian | 550 per visit | 65 per visit |
| Occupational Therapist | 550 per visit | 65 per visit |
| Physiotherapist | 550 per visit | 65 per visit |
| Smoking counselling and cessation centre | 550 per visit | 65 per visit |
| Hospitalisation | | |
| General ward | 5,100 per day | 600 per day |
| Intensive care unit | 24,400 per day | 2,871 per day |
| Cardiac care unit | 24,400 per day | 2,871 per day |
| High dependency unit | 13,650 per day | 1,606 per day |
| **Bariatric surgery and revision surgery**[‡] | | |
| Laparoscopic sleeve gastrectomy | 114,585 | 13,481 |
| Laparoscopic adjustable gastric banding | 105,410 | 12,401 |
| Laparoscopic gastric bypass | 119,585 | 14,069 |
| Laparoscopic sleeve gastrectomy with duodenojejunal bypass | 162,910 | 19,166 |
| Laparoscopic plication of greater curve of stomach | 67,010 | 7,884 |
| Duodeno-jejunostromy | 67,735 | 7,969 |

Note:
[†] Data source: 2017 Hong Kong SAR Government Gazette and Hospital Authority Ordinance (chapter 113): Public charges – non-eligible persons.
[‡] Data source: 2017 Hong Kong SAR Government Gazette and Hospital Authority Ordinance (chapter 113): Private charges (mid-point value); and personal communication with bariatric surgeons
[§] At a fixed exchange rate of €1 = HK$8.50

| | Cost components (HK$) | | | Total cost (HK$) | Total cost (EUR€)[¶] |
|---|---|---|---|---|---|
| | OGD[†‡] | Surgery[‡] | Consumables[§] | | |
| **Bariatric surgery** | | | | | |
| Laparoscopic sleeve gastrectomy | 9,410 | 80,175 | 25,000 | 114,585 | 13,481 |
| Laparoscopic gastric banding | 9,410 | 66,000 | 30,000 | 105,410 | 12,401 |
| Laparoscopic gastric bypass | 9,410 | 80,175 | 30,000 | 119,585 | 14,069 |
| Laparoscopic sleeve gastrectomy with duodenojejunal bypass | 9,410 | 123,500 | 30,000 | 162,910 | 19,166 |
| **Revision surgery** | | | | | |
| Laparoscopic plication of greater curve of stomach | 9,410 | 49,600 | 8,000 | 67,010 | 7,884 |
| Duodeno-jejunostromy | 9,410 | 43,325 | 15,000 | 67,735 | 7,969 |

Note:
[†] Oesophago-gastro-duodenoscopy
[‡] Data source: 2017 Hong Kong SAR Government Gazette and Hospital Authority Ordinance (chapter 113): Private charges (mid-point value). The charge covers surgeon fee, administration of anaesthetics, medicines used in operation, and operating theatre expenses
[§] Personal communication with bariatric surgeons
[¶] At a fixed exchange rate of EUR€1 = HK$8.50.

**Supplemental Table 3** Number and percentage of surgical patients who had reoperations over time

| Cohort entry year | 2006-2009 | | | 2010-2012 | | | 2013-2015 | | | 2016-2017 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Years after the initial surgery | Restrictive surgery† (n=12) | Bypass surgery‡ (n=4) | Overall (n=16) | Restrictive surgery† (n=77) | Bypass surgery‡ (n=15) | Overall (n=92) | Restrictive surgery† (n=94) | Bypass surgery‡ (n=26) | Overall (n=120) | Restrictive surgery† (n=127) | Bypass surgery‡ (n=46) | Overall (n=173) |
| 1 | 10 (83.8%) | 0 (0.0%) | 10 (62.5%) | 1 (1.3%) | 0 (0.0%) | 1 (1.1%) | 1 (1.1%) | 1 (3.8%) | 2 (1.7%) | 1 (0.8%) | 5 (10.9%) | 6 (3.5%) |
| 2 | 4 (33.3%) | 0 (0.0%) | 4 (25.0%) | 3 (3.9%) | 0 (0.0%) | 3 (3.3%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 4 (3.1%) | 0 (0.0%) | 4 (2.3%) |
| 3 | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 3 (3.9%) | 0 (0.0%) | 3 (3.3%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| 4 | 1 (8.3%) | 0 (0.0%) | 1 (6.3%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (3.8%) | 1 (0.8%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| 5 | 1 (8.3%) | 0 (0.0%) | 1 (6.3%) | 1 (1.3%) | 0 (0.0%) | 1 (1.1%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |

**Notes:**

† Restrictive surgery includes laparoscopic sleeve gastrectomy and laparoscopic gastric banding;

‡ Bypass surgery include laparoscopic gastric bypass and laparoscopic sleeve gastrectomy with duodenojejunal bypass.

**Supplemental Table 4** Use and costs of outpatient services, inpatient services and drugs for diabetes over 5 years.

**(A) Use of healthcare services and drugs for diabetes**

| | Bariatric surgery group | | | | | Matched control group | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Items** | Year 1 (N=401) | Year 2 (N=300) | Year 3 (N=199) | Year 4 (N=141) | Year 5 (N=106) | Year 1 (N=1,894) | Year 2 (N=1,671) | Year 3 (N=1,214) | Year 4 (N=847) | Year 5 (N=598) |
| **Mean frequency of outpatient visits** | | | | | | | | | | |
| General outpatient visits | 0.66 | 0.50 | 0.49 | 0.51 | 0.55 | 1.94 | 1.69 | 1.61 | 1.63 | 1.61 |
| Specialist outpatient visits | 0.02 | 0.02 | 0.07 | 0.02 | 0.08 | 0.04 | 0.04 | 0.03 | 0.05 | 0.01 |
| **Mean length of stays** | | | | | | | | | | |
| General wards | 7.99 | 1.07 | 0.40 | 0.40 | 0.47 | 2.06 | 2.18 | 1.96 | 3.38 | 2.22 |
| Intensive care units | 0.56 | 0.02 | 0.00 | 0.00 | 0.00 | 0.09 | 0.05 | 0.06 | 0.03 | 0.03 |
| Cardiac care units | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.02 |
| High dependency units | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Mean Diabetes drug dispensing days** | | | | | | | | | | |
| Insulin | 104 | 50 | 62 | 64 | 72 | 89 | 75 | 75 | 83 | 81 |
| Metformin | 184 | 142 | 147 | 173 | 180 | 240 | 219 | 202 | 209 | 217 |
| Sulphonylurea | 58 | 29 | 42 | 52 | 75 | 151 | 139 | 129 | 131 | 136 |
| TZD | 22 | 15 | 17 | 20 | 29 | 12 | 12 | 9 | 9 | 10 |
| DPP-4i | 34 | 29 | 32 | 38 | 49 | 30 | 29 | 25 | 26 | 26 |
| SGLT2i | 8 | 4 | 5 | 2 | 6 | 5 | 6 | 5 | 6 | 4 |
| GLP-1 | 1 | 0 | 0 | 4 | 21 | 2 | 2 | 2 | 3 | 3 |

**(B) Costs of healthcare services and drugs for diabetes**

| | Bariatric surgery group | | | | | Matched control group | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Items** | Year 1 (N=401) | Year 2 (N=300) | Year 3 (N=199) | Year 4 (N=141) | Year 5 (N=106) | Year 1 (N=1,894) | Year 2 (N=1,671) | Year 3 (N=1,214) | Year 4 (N=847) | Year 5 (N=598) |
| **Mean costs of outpatient visits, €** | | | | | | | | | | |
| General outpatient visits | 34 | 26 | 25 | 27 | 28 | 101 | 88 | 84 | 85 | 84 |
| Specialist outpatient visits | 3 | 3 | 9 | 3 | 12 | 6 | 5 | 4 | 7 | 2 |
| **Subtotal (a)** | 37 | 29 | 34 | 30 | 40 | 107 | 93 | 88 | 92 | 86 |
| **Mean costs of hospitalization, €** | | | | | | | | | | |
| General wards | 4,796 | 644 | 238 | 238 | 283 | 1,236 | 1,308 | 1,177 | 2,031 | 1,304 |
| Intensive care units | 1,604 | 67 | 0 | 0 | 0 | 246 | 131 | 161 | 75 | 77 |
| Cardiac care units | 0 | 0 | 43 | 0 | 0 | 5 | 15 | 21 | 0 | 48 |
| High dependency units | 312 | 0 | 0 | 0 | 0 | 3 | 4 | 3 | 2 | 3 |
| **Subtotal (b)** | 6,712 | 711 | 281 | 238 | 283 | 1,489 | 1,458 | 1,362 | 2,107 | 1,432 |
| **Mean costs of diabetes drugs, €** | | | | | | | | | | |
| Insulin | 1,259 | 610 | 766 | 772 | 872 | 1,084 | 913 | 907 | 1,009 | 988 |
| Metformin | 39 | 30 | 31 | 37 | 38 | 51 | 47 | 43 | 45 | 46 |
| Sulphonylurea | 21 | 11 | 15 | 19 | 28 | 55 | 51 | 47 | 48 | 50 |
| TZD | 10 | 7 | 8 | 9 | 13 | 5 | 5 | 4 | 4 | 4 |
| DPP-4i | 296 | 249 | 281 | 330 | 431 | 258 | 255 | 221 | 226 | 226 |
| SGLT2i | 104 | 59 | 71 | 25 | 74 | 71 | 85 | 60 | 76 | 59 |
| GLP-1 receptor agonists | 22 | 9 | 0 | 64 | 380 | 27 | 38 | 41 | 60 | 51 |
| **Subtotal (c)** | 1,752 | 973 | 1,172 | 1,256 | 1,836 | 1,553 | 1,395 | 1,323 | 1,467 | 1,426 |
| **Total (a)+(b)+(c), €** | 8,499 | 1,713 | 1,488 | 1,524 | 2,159 | 3,149 | 2,939 | 2,750 | 3,621 | 2,943 |

Notes: TZD = thiazolidinedione; DPP-4i = dipeptidyl peptidase 4 inhibitors; SGLT2i = sodium glucose co-transporter 2 inhibitors; GLP-1 = glucagon-like peptide-1.
P-values of total outpatient costs for diabetes between the two groups in year 1 to 5 were <0.001*, <0.001*, <0.001*, <0.001*, and <0.001*, respectively.
P-values of total inpatient costs for diabetes between the two groups in year 1 to 5 were <0.001*, 0.256, 0.046*, 0.104, and 0.134, respectively.
P-values of total diabetes medication costs between the two groups in year 1 to 5 were 0.225, 0.012*, 0.457, 0.440, and 0.2185, respectively.
P-values of total costs for diabetes between the two groups in year 1 to 5 were <0.001*, 0.079, 0.038*, 0.091, and 0.369, respectively.

**Supplemental Table 5** Impact of patient covariates on annual direct medical costs (generalised linear model with log link of gamma distribution)

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient, € | Multiplier | P-value | Coefficient, € | Multiplier | P-value | Coefficient, € | Multiplier | P-value | Coefficient, € | Multiplier | P-value | Coefficient, € | Multiplier | P-value |
| Constant | 8.44 | NA | <0.001* | 8.41 | NA | <0.001* | 8.40 | NA | <0.001* | 8.46 | NA | <0.001* | 8.85 | NA | <0.001* |
| Bariatric surgery (vs no surgery) | 1.93 | 6.90 | <0.001* | -0.16 | 0.86 | 0.173 | -0.09 | 0.91 | 0.611 | -0.36 | 0.70 | 0.042* | -0.17 | 0.85 | 0.320 |
| Male (vs female) | -0.13 | 0.88 | 0.202 | 0.03 | 1.03 | 0.807 | -0.11 | 0.89 | 0.411 | -0.03 | 0.97 | 0.824 | 0.03 | 1.03 | 0.835 |
| Age≥60 years old (vs age<60 years old) | 0.07 | 1.07 | 0.585 | 0.15 | 1.16 | 0.227 | 0.26 | 1.29 | 0.054 | 0.57 | 1.77 | <0.001* | 0.01 | 1.01 | 0.952 |
| BMI ≥ 35 kg/m² (vs BMI < 35 kg/m²) | 0.12 | 1.13 | 0.227 | 0.29 | 1.33 | 0.007* | 0.11 | 1.12 | 0.387 | 0.39 | 1.48 | 0.009* | 0.30 | 1.35 | 0.063 |
| T2DM duration (vs duration ≤ 5 years) | 0.41 | 1.50 | <0.001* | 0.40 | 1.49 | 0.001* | -0.11 | 0.90 | 0.392 | -0.03 | 0.97 | 0.832 | -0.56 | 0.57 | 0.002* |
| Presence of hypertension | -0.44 | 0.64 | 0.001* | -0.69 | 0.50 | <0.001* | -0.35 | 0.71 | 0.025* | -0.55 | 0.58 | 0.003* | -0.66 | 0.52 | 0.001* |
| Presence of mental health problems | 0.32 | 1.38 | 0.143 | 0.71 | 2.04 | 0.001* | 0.47 | 1.60 | 0.025* | -0.20 | 0.82 | 0.447 | 0.41 | 1.50 | 0.221 |
| Presence of hyperlipidaemia | -0.18 | 0.84 | 0.072 | -0.13 | 0.88 | 0.233 | -0.17 | 0.84 | 0.184 | -0.12 | 0.88 | 0.422 | -0.17 | 0.84 | 0.270 |
| Presence of obstructive sleep apnoea | -0.01 | 0.99 | 0.927 | -0.14 | 0.87 | 0.185 | -0.14 | 0.87 | 0.305 | -0.22 | 0.81 | 0.153 | -0.23 | 0.79 | 0.113 |
| Presence of gallbladder disease | 0.38 | 1.47 | 0.028* | 0.20 | 1.22 | 0.261 | 0.44 | 1.55 | 0.073 | 0.23 | 1.25 | 0.350 | -0.02 | 0.98 | 0.943 |
| Presence of musculoskeletal and chronic orthopaedic disorders | 0.34 | 1.40 | 0.003* | 0.28 | 1.33 | 0.034* | 0.32 | 1.37 | 0.033* | 0.28 | 1.32 | 0.116 | 0.29 | 1.34 | 0.240 |
| Presence of cardiovascular disease | 0.78 | 2.17 | <0.001* | 0.71 | 2.04 | <0.001* | 0.76 | 2.14 | <0.001* | 0.90 | 2.46 | <0.001* | 0.85 | 2.35 | <0.001* |
| Presence of chronic renal disease | 0.80 | 2.23 | <0.001* | 1.05 | 2.87 | <0.001* | 2.15 | 8.61 | 0.003* | 1.40 | 4.06 | 0.004* | 0.60 | 1.82 | 0.181 |

Note: Base cost of Year 1 is €4,624 (95% CI: €3,480 - €6,144); base cost of Year 2 is €4,483 (95% CI: €3,309 - €6,073); base cost of Year 3 is €4,438 (95% CI: €3,170- €6,213); base cost of Year 4 is €4,709 (95% CI: €3,152 - €7,035); base cost of Year 5 is €6,990 (95% CI: €4,335 - €11,272).
BMI = Body Mass Index
CI=Confidence interval
T2DM = Type 2 Diabetes Mellitus

**Supplemental Table 6** Direct medical costs incurred by surgical and non-surgical patients in the year before the index year

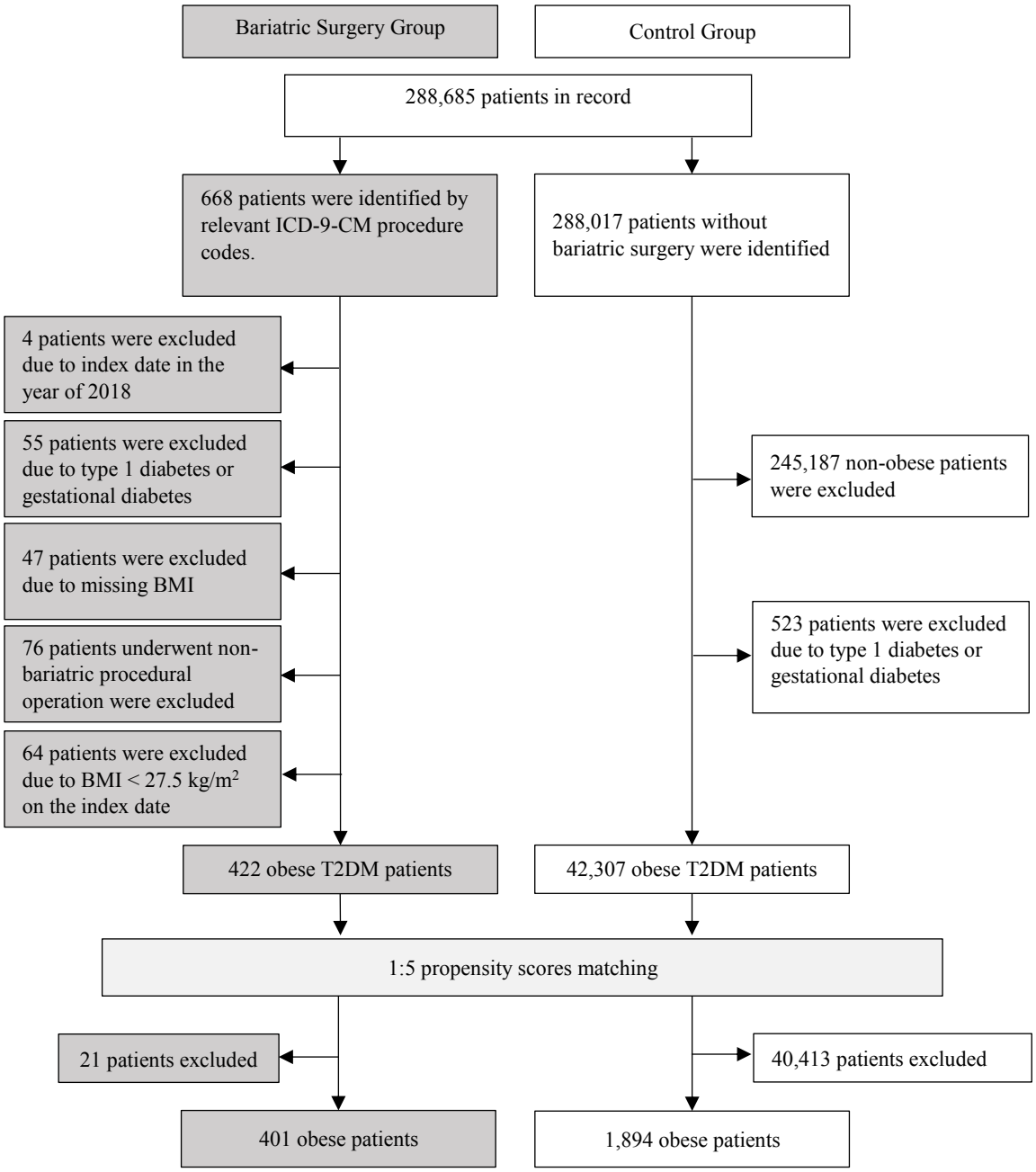
| Costs (€) | Bariatric surgery group (N=401) | | | Matched control group (N=1,894) | | |
|---|---|---|---|---|---|---|
| | Mean | 95% Confidence Interval | | Mean | 95% Confidence Interval | |
| **Healthcare utilisation** | | | | | | |
| General outpatient clinic | 101.93 | 82.85 | 121.00 | 152.57 | 146.28 | 158.86 |
| Specialist outpatient clinic | 1,054.02 | 989.69 | 1,118.34 | 461.84 | 443.45 | 480.22 |
| Accident and emergency | 112.82 | 88.96 | 136.67 | 107.18 | 98.27 | 116.09 |
| Allied health professionals | 162.74 | 103.51 | 221.98 | 91.87 | 70.82 | 112.92 |
| Hospitalisation | | | | | | |
| General ward | 2,199.50 | 1,571.72 | 2,827.28 | 2,846.67 | 2,241.37 | 3,451.98 |
| Intensive care unit | 315.02 | -262.81 | 892.85 | 156.13 | 76.04 | 236.22 |
| Cardiac care unit | 7.16 | -6.92 | 21.23 | 95.50 | -15.80 | 206.80 |
| High dependency unit | 0.00 | 0.00 | 0.00 | 6.78 | 1.03 | 12.54 |
| **Glucose-lowering medication** | | | | | | |
| Insulin | 1,751.74 | 1,469.60 | 2,033.87 | 962.84 | 860.43 | 1,065.25 |
| Metformin | 61.89 | 58.58 | 65.20 | 51.11 | 49.42 | 52.79 |
| Sulphonylurea | 58.85 | 52.24 | 65.45 | 55.26 | 52.26 | 58.27 |
| TZD | 19.42 | 14.42 | 24.42 | 4.19 | 3.06 | 5.32 |
| DPP-4i | 591.06 | 473.77 | 708.35 | 212.85 | 178.51 | 247.19 |
| SGLT2i | 236.66 | 148.18 | 325.14 | 10.99 | 3.59 | 18.38 |
| GLP-1 receptor agonists | 159.05 | 67.71 | 250.40 | 12.43 | 1.30 | 23.56 |
| **Total** | 6,831.85 | 5,645.05 | 8,018.66 | 5,228.21 | 4,549.27 | 5,907.15 |

Notes: TZD = thiazolidinedione; DPP-4i = dipeptidyl peptidase 4 inhibitors; SGLT2i = sodium glucose co-transporter 2 inhibitors; GLP-1 = glucagon-like peptide-1. The difference in total costs between the two groups was significantly different (p=0.046).

**Supplemental Table 7** Causes of death for surgical and control patients over five years

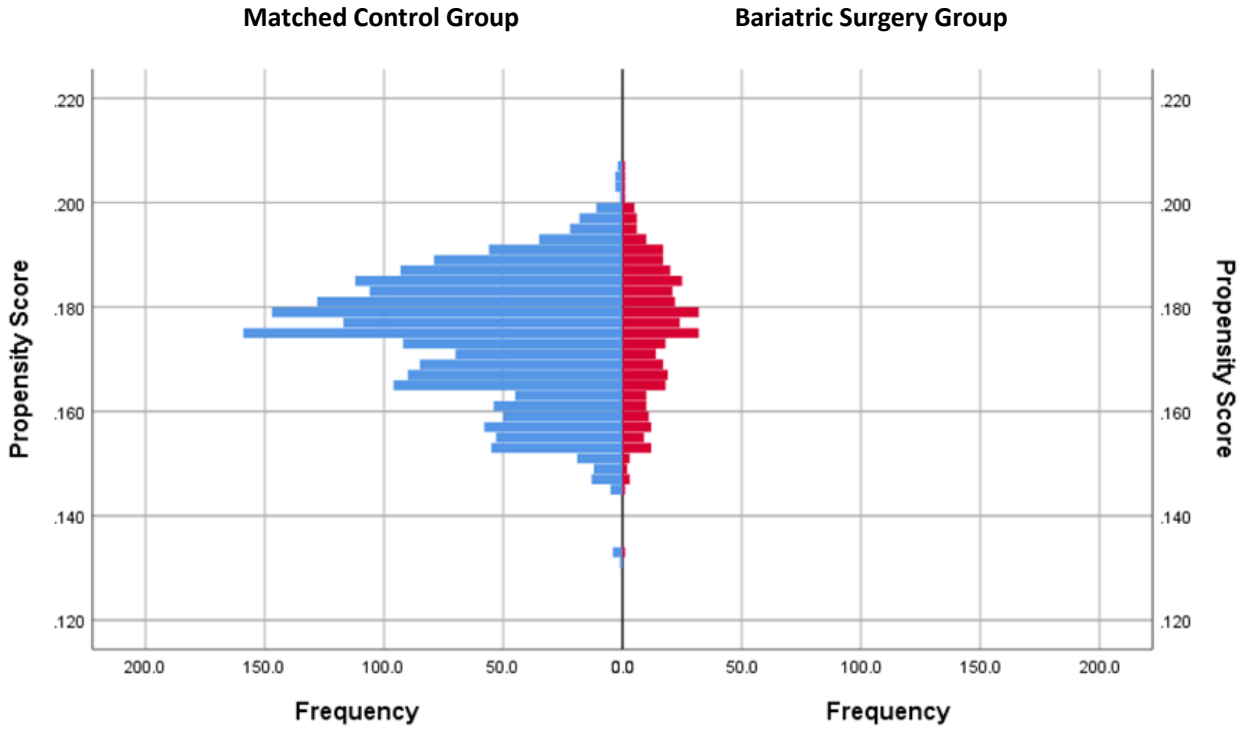
| Cause of death, N | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| **Surgery cases** | | | | | |
| Septicaemia | 2 | 0 | 0 | 0 | 0 |
| Cancer | 17 | 5 | 1 | 0 | 0 |
| Heart disease | 4 | 0 | 2 | 0 | 0 |
| Respiratory diseases | 1 | 0 | 0 | 0 | 1 |
| Digestive diseases | 4 | 0 | 0 | 0 | 0 |
| Unspecified | 2 | 1 | 1 | 0 | 0 |
| **Total** | 30 | 6 | 4 | 0 | 1 |
| | | | | | |
| **Control cases** | | | | | |
| Septicaemia | 6 | 2 | 1 | 1 | 0 |
| Cancer | 8 | 13 | 9 | 4 | 3 |
| Heart disease | 6 | 10 | 11 | 2 | 7 |
| Respiratory diseases | 5 | 9 | 9 | 7 | 3 |
| Digestive diseases | 0 | 1 | 0 | 0 | 1 |
| musculoskeletal system and connective tissue | 1 | 0 | 0 | 1 | 0 |
| Renal failure | 2 | 1 | 0 | 2 | 3 |
| Other diseases | 4 | 1 | 3 | 3 | 0 |
| Unspecified | 7 | 2 | 5 | 2 | 5 |
| **Total** | 39 | 39 | 38 | 22 | 22 |

**Supplemental Figure 1** Flowchart for identification of patients undergoing bariatric surgery and matched patients

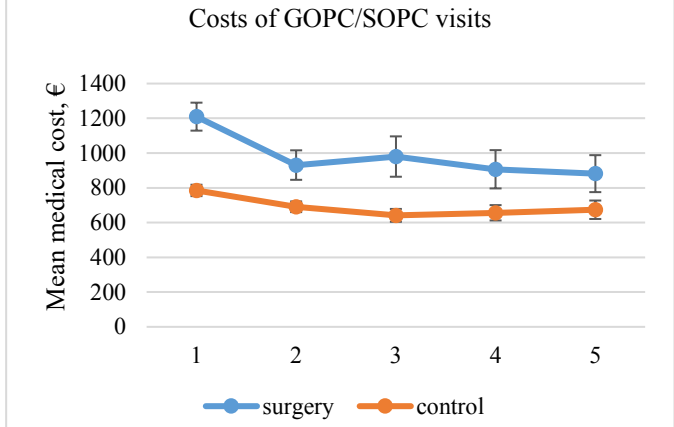



| Cohort entry year | Bariatric Surgery Group | Matched Control Group |
|---|---|---|
| 2006-2009 | 16 | 70 |
| 2010-2012 | 92 | 421 |
| 2013-2015 | 120 | 570 |
| 2016-2017 | 173 | 833 |

**Supplemental figure 2** Pyramid of propensity score distribution among bariatric surgery and matched control group

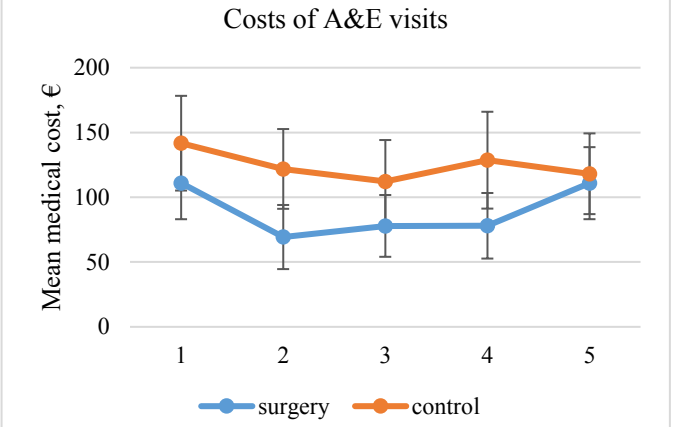


**Supplemental Figure 3** Mean cost of healthcare services for patients in bariatric surgery and control groups in the index year and subsequent four years



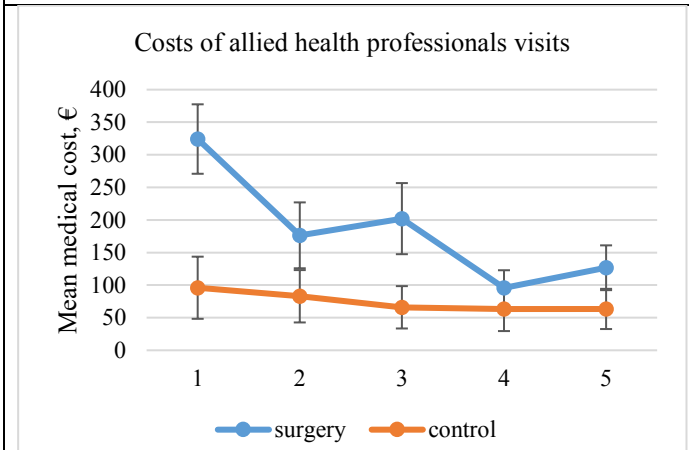

| Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| P value | <0.001* | <0.001* | <0.001* | <0.001* | 0.003* |

a



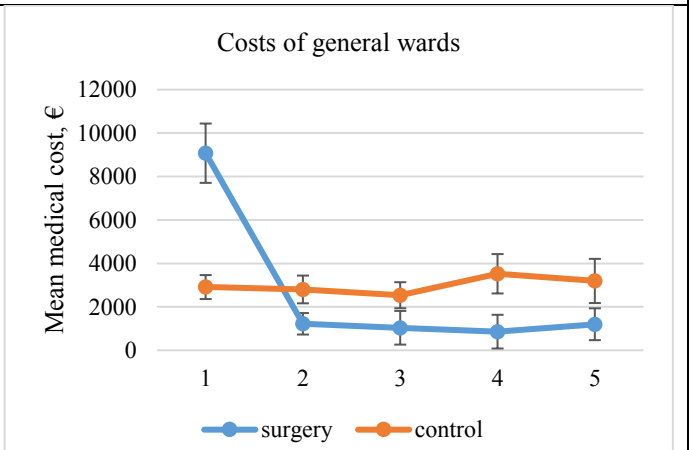

| Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| P value | 0.088 | <0.001* | 0.085 | 0.116 | 0.783 |

b



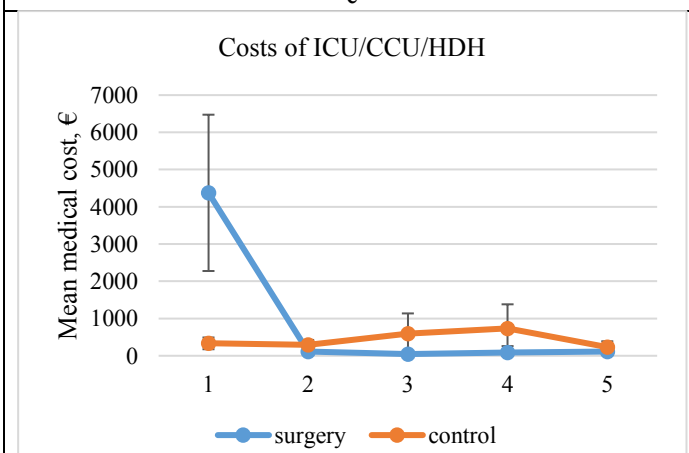

| Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| P value | <0.001* | 0.001* | <0.001* | 0.225 | 0.022* |

c



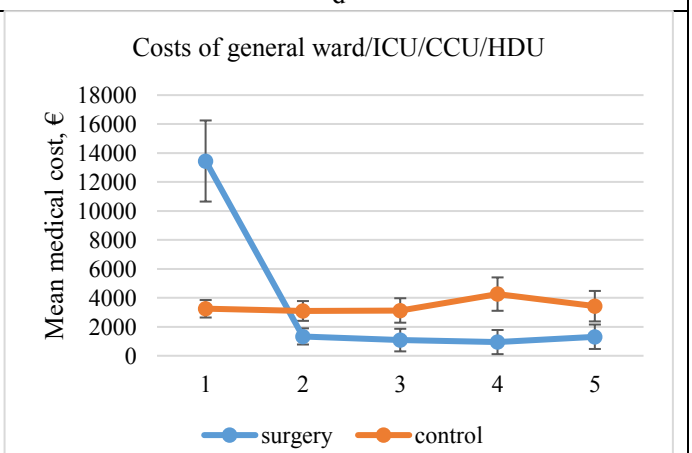

| Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| P value | <0.001* | 0.040* | 0.060 | 0.022* | 0.088 |

d




| Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| P value | <0.001* | 0.271 | 0.436 | 0.435 | 0.538 |

e

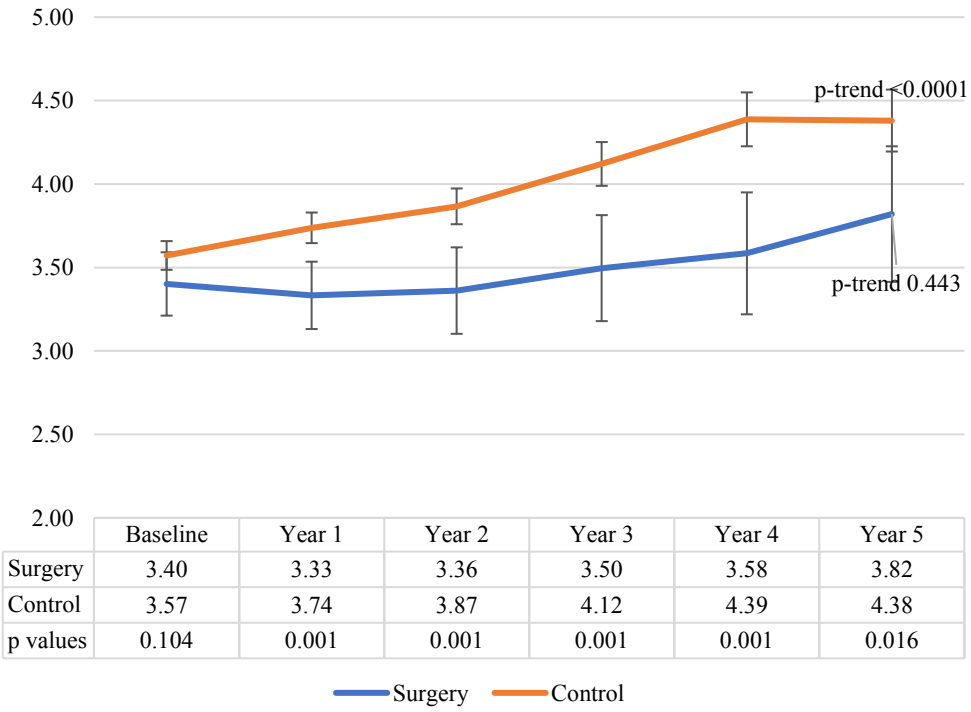



| Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| P value | <0.001* | 0.034* | 0.068 | 0.026* | 0.085 |

f

Notes: GOPC = general outpatient clinic; SOPC = specialist outpatient clinic; A&E = accident & emergency department; ICU = intensive care unit; CCU = cardiac care unit; HDU = high dependency unit

**Supplemental Figure 4** Changes of mean Charlson Comorbidity Index (CCI) of surgical and control patients over five years




| | Baseline | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|
| Surgery | 3.40 | 3.33 | 3.36 | 3.50 | 3.58 | 3.82 |
| Control | 3.57 | 3.74 | 3.87 | 4.12 | 4.39 | 4.38 |
| p values | 0.104 | 0.001 | 0.001 | 0.001 | 0.001 | 0.016 |