

COST-EFFECTIVENESS OF BARIATRIC SURGERY IN TURKEY: FROM A LONG-TERM PERSPECTIVE

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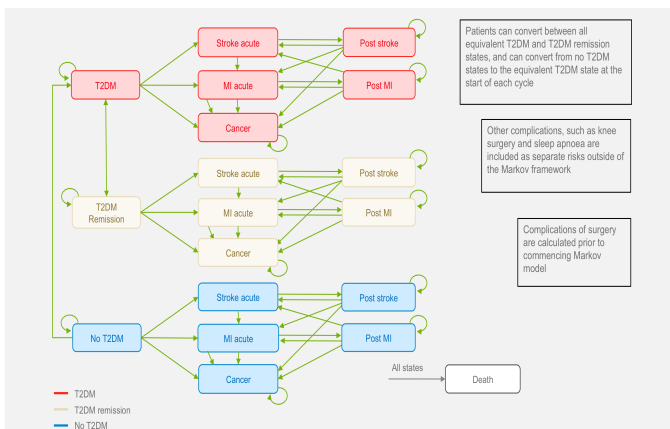
OBJECTIVES

According to the most recent data, obesity rate has increased to 19,9% in 2014 from 15,2% in 2008 in Turkey. Bariatric surgery is among the most recent treatment alternatives increasingly used for morbid obese patients. Reimbursement agencies face the challenge to fight with the cost of obesity and its co-morbidities and also with the cost of bariatric surgery. The main objective of this study is to assess the cost effectiveness of bariatric surgery from a 20 years perspective in Turkey.

METHODS

A Markov model was developed to show the long-term clinical and economic benefits of bariatric surgery. Cost effectiveness of gastric bypass (GBP) and sleeve gastrectomy (SG) were compared with standard of care (SoC) (diet exercise etc.) for BMI≥40 patients. The model not only covers the impact of surgery on BMI but also on Type 2 diabetes, cardiovascular diseases, cancer (only in women) sleep apnea, knee pain and complications due to surgery. Analyses were made from the Turkish Social Security Institution's (SSI) perspective and for both package and fee for service prices. Markov transition probabilities were obtained from published research, Turkish cost data were obtained from literature and expert views.

Figure 1: Markov Model



FINDINGS

Table 1: Cost of Bariatric Surgery and SoC by Type of SSI Payment Schedule

Type of Surgery	Payment Schedule	Cost Per Patient (TRY)	Incremental Cost Per Patient (TRY)
GBP BMI ≥ 40	Fee for Service	47,361	4,287
SoC BMI ≥ 40		43,075	
GBP BMI ≥ 40	Package	41,795	- 1,279
SoC BMI ≥ 40		43,075	
SG BMI ≥ 40	Fee for Service	46,648	3,573
SoC BMI ≥ 40		43,075	
SG BMI ≥ 40	Package	41,936	- 1,139
SoC BMI ≥ 40		43,075	

Table 2: QALYs Gained by Bariatric Surgery (BMI ≥ 40)

	GBP vs SoC		SG vs SoC	
	GBP	SoC	SG	SoC
QALYs Gained	8.28	5.69	8.32	5.69
Incremental QALY	2.59		2.63	

Table 3: Cost of Complications- GBP vs SoC – BMI≥40 (Per Patient)

	GBP	SoC	Incremental
Diabetes			
Total No of Patients in 20 Years	8,337	11,361	-3,024
Total Cost of Diabetes in 20 Years (TRY)	15,971,141	22,448,987	-6,477,846
No of New Diabetes Patients	155	257	-102
Cancer			
No of Cancer Patients in 20 Years	59	76	-17
Total Cost of Cancer in 20 Years	6,860,339	8,838,391	-1,978,052
Cardiovascular Diseases			
No of New Stroke Patients in 20 Years	47	59	-11
Total Cost of Stroke in 20 Years	476,990	619,700	-142,711
No of New MI Patients in 20 Years	80	116	-36
Total Cost of MI in 20 Years	1,346,470	2,196,153	-849,682
Cost of Stroke and MI	1,823,460	2,815,853	-992,393
Other Co-Morbidities			
Knee Pain Total Patient Year	5,329	5,708	-378
Cost of Knee Pain	1,498,923	1,631,148	-132,225
Sleep Apnea	4,650	4,726	-75
Cost of Sleep Apnea	3,993,310	4,087,397	-94,087

Table 4: Cost of Complications- SG vs SoC – BMI≥40 (Per Patient)

	SG	SoC	Incremental
Diabetes			
Total No of Patients in 20 Years	8,879	11,361	-2,482
Total Cost of Diabetes in 20 Years	17,252,212	22,448,987	-5,196,774
No of New Diabetes Patients	153	257	-104
Cancer			
No of Cancer Patients in 20 Years	59	76	-17
Total Cost of Cancer in 20 Years	6,828,971	8,838,391	-2,009,420
Cardiovascular Diseases			
No of New Stroke Patients in 20 Years	48	59	-11
Total Cost of Stroke in 20 Years	487,318	619,700	-132,382
No of New MI Patients in 20 Years	81	116	-35
Total Cost of MI in 20 Years	1,394,449	2,196,153	-801,704
Cost of Stroke and MI	1,881,767	2,815,853	-934,086
Other Co-Morbidities			
Knee Pain Total Patient Year	5,305	5,708	-402
Cost of Knee Pain	1,492,151	1,631,148	-138,997
Sleep Apnea	4,629	4,726	-97
Cost of Sleep Apnea	3,975,354	4,087,397	-112,043

Table 5: Cost Effectiveness of Bariatric Surgery in Turkey From a Long Term Perspective

	Incremental Cost Per Patient (TRY)	Incremental QALY Per Patient	ICER
GBP vs SoC			
Fee For Service Package	4,287	2.59	1,655 Dominates
SG vs SoC			
Fee For Service Package	3,573	2.63	1,357 Dominates

RESULTS

Incremental QALYs were 2.59 and 2.63 for GBP and SG respectively. Both modes of bariatric surgery dominated SoC under fee for service payment. With package prices, incremental costs per patient were 4,287 TRY for GBP vs SoC and 3,573 TRY for SG vs SoC. The ICERs were 1,655 TRY and 1,357 TRY for GBP and SG respectively.

CONCLUSION

The results showed that bariatric surgery is a cost effective option for the Turkish health care system both under package and fee for service prices in the long term.