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A MARKET RESEARCH OF OBESITY AND BARIATRIC SURGERY IN TURKEY AND TUNISIA

Abstract. *This article aims to discuss four topics according to the recent scientific data a) to overview the frequency of obese and overweight individuals among Tunisia and Turkey populations; b) to examine health technology assessment of bariatric surgery (BS) report (HTA) in Tunisia and Turkey; c) to evaluate the cost and cost reimbursements by social health systems for bariatric surgery in Turkey and Tunisia; d) to examine the total number of bariatric surgical procedures and their costs in state and private health organizations in Tunisia and Turkey. The OECD (2011-2017) Turkey report was included for the data for the frequency of obese and over-weighted people among the general population Turkey, while the WHO report of «Diabetes Prevalence and Diabetes Risk Factors» of 2016 was included for Tunisia. Also supporting data on the overweight and obese population in Tunisia was provided from the news site named Middle East Monitor and the «Tunisian Health Examination Survey» conducted in 2016. Surgery cost and reimbursement of cost, analyses of bariatric surgery in Turkey published in 2014 was included as well. The data about the patient profile to whom bariatric surgery can be applied, the indications for bariatric surgery, and centers where it can be applied in Turkey are obtained from the Cost-Effectiveness of Obesity Surgery in Turkey and Economic Value Study (CEVOS-T) and Turkey Bariatric Surgery HTA Report. The Turkey Health Management Center website has been used for the total bariatric surgery performed. The authors analyzed the general status of bariatric operations in Turkey and Tunisia. The overweighted and obese individuals constitute 64.4% of Turkey's population while this frequency is obtained as 62.8% of the Tunisian population. The rate of increase in obesity was obtained by 10.8% between 2014 to 2017 in Turkey. According to the results of CEVOS-T study the total economic burden attributable to an obesity rate of 1.16% of GDP in 2004, the proportion of the GDP in 2012 was seen as 1.73%. A total of 15,800 bariatric surgical procedures were performed in Turkey in 2018. The operational cost of a tube stomach surgery in the health unit of the Turkish Union of Public Hospitals (TKHK) was found to be 8930 TL. The cost of bariatric surgery in Tunisia including hospitalization is £ 3950. As the majority of the population is overweighted and obese in both Turkey and Tunisia, it can be interpreted as the occurrence of obesity-related health problems that can be increased. When the complications and advantages of bariatric surgery were examined it was decided that these two countries should give importance to bariatric surgery. Turkey's interest in this subject is revealed with HTA and CEVOS-T report. Health economics analyses such as bariatric surgery HTA reports, number of bariatric surgery operations, the cost-effectiveness of BS in Tunisia could not be reached due to lack of statistics and resources. Turkey and Tunisia made with these investigations demonstrated a general situation in bariatric surgery.*

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Keywords: bariatric surgery, health technology, market of bariatric surgery, obesity, overweight population.

Introduction. The World Health Organization (WHO) defines obesity as «abnormal or excessive fat accumulation in the body to the extent that it impairs health» (WHO, 2020). According to the WHO, individuals with a body mass index above 25 are considered overweight, while individuals with a body mass index above 30 are considered obese. The overweight population in adults and children and the obese population continue to increase in all countries (WHO, 2020).

Among the diseases caused by obesity, the most common ones are diabetes, infertility, metabolic syndrome, central nervous system diseases, respiratory system diseases, and cardiovascular system diseases. (Gastric sleeve, 2020). Obesity is also associated with some cancers such as endometrium cancer, breast cancer, ovarian cancer, prostate cancer, liver cancer, gallbladder cancer, kidney, and colon cancer (WHO, 2020). Bariatric surgery is a surgical operation performed in the digestive system to enable patients with morbid obese or overweight to lose weight according to their body mass index (BMI) (Florence, 2020).

Three basic approaches are applied in bariatric surgery to treat obesity and overweight patients (Cerrahisi, 2020). These approaches are:

1. Restrictive; restricting food intake (stomach shrinking surgeries).
2. Malabsorptive; disrupting & inhibiting food absorption (operations in the small intestine).
3. Mixed is a type of bariatric surgery that includes both features.

The types of bariatric surgery performed in recent years are grouped as follows:

1. Gastric Band.
2. Sleeve Gastrectomy (Tube Stomach Surgery).
3. Gastric By-Pass.
4. 4.Gastric Balloon (Gastric sleeve, 2020).

This study aims to examine the findings of obese population in the field of bariatric surgery in Tunisia and Turkey, the reimbursement status of bariatric surgery, the status of bariatric surgery costs in Tunisia and Turkey, HTA Reports, Health Economics analysis such as bariatric surgery cost, cost-effectiveness, and the number of bariatric surgery surgeries in comparison. In Tunisia and Turkey, the post-operative recovery and complications of the patients who had sleeve gastrectomy in bariatric surgery in the diseases caused by obesity were analyzed comparatively.

Literature Review. The documents examined within the scope of the research consist of articles, researches, and reports written in the field of bariatric surgery. While identifying these documents, the literature was scanned. Google Scholar database was used when scanning. «Obesity, overweight population, bariatric surgery, Tunisia, Turkey» was used as the keywords when scanning this database. As a result of the survey, suitable articles were selected. After determining the articles, research and reports to be used in the research, the necessary data was collected in one file. The findings required for the research are the obese population, reimbursement status of bariatric surgery, status of bariatric surgery costs in Tunisia and Turkey, HTA Reports, Health Economics analysis such as bariatric surgery cost, cost-effectiveness, and the number of bariatric surgery surgeries. These collected data were used for the analysis process.

Data relating to the research are obtained from the following sources:

a) data on obese and overweight populations in Turkey are taken from the OECD (2011-2017) Turkey report (OECD, 2019). According to the data obtained from this report, the obese and overweight population in Turkey constitute 64.4% of the population of Turkey;

b) data on obese and overweight populations in Tunisia were taken from the World Health

Organization's (WHO) Research «Diabetes Prevalence and risk factors related to Diabetes» published in 2016 (Diabetes, 2016). 62.8% of Tunisia's population is overweight and 27.1% is obese, according to research results published by the WHO;

c) data on reimbursement status of bariatric surgery in Turkey were obtained from SUT (SUT, 2020). The operational cost of gastric tube surgery in Turkey was taken from the Turkish Public Hospitals Association (TKHK, 2020). 5.814 Turkish lira for a hospital according to the price tariffs of the Union of public hospitals. The operational cost of sleeve gastrectomy in Turkey (2020) was found to be 20,000 according to the information obtained by the healthworker of a private hospital;

d) data on the reimbursement status of bariatric surgery in Tunisia was obtained by contacting an officer in the Ministry of social affairs in Tunisia and found to be 1310 TND. The operational cost of Sleeve gastrectomy from the website docteur-adala.com, it was found as € 3950 (Gastric sleeve, 2020). The euro exchange rate was converted to Tunisian Dinar and the operational cost was calculated as 12.679.50 TND;

e) in the study, data on the patient profile and the reason for the application of bariatric surgery in Turkey were obtained from the following sources:

– the cost-effectiveness and economic value of Bariatric Surgery in Turkey (Kockaya, 2016);

– the HTA report on Obesity Surgery in Turkey (2014) prepared by the Turkish Center for Strategic Research Development and integration (SAGEM);

f) data on the number of bariatric surgery surgeries in Turkey, Health Management Center (Health Technologies, 2019). According to the findings from this site, the number of surgeries performed in Turkey in 2018 was 15,800 and the number of surgeries performed in the last 4 years was 44,453.

Methodology and research methods. This research was carried out by field research/document review method. Document review is a method of research that is used in the collection and systematic review of official or private records and provides a detailed analysis (Ekiz, 2009).

The data collected were analyzed by content analysis method. Content analysis of the coding of the data collected for the research proceeds in the form of classification-identification and identification-classification (Glesne, 2012). The necessary process of content analysis is to bring together similar data within the framework of specific concepts and themes and to organize and interpret them in a way that the reader can understand (Yıldırım, 2008). The data obtained as a result of the articles, reports and researches were compared in Tunisia and Turkey. Expert opinion has been taken from private hospitals for the cost of gastric sleeve.

Total bariatric surgery costs in Tunisia and Turkey PPP value were compared. GDP Per Capita (PPP), (The World Bank, 2020) was compared to GDP per capita (The World Bank, 2020) and the PPP values of the countries were found. PPP costs were calculated by proportion to the obtained PPP values to the total costs. In Turkey, bariatric surgeries are defined as special operations. Additional fees for exceptional health services can be up to three times as high. For this reason, the amount paid by the SGK was multiplied by three. The figure obtained was collected with the amount paid by SGK and the ceiling price was calculated.

Results. Research findings from the WHO published in 2016, «Diabetes Prevalence and Risk Factors Related to diabetes» were examined. As a result of the study, the findings of the obese population in Tunisia are shown in Table 1.

The «overweight» population accounts for the majority of the total population in Tunisia, at a rate of 62.8%. «Obesity» is followed by the «Overweight» population with a rate of 27.1 % [10]. The percentage of female population in all proportions is further (WHO, 2020). The OECD (2011-2017) Turkey report was examined in order to reach the findings of obese population in Turkey (OECD, 2019). The results obtained are shown in Table 2.

Table 1. Findings on obese and diabetic population in Tunisia

Type	Men	Women	Total
Diabetes	11.7%	12.7%	12.2%
Overweight	59.0%	66.5%	62.8%
Obesity	20.2%	33.9%	27.1%
Physical Inactivity	18.6%	26.6%	22.6%

*Data show percentage rates of Tunisia's population for 2016.
Sources: developed by the authors on the basis of (WHO, 2020).

Table 2. Findings on obese population In Turkey

Year	Measure (%)	Self-Reported (%)
2011	55.4	–
2012	–	52.0
2014	–	53.6
2016	–	53.9
2017	64.4	–

Sources: developed by the authors on the basis of (OECD, 2019).

According to the findings in Table 2, according to OECD data from 2011-2017, the percentage of Turkey's overweight or obese population over 15 years has increased over the years since 2012. From 2011 to 2012, the percentage of the overweight or obese population decreased by 3.4 percent. From 2014 to 2017, the percentage of the overweight or obese population increased by 10.8 percent.

Table 3. Comparison of overweight populations in Tunisia andTurkey

Country	Population, people	Rate (%)	Overweight population, people
Turkey (2017 year)	81,101,892	64,40%	52,229,618
Tunisia (2016 year)	11,303,946	44,95%	5,081,124

Sources: developed by the authors on the basis of (The World Bank, 2020).

When the percentage of the overweight and obese population of Turkey 2017 and Tunisia 2016 was calculated, it was found that 52,229,618 of the population of Turkey and 5,081,124 of the population of Tunisia were overweight and obese.

To reach the findings regarding the reimbursement status of bariatric surgery in Tunisia, an official working at the Ministry of social affairs in Tunisia was contacted and the data obtained are given in Table 4 (TKHK, 2020).

The Tunisian National Security Fund: CNAM (Caisse Nationale d'assurance Maladie) for bariatric surgery in Tunisia offers a refund of 1310 Tunisian dinars (TND) for patients with morbid obesity status who are only covered by public health insurance. Each patient is reimbursed on a patient-by-patient basis according to the private insurance contract and the state of their operations in the private sector. To ensure that bariatric surgery is reimbursed in the private sector, an agreement must be made with the Department of Social Affairs and the Department of Health. Only Gastric Sleeve is practiced in the public sector in Tunisia. It costs 3950 €, including hospitalization (Gastric Sleeve, 2020).

Table 4. Reimbursement of bariatric surgery In Tunisia

Patients covered by social insurance	Morbid obesite patients
Reimbursement	1310 TND
Cost Of Bariatric Surgery	3950 €

*Primary Research, Civil Servant at the Ministry of Social Affairs, Tunisia

Sources: developed by the authors.

The study examined the SUT published by the Social Security Institution to reach the findings regarding the reimbursement status of bariatric surgery in Turkey (SUT, 2020). Operational costs of bariatric surgery in Turkey are taken from the Health Services Price List. The results of the examination are given in Table 5 and Table 6.

Table 5. Reimbursement of bariatric surgery In Turkey

Patients covered by social insurance	BMI>40 kg/m2
By-Pass Fixed Price	6750 ₺
Sleeve Gastrectomy Fixed Price	4650 ₺
Gastric Banding Fixed Price	2700 ₺
Duodenal Switch Biliopancreatic Diversion	1281 ₺

Sources: developed by the authors on the basis of (SUT, 2020).

Table 6. Operational costs of bariatric surgery branches in Turkey

Intervention	Cost
Gastric By-Pass	8,437.00 ₺
Gastric Sleeve	5,813.00 ₺
Gastric Banding	3,375.00 ₺
Duodenal Switch Biliopancreatic Diversion	1,601.00 ₺

Sources: developed by the authors on the basis of (TKHK, 2020).

The Social Security Institution in Turkey has determined the fixed prices of bariatric surgery as follows: a) For By-pass, 6750TL; b) For Sleeve Gastrectomy, 4650 TL; c) For Gastric Banding, 2700 TL; d) For Duodenal Switch Biliopancreatic Diversion, 1281 TL (SUT, 2020). Fixed price; includes pre-surgery (15 days), surgery, and post-surgery (45 days). The fixed price has been shown to be lower than the actual cost of bariatric surgery. The highest reimbursement and actual cost have been reported for by-pass gastrectomy. However, the significant difference was calculated for gastric tube surgery by 117%. In other words, if a hospital administration permits tube stomach surgery, the hospital budget suffers more losses than the amount of reimbursement. Less loss can be achieved with the banding process.

The operational cost of the gastric sleeve was 5,813 Turkish lira for a hospital from the Turkish Public Hospital Union Hospitals (TKHK, 2020). The operational cost of sleeve gastrectomy in Turkey (2020) was found to be 20,000 ₺ according to the information obtained by the health worker of a private hospital.

In Turkey, bariatric surgeries are defined as special operations by SGK. Hospitals can charge additional fees for exceptional health services up to three times as high to patients. For this reason, the amount paid by the SGK was multiplied by three for retrieving the total amount. The figure obtained was collected with the amount paid by SGK and the exceptional health services price. The data is shown in

Table 7.

Table 7. Out of pocket payments in bariatric surgery for Turkey

Country	Intervention	Reimbursement Amount (Public)	Price Ceiling	Out of Pocket Payments
Turkey (₺)	Gastric By-Pass	6,750	27,000	20,250
	Gastric Sleeve	4,650	18,600	13,950
	Gastric Banding	2,700	10,800	8,100
	Duodenal Switch Biliopancreatic Diversion	1,281	5,124	3,843
Tunisia (TND)	Gastric Sleeve	1,310	12,679.50	11,369.50

Sources: developed by the authors on the basis of (SUT, 2020).

Total bariatric surgery costs in Tunisia and Turkey PPP value were compared. GDP Per Capita (PPP), (The World Bank, 2020) was compared to GDP per capita (The World Bank, 2020) and the PPP values of the countries were found. PPP costs were calculated by proportion to the obtained PPP values to the total costs. The data is shown in Table 8.

Table 8. Comparison of Total PPP Costs for bariatric surgery In Tunisia and Turkey

Countries	Intervention	Total Cost	Out of Pocket Payments	PPP Exchange Rate	Cost (PPP)	Out of Pocket Payments (PPP)
Turkey (₺)	Gastric By-Pass	27,000	20,250	3.08	8,759	6,569
	Gastric Sleeve	18,600	13,950		6,034	4,525
	Gastric Banding	10,800	8,100		3,503	2,628
	Duodenal Switch Biliopancreatic Diversion	5,124	3,843		1,662	1,247
Tunisia (TND)	Gastric Sleeve	12,680	11,370	3.38	3,755	3,367

Sources: developed by the authors on the basis of (SUT, 2020).

In order to reach HTA reports and cost-effectiveness analysis in the field of Bariatric Surgery in Turkey, «Cost effectiveness and economic value of obesity surgery for Turkey (CEVOS-T)» and «The Role Of Obesity Surgery In Obesity Treatment In Turkey» named HTA reports were examined. HTA report and cost-effectiveness analysis for Tunisia could not be reached. Because no CE was ever made in Tunisia for Bariatric Surgery

Table 9. Patient profile of bariatric surgery in Turkey and Tunisia and the reason for bariatric surgery

Country	Profile of patients who can be candidate to bariatric surgery	The reason for the application of bariatric surgery
Turkey	BMI>40 and all individuals who try to lose weight and are not successful or who take it after losing weight and relapse again	The increase in obese population in Turkey and the inability to treat with diet
Tunisia	There is no general rule for the patient profile that can be applied to bariatric surgery. Evaluation is performed on a patient basis.	–

Source: developed by the authors on the basis of HTA Report on Bariatric Surgery in Turkey.

In Turkey, all individuals whose body mass index is above 40 and who try to lose weight by various methods (diet, exercise, behavior therapy, medication, etc.) and fail to succeed or who relapsed after losing weight are defined as candidates for laparoscopic bariatric surgery under Social Security. Individuals with BMI over 35kg/m2 and metabolic or systemic complications, and those whose waist circumference is above the figures recommended in the NHMRC guidelines are not under reimbursement of SGK. In Tunisia, there is no general rule for the patient profile that can be a candidate for bariatric surgery. Evaluation of reimbursement decision is performed on a patient basis. It could be said that lack of awareness, cultural reasons, and budget limits of the Tunisian government may lead not to improve the infrastructure for bariatric surgery in Tunisia when compared to Turkey.

The results of the TURDEP I and II study in Turkey show that obesity and accompanying diseases are reaching frightening levels in our country. The second phase of the first study, conducted between 1997-98, was carried out in 2010 and the frequency of Type2 diabetes increased by 90% over the intervening time, increasing from 7.7% to 13.7%, while obesity rates increased from 32.9% to 44.2% in women and from 13.2% to 27.3% in men. In the same process, women's body weight increased by an average of 6 kg, and men's body weight increased by 8 kg. The waist circumference of the women was 6 cm, the hips were 7 cm, the men's waist circumference was 7 cm, and the hips were 2 cm thickened. Even a 10% reduction in body weight results in a very significant reduction in the risk factors associated with obesity. However, according to statistical data, more than 95% of people who have been treated for obesity who have lost weight are gaining weight again. For this reason, trying to treat morbidly obese patients with lifestyle changes is suggestive in terms of both the solution of the patient's health problems and the cost. For this reason, bariatric surgery can provide much more effective results for this group of patients. No such data could be reached for Tunisia.

The number of bariatric surgery surgeries in Turkey has been examined, and the Health Management Center (Health Technologies, 2019). The number of bariatric surgery surgeries in Tunisia has been sought but the data could not be reached. The number of surgeries in Turkey were used for estimating the number of surgeries in Tunisia depending on the obese population number as 1537. The results are given in Table 10.

Table 10. Number of bariatric surgery surgeries

Country	Number of surgeries	Number of surgeries conducted in last 4 years
Turkey	15,800	44,453
Tunisia	1,537*	6,148"

* Estimated depending on obese population of Turkey and Tunisia.

Sources: developed by the authors on the basis of (Health Technologies, 2019).

Examination of post-operative recovery and complications of patients with Sleeve Gastrectomy in Bariatric Surgery in diseases caused by obesity in Tunisia, no data could be reached for Turkey. In the study, bariatric surgery in Tunisia was screened for the post-operative recovery of patients who had sleeve gastrectomy in diseases caused by obesity. For Turkey, these findings have not been reached. The results are given in Table 11.

Table 11. Examination of the post-operative recovery of patients with sleeve gastrectomy in bariatric surgery in the diseases caused by obesity in Tunisia (no such data could be reached for Turkey)

Diseases caused by obesity	Sleeve gastrectomy result in recovery rates
Diabetes	55% of patients have diabetes to resolve or improve after one year.
Infertility	Up to 58% of previously sterile women are able to become pregnant.
Metabolic Syndrome	Complete resolution up to 62% of patients
Central Nervous System	Depression: it goes away for most patients. Documented improvement, but no global data available. Migraines: Up to 40% improvement in patients.
Respiratory System	Asthma: Up to 90% of patients have improved or healed Sleep apnea: 62% have obstructive sleep apnea resolved after one year
Cardiovascular system	Hyperlipidemia: 35% of patients have recovered after one year Dyslipidemia, hypercholesterolemia: up to 64% of patients improved or cured Hypertension: 68% of patients have their hypertension cured or improve after one year Venous stasis: up to 95% of patients healed after one year

Sources: developed by the authors on the basis of (Gastric sleeve, 2020).

The study was conducted in bariatric surgery in Tunisia, screening for possible post-operative

complications of patients with sleeve gastrectomy in diseases caused by obesity. For Turkey, these findings have not been reached. The results are given in Table 12.

Table 12. Examination of complications as a result of sleeve gastrectomy in bariatric surgery inTunisia (no such data could be reached for Turkey)

Complications	Complication realization rates
Fistula (leakage at the staple line of the stomach)	2.1% of patients on average (between 1.09% and 4.66%, according to one study). Sometimes a surgical operation is necessary to repair them.
Bleeding (1.2% of patients on average)	At the row of staples is another possible complication that may, in some cases, require a transfusion, or even re-intervention, if it persists, to evacuate clots.
Stenosis	Narrowing or stenosis on a segment of the gastric tube (0.6% of patients), which may require endoscopic procedures, or even a reintervention.
Phlebitis and Pulmonary Embolism	Blood clots are a concern for any surgery.
Digestion problems	About 1 in 5 patients had gastroesophageal reflux in the first 12 months. This rate decreases to 3% after two years.
Skin sagging	For most obese patients
Weight regain after a gastric sleeve	It is caused by an inappropriate lifestyle.
Return of type 2 diabetes	Remission goes from 56% to 20% of patients in year 1 and 5 respectively

Sources: developed by the authors on the basis of (Gastric sleeve, 2020).

Conclusions. The fact that 64.4% of Turkey's population and 62.8% of Tunisia's population are obese and overweight individuals suggests that most of the population in both countries is at risk of obesity. Patients who are covered by reimbursement in Tunisia and Turkey are only morbidly obese patients. For both countries, the scope of reimbursement status of bariatric surgery can be extended for patients with BMI below 40 but with chronic illnesses. The cost of reimbursement in bariatric surgery in Tunisia has been set at 1,310 Tunisian dinars. As a result of the ceiling price calculated with the amount paid by SGK in Turkey, Gastric Sleeve was obtained as 18,600, GastricBy-pass 27000. The fact that Gastric sleeve refund is 4650 and Gastric by-pass refund is 6750 indicates that SGK refund is lower than the actual cost.

Turkey has demonstrated its interest in bariatric surgery through the HTA report and studies on this subject, such as «cost effectiveness and economic value of Bariatric Surgery (2016)» and «operational cost of Bariatric Surgery in Turkey (2014)». The number of bariatric surgery surgeries in Turkey has reached 15,800 for the year 2018 and 44,453 in the last four years until 2018. As a result of this data, it is clear that the demand and need for bariatric surgery in Turkey are increasing steadily. In the study, the recovery and complication rates of diseases caused by obesity in Tunisia due to sleeve gastrectomy were examined with percentile rates.

In Tunisia, HTA report and cost-effectiveness studies in bariatric surgery and the number of surgeries were not reached. In Turkey, data on the recovery and complication rates of diseases caused by obesity

as a result of sleeve gastrectomy have not been reached. The reach status of data is given in Table 13.

Table 13. Comparison of publicly available data for Tunisia and Turkey about bariatric surgery

Country	Obesity population	Reimbursement amount	Cost-effectiveness analysis and HTA Reports	Number of Bariatric Surgery	Advantages of the gastric sleeve	Complications of the gastric sleeve
Turkey	✓	✓	✓	✓	X	X
Tunisia	✓	✓	X	X	✓	✓

Sources: developed by the authors.

According to the researches made in Table 13, the findings that can be reached in bariatric surgery in Turkey and Tunisia are shown with «✓» and the findings that cannot be reached are shown with «X».

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Маркетингове дослідження ринку баріатричної хірургії у Туреччині та Тунісі

Стаття присвячена дослідженню таких питань: а) аналіз кількості населення з ожирінням та надмірною вагою серед населення Тунісу та Туреччини; b) огляд новітніх технологій баріатричної хірургії в Тунісі та Туреччині; в) аналіз підходів до формування вартості та відшкодування витрат соціальними системами охорони здоров'я на ринку баріатричної хірургії у Туреччині та Тунісі; г) огляд баріатричних хірургічних процедур та аналіз їх витратних характеристик у державних та приватних організаціях охорони здоров'я Тунісу та Туреччини. До аналізу включено Звіт ОЕСР (2011-2017) Туреччини щодо кількості людей з ожирінням та надмірною вагою, а також Звіт ВООЗ «Поширеність діабету та фактори ризику діабету» за 2016 рік був проаналізований при врахуванні ринку Тунісу. Дані про профіль пацієнта, до якого може бути застосована баріатрична хірургія, показання до баріатричної хірургії та центри, де її можна застосовувати в Туреччині, отримані з дослідження економічної ефективності ожиріння в Туреччині та дослідження економічної цінності (CEVOS-T) та Звіту Туреччини про баріатричну хірургію HTA. Веб-сайт Центру управління охороною здоров'я Туреччини використаний авторами для загального маркетингового аналізу послуг баріатричної хірургії. Автори проаналізували загальний стан баріатричних операцій у Туреччині та Тунісі. Переважені

та ожирілі особи складають 64,4% населення Туреччини, тоді як ця частота становить 62,8% для населення Тунісу. Темп зростання ожиріння у період з 2014 по 2017 рік складав 10,8% у Туреччині. Згідно з результатами дослідження CEVOS-T загальний економічний тягар, пов'язаний із рівнем ожиріння 1,16% ВВП у 2004 році, частка ВВП у 2012 році розглядалася як 1,73%. У 2018 році в Туреччині було проведено 15800 баріатричних хірургічних втручань. Вартість операції шлунку в медичному підрозділі Турецького союзу державних лікарень (TKHK) склала 8930 TL. Вартість баріатричної хірургії в Тунісі, включаючи госпіталізацію, становить 3950 фунтів стерлінгів. Авторами досліджені переваги та недоліки баріатричної хірургії. Інтерес Туреччини до цієї теми розкривається у звіті HTA та CEVOS-T.

Ключові слова: баріатрична хірургія, здорові технології, ринок баріатричної хірургії, ожиріння, населення із зайвою вагою.

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