



# Turkish primary care physicians' attitudes and knowledge of obesity and bariatric surgery: a survey study

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## ABSTRACT

**Objective:** This survey study attempted to determine Turkish primary care physicians' (PCP) knowledge, attitudes, and perceptions of obesity treatment and bariatric surgery. Moreover, the relationship between the duration of practice as a physician, and especially the indications for bariatric surgery and referral to surgery were investigated.

**Material and Methods:** A survey of 27 questions was administered via social media and the internet using the SurveyMonkey platform. The physicians who responded to the survey were grouped based on the duration of working life. Among these groups, the responses to the questions about bariatric surgery were compared using univariate analysis.

**Results:** A total of 1044 physicians responded to the survey. The number of physicians who strongly agreed that a PCP should play role in the treatment of obesity was 743 (71.1%). The most important reason for not undertaking this treatment was reported as the requirement for a multidisciplinary approach to obesity treatment (51.5%, n= 537). The percentage of those who thought that patients with a body mass index (BMI) above 40 kg/m<sup>2</sup> should be referred to surgery was 72.3%, while the percentage of those referring patients with a BMI of 35-40 kg/m<sup>2</sup> and comorbidities to surgery was 53.3%, and the percentage of those referring patients with a BMI of 35-40 kg/m<sup>2</sup> and uncontrolled diabetes to surgery was 35.9%. Physicians who were new to the profession were found to evaluate surgical indications more positively (p< 0.05).

**Conclusion:** This study found that PCPs in Turkey had a basic knowledge of obesity treatment and were willing to treat and follow up these patients. However, it was observed that they could not adequately focus on this issue due to the requirement for a multidisciplinary approach to the disease and the workload. It was found that the young physicians' level of knowledge of bariatric surgery was higher, but their attitudes towards patient referral were similar.

**Keywords:** Primary care physicians, obesity treatment, obesity surgery, survey study

## INTRODUCTION

Obesity is a serious public health problem with an increasing prevalence worldwide. According to the data of the Ministry of Health, 41% of women and 20.5% of men in Turkey are obese (1). These rates indicate that Turkey is among the countries with the highest prevalence of obesity. Despite all the measures taken and warnings, the prevalence of obesity does not decrease (2). Obesity treatment is complex and requires a multidisciplinary approach. Depending on its severity, the treatment approach may be diet, exercise, lifestyle modifications and medication, endoscopic interventions, and surgery for patients with an indication (3).

Primary care physicians (PCPs) are usually the first to encounter these patients, treat, follow up, and refer them, and participate in their postoperative long-term follow-ups. Therefore, their knowledge of treatment, approaches, and facilities is of great importance. It has been determined that only 29% of obese individuals in the USA are recorded when they visit a physician, and the physicians are reluctant to offer treatment, refer, and motivate these patients due to various factors (4,5).

Among all modalities, bariatric surgery has been the most effective treatment approach so far. It provides both more and long-term postoperative weight loss. The improvement rate of metabolic problems secondary to obesity is much higher. A meta-analysis of thirty-eight randomized controlled studies has found mortality rate following bariatric surgery as 0.18% (6). Despite all documented advantages of surgery, a significant bias remains about the surgery. Therefore, surgical approaches are not offered as an option to many patients who may benefit from it. Primary care

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physicians are at the forefront of obesity treatment, follow-up, and referral to surgery. Referral of obese patients to surgery by their PCPs is important and increases the rate of accepting surgery. A study from Canada has shown that primary care physicians directed only.

42% of obese patients for treatment due to various factors. These factors have generally been reported as a negative attitude towards the disease and treatment, workload, lack of knowledge, insufficient infrastructure, and lack of motivation (7-9).

Identifying problems and deficiencies in this field is particularly important in terms of developing training programs. Results from different countries and regional studies will provide valuable insight into measures to be taken and what to do. There is no published Turkish study on the subject. The primary aim of the present study was to evaluate Turkish PCPs' basic level of knowledge, attitudes, and perceptions of obesity treatment and bariatric surgery with a survey study, and on what subjects they demand information and support. The secondary aim of this study was to investigate the relationship between the duration of practice as a physician, knowledge of the indications for bariatric surgery, and referral to surgery.

## MATERIAL and METHODS

### Survey Design

The target population of the study was determined as PCPs working as family physicians in Turkey. The survey was prepared by a surgeon experienced in bariatric surgery by reviewing similar studies in the literature, including standard guidelines. The members of the Board of Directors of the Turkish Society for Metabolic and Bariatric Surgery then assessed the survey and contributed to it. The prepared survey was administered to a pilot sample of 10 PCPs as a pre-test survey, and it was finalized as a survey of 27 questions to be completed approximately within 6 minutes following their responses and comments. The survey included questions about consent (1 question), demographic data and workload (6 questions), basic knowledge of obesity evaluation, treatment, attitude (11 questions), basic knowledge of surgery, indications, follow-up, referral to surgery, and training (9 questions). The questions about demographic data,

attitude towards obesity, and demands in practice were multiple-choice and open-ended, while the other questions were prepared as a five-point Likert scale (strongly disagree, disagree, neutral (no idea), agree, strongly agree). The survey questions are presented in Appendix 1. The approval for the study was obtained from the Ethics Committee of Uludag University ethics committee approval number: 2019-10/4). An information letter was prepared for the survey and consent was obtained from all participants for the scientific use of the study results.

### Data collection and Statistical Analysis

There were 25 thousand PCPs working as family physicians in Turkey in 2019, according to the data of the Ministry of Health of Turkey (1). It was planned to reach 1023 physicians with a margin of error of 3% at a 95% confidence interval. The survey was introduced via the SurveyMonkey website. The link of the survey was distributed via social media and sent to association websites as well as randomly selected physicians. A total of 1044 PCPs responded to the survey. The physicians who responded to the survey were grouped based on the duration of practice as follows: 0-5 years of experience, 6-10 years of experience, 11-20 years of experience, 21-30 years of experience, and over 30 years of experience. Among these groups, the responses to the questions about bariatric surgery were compared using univariate analysis. Chi-square test or Fisher's exact test was used for comparison. The level of significance was set at  $p < 0.05$ . Statistical analysis results were acquired using the SurveyMonkey software.

## RESULTS

### Demographic Results

A total of 1044 physicians responded to the survey. Of the respondents, 906 (79.1%) were working in the most populous 4 major cities of Turkey with a total number of family physicians of 8178. While none of the physicians working in 29 provinces responded to the survey, 1 to 33 physicians from the other forty-eight provinces participated in the survey. Analysis of age distribution of the physicians who participated in the survey revealed that the majority of the participants were in the age range of 31-40 (378, 36.2%) years and 41-50 (315, 30.1%) years. Considering the distribution of duration of practice, those with 11-20 years of experience (321, 30.75%) ranked first, while those with 21-30 years of experience (267, 25.57%) ranked second. While the number of patients examined by 355 (34.1%) physicians per week was between 201 and 300, 277 (26.61%) physicians reported that they examined 301-400 patients per week. Of the physicians, 224 (21.58%) stated that 11-15% of their patients were obese, and 222 (21.39%) stated that 16-20% of their patients were obese. The demographic distribution of the physicians who responded to the survey, their workload, and the number of patients who had undergone bariatric surgery and followed up by them are presented in Table 1.

### Level of Knowledge and Attitude towards Obesity Treatment

The percentage of physicians who strongly agreed with the question "obesity is a chronic disease defined as an excessive accumulation of body fat to an extent to impair health" was 38.1% (n:398), while the percentage of those who agreed with that was 53.9% (563). The percentage of physicians who strongly agreed that the reason for the increase in obesity prevalence was a sed-

**Table 1.** Demographic data and workloads of physicians participated in the survey

Province of work (81)	
4 major cities	906 (79.1%)
Other provinces (48)	138 (20.9%)
Age distribution	
24-30 years	203 (19.4%)
31-40 years	378 (36.2%)
41-50 years	315 (30.2%)
51-60 years	136 (13%)
Over 60 years	12 (1.2%)
Duration of practice	
0-5 years	198 (19.9%)
6-10 years	205 (19.7%)
11-20 years	321 (30.7%)
21-30 years	267 (25.6%)
Over 30 years	53 (5.1%)
Weekly number of patients	
0-100	115 (11%)
101-200	190 (18.2%)
201-300	356 (34.1%)
301-400	278 (26.6%)
401-500	75 (7.2%)
Above 500	30 (2.9%)
Rate of obese patients	
0-5%	85 (8.2%)
6-10%	212 (20.3%)
11-15%	226 (21.6%)
16-20%	225 (21.5%)
21-25%	164 (15.8%)
26-30%	80 (7.7%)
31-40%	39 (3.7%)
Above 40%	13 (1.2%)
Number of patients who had undergone bariatric surgery	
Yes	344 (32.9%)
No	700 (67.1%)

entary lifestyle and easy access to food was 40.8% (n:426), and the percentage of physicians who agreed with that was 47.8% (n:499). While a significant proportion of physicians agreed with the knowledge that the prevalence of obesity in Turkey is around 30%, 204 physicians (19.6%) strongly agreed, 544 physicians (52.2%) agreed, and 221 physicians (21.2%) were neutral in this regard. The most commonly used diagnostic method for obesity was the Body Mass Index (BMI) with 98.9% (n= 1032), followed by waist circumference measurement (52.5%, n= 548). A significant proportion of physicians did not use a single parameter. However, only 37 (3.5%) of the physicians stated that they

always recorded their patients' height and weight, while 294 (28.2%) physicians stated that they often recorded the height and weight of their patients. The number of physicians who strongly agreed that a PCP should play a role in the treatment of obesity was 155 (14.8%), while the number of physicians who agreed with that was 588 (56.3%). The most important reason for not taking responsibility for obesity treatment was reported to be a requirement for a multidisciplinary approach (51.5%, n= 537). The percentage of physicians who defined patients with a BMI of 30 kg/m<sup>2</sup> and above as obese was 82.8% (n:864). The percentage of physicians who agreed with the proposition that the target should be a weight loss of 5-10% of body weight to have a significant change in health parameters and quality of life was 55.2% (n= 576), while the percentage of physicians who strongly agreed with that proposition was 10.2% (n= 107). The percentage of physicians who stated that they were neutral in this regard was 25.8% (n= 269), while the percentage of physicians who stated that they disagreed with that was 8.2% (n= 86). The percentage of physicians who refer their patients who fail to lose weight with a comprehensive diet and exercise program to surgery was 37.6% (n=393), while the percentage of those who stated that they would use medical treatment was 24% (n= 251), the percentage of those stated that they would recommend alternative treatment methods (such as acupuncture, hypnosis, ozone therapy, etc.) was 17.1% (n= 179), the percentage of those who stated that they would recommend a stricter diet was 15.8% (n= 165), and the rate of physicians who stated that they would refer the patient to a higher-level center (endocrinology, psychiatry) was 5.4% (n= 56). The responses of the primary care physicians to the questions measuring obesity evaluation and perception are shown in Table 2.

### Knowledge, Indications, and Attitudes Towards Bariatric Surgery

Of the participants, 32.5% (n= 339) acquired their knowledge of obesity and metabolic surgery from conferences and congresses, 28.4% (n= 297) during their medical education, and 24.07% (n= 251) from internet-social media and press (Figure 1). In the responses given regarding the three indications for bariatric and metabolic surgery today, the percentage of those who thought that patients with a BMI above 40 kg/m<sup>2</sup> should be referred to surgery was 72.37% (agree: 56.3% (n= 588), strongly agree: 16.1% (n= 168)), the percentage of those who referred patients with a BMI of 35-40 kg/m<sup>2</sup> and comorbidities to surgery was 53.3% (agree: 42.3% (n= 440), strongly agree: 11% (n= 115), the percentage of those who referred patients with a BMI of 35-40 kg/m<sup>2</sup> and uncontrolled diabetes was 35.9% (agree: 30.1% (n= 315), strongly agree: 5.7% (n= 60)). The majority of physicians accepted that obesity and metabolic surgery was the most effective method for the treatment of morbidly obese patients, but they had no information on mortality rates. The percentage of physi-

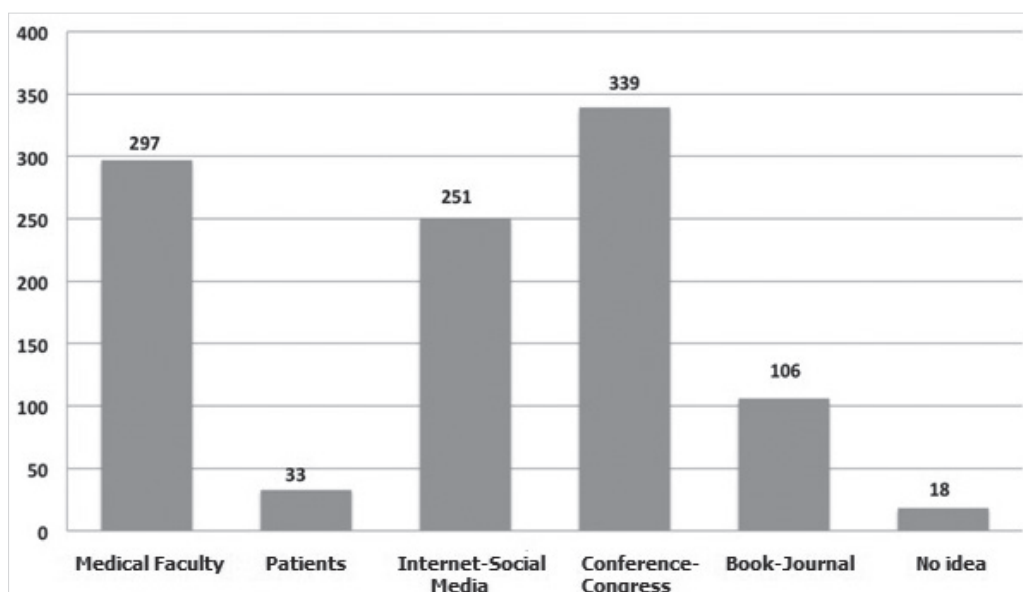
**Table 2.** The results of the questions prepared as a Likert scale to measure the physicians' evaluation and perception of obesity with multiple-choice/open-ended answers (the full sentences of the questions are presented in Annex 1). Values are given in percentages

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	β
Q2 (Obesity definition)	0.9% (n= 9)	1.4% (n= 15)	5.7% (n= 59)	53.9% (n= 563)	38.1% (n= 398)	4.27 ± 0.71
Q3 (Reason)	1% (n= 10)	2.1% (n= 22)	8.3% (n= 87)	47.8% (499)	40.8% (426)	4.25 ± 0.77
Q4 (Prevalence)	0.7% (n= 7)	6.3% (n= 66)	21.3% (n= 222)	52.2% (n= 545)	19.5% (n= 204)	3.84 ± 0.83
Q5 (Acceptance)	1% (n= 10)	8% (n= 84)	19% (n= 207)	56.3% (n= 588)	14.9% (n= 155)	3.76 ± 0.84
Q6 (Treatment target)	0.6% (n= 6)	8.3% (n= 86)	25.8% (n= 270)	55.2% (n= 576)	10.1% (n= 106)	3.66 ± 0.79
Q7 (Treatment success)	8.5% (n= 89)	27.5% (n= 287)	24.5% (n= 256)	36.1% (n= 377)	3.4% (n= 35)	2.98 ± 1.05
Q8 (Diagnostic methods)	Body Weight 34.9% (n= 364)	BMI 98.9% (n= 1033)	Waist Circumference 52.5% (n= 548)	Waist-to-hip Ratio 3 2.7% (n= 341)	Skinfold Thickness 8.1% (n= 85)	
Q9 (Records)	Never 2.2% (n= 23)	Rarely 19% (n= 198)	Sometimes 47.1% (n= 492)	Frequently 28.2% (n= 294)	Always 3.5% (n= 37)	
Q10 (Diagnostic criteria for obesity)	BMI> 25≤29. 93.5% (n= 37)	BMI ≥30 82.8% (n= 864)	BMI ≥35 11.1% (n= 116)	BMI ≥40 2.2% (n= 23)	No knowledge 0.4% (n= 4)	
Q11 (Reason for not undertaking)	Intense clinic hours 12.2% (n= 127)	Lack of knowled- ge6.2% (n= 65)	Inadequate physical facilities 9.5% (n= 99)	Reluctance of patients 7.7% (n= 80)	Multidisciplinary approach 51.4% (n= 537)	Other <sup>a</sup> 13 (n= 136)
Q12 (Advice to unsuccess- ful patients)	Strict diet %15.8 (n= 165)	Medical treat- ment %24 (n= 251)	Alternative treatment %17.2 (n= 179)	Surgery %37.6 (n= 393)	Other <sup>h</sup> %5.4 (n= 56)	

β: Average of responses to the questions on the Likert scale (Arithmetic mean ± standard deviation).

<sup>a</sup>: The most common responses to this option are should absolutely undertake, the lack of dietician support, and reluctance of physician.

<sup>h</sup>: The most common responses to this option are referral to a higher-level center, dietician, and psychology-psychiatry.



**Figure 1.** The responses given by the physicians participated in the survey to the question about how they acquired their knowledge of bariatric surgery (Q13). The physicians stated that they obtained this knowledge mostly during conferences-congresses.

cians who stated that they would refer their first-degree relatives to surgery when they have an indication was 48% (n= 502), and the percentage of those who strongly agreed with that was 9.6% (n=100). The percentage of physicians who stated that they were neutral in this regard was 32.1% (n= 335). The reasons for not referring patients to surgery were reported as cost (56.7%), high risk (56.4%), and patient refusal (41.2%). The physicians stated

that they would like to be informed about indications for surgery (89.5%), complications (74.7%), efficacy (69.1%), and long-term follow-up protocols (65%). Of the physicians who participated in the survey, 67.1% had patients who had undergone bariatric surgery and who were followed up by them. The responses about bariatric surgery are shown in Table 2.

**Table 3.** The results of the questions containing multiple-choice and open-ended answers to measure the knowledge and attitudes of the physicians participated in the survey regarding bariatric surgery (the full sentences of the questions are presented in Annex 1)

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	β
Q14 (BMI≥40)	0.3% (n= 3)	6.3% (n= 66)	21% (n= 219)	56.3% (588)	16.1% (168)	3.82 ± 0.78
Q15 (35≤ BMI <40)	1% (n= 10)	10.8% (n= 113)	35% (n= 365)	42.2% (n= 441)	11% (n= 115)	3.52 ± 0.86
Q16 (30≤ BMI <35)	1.8% (n= 19)	18.1% (n= 190)	44.2% (n= 462)	30.1% (n= 315)	5.7% (n= 60)	3.20 ± 0.86
Q17 (Surgery success)	0.5% (n= 5)	4.9% (n= 51)	21.8% (n= 227)	54.9% (n= 574)	17.9% (n= 187)	3.85 ± 0.78
Q18 (Bariatric surgery mortality)	0.2% (n= 2)	2.6% (n= 27)	65.3% (n= 682)	28.1% (n= 294)	3.7% (n= 39)	3.33 ± 0.60
Q19 (Recommending surgery)	1.2% (n= 13)	9% (n= 94)	32.1% (n= 335)	48% (n= 502)	9.7% (n= 100)	3.56 ± 0.83
Q20 <sup>δ</sup> (Reason for not recommending surgery )	Lack of knowledge 15.6% (n= 160)	Not effective 5.7% (n= 59)	Patient refusal 41.1% (n= 423)	High cost 56.7% (n= 583)	High risk 56.4% (n= 580)	Other <sup>α</sup> 10.8% (n= 111)
Q21 (Need for knowledge of bariatric surgery)	Indications 89.5% (n= 935)	Complications 74.7% (n= 781)	Efficacy 69.1% (n= 722)	Follow-up protocols 65.1% (n= 680)	None 1.8% (n= 19)	

β: Average of responses to the questions on the Likert scale (Arithmetic mean ± standard deviation)  
 α: The most common responses to this option are that they find it effective and would refer their patients, weight regain is high, and they disapprove of changes in physiology and anatomy.  
 δ: More than one option could be selected.

**Table 4.** The responses of the physicians participating in the survey to the question about three classical indications for bariatric and metabolic surgery. It was found that the physicians who have just started working as professionals were more knowledgeable about indications for surgery. Values are given in percentages (numbers)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Q14 (BMI≥40)					
0-5 years	0.5 (1)	3.6 (7)	14.8 (29) <sup>δ</sup>	59.7 (117)	21.4 (42) <sup>α</sup>
6-10 years	0.5 (1)	5.4 (11)	18 (37)	61 (125)	15.1 (31)
11-20 years	0 (0)	6.5 (21)	24.9 (80)	54.5 (175)	14 (45)
21-30 years	0 (0)	9.4 (25)	21.7 (58)	53.6 (143)	15.4 (41)
Over 30 years	1.9 (1)	3.9 (2)	27.5 (14)	49 (25)	17.5 (9)
Q15 (BMI ≥35<40)					
0-5 years	0.5 (1)	7.6 (15)	27 (53) <sup>β</sup>	50.8 (100) <sup>ϕ</sup>	14.2 (28) <sup>Ω</sup>
6-10 years	0.5 (1)	13.7 (28)	41.5 (85)	38.5 (79)	5.8 (12) <sup>ω</sup>
11-20 years	1.2 (4)	10 (32)	37.8 (121)	42.2 (135)	8.7 (28)
21-30 years	1.5 (4)	12 (32)	30.8 (82)	41 (109)	14.7 (39)
Over 30 years	0 (0)	8 (4)	44 (22)	32 (16)	16 (8)
Q16 (BMI ≥30<35)					
0-5 years	2 (4)	19.2 (38)	32.8 (65) <sup>ψ</sup>	40.4 (80) <sup>ϕ</sup>	5.6 (11) <sup>π</sup>
6-10 years	1.5 (3)	18 (37)	51.7 (106)	25.8 (53)	2.9 (6)
11-20 years	1.88 (6)	14 (45)	49.2 (158)	29.3 (94)	5.6 (18)
21-30 years	2.2 (6)	23.6 (63)	38.6 (103)	28.8 (77)	6.7 (18)
Over 30 years	0 (0)	11.8 (6)	54.9 (28)	19.6 (10)	13.7 (7)

Q14: <sup>δ</sup>: vs. 11-20 years, >30 years <sup>α</sup>: vs. 11-20 years, Q15: <sup>β</sup>: vs. 6-10 years, 11-20 years, >30 years, <sup>ϕ</sup>: vs. 6-10 years, 21-30 years, >30 years, <sup>Ω</sup>: vs. 6-10 years, <sup>ω</sup>: vs. 0-5 years, 21-30 years, >30 years, Q16: <sup>ψ</sup>: vs. 6-10 years, 11-20 years, >30 years, <sup>ϕ</sup>: vs. years 6-10 years, 11-20 years, 21-30 years, >30 years. <sup>π</sup>: vs. >30 years.

**Table 5.** The responses of the physicians participating in the survey to the questions about efficacy of bariatric surgery, mortality rate, and recommendation. Unlike the responses given to the questions about indications, it was found that physicians who have just started working as professionals had less knowledge of the efficacy of surgery and mortality rates. There was no difference between the durations of practice in terms of recommending surgery. Values are given in percentages (numbers)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Q17 (efficacy of surgery)					
0-5 years	1 (2)	7.1 (14)	21.2 (42)	49.5 (98) <sup>¶</sup>	21.2 (42)
6-10 years	0 (0)	3.4 (7)	22.9 (47)	56.1 (115)	17.6 (36)
11-20 years	0.9 (3)	3.4 (11)	19.9 (64)	59.5 (191)	16.2 (52)
21-30 years	0 (0)	6.7 (18)	23.2 (62)	52.8 (141)	17.2 (46)
Over 30 years	0 (0)	2 (1)	25.5 (13)	52.9 (27)	19.6 (10)
Q18 (mortality rate)					
0-5 years	0 (0)	1.5 (3)	76.8 (152) <sup>δ</sup>	18.7 (37) <sup>β</sup>	3 (6)
6-10 years	0 (0)	2.9 (6)	60 (123)	34.6 (71)	2.4 (5)
11-20 years	0.6 (2)	2.2 (7)	60 (192)	33.1 (106)	4 (13)
21-30 years	0 (0)	4.1 (11)	67 (179)	24.3 (65)	4.5 (12)
Over 30 years	0 (0)	0 (0)	66.7 (34)	27.4 (14)	5.9 (3)
Q19 (recommending surgery)					
0-5 years	2 (4)	8.6 (17)	27.3 (54)	50.5 (100)	50.5 (100)
6-10 years	2 (4)	5.8 (12)	32.7 (67)	53.2 (109)	53.2 (109)
11-20 years	0.3 (1)	10.3 (33)	34.9 (112)	46.1 (148)	46.1 (148)
21-30 years	1.5 (4)	10.1 (27)	31.8 (85)	45.7 (122)	45.7 (122)
Over 30 years	0 (0)	5.9 (3)	35.3 (18)	43.1 (22)	43.1 (22)

Q17: <sup>¶</sup>. vs. 11-20 years.  
Q18: <sup>δ</sup>. vs. other groups, <sup>β</sup>. vs. 6-10 years, 11-20 years.

### Duration of Practice and Indications for Surgery

The analysis of the duration of practice and the knowledge of three classical indications accepted today revealed that physicians who were new to the profession evaluated the indications more accurately ( $p < 0.05$ ). However, there was no significant difference in terms of referring first-degree relatives when indicated and risk perception ( $p > 0.05$ ) (Tables 3 and 4). The responses of the physicians regarding the efficacy of bariatric surgery, mortality rate and recommendation are presented in the Table 5.

### DISCUSSION

This survey study conducted with the participation of 1044 PCPs in Turkey evaluated PCPs' knowledge and attitudes towards obesity and bariatric surgery. PCPs' basic levels of knowledge of identifying obesity, its etiology, and targets are sufficient and their attitudes were positive. It was determined that they could not focus on this issue due to the requirement for a multidisciplinary treatment approach and the workload although they were willing to follow up, treat and guide patients for obesity and surgical treatment. Young physicians were found to make more accurate evaluations in terms of the indications for surgery, but there was no difference between the physicians in terms of professional experiences due to reasons such as cost and risk perception of referring patients to surgery.

Studies conducted in our country have shown an obesity prevalence of around 30% (1). Of the physicians who participated in the survey, 72% agreed with this rate (agree 52.2%, strongly agree 19.5%), while approximately one of the five physicians (22%) had no idea about this. This rate is important since it may indicate a lack of knowledge of the significance of the problem. Studies have shown varying rates of PCPs evaluating their patients with BMI. It appears that especially waist circumference, which is used for obesity assessment, is measured less frequently (9-11). In our study, almost all physicians used BMI to assess obesity and most of them were not satisfied with a single parameter. It was found that physicians did not have any problems in evaluating patients, but there was a problem with recording parameters. About half of the physicians were occasionally recording these values.

The fact that the first and most important steps in obesity treatment are diet, exercise, and behavior modification is an accepted approach in all guidelines (12). However, a considerable proportion of patients cannot achieve success with these approaches. This is much more pronounced in patient groups with an indication for surgery (13,14). Of the physicians, 36% thought that this treatment approach would be successful, while 27.5% stated that it would fail, and 24.5% did not have a definite idea about it. This rate has been found around 16% in the study of Fogelman et

al. (15). These studies have shown that there may be differences among countries. These differences may be related to the number of physicians who participated in the survey, country, and question technique. Again, in another USA survey study, 88% of the PCPs participating in the survey have stated that diet and exercise are successful in the treatment of obesity, but about 30% of them have stated that they do not have enough time to discuss this issue and motivate their patients (16).

Another problem is patient adherence to these recommendations and advice. Another study has found that only 22% of patients followed these recommendations and again the weight loss of only 23% of patients was due to the doctor's advice (17). Although PCPs have key roles in both treatment and prevention, they have important limitations, especially in using some interventions and approaches. A significant proportion of the physicians who participated in the survey had a substantial workload. One of the factors determining success in this patient group is close attention and motivation, which reduces the time that physicians taking care of many patients can allocate to these patients. Problems in the long-term follow-up of the patients remain a barrier for physicians who play a key role in the fight against obesity in our country. The high number of patients examined on a daily basis shows that physicians cannot adequately focus on this patient group in routine practice. However, in our study, the physicians stated that the most important reason for not paying enough attention to this patient group was the requirement of a multidisciplinary approach. This is a significant finding since it shows that physicians are willing to deal with this issue despite a considerable workload if an adequate organization could be made. The results of the study show that a better guideline, a better organization, and coordination between relevant departments are required for primary care physicians. The healthcare centers recently opened in our country and the perfection studies on bariatric surgery can bring PCPs to an important position in terms of guiding and following this issue.

Another result obtained in our study was that the percentage of physicians who stated that they would refer patients who failed to lose weight to surgery with these treatment approaches was 37.6%. The physicians stated that they would recommend alternative treatments (such as acupuncture, ozone, hypnosis) that are not included in the guidelines to 17% of these patients. These results show that there is lack of knowledge of treatment algorithms. The vast majority of the physicians who participated in the survey seemed to agree that there is a need for more training on obesity and bariatric surgery. Although the reported mortality rates for bariatric surgery are 0.2-0.1%, 65.3% of the physicians who participated in the survey stated that they did not have any information on this issue. The rate of positive responses about effective surgical techniques in obesity treat-

ment was high. However, the rate of reluctance to refer their relatives to surgery was high due to the perception of cost and risk. A survey study by Conaty et al. on 150 physicians has found that 21% of physicians were reluctant to refer patients due to complications and risk perception. Despite the considerable contribution of bariatric surgery to the health status of morbidly obese patients, it has been observed that risk perception has a deterrent effect. Many studies on this subject have shown that PCPs do not give priority and importance to obesity treatment, with a negative perception of bariatric surgery risks. Interestingly, similar results have been obtained among surgeons who do not perform bariatric surgery (8,18-20). In particular, physicians' lack of knowledge of the indications for surgery, risks and types of surgery, and long-term follow-ups cause them not to feel comfortable in guiding patients.

In this study, physicians' attitudes towards the indications for surgery were determined by presenting three cases. Two questions described cases of an indication for surgery in accordance with the National Health Institute (NIH) consensus criteria. Recent studies have shown that gastric bypass surgery has positive effects on type 2 diabetes, regardless of weight loss (14). As a result of these studies, the concept of metabolic surgery has emerged and a new indication has been included in the guidelines. Today, surgical treatment is recommended as an alternative approach if type 2 diabetic patients with a BMI between 30-35 kg/m<sup>2</sup> cannot achieve success with medical treatment (21). The third question regarding the indication for surgery was in the form of a metabolic surgery case with this indication. In the first two relevant questions, the percentage of physicians who referred patients to surgery was higher than the case of an indication for metabolic surgery (strongly agree/agree ratio 72.4% vs. 43.3% vs. 35.9%). The rate of referring patients with this relatively new indication to surgery was lower compared to other indications. This rate is only 14.5% in the study of Sarwer et al. (22). In our study, this rate was 36% (agree 30.1%, strongly agree 5.74%). The probable reason for such a result may be due to the fact that the study of Sarwer is older dated. This reveals the importance of including this new indication and the concept of metabolic surgery in all education programs.

Another important result revealed by the comparison based on duration of practice was that the young physician group had a higher willingness to refer patients to surgery. This difference becomes evident, especially in indications for metabolic surgery. There are not many studies on this subject in the literature. A pilot study conducted on a small number of PCPs in England obtained a contrary result. However, this study included a total of 35 physicians, and there were only eight junior physicians (23). Higher willingness of young physicians is the possible result regarding the increasing interest in the subject in recent years, establishment of more training programs in academic

hospitals, and increased use of bariatric surgery. Another possible reason is the inadequacy of postgraduate training programs for PCPs. Again, the pessimistic attitude caused by intense clinic hours over the years may be another reason. It has been found that physicians who have received special training on obesity and its treatment during their medical education refer a higher number of patients to surgery (24). Another interesting result that emerged in our study was that the group of physicians who were new to the profession had less knowledge of surgical success and risk perception compared to other physicians. Training programs to be created will enable physicians to refer more patients to bariatric surgery and increase the positive perception of surgery in patients. Modifications to be made especially in the medical education process are of extreme importance.

Our study has some limitations. Despite the high number of respondents, most of the physicians were from four major cities. Therefore, even though the study numerically reached a power level, it may not homogeneously reflect the general physician population throughout Turkey. However, it is believed that receiving responses from 1044 physicians can still provide an insight into the countrywide physician population. Another limitation was that the study measured the general perception and knowledge level rather than specific conditions. The reason for this was to create a general profile. Another criticism that can be made about the survey methodology may be not knowing the exact number of physicians reached via the survey, therefore not be able to provide an exact response rate. This was attempted to be overcome with repeated calls when necessary by reaching all social media platforms used by PCPs and managers. Participation in the survey was completely voluntary and no award was given for participation.

In conclusion, this study demonstrated that despite their basic knowledge of obesity treatment and willingness to take part in the treatment and follow-up of these patients, the physicians in our country could not adequately focus on this issue due to the requirement for a multidisciplinary approach to the disease and the workload. Young physicians' level of knowledge of bariatric surgery was higher, but their attitudes were similar in terms of patient referral, especially due to risk perception and cost. The demand for training on almost all subjects was high. Organizing postgraduate training programs, establishing curricula on bariatric surgery in medical faculty education programs will positively contribute to the knowledge and perception of this issue. Training on possible complications, risk-benefit perception, and especially long-term follow-up will increase the self-confidence of PCPs.

**Ethics Committee Approval:** The approval for the study was obtained from the Ethics Committee of Uludag University ethics committee approval number: 2019-10/4).

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept - H.Ö., M.N.; Design - H.Ö., M.N.; Supervision - H.Ö.; Materials - M.N., H.Ç.; Data Collection and/or Processing - H.Ç.; Literature Review - H.Ö., M.N.; Writing Manuscript - H.Ö.; Critical Reviews - H.Ö.

**Conflict of Interest:** The authors declare that they have no conflict of interest.

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## REFERENCES

1. The Republic of Turkey Health Ministry. General Directorate of Public Health. Activity report (2019). Available from: <https://dosyasb.saglik.gov.tr> [CrossRef]
2. Chooi YC, Ding C, Magkos F. The epidemiology of obesity. *Metabolism* 2019; 92: 6-10 [CrossRef]
3. Bray GA, Fruhbeck G, Ryan DH, Wilding JP. Management of obesity. *Lancet* 2016; 387(10031): 1947-56. [CrossRef]
4. Ma J, Jr Urizar GG, Alehegn T, Stafford RS. Diet and physical activity counseling during ambulatory care visits in the United States. *Prev Med* 2004; 39(4): 815-22. [CrossRef]
5. Logue E, Sutton K, Jarloura D, Smucker W. Obesity management in primary care: assessment of readiness to change among 284 family practice patients. *J Am Board Fam Pract* 2000; 13(3): 164-71. [CrossRef]
6. Cardoso L, Rodrigues D, Carrilho F. Short and long-term mortality after bariatric surgery: A systematic review and meta-analysis. *Diabetes Obes Metab* 2017; 19(9): 1223-32. [CrossRef]
7. Kallies KJ, Borgert AJ, Kothari SN. Patient perceptions of primary care providers' knowledge of bariatric surgery. *Clin Obes* 2019; 9(2): e12297. [CrossRef]
8. Hirpara DH, Cleghom MC, Kwong J, Saleh F, Sockalingam S, Quereshey FA, et al. Perception and awareness of bariatric surgery in Canada: A national survey of general surgeons. *Obes Surg* 2016; 26(8): 1799-805. [CrossRef]
9. Bocquier A, Verger P, Basdevant A, Andreotti G, Baretge J, Villani P, et al. Overweight and obesity: Knowledge, attitudes, and practices of general practitioners in France. *Obes Res* 2005; 13(4): 787-95. [CrossRef]
10. Piccinini-Vallis H. Diagnosis management of obesity: a survey of general practitioners' awareness of familiarity with the 2006 Canadian clinical practice guidelines. *Can J Diabetes* 2011; 35: 269-73. [CrossRef]
11. Tsai AG, Rimmert JE, Butryn ML, Wadden TA. Treatment of obesity in primary care. *Med Clin North Am* 2018; 102(1): 35-47. [CrossRef]
12. The Look AHEAD Research Group. Eight-year weight losses with an intensive lifestyle intervention: The look AHEAD study. *Obesity (Silver Spring)* 2014; 22(1): 5-13 [CrossRef]
13. Schauer PR, Bhatt DL, Kirwan JP, Wolski K, Ali Aminian A, Brethauer SA, et al. Bariatric surgery versus intensive medical therapy for diabetes: 5-year outcomes. *N Eng J Med* 2017; 376(7): 641-51. [CrossRef]
14. Fogelman Y, Vinker S, Lachter J, Biderman A, Ithzak B, Kitai E. Managing obesity: a survey of attitudes and practices among Israeli primary care physicians. *Int J Obes Relat Metab Disord* 2002; 26(10): 1393-7. [CrossRef]
15. Glauser TA, Roepke N, Stevenin B, Dubois AM, Ahn SM. Physician knowledge about and perceptions of obesity management. *Obes Res Clin Pract* 2015; 9(6): 573-83. [CrossRef]
16. Falvo AM, Philp FH, Eid GM. Primary care provider management of patients with obesity at an integrated health network: a survey of practices, views, and knowledge. *Surg Obes relat Disord* 2018; 14(8): 1149-54. [CrossRef]



17. Conaty EA, Denham W, Haggerty SP, Linn JG, Joehl RJ, Ujiki MB. Primary care physicians' perceptions of bariatric surgery and major barriers to referral. *Obes Surg* 2020; 30(2): 521-6. [\[CrossRef\]](#)
18. Stolberg CR, Hepp N, Juhl AJA, B CD, Juhl CB. Primary care physician decision making regarding referral for bariatric surgery: a national survey. *Surg Obes Relat Dis* 2017; 13(5): 807-13. [\[CrossRef\]](#)
19. Auspitz M, Cleghorn MC, Azin A, Sockalingam S, Queresby FA, Okraïneç A, et al. Knowledge and perception of bariatric surgery among primary care physicians: a survey of family doctors in Ontario. *Obes Surg* 2016; 26(9): 2022-8. [\[CrossRef\]](#)
20. El-Beheiry M, Vergis A, Choi JU, Clouston K, Hardy K. A survey of primary care physician referral to bariatric surgery in Manitoba: Access, perceptions and barriers. *Ann Transl Med* 2020; 8(Suppl 1): S3. [\[CrossRef\]](#)
21. Di Lorenzo N, Antoniou SA, Batterham RL, Busetto L, Godoroja D, Iossa A, et al. Clinical practice guidelines of the European Association for Endoscopic Surgery (EAES) on bariatric surgery: update 2020 endorsed by IFSO-EC, EASO and ESPCOP. *Surg Endosc* 2020; 34(6): 2332-58. [\[CrossRef\]](#)
22. Sarwer DB, Ritter S, Wadden TA, Spitzer JC, Vetter ML, Moore RH. Physicians' attitudes about referring their type 2 diabetes patients for bariatric surgery. *Surg Obes Relat Dis* 2012; 8(4): 381-6. [\[CrossRef\]](#)
23. McGlone ER, Wingfield LR, Munasinghe A, Batterham RL, Reddy M, Khan OA. A pilot study of primary care physicians' attitude to weight loss surgery in England: are the young more prejudiced. *Surg Obes Relat Dis* 2018; 14(3): 376-80. [\[CrossRef\]](#)
24. Stanford FC, Johnson ED, Claridy MD, Earle RL, Kaplan LM. The role of obesity training in medical school and residency on bariatric surgery knowledge in primary care physicians. *Int J Family Med* 2015; 2015: 841249. [\[CrossRef\]](#)



### ORJİNAL ÇALIŞMA-ÖZET

Turk J Surg 2021; 37 (3): 266-276

## Türkiye birinci basamak hekimlerinin obezite ve bariatrik cerrahi hakkında bilgi ve tutumları: Anket çalışması

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<sup>2</sup> Uludağ Üniversitesi Tıp Fakültesi, Bursa, Türkiye

### ÖZET

**Giriş ve Amaç:** Bu anket çalışması Türkiye birinci basamak hekimlerinin (BBH) obezite ve bariatrik cerrahi hakkındaki bilgi, tutum ve algılarını ölçmek amacıyla yapılmıştır. Ayrıca hekimlerin çalışma süreleri ve özellikle bariatrik cerrahi ve cerrahiye hasta yönlendirmeleri arasındaki ilişki araştırılmıştır.

**Gereç ve Yöntem:** Yirmi yedi soruluk bir anket Survey monkey üzerinde yürürlüğe konarak sosyal medya ve internet aracılığıyla hekimlere ulaştırıldı. Hekimler çalışma sürelerine göre gruplandırıldı. Bu gruplar bariatrik cerrahiye verdikleri cevap açısından univaryans analiz kullanılarak karşılaştırıldı.

**Bulgular:** Toplam 1044 hekim ankete katıldı. Obezite tedavisinde BBH'lerinin önemli bir rol oynayabileceğine kesinlikle katılan/katılan hekim sayısı 743 (%71,1) olmuştur. Bu hastaların tedavilerini üstlenmemelerinin en önemli nedeni olarak tedavinin multidisipliner olması belirtilmiştir (%51,5, n= 537). Beden kitle indeksi (BMI) 40 kg/m<sup>2</sup> üzeri olan hastaları cerrahiye yönlendireceğini söyleyen hekim oranı %72,3, BMI 35-40 kg/m<sup>2</sup> olan ve beraberinde yandaş hastalığı olan hastaları cerrahiye yönlendirme oranı %53,3 ve BMI 30-35 kg/m<sup>2</sup> ve kontrolsüz diyabeti olan hastaları yönlendirme oranı %35,9. Çalışma süresi daha yeni olan hekimlerin cerrahi endikasyonları daha olumlu değerlendikleri bulunmuştur (p< 005).

**Sonuç:** Bu çalışmada Türkiye BBH'lerinin obezite tedavisi konusunda temel bilgi düzeyine sahip oldukları ve tedaviye katılma konusunda istekli oldukları görülmüştür. Bununla beraber multidisipliner yaklaşım gerekmesi ve iş yükü nedeniyle bu hastalarla ilgilenemediklerini belirtmişlerdir. Çalışma süresi açısından daha yeni olan hekimlerin hastaları cerrahiye yönlendirme açısından daha yüksek bilgi oranına sahip oldukları ancak hastaları sevk etme oranının benzer olduğu görülmüştür.

**Anahtar Kelimeler:** Birinci basamak hekimler, obezite tedavisi, obezite cerrahisi, anket çalışması

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17. Conaty EA, Denham W, Haggerty SP, Linn JG, Joehl RJ, Ujiki MB. Primary care physicians' perceptions of bariatric surgery and major barriers to referral. *Obes Surg* 2020; 30(2): 521-6. [\[CrossRef\]](#)
18. Stolberg CR, Hepp N, Juhl AJA, B CD, Juhl CB. Primary care physician decision making regarding referral for bariatric surgery: a national survey. *Surg Obes Relat Dis* 2017; 13(5): 807-13. [\[CrossRef\]](#)
19. Auspitz M, Cleghorn MC, Azin A, Sockalingam S, Queresby FA, Okra-inec A, et al. Knowledge and perception of bariatric surgery among primary care physicians: a survey of family doctors in Ontario. *Obes Surg* 2016; 26(9): 2022-8.
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**Appex 1: Survey Questions**

1. I consent to participate in the study and my answers to be used for research purposes.

I approve

2. Obesity is a chronic disease defined as "an excessive accumulation of body fat to an extent to impair health".

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

3. The most important reason for the increase in obesity prevalence all over the world is easy access to high-energy foods and a sedentary lifestyle.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

4. Studies have shown that the prevalence of obesity in the adult population in our country is around 30%.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

5. A primary care physician should undertake the treatment and provide the necessary recommendations when an obese patient visits for weight loss.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

6. A weight loss of 5-10% of body weight should be targeted for a significant change in health parameters and quality of life of an obese patient.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

7. Patients who are included in the diet-exercise-behavioral therapy program for besity are generally successful in achieving their weight loss goals.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

8. What is the most common method you use for diagnosing obesity? (You can choose more than one option)

Body weight

Body Mass Index

Waist circumference

Waist-to-hip ratio

Skinfold thickness

9. How often do you record the height and weight of the patients you examine?

Never

Rarely

Sometimes

Frequently

Always

10. In what case is a patient defined as obese according to the criteria currently used in routine practice?

A body mass index of 25-29.9 kg/m<sup>2</sup>

A body mass index > 30 kg/m<sup>2</sup>

A body mass index >35 kg/m<sup>2</sup>

A body mass index >40 kg/m<sup>2</sup>

Do not know

11. What is the most important reason for a primary care physician not to undertake obesity treatment in your opinion?

Intense clinic hours

Lack of knowledge

Inadequate physical and medical facilities

Reluctance of patients

Requirement for a multidisciplinary approach

Other (please specify)

12. What would you recommend to an obese patient who is unsuccessful in losing weight with a comprehensive diet and exercise program

A stricter diet-exercise program

Medical treatment

Alternative methods (Acupuncture, ozone, hypnosis, etc.)

Refer to surgery

Other (please specify)

13. How did you acquire your knowledge of obesity and metabolic surgery

During medical education

From patients

Internet-social media, press

Conferences/congresses

Books/journals

I have no knowledge on this subject

14. A patient with a body mass index of 41 kg/m<sup>2</sup> who cannot lose weight with diet-exercise-lifestyle modifications should be referred to bariatric and metabolic surgery.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

15. Patients with a body mass index of 36 kg/m<sup>2</sup> and obesity-related concomitant diseases (such as type 2 diabetes, hypertension, dyslipidemia, sleep apnea) who cannot lose weight with diet-exercise-lifestyle modifications should be referred to bariatric and metabolic surgery.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

16. Bariatric and metabolic surgery should be considered an alternative for a patient with type 2 diabetes and a body mass index of 33 kg/m<sup>2</sup> if hyperglycemia is inadequately controlled despite the use of optimal medical treatment (druginsulin).

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

17. Bariatric and metabolic surgery is the method providing the longest and largest amount of weight loss in morbidly obese patients among the methods known and used.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

18. According to the literature data, the 30-day mortality rates for bariatric and metabolic surgery procedures are less than 0.5% today.

Strongly disagree

Disagree

No idea

Agree

Strongly agree

19. I would refer a first-degree relative of mine to bariatric and metabolic surgery when indicated.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

20. If you do not refer a patient with an indication for bariatric and metabolic surgery for this purpose, what could be the reason? (You can choose more than one option)

I have no knowledge

I do not find it effective

Patient refusal

High cost

High risk

Other (please specify)

21. In your opinion, what should the primary care physician know about bariatric and metabolic surgery? (you can choose more than one option)

Indications

Complications

Efficacy

Postoperative long-term follow-up protocols

None

22. Do you have a patient who had undergone bariatric or metabolic surgery and whose long-term follow-up is carried out by you?

No

Yes

23. Your age

24-30 years

31-40 years

41-50 years

51-60 years

Over 60 years

24. How many years have you been a physician?

0-5 years

6-10 years

11-20 years

21-30 years

31-40 years

Over 40 years

25. The province you work in

26. How many patients do you examine per week?

0-50

51-100

101-200

201-300

301-400

401-500

Above 500

27. What is the approximate rate of obese patients among the patients you examine?

0-5%

6-10%

11-15%

16-20%

21-25%

26-30%

31-40%

Above 40%