

Seasonal Rise in Plastic Surgery during Ramadan: A Cross-sectional Survey

Adnan G. Gelidan, MD, FRCSC,
FACS

Background: While demand for plastic surgery continues to rise worldwide, there are no known seasonal differences in plastic surgery volume. This study aimed to evaluate whether Ramadan was associated with a measurable rise in demand for plastic surgery.

Methods: This was a cross-sectional nationwide survey of plastic surgeons. Surgeon demographics, practice setting, case load, surgical preference during the month of Ramadan, factors associated with surgical volume, and procedures that were in demand during Ramadan were collected from all registered plastic surgeons in the Saudi Commission Health Specialties.

Results: A total of 120 (73%) of 165 plastic surgeon completed the survey. The male:female ratio was 8:1. A total of 34 (28%) surgeons operated in public- and private-sector practices, and 53% (n = 64) maintained private practice only. When they operate, 60 (50%), 34 (28%), and 10 (8%) operate in the morning, in morning and evening, and in evening only, respectively. Although surgeons reported lower case volumes due to reduced working hours, 57% (n = 68) reported an increase in the proportion of cosmetic surgery. There was more than 80% consensus between surgeons on school vacation and ensuing wedding season as reasons for increased demand for plastic surgery.

Conclusions: Seasonal demand for cosmetic plastic surgery was virtually unheard of. Although reduced working hours in Ramadan meant lower plastic surgery case volumes, surgeons reported an increase in the demand for cosmetic surgical and nonsurgical procedures during the month of Ramadan. School vacation and post-Ramadan social events were attributed as reasons for this rise. (*Plast Reconstr Surg Glob Open* 2022;10:e4397; doi: [10.1097/GOX.0000000000004397](https://doi.org/10.1097/GOX.0000000000004397); Published online 23 June 2022.)

INTRODUCTION

Plastic surgery has seen a significant rise in demand during the recent years. The United States recorded a 60% rise in plastic surgery procedures in both sexes between 2012 and 2016. A recent report published by the American Society of Plastic Surgeons showed that Americans spent around \$16.5 billion on plastic surgery in 2018.¹ Worldwide, almost two million cosmetic plastic surgery procedures were performed in 2017.² The rise of plastic surgery is attributed to the effects of social media, intense marketing, plastic surgeon websites,

and popularity of before and after photographs.⁸⁻¹⁰ The typical plastic surgery patient is the university graduate, employed, 20- to 40-year-old woman. Reasons given for seeking plastic cosmetic surgery were mainly beauty and attaining a youthful look.¹¹

Similar trends in plastic surgery volume were noticed in Saudi Arabia, which ranks number one in the region and among the top 20 countries in plastic surgery volume worldwide.² Reports released by the Saudi Ministry of Health in 2019 documented a significant increase in the volume of cosmetic procedures in the last 3–5 years.³ Rhinoplasty was reported as the most commonly performed facial plastic surgery procedure, and liposuction was the most common general plastic surgery procedure.⁴

Reconstructive plastic surgery procedures tend to show seasonal peaks. For instance, burns are more common

From the Department of Surgery, King Khalid University Hospital, King Saud University, Riyadh, Saudi Arabia.

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around Christmas, hand injuries tend to occur more often during long weekends, and necrotizing infections are likelier in winter.⁵⁻⁷ However, there is no published evidence for seasonal peaks in cosmetic surgery volumes. Nevertheless, local anecdotal evidence suggests increased demand for plastic surgery cosmetic procedures around holidays.

Ramadan (the ninth month of the lunar Islamic calendar) is an important holy month in Islam. During this month, Muslims abstain from food and fluids between dawn and sunset. The annual observance of Ramadan is considered an important Islamic practice and one of the five pillars of Islam. It is a month of fasting, reflection, and strengthening of community bonds. More than 1.5 billion Muslims worldwide fast from food and water from dawn to sunset for 29–30 days. Workplaces in Muslim majority countries accommodate this significant change in lifestyle by reducing daytime work hours and/or conducting business after sunset. Ramadan is followed by Eid holiday, a time of celebration and social gathering.

In this study, we aimed to evaluate whether plastic surgery caseload is affected by Ramadan. We explored the effect of seasonality on preference to undergo plastic surgery cosmetic procedures in Saudi Arabia, evaluated possible causes, and identified the procedures that were in demand at this time of the year.

METHODS

This was a cross-sectional electronic survey of plastic surgeons registered with the Saudi Commission for Health Specialties. Data were collected over a period of 2 weeks from August 14 to August 28, 2020. To optimize the scientific rigor of the survey and to lessen any real or perceived bias from the methodology, the authors collaborated with a contract research organization to guide development and administration of the survey.

Questionnaire development for this study was an iterative process that was conducted by the main author and reviewed by two other plastic surgeons and data analysts. The survey instrument included questions targeting participant demographics, practice setting, practice during the month of Ramadan, factors associated with practice increase if present, and list of plastic cosmetic procedures the surgeon observes the increase in (if any). The survey was validated in a small pilot study that included five participants to ensure clarity and flow, and to gauge the time required to complete the questionnaire. Comments by the participants were taken into consideration, and adjustments were made. Internal consistency was assessed using reliability analysis, which showed a Cronbach's alpha of 0.743 (interpreted as good and acceptable).

Informed consent to participate in the survey was obtained before starting the questionnaire, and confidentiality was guaranteed. Each participant responded once, and responses from the same IP address within a short timeframe were merged to prevent duplication of entries. Ethical approval was obtained through the institutional review board at King Saud University Medical City IRB Project No. E-20-4757.

Takeaways

Question: Is there a season for increase in surgical and nonsurgical cosmetic procedures?

Findings: In the holy month of Ramadan, we found an increased caseload of cosmetic surgery.

Meaning: Proximity to summer and religious holiday after Ramadan and increase of volume of social and wedding events after Ramadan were found to be the main reasons associated with the possible rise in cosmetic procedures and labeling of the month of Ramadan as a cosmetic season.

Data Analysis

Data were analyzed using SPSS 21.0 (IBM Inc, Chicago, IL) statistical software. Descriptive statistics (frequencies and percentages) were used to describe the categorical variables. The Fisher exact or Pearson chi-square test was used to observe the association between the categorical variables. A *P* value of 0.05 or less was used to report the statistical significance of findings.

RESULTS

The overall response rate was 73%, with 120 of the 165 invited plastic surgeons completing the questionnaire. The male:female ratio was 8:1, and two-thirds of surgeons were at least 41 years old (*n* = 81). A total of 34 (28%) surgeons operated in public- and private-sector practices, and 53% (*n* = 64) maintained private practice only. Additionally, 80% (*n* = 96) had more than 5 years of experience after specialist training (Table 1). Regarding case load, about half of surgeons (45%; *n* = 54) reported that 50% of their cases were cosmetic, whereas one-third of surgeons performed mostly (80% or more of cases) cosmetic surgery.

When asked about plastic surgery during the month of Ramadan, 71 surgeons (59%) expressed dislike of performing cosmetic surgery during the month. When they operate, 60 surgeons (50%) operate only during the day, 34 surgeons (28%) operate in morning and evening, whereas 10 (8%) performed cosmetic surgery only in the evening after breaking their fast. Interestingly, 16 surgeons (13%) halted their practice during the month of Ramadan (Table 2).

During Ramadan, 73% of surgeons (*n* = 87) observed lower case volumes overall. However, 57% of surgeons (*n* = 68) reported an increase in the proportion of cosmetic surgery. There was more than 80% consensus between surgeons on school vacation and ensuing wedding season as reasons for increased demand for plastic surgery (Fig. 1).

During Ramadan, high demand was reported for liposuction, lipofilling abdominoplasty, and breast surgery by 80%, 55%, 51%, and 46% of surgeons, respectively. For nonsurgical procedures, Botox and filler were reported to be in high demand by 81% and 78% of surgeons, respectively (Fig. 2).

Surgeons who operate private practices solely or in conjunction with public-sector hospitals were more willing to operate during Ramadan (*P* value < 0.001).

Table 1. Distribution of Sociodemographic and Professional Characteristics of Surgeons in the Present Study (n = 120)

Characteristic	n (%)
Age group, y	
31–40	39 (32.5)
41–50	44 (36.7)
>50	37 (30.8)
Gender, men	107 (89.2)
Years in practice after specialty training	
<5	24 (20.0)
5–10	32 (26.7)
10–15	17 (14.1)
>15	47 (39.2)
Region of practice	
Central region	68 (56.7)
Western region	29 (24.2)
Eastern region	12 (10.0)
Other	11 (9.1)
Practice setting	
Public sector	57 (47.5)
Private sector	29 (24.2)
Both	34 (28.3)
Type of plastic surgery practice	
Reconstructive	98 (81.7)
Cosmetic	18 (15.0)
Both	4 (3.3)
Percentage of cosmetic practice	
0–20	26 (21.7)
20–40	34 (28.3)
40–60	20 (16.7)
60–80	26 (21.7)
80–100	14 (11.7)

Practice setting, type of practice, and percentage of cosmetic practice were factors that were significantly associated with willingness to perform cosmetic surgery

Table 2. Distribution of Responses of Assessment among Plastic Surgeons for Performing Surgery during Ramadan

Assessment Item	n (%)
Do you like to perform cosmetic surgery during Ramadan? Yes	49 (40.8)
Operating during the day in Ramadan makes fasting feel shorter, yes	91 (75.8)
There are more cases in Ramadan compared with other months, yes	33 (27.5)
When do you usually perform cosmetic surgery during Ramadan?	39 (32.5)
Morning	60 (50.0)
Evening	10 (8.4)
Both	34 (28.3)
I do not operate	16 (13.3)
Is there increased demand on cosmetic plastic surgery during the month of Ramadan in your practice?	
Yes	48 (40.0)
No	44 (36.7)
I do not know	28 (23.3)
What is roughly the percentage increase in cosmetic surgery in your practice during the month of Ramadan in the past 3 to 5 years?	
0–20	52 (43.3)
20–40	35 (29.2)
40–60	17 (14.1)
60–80	11 (9.2)
80–100	2 (1.7)
>100	2 (1.7)
Which cosmetic procedures did you notice increased demand for?	
Surgical procedures	13 (10.8)
Nonsurgical procedures	47 (39.2)
Both	60 (50)

during Ramadan. Those who operate in the private sector and surgeons with a predominantly cosmetic practice were more willing to operate during the month (Table 3).

Overall, there was no statistically significant agreement on a specific reason for willingness (or lack thereof) to operate during Ramadan (Table 4).

DISCUSSION

In this study, we show that while overall plastic surgery volume is decreased, surgeons agree that the caseload during the month is higher unique and consists mostly of cosmetic surgery. The majority of surgeons attribute this rise in cosmetic surgery to social reasons including the beginning of school holiday and Eid, which marks the end of Ramadan and is one of the two main holidays in the Muslim world. Interestingly, one in every 12 surgeons only operates during the evening, and one in every eight takes the month off. It is worth noting that business hours are reduced to 6 hours during Ramadan.

Many activities, such as sports championship, and social events have special circumstances, exposure and risk, treatment options, injury predilection, and approach. Although several plastic surgical reconstructive procedures were found to have seasonal peaks (burns during Christmas, hand injuries during long weekends and breaks, and necrotizing infections during the winter, for instance),^{6,7} there is scarce literature on seasonality for undergoing plastic surgery cosmetic procedures. To the best of our knowledge, this is the first study that found an association between a specific season and a rise in demand for surgical and nonsurgical cosmetic interventions.

During Ramadan in Saudi Arabia, business hours are shortened to 6 hours during the day, and many businesses operate after dusk. These facts explain why 73% of surgeons in this study reported lower case volumes during the month. A cross-sectional survey from Turkey found that nurses working in surgery were more likely to experience fatigue during Ramadan.¹² Daytime fatigability is a potential explanation for why 60% of surgeons dislike operating during the day in Ramadan, and why almost half of all surgeons schedule some or all of their cases in the evening. This also potentially explains why 13% of surgeons take Ramadan off. The reduction in plastic surgeon availability may also be a reason for why practicing surgeons observed a rise in demand for cosmetic surgery during Ramadan.

Social functioning is increased after procedures that affect body image. A study by Daldal et al¹³ found that patients who undergo bariatric surgery early in Ramadan were more social late in the month and during Eid. In the present study, surgeons were in agreement that the reasons patients seek cosmetic surgery in Ramadan are related to their social functions after the month. Summer starts around Ramadan, and Saudi Arabian weddings usually take place during the summer. Some families choose to have their weddings at a tourist destination abroad where the event is regarded as an opportunity for entertainment

Reasons for Increased Demand on Plastic Surgery in Ramadan

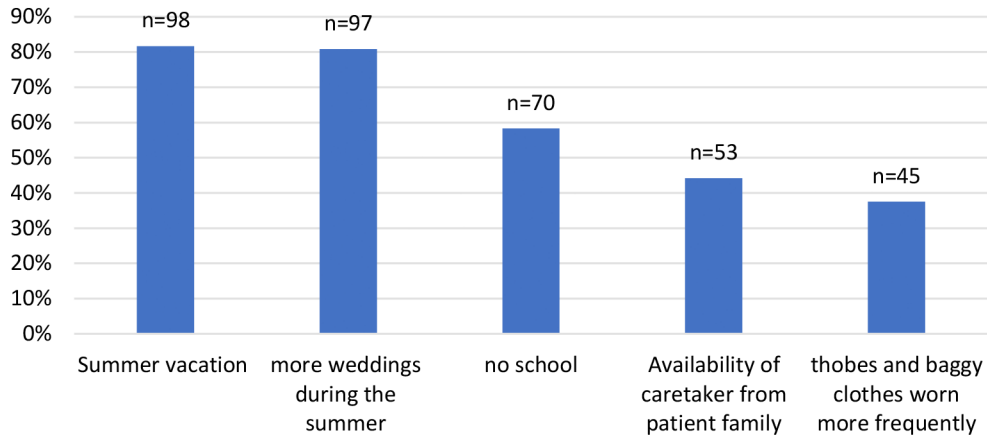


Fig. 1. Consensus among surgeons on reasons for increased demand on plastic surgery during Ramadan.

Procedures with increased demand during Ramadan

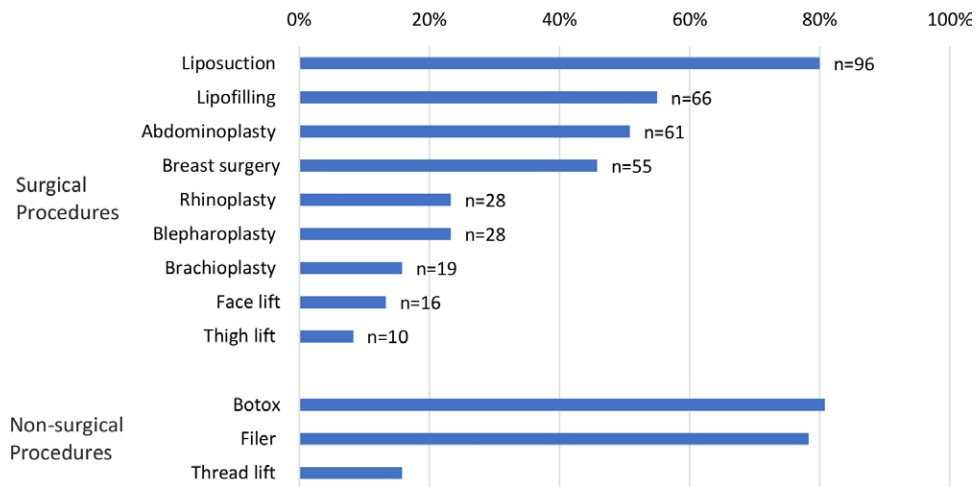


Fig. 2. Consensus among surgeons on procedures with increased demand during Ramadan.

and leisure. Botox, Filler, liposuction, and lipofilling were among the most common cosmetic procedures that surgeons noticed the upsurge in during Ramadan. These procedures are simple and quick and do not interfere with fasting.

This study found that the male:female ratio of plastic surgeons is 8:1. This is in contrast with the male:female ratio of graduates from medical schools in Saudi Arabia. In 2020, the ratio was 1.3:1, indicating equal opportunities in graduate degrees.¹⁴ This gender inequality is not limited to Saudi Arabia but is a worldwide problem. A study in *JAMA Surgery* by four women surgeons identified several issues that are behind the present status of women in surgery. These include obstacles to career development for women surgeons such as residency/fellowship

support, mentorship/sponsorship, leadership, work-life balance, pay equity, and conscious and unconscious biases. We share the opinion of the authors and support enacting measures that cultivate gender equity for women surgeons.¹⁵

Limitations of this study include that it was cross sectional and that it relied on surgeons' input. Unfortunately, there is no plastic surgery registry in Saudi Arabia to date. This issue hinders plastic surgery research in the country, and efforts to develop a nationwide registry are underway. To help surgeons and administrators understand the unique needs of our patient population during Ramadan, this study was designed to rely on surgeons' input from across the nation and, thereby, guarantee representation of all regions. Also, we would like to add that seasons

Table 3. Association between Willingness to Perform Surgery during Ramadan and Professional Characteristics of Study Subjects

Characteristic	Do You Like to Perform Cosmetic Surgery in the Month of Ramadan		χ^2 value	P
	Yes (n = 49)	No (n = 71)		
Age group, y			2.58	0.276
31–40	13 (33.3)	26 (66.7)		
41–50	22 (50)	22 (50)		
>50	14 (37.8)	23 (62.2)		
Gender			0.03	0.854
Men	5 (38.5)	8 (61.5)		
Women	44 (44.1)	63 (58.9)		
Years in practice after specialty training			4.38	0.223
<5	5 (29.4)	12 (70.6)		
5–10	13 (40.6)	19 (58.4)		
10–15	14 (58.3)	10 (41.7)		
>15	17 (36.2)	30 (63.8)		
Region of practice			5.27	0.153
Central region	34 (50)	34 (50)		
Western region	8 (27.6)	21 (72.4)		
Eastern region	4 (33.3)	8 (66.7)		
Other	9 (52.9)	8 (47.1)		
Practice setting			14.98	0.001
Public sector	4 (13.8)	25 (86.2)		
Private sector	21 (61.8)	13 (38.2)		
Both	24 (42.1)	33 (57.9)		
Type of plastic surgery practice			8.12	0.017
Reconstructive	0 (0)	4 (100)		
Cosmetic	12 (66.7)	6 (33.3)		
Both	37 (37.8)	61 (62.1)		
Percentage of cosmetic practice			8.38	0.036
0	0 (0)	2 (100)		
20–40	17 (29.8)	40 (70.2)		
60–80	22 (47.8)	24 (52.2)		
100	9 (64.3)	5 (35.7)		

shift by 11 days every lunar year. Therefore, the season on which Ramadan falls on changes over a 33-year span. Nevertheless, end of school year (summer) vacation is synchronized in Saudi Arabia to start after Ramadan.

CONCLUSIONS

Seasonal demand for cosmetic plastic surgery was virtually unheard of. Although working hours are reduced in Ramadan, a notable rise in demand for surgical and nonsurgical cosmetic procedures was reported by plastic

Table 4. Association between Willingness to Perform Surgery during Ramadan and Surgeon Perception

Question to Assess Possible Reasons for Surgery Rise	Willingness to Perform Surgery during Ramadan		χ^2 Value	P
Do you think that the increase in cosmetic surgery during the month of Ramadan is because of the vacation period?				
Yes	41 (41.8)	57 (58.2)		
No	8 (36.4)	14 (63.6)		
Do you think that the increase in cosmetic surgery during the month of Ramadan is because patients saved enough money toward the end of the year to perform surgery?			0.005	0.945
Yes	12 (41.4)	17 (58.6)		
No	37 (40.7)	54 (59.3)		
Do you think that the increase in cosmetic surgery during the month of Ramadan is because of the start of school vacation when people are more concerned about looks and appearance?			0.81	0.368
Yes	40 (43)	53 (57)		
No	9 (33.3)	18 (66.7)		
Do you think that the increase in cosmetic surgery during the month of Ramadan is because there are more weddings during the summer and the beginning of the year for which patients want to look better, being brides, grooms, or attendees?			0.08	0.774
Yes	39 (40.2)	58 (59.8)		
No	10 (43.5)	13 (56.5)		
Do you think that the increase in cosmetic surgery during the month of Ramadan is because patients are more likely to wear thobes (ankle length baggy robes with long sleeves) during this month, thereby helping them hide cosmetic procedure effects such as drains, binders, swelling, and edema better?			0.02	0.886
Yes	18 (40)	27 (60)		
No	31 (41.3)	44 (58.7)		
The month of Ramadan is a social month so children can be left with patients' families easier during the time of cosmetic procedure performance			0.018	0.893
Yes	22 (41.5)	31 (58.5)		
No	27 (40.3)	40 (59.7)		

surgeons. Surgical procedures for which this observation was especially evident included liposuction, lipofilling, and abdominoplasty, whereas the nonsurgical intentions that had the highest demand were Botox and filler procedures.

Adnan G. Gelidan, MD, FRCSC, FACS

Department of Surgery
King Khalid University Hospital
King Saud University
7488 Almajmaa, Riyadh 13316, Saudi Arabia
E-mail: adnangelidan@gmail.com

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