



## Original Research

# Motivations and characteristics of patients seeking minimally invasive cosmetic procedures in two Iranian dermatology centers: A cross-sectional study ☆☆☆★



Sahar Dadkhahfar MD<sup>a,1</sup>, Mehdi Gheisari MD<sup>a,1</sup>, Yasamin Kalantari MD<sup>b</sup>,  
Khatere Zahedi MD<sup>a</sup>, Amirhooshang Ehsani MD<sup>b</sup>, Etesami Ifa MD, MPH<sup>b,\*</sup>

<sup>a</sup> Skin Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>b</sup> Department of Dermatology, Razi Hospital, Tehran University of medical sciences, Tehran, Iran

## ARTICLE INFO

## Article history:

Received 18 February 2021

Revised 7 July 2021

Accepted 8 July 2021

## Keywords:

Cosmetic medicine  
minimally invasive plastic surgery  
noninvasive plastic surgery  
Botox  
fillers

## ABSTRACT

**Background:** Few studies have evaluated patients' motivations for seeking minimally invasive cosmetic procedures.

**Objective:** This study aimed to assess the demographic characteristics and motivation of patients who seek minimally invasive cosmetic procedures in two academic referral dermatology centers.

**Methods:** The study included adult patients seeking minimally invasive facial cosmetic procedures at two academic dermatology centers in Tehran, Iran, between January 2019 and June 2019.

**Results:** The majority of patients were married, employed women with a mean age of  $39.6 \pm 10.74$  years. The most common region of the face they expected to change was the eyes (56%). Patients who requested fillers desired their cheeks to improve significantly more than patients who requested toxin injections (20.5% vs. 3%;  $p = .005$ ). Patients had mostly heard about the procedures from friends (40.4%). Approximately one third of patients had experienced a major life event during the preceding year (loss of a family member [50%], marriage [26.9%]). A minority of patients had ever visited a psychiatrist (13.9%), and 15.3% had a history of using psychiatric drugs. The procedure type requested by men was significantly different from that requested by women (88.2% vs. 60.8% for Botox; 11.8% vs. 34.9% for fillers, and 0% vs. 4.3% for fat injections;  $p = .044$ ). The most common motivating factor for patients was gaining rejuvenation (39.2%). The most common preventive factors for patients to undergo the procedures earlier were financial issues (41.7%).

**Conclusion:** Patients seeking minimally invasive cosmetic procedures were married, educated, employed women in their 30s desiring rejuvenation and commonly were not influenced by external factors, such as relationships or the media.

© 2021 The Author(s). Published by Elsevier Inc. on behalf of Women's Dermatologic Society.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

☆ Originally received: February 18, 2021.

☆☆ Final revision: July 7, 2021.

★ Accepted: July 8, 2021.

\* Corresponding Author: I. Etesami

E-mail address: [ifa.etesami@gmail.com](mailto:ifa.etesami@gmail.com) (E. Ifa).

<sup>1</sup> Co-first authors

### What is known about this subject with regard to women and their families?

- Few studies have evaluated patients' motivations for seeking minimally invasive cosmetic procedures. Also, sociocultural factors that motivate female patients to undergo such procedures in different populations are not well defined.
- Performing these procedures places a financial burden on patients' families.
- Knowing someone who has already undergone a cosmetic procedure motivates female patients to undergo that procedure.

### What is new from this article as messages for women and their families?

- The majority of patients seeking minimally invasive cosmetic procedures were women in their 30s who were married, educated, and employed.
- The most important factors that encouraged female patients to undergo a minimally invasive procedure were rejuvenation and friends' suggestions.
- Women are more likely to request fat and filler injections compared with men.
- The rate of regular sunscreen usage was significantly higher in women compared with men.

## Introduction

Despite the increasing request for noninvasive cosmetic procedures, the sociocultural factors that motivate patients to undergo such procedures in different populations are not well defined (Maisei et al., 2018). Several studies have assessed the perception of invasive cosmetic procedures, such as rhinoplasty, mammoplasty, and abdominoplasty (Javo and Sørli, 2010). Based on the current evidence, patients with internal motivations for seeking cosmetic procedures are more satisfied with their outcomes compared with those seeking cosmetic surgeries for external motivations, such as saving a failing marriage (Honigman et al., 2004). Social status, as well as new social media applications, may also affect the motivations for choosing cosmetic procedures (Parsa et al., 2021).

This study aimed to evaluate the demographic characteristics and motivation of patients who seek minimally invasive cosmetic procedures, including botulinum toxin, soft-tissue filler, or fat injection, at two referral dermatology centers in Iran based on a standard predesigned survey.

## Methods

This cross-sectional study was performed cooperatively at two academic dermatology centers in Tehran, Iran, between January 1 and June 1, 2019. Patients age >18 years who visited cosmetic clinics seeking a minimally invasive facial cosmetic procedure, including botulinum toxin, soft-tissue filler, or fat injection, were consecutively asked to participate in this study. The study protocol was approved by the institutional ethical board, and all patients provided informed consent. Patients with a history of facial reconstructive surgery within the last 6 months, craniofacial abnormalities, or facial scarring were excluded.

Patients completed a two-section survey extracted from the Sobanko et al. (2015) study designed to seek patient motivations and information on minimally invasive procedures. The two sections (demographic and informational) assessed the motivation for seeking treatment, adherence to sunscreen use, and understanding of the minimally invasive cosmetic procedure (supplemental file 1).

The questionnaire was translated from English into Persian based on the Beaton et al. (2000) steps. The questionnaire was first translated from English into Persian by two independent, bilingual, Persian-speaking translators. Second, the discrepancies were resolved by consensus between two dermatologists and the translators. Third, a back translation was performed from Persian into English by two other bilingual translators. The back translation versions were compared with the original English language version by all dermatologists and the translators. The disagreements were resolved, and the pre-final Persian version was developed. Twenty patients, age >18 years, were asked to answer the pre-final Persian version. Patients were asked to explain their problems by answering the pre-final version. The Persian version of the questionnaire was finalized after resolving patients' pretesting problems.

## Data analysis

Statistical Package for the Social Sciences software (version 25.0; IBM Corp., Armonk, NY) was used for data analysis. Descriptive statistics were used to describe the results. We used Chi-squared and Fisher's exact tests to compare the qualitative data, and *p*-values < .05 were considered statistically significant.

## Results

### Sociodemographic features

Demographic data are shown in Table 1. During the study period, a total of 140 patients visited the dermatology centers, and 80% of these patients participated in our study. A total of 111 patients with a mean age of  $39.6 \pm 10.74$  years (range, 20–73 years) participated in the study, of whom 94 (84.7%) were female and 17 (15.3%) were males (Table 1). More than half were married ( $n = 69$  [62.7%]). Most patients had university degrees ( $n = 68$ ; [61.3%]) and were employed ( $n = 75$  [67.6%]). Of the 104 participants who declared their income, almost half (49%) earned \$250 to \$500 monthly. There was no significant difference between male and female patients with regard to marital status, education, and employment. At the time of our study in our country, the average fees for botulinum toxin, filler, and fat injection were \$100, \$300, and \$500, respectively.

### Minimally invasive cosmetic procedures and skin care

Sixty-eight participants asked for botulinum toxin injections (61.3%), 39 (35.1%) requested filler injections, and 4 (3.6%) requested fat injections. Each patient underwent only one procedure at a time. Fifty-seven participants (51.8%) had a positive history of minimally invasive cosmetic procedures, defined as previous Botox, filler, or fat injections. Of these patients, 52 rated their satisfaction level with the procedure, 22 patients (42.3%) were significantly satisfied and 28 patients (53.8%) were moderately satisfied. Two patients (3.8%) were not satisfied ( $p = .026$ ).

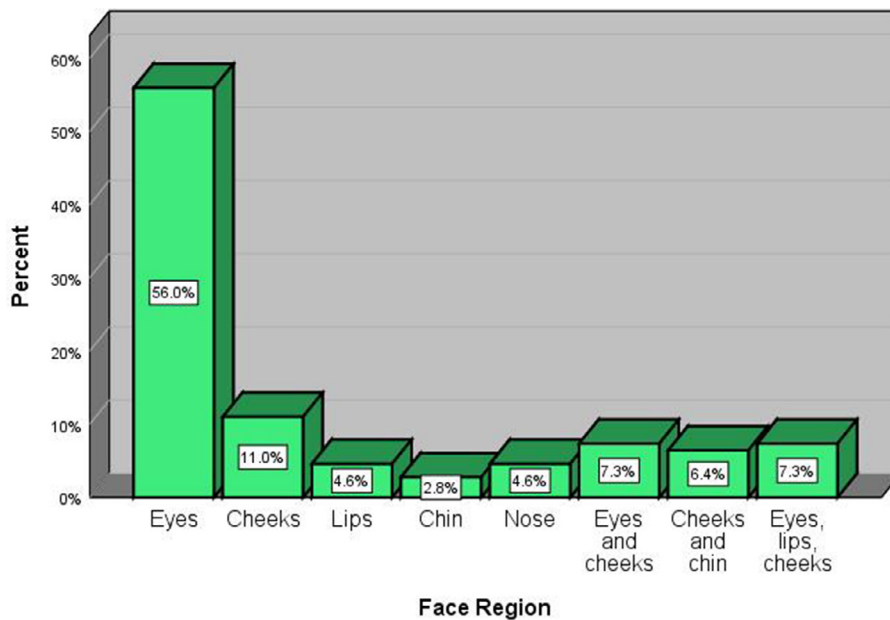
The types of minimally invasive procedures asked for by men were significantly different from those asked for by women for botulinum toxin injection (88.2% vs. 60.8%), filler injection (11.8% vs. 34.9%), and fat injection (0% vs. 4.3%;  $p = .044$ ). Regarding skin care, 62 of 110 patients (56.4%) used sunscreen frequently. Of note, the rate of regular sunscreen usage was significantly higher in women compared with men (63.8% and 12.5%, respectively;  $p < .001$ ).

### Patients desires and expectations

A total of 109 patients mentioned the face area when asked what they wanted to change. Patients mostly expected their eyes (56%) and cheeks (11%) to improve. Figure 1 shows patients' interest in improving different facial features.

**Table 1**  
Patients' demographic characteristics

Variable (patients with available data, n)	n (%)	
<b>Sex</b> (111)	Male	17 (15.3)
	Female	94 (84.7)
<b>Marital status</b> (110)	Single	37 (33.6)
	Married	69 (62.7)
	Widowed	3 (2.7)
	Divorced	1 (0.9)
<b>Education</b> (111)	High school	14 (12.6)
	College	17 (15.3)
	Bachelor's or master's degree	68 (61.3)
	PhD	12 (10.8)
<b>Income</b> (104)	<\$250	6 (5.8)
	\$250–500	51 (49)
	\$500–2000	36 (34.6)
	>\$2000	11 (10.6)
<b>Occupation</b> (111)	Employed	75 (67.6)
	Unemployed	36 (32.4)

**Fig. 1.** Facial areas where patients desire improvement.

Comparing patients requesting botulinum toxin injections with those requesting filler injections showed that although commonly both groups expected their eyes to look better after the procedure (45 of 66 [68.2%] vs. 16 of 39 [41%]), the proportion of patients expecting their cheeks to improve was significantly higher among patients requesting fillers (8 of 39 [20.5%]) than those requesting toxin injections (2 of 66 [3%];  $p = .005$ ).

Regarding patients' understanding of the procedures (the time interval between repeated sessions for Botox or filler injections), 42 of 108 patients (38.9%) had the correct knowledge and estimated that the procedure had to be repeated every 4 to 6 months. In addition, 48 of 108 patients (44.4%) estimated annual and 18 of 108 patients (16.7%) estimated biennial repetition of the cosmetic procedure. Eighty-five of 107 patients (79.4%) who answered this section believed that the current procedure was done to prevent or postpone rejuvenating surgeries, such as facelifts.

#### Psychosocial factors

As shown in [Figure 2](#), participants had heard about the procedures mostly from friends ( $n = 45$  [40.4%]) and family members

( $n = 16$  [14.7%]). The majority of patients ( $n = 94$  [84.9%]) knew at least one person who had undergone one of these procedures.

Regarding major life events in the past year, 32 of 106 patients (30.2%) reported having experienced at least one event. Two participants had experienced more than one major event. Twenty-six patients specified the type of the event as a marriage ( $n = 7$  [26.9%]), divorce ( $n = 2$  [7.6%]), death of family member ( $n = 13$  [50%]), and recovery from a disease ( $n = 4$  [15.3%]). Of note, the number of patients who had experienced a major life event was significantly higher among patients requesting fillers ( $n = 16$  of 38 [42.1%]) compared with those requesting toxin injections ( $n = 14$  of 65 [21.5%];  $p = .04$ ).

Of the 108 patients who had a psychiatric medical history, only 15 (13.9%) had ever visited a psychiatrist for depression or mood disorders, and 17 (15.3%) had a history of using psychiatric drugs. There was no significant difference regarding psychiatric history between patients requesting fillers or toxin injections.

Some of the preventive factors affecting participants' decision to undergo any of these minimally invasive cosmetic procedures during the past 6 months were financial issues ( $n = 40$  of 96 [41.7%]), unawareness of a procedure ( $n = 20$  of 96 [20.8%]), family members' concern ( $n = 14$  of 96 [14.6%]), upcoming social events ( $n = 12$

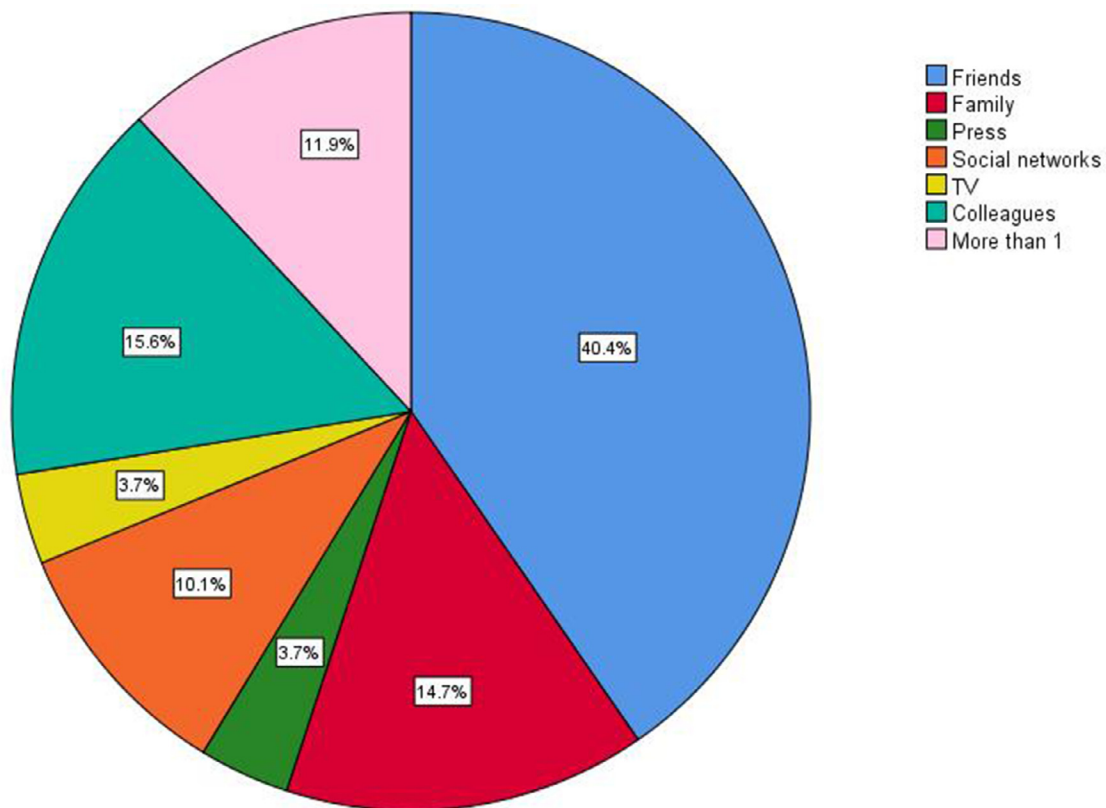


Fig. 2. How patients heard about minimally invasive cosmetic procedures.

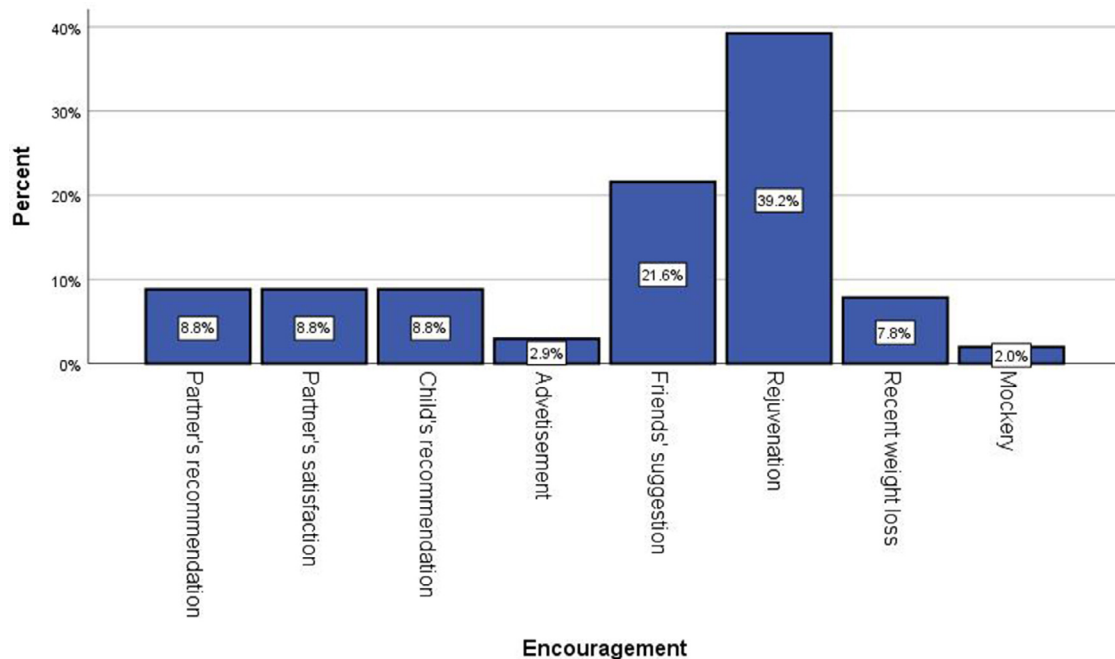


Fig. 3. How patients were encouraged or motivated.

of 96 [12.5%], and social labels about a certain procedure ( $n=3$  of 96 [3.1%]). Seven of 96 participants (7.3%) could not be classified into the mentioned causes. Figure 3 demonstrates how patients were encouraged or motivated to undergo their procedures. The most common motivating factor for patients was gaining rejuvenation (39.2%), and a minority of patients were motivated by their partners' satisfaction (8.8%) or recommendation (8.8%).

## Discussion

The increasing request for minimally invasive procedures, such as botulinum toxin, fillers, or fat injections, highlights the importance of studying patients who seek these procedures. Identifying their characteristics, expectations, motivations, and understanding

of the procedures would help clinicians increase patient satisfaction and help them make better decisions in selecting patients.

In this study, the majority of patients seeking minimally invasive cosmetic procedures were women in their 30s who were married, educated, and employed. The most common facial areas that patients wanted to improve were the eyes and cheeks, which might be because the majority of people worldwide believe that the eye area is the most important when assessing facial beauty (Cula et al., 2010). Interestingly, most patients asking for fillers expected their cheeks to be modified compared with those asking for toxin injections. The majority of patients had heard about the minimally invasive procedure from their friends and colleagues, and 84% of patients knew at least one person who had undergone one of these procedures. To compare our results with those in other countries, the results of a previous study at an urban academic medical center showed that the most reported area of the face that patients want to change were the eyes. Interestingly, most patients presented for botulinum toxin or soft-tissue filler injections (Sobanko et al., 2015).

The majority of our patients were employed women who hold academic degrees. Sobanko et al. (2015) also demonstrated higher educational levels in women seeking minimally invasive procedures. Although the Javo et al. (2010) study showed that a low educational level was a predictive factor in seeking cosmetic procedures, the procedures assessed in their study were invasive procedures, such as rhinoplasty and abdominoplasty. Therefore, educated and employed women appear more interested in minimally invasive procedures than invasive ones, which may be due to minimally invasive procedures' significantly less downtime.

Regarding major life events during the previous year, one third of patients had experienced a major life event; the death of a family member (50%) and marriage (26.9%) were the most common events. Of note, these events were significantly more common in patients requesting fillers (42.1%) compared with those requesting toxin injections (21.5%). In the Sobanko et al. (2015) study, nearly a third of patients also had a major life event, and the two most common events were the death of a loved one and divorce. Moreover, the results of the Sobanko et al. (2015) study showed that a significant minority of patients had a major life event during the previous year. Based on our study, the majority of patients seeking minimally invasive procedures had no major life events, which support the results of previous studies that reported internal rather than external sources of motivation (e.g., pressure from a partner or family member) as the main reason for seeking minimally invasive cosmetic procedures (Maisel et al., 2018; Sobanko et al., 2015).

Psychopathological issues in patients seeking cosmetic procedures have always been challenging. In a recent study of factors that motivate patients to seek minimally invasive cosmetic procedures, psychosocial factors such as the desire to feel happier were commonly reported (Maisel et al., 2018). Studies that considered a medical history of a mental illness as a marker of psychopathology found that 19% of patients who asked for cosmetic interventions were under mental health treatments, such as taking psychiatric medications—nearly four times the rate among other patients who presented to the same physician for noncosmetic issues (Sarwer et al., 2004). In the Sobanko et al. (2015) study, near half of patients reported a history of mental health treatment. In our study, the reported history of taking psychiatric drugs was 15.3% and a history of ever visiting a psychiatrist was 13.9%, which is less than in the Sobanko et al. (2015) study. In our study, the exact reason for visiting a psychiatrist or taking psychiatric medications was not investigated. Although both a history of taking psychiatric drugs or visiting a psychiatrist were used as markers of mental illness in our study, it is evident that they are not accurate variables for assessing mental health, and further studies evaluating patients' mental health in detail are necessitated.

In this study, the most important factors that encouraged patients to undergo a minimally invasive procedure were requesting rejuvenation (39.2%) and friends' suggestions (21.6%). Our results are consistent with those of the Maisel et al. (2018) study that showed that the most common motivations for undergoing a minimally invasive procedure were internally generated, designed to satisfy the patients themselves and not others, and spouses are seldom influential.

More than half of our patients used sunscreen creams regularly to preserve a youthful appearance and protect their skin from the damaging effects of the sun. Previous studies reported a higher rate of health and fitness investment in patients seeking cosmetic interventions (Didie and Sarwer, 2003). Interestingly, the majority of our patients (84%) knew at least one person who had undergone the same procedures. Previous studies have shown that knowing someone who has already undergone a cosmetic procedure motivates people to undergo the same procedure (Javo and Sorlie, 2010; Maisel et al., 2018; Sobanko et al., 2015). In this study, a partner's suggestion (8.8%), satisfaction (8.8%), and children's' suggestion (8.8%) were all equally reported by patients. Although lesser than seeking rejuvenation and friends' suggestion, pressure from spouses and children were more common in our patients than in the Sobanko et al. (2015) study that reported pressure from spouses and children in only 2.7% and 1.4%, respectively. Patients were asked about how frequently they needed to repeat the procedures (Botox or filler injection). Notably, 38.9% estimated that the procedure had to be repeated every 4 to 6 months and 44.4% estimated annually, and the majority of patients (79.4%) considered the procedure as a way to postpone rejuvenating surgeries, such as a facelift. These results support the acceptable knowledge and expectation of our patients about minimally invasive cosmetic procedures, leading to acceptable satisfaction with the procedures' outcome.

Although most of our patients estimated a 4- to 12-month interval for repeating the procedure, the most important hindering factor for undertaking the procedure was financial issues (41.7%). Similar results were reported by two previous studies that reported financial limitations as the main barrier to pursuing procedures (Maisel et al., 2018; Sobanko et al., 2015).

At the time of our study in our country, the average fees for botulinum toxin, filler, and fat injection were \$100, \$300, and \$500, respectively. According to the Statistical Center of Iran, the median household income of Iran is around \$3300 dollars per year. Hence, these procedures would cost a month or even several months of an individual's salary (Press TV, 2019).

In this study, a minority of patients were male (15.3%), and no significant difference was observed between male and female patients in terms of demographic characteristics, area of face that they desired to improve, motivating factors, and psychosocial issues. The significant gender differences were lower use of sunscreen creams and lower request for filler injections in men compared with women. Some previous studies on demographic differences in sun-protective behavior have shown that male sex was associated with lower sun-protective knowledge and behavior (Haluzá et al., 2016; Lee et al., 2015; Yan et al., 2015). With regard to gender differences in preference of type of minimally invasive cosmetic procedure, studies are lacking and future studies focusing on this issue are necessary.

To the best of our knowledge, the present study is the first to evaluate patient motivations for seeking a minimally invasive cosmetic procedure in a Middle Eastern country. This study provides important information on patient characteristics and motivations for seeking botulinum toxin, filler, and fat injection. Although we found significant differences between patients requesting fillers and those requesting botulinum toxin injections in terms of the facial area they desired to improve and the frequency of major life

events experienced, further studies with larger sample sizes are needed for further comparison between these two groups of patients. The fact that this study was conducted in the setting of academic centers may have limited our study. The lack of accurate psychiatric evaluation of patients by a psychiatrist or with a psychometric questionnaire, the low number of male patients, and the low number of patients requesting fat injection are among the limitations of this study. Also, volunteer and/or nonresponse bias may have affected the internal validity of this study. Therefore, the participants of this study may not represent the entire community.

## Conclusion

This study demonstrated that patients seeking minimally invasive procedures at academic dermatology centers are mainly educated, employed women in their 30s. Patients had acceptable knowledge about the procedure, as well as previous experience with the minimally invasive procedure with a high satisfaction rate. The majority of our patients had heard about the procedures from friends and colleagues and knew at least one person who had undergone the same procedure. The most common motivating factor for our patients was desiring rejuvenation, which is an internal motivation not influenced by external factors, such as relationship issues or media pressure. Patients requesting filler injections were significantly different from patients requesting toxin injections in terms of facial areas they desired to improve and major life events that they had experienced before undergoing the procedures.

## Conflicts of Interest

None.

## Funding

None.

## Study Approval

The author(s) confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.ijwd.2021.07.001](https://doi.org/10.1016/j.ijwd.2021.07.001).

## References

- Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976)* 2000;25(24):3186–91.
- Cula GO, Fantasia J, Kollias N, Chen T. Beauty perception: A scientific evaluation of the importance of the eye area across populations. *J Am Acad Dermal* 2010;62(3):AB63.
- Didie ER, Sarwer DB. Factors that influence the decision to undergo cosmetic breast augmentation surgery. *J Womens Health (Larchmt)* 2003;12(3):241–53.
- Haluza D, Simic S, Höltge J, Cervinka R, Moshhammer H. Gender aspects of recreational sun-protective behavior: Results of a representative, population-based survey among Austrian residents. *Photodermatol Photoimmunol Photomed* 2016;32(1):11–21.
- Honigman RJ, Phillips KA, Castle DJ. A review of psychosocial outcomes for patients seeking cosmetic surgery. *Plast Reconstr Surg* 2004;113(4):1229–37.
- Javo IM, Sorlie T. Psychosocial characteristics of young Norwegian women interested in liposuction, breast augmentation, rhinoplasty, and abdominoplasty: A population-based study. *Plast Reconstr Surg* 2010;125(5):1536–43.
- Lee A, Garbutcheon-Singh KB, Dixit S, Brown P, Smith SD. The influence of age and gender in knowledge, behaviors and attitudes towards sun protection: A cross-sectional survey of Australian outpatient clinic attendees. *Am J Clin Dermatol* 2015;16(1):47–54.
- Maisel A, Waldman A, Furlan K, Weil A, Sacotte K, Lazaroff JM, et al. Self-reported patient motivations for seeking cosmetic procedures. *JAMA Dermatol* 2018;154(10):1167–74.
- Parsa KM, Prasad N, Clark CM, Wang H, Reilly MJ. Digital appearance manipulation increases consideration of cosmetic surgery: A prospective cohort study. *Facial Plast Surg Aesthet Med* 2021;23(1):54–8.
- Press TV. Iran household spending up by almost 20 percent: Government data; 2019.
- Sarwer DB, Zanville HA, LaRossa D, Bartlett SP, Chang B, Low DW, et al. Mental health histories and psychiatric medication usage among persons who sought cosmetic surgery. *Plast Reconstr Surg* 2004;114(7):1927–33 discussion 1934–25.
- Sobanko JF, Taglienti AJ, Wilson AJ, Sarwer DB, Margolis DJ, Dai J, et al. Motivations for seeking minimally invasive cosmetic procedures in an academic outpatient setting. *Aesthet Surg J* 2015;35(8):1014–20.
- Yan S, Xu F, Yang C, Li F, Fan J, Wang L, et al. Demographic differences in sun protection beliefs and behavior: A community-based study in Shanghai, China. *Int J Environ Res Public Health* 2015;12(3):3232–45.