Motivations for Seeking Minimally Invasive Cosmetic Procedures in an Academic Outpatient Setting

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Abstract

Background: The demand for minimally invasive cosmetic procedures has continued to rise, yet few studies have examined this patient population.

Objectives: This study sought to define the demographics, social characteristics, and motivations of patients seeking minimally invasive facial cosmetic procedures.

Methods: A prospective, single-institution cohort study of 72 patients was conducted from 2011 through 2014 at an urban academic medical center. Patients were aged 25 through 70 years; presented for botulinum toxin or soft tissue filler injections; and completed demographic, informational, and psychometric questionnaires before treatment. Descriptive statistics were conducted using Stata statistical software.

Results: The average patient was 47.8 years old, was married, had children, was employed, possessed a college or advanced degree, and reported an above-average income. Most patients felt that the first signs of aging occurred around their eyes (74.6%), and a similar percentage expressed this area was the site most desired for rejuvenation. Almost one-third of patients experienced a "major life event" within the preceding year, nearly half had sought prior counseling from a mental health specialist, and 23.6% were being actively prescribed psychiatric medication at the time of treatment.

Conclusions: Patients undergoing injectable aesthetic treatments in an urban outpatient academic center were mostly employed, highly educated, affluent women who believed that their procedure would positively impact their appearance. A significant minority experienced a major life event within the past year, which an astute clinician should address during the initial patient consultation. This study helps to better understand the psychosocial factors characterizing this patient population.

Level of Evidence: 4

The demand for cosmetic surgeries and minimally invasive procedures, such as botulinum toxin and facial filler injections, has increased dramatically over the past decade. In 2013, Americans spent over $12.3 billion on elective surgical and nonsurgical cosmetic procedures. Over half of the documented cases (nearly 5.9 million) were nonsurgical facial rejuvenation procedures, specifically soft tissue fillers and botulinum toxin. Use of these injectables has increased 5680% since 1997, and it is likely that this trend will continue for the foreseeable future.

A large body of psychosocial research suggests that physical appearance influences nearly every aspect of life,
not only our quality of life, self-esteem, and body image, but also interpersonal relationships, employment opportunities, and financial compensation.\textsuperscript{2-5} With this research in mind, the growth in cosmetic medical treatments is not particularly surprising.\textsuperscript{6} Wide spread media coverage of surgical and minimally invasive treatments has raised public awareness and increased acceptance.\textsuperscript{7,8} This evolving public sentiment, in combination with technical advances, lower procedural costs, higher disposable patient incomes, a greater number of practitioners offering these services, and reduced postoperative downtime have all contributed to the soaring rise of cosmetic procedures in the past decade.\textsuperscript{9,10}

A number of studies have investigated individuals’ perceptions of cosmetic surgical procedures as well as their motivations for and interests in seeking them in the future.\textsuperscript{7,11-13} In general, patients who are psychologically appropriate for treatment are believed to be internally motivated for treatment and seek an improvement in their appearance to improve their body image and self-esteem.\textsuperscript{14} In contrast, patients who are externally motivated for treatment and who seek surgery for some secondary gain, such as saving a failing marriage, are believed to be less likely to achieve their goals with treatment.\textsuperscript{15} Thus, the presence of some degree of body image dissatisfaction is believed to be a motivational catalyst to cosmetic surgery. At the same time, excessive body image dissatisfaction is a symptom of a number of psychiatric conditions, such as body dysmorphic disorder and eating disorders, which are believed to contraindicate cosmetic surgery.\textsuperscript{14}

Almost all of this research has been conducted on patients who are interested in or have presented for traditional cosmetic surgical procedures. Few studies have investigated these issues in patients who present for minimally invasive cosmetic treatments. A systematic review published by our group in 2013 confirmed the dearth of prospective, patient-reported outcome studies in patients desiring minimally invasive cosmetic procedures.\textsuperscript{16} The exponential rise of minimally invasive procedures, combined with the limited amount of patient data gathered from research in this area, supports the need for further research. The present study was undertaken to investigate these questions.

**METHODS**

A prospective cohort study was carried out jointly between the Division of Plastic Surgery and the Department of Dermatology (IRB Protocol #184181; IRB of the Hospital of the University of Pennsylvania) between September 1, 2011 and December 1, 2014. All patients between the ages of 25 and 70 who visited the offices of JS (Department of Dermatology) or IP (Division of Plastic Surgery) for a minimally invasive facial rejuvenation procedure, defined as botulinum toxin injection or soft tissue filler injection, were approached to participate. All queried patients provided consent to enroll. The study was conducted in accordance with the guidelines set forth in the Declaration of Helsinki. Patients with prior facial cosmetic or reconstructive procedures, craniofacial abnormalities, or facial scarring were excluded from participation. After obtaining informed consent, patients completed demographic and informational questionnaires (Supplemental File 1). The demographic questionnaire assessed variables such as age, race, and income; the informational questionnaire assessed, among other items, sun exposure, motivation for seeking treatment, skin care regimens, and understanding of minimally invasive cosmetic procedures. A systematic review published by our group in 2013 confirmed the dearth of prospective, patient-reported outcome studies in patients desiring minimally invasive cosmetic procedures.\textsuperscript{16} The exponential rise of minimally invasive procedures, combined with the limited amount of patient data gathered from research in this area, supports the need for further research. The present study was undertaken to investigate these questions.

**RESULTS**

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an ongoing investigation of changes in psychosocial functioning following minimally invasive cosmetic procedures. Standard descriptive statistics were conducted with Stata Statistical Software: Release 13 (StataCorp LP, College Station, TX).

RESULTS

**Demographics**

Seventy-two subjects (70 women and 2 men), averaging 47.8 years (SD ± 12.0; range, 24-69 years) received botulinum toxin and/or facial filler by 1 of the principal investigators and were included in the experimental group (Table 1). Half (36/72) were married. Most had children (62.5% [45/72]), were employed (83.1% [59/71]), and possessed a college or advanced degree (88.9% [64/72]). Approximately 75% (75.3% [52/69]) disclosed annual salaries greater than $75,000, with 42.3% [22/52] reporting income of more than $150,000 per year.

**Skin Care/Sun-Protective Habits**

An overwhelming majority of patients felt that skin care was critical to improving the appearance of aging in the face. Approximately one-fifth of patients (19.4% [14/72]) disclosed extensive amounts of prior sun exposure (eg, numerous blistering burns, sunbathing regularly, history of skin cancer), while 12.5% [9/72] reported diligent sun-protective behaviors without any history of blistering burns. Eighty-six percent [61/71] of patients stated that they apply sunscreen on a daily basis. Patients varied in their use of adjuvant skin-care treatments: cosmeceuticals (46.4% [33/71]), chemical peels (22.5% [16/71]), topical retinoids (41% [29/71]), lasers (11.2% [8/71]), medical esthetician (18.3% [13/71]), and spa treatments (12.5% [9/72]) (Figure 1). One-third of patients (33.3% [24/72]) reported being active smokers.

**Patient Desires and Expectations**

Patients expressed interest in improving a variety of facial features: eyes (78.8% [56/71]), cheeks (28.1% [20/71]), lips (15.4% [11/71]), nose (7% [5/71]), and neck (21.1%, [15/71]). They felt that the first signs of aging occurred in: eyes (74.6% [53/71]), cheeks (12.6% [9/71]), lips (9.7% [7/71]), nose (2.8% [2/70]), neck (26.7% [19/71]) (Figure 2). More than half (57.0% [41/72]) of patients queried believed their minimally invasive treatment would moderately affect their appearance, while 16.9% [12/71] and 25% [18/71] reported that they anticipated minimal and significant improvements, respectively. Fifty-five percent [39/71] of patients would consider pursuing more invasive facial surgery such as rhytidectomy and approximately one-third (36.6% [26/71]) anticipated repeat treatments.

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**Table 1. Subject Demographics**

<table>
<thead>
<tr>
<th>Total patients</th>
<th>72</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>70</td>
</tr>
<tr>
<td>Men</td>
<td>2</td>
</tr>
<tr>
<td>Average age (years)</td>
<td>47.8 (SD ± 12.0)</td>
</tr>
<tr>
<td>Age range (years)</td>
<td>24-69</td>
</tr>
<tr>
<td>Married (n/%)</td>
<td>36 (50.0)</td>
</tr>
<tr>
<td>Single (n/%)</td>
<td>25 (34.7)</td>
</tr>
<tr>
<td>Divorced (n/%)</td>
<td>11 (15.3)</td>
</tr>
<tr>
<td>With children (n/%)</td>
<td>45 (62.5)</td>
</tr>
<tr>
<td>Without children(n/%)</td>
<td>27 (37.5)</td>
</tr>
<tr>
<td>Employed (n/%)</td>
<td>59 (83.1)</td>
</tr>
<tr>
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<td>12 (16.9)</td>
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<tr>
<td>Highest level of education completed</td>
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<tr>
<td>High school (n/%)</td>
<td>8 (11.1)</td>
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<td>College (n/%)</td>
<td>29 (40.3)</td>
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<tr>
<td>Masters (n/%)</td>
<td>21 (29.2)</td>
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<tr>
<td>Doctorate (n/%)</td>
<td>14 (19.4)</td>
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<tr>
<td>Reported annual income</td>
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<td>Less than $25,000 (n/%)</td>
<td>3 (4.3)</td>
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<tr>
<td>Between $25,000-50,000 (n/%)</td>
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<td>Between $50,000-75,000 (n/%)</td>
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<tr>
<td>Between $75,000-150,000 (n/%)</td>
<td>30 (43.5)</td>
</tr>
<tr>
<td>Greater than $150,000 (n/%)</td>
<td>22 (31.9)</td>
</tr>
</tbody>
</table>

SD, standard deviation.

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**Figure 3. How subjects heard about minimally invasive treatments.**

- Friends: 49%
- Colleagues: 13%
- Newspaper: 22%
- Online Advertisements: 16%

How subjects heard about minimally invasive treatments.
Psychosocial Factors

Most patients heard about treatment from friends (54.9% [39/71]) and colleagues (25.3% [18/71]), while newspaper (14.1% [10/71]) and online advertisements (18.3% [13/71]) played a lesser role (Figure 3). Reasons for selecting a specific physician included: reputation of institution (41.7% [30/72]), referral from a friend (33.3% [24/72]), physician reputation (29.2% [21/72]), referral from another physician (18.1% [13/72]), and online/media marketing (8.3% [6/72]). Financial restraints (41.7%) were stated as the largest factor in postponing treatments over the past 6 months. Almost one-third of patients (29.1% [21/72]) experienced a major life event within the preceding year, defined as either a birth or death in the family, a new job or loss of job, a marriage, or a divorce. Six patients reported a death in the family and 5 reported a divorce. Almost half (43.1% [31/72]) of the patients reported a history of mental health treatment. Approximately a quarter (23.6% [17/72]) of patients reported the use of psychiatric medication (defined as an antidepressant, antipsychotic, or anxiolytic) at the time of treatment.

DISCUSSION

The rising demand for minimally invasive cosmetic procedures highlights the importance of understanding patient backgrounds and underlying motivations for seeking treatment. In this survey study conducted at an urban academic medical center across 2 core aesthetic specialties, the overwhelming majority of patients who sought minimally invasive cosmetic treatments were women, middle-aged, highly educated, and employed.

The gender and age of our patients mimic data issued by the American Society for Aesthetic Plastic Surgery, although the ASAPS statistics do not report educational status. Data from Frederick and colleagues’ study with 52,000 participants also supports the greater female interest in cosmetic procedures. Our patients’ pursuit of education is noteworthy as it may inform their views of the procedures, guide where and with whom they seek treatment, and ultimately influence their perceptions of postoperative outcomes. Currently, there is a paucity of data for which to compare this finding. Patients in prior studies that expressed interest in cosmetic procedures reported lower levels of education, but the authors sampled the female Norwegian public at large about surgical cosmetic procedures. It seems possible that a higher educated patient population could feel averse to the greater side effect profile of invasive surgical procedures and would prefer minimally invasive procedures. Additionally, 80% of our cohort was employed and might have selected minimally invasive procedures because they could not tolerate significant downtime from work.

Perhaps the finding most pertinent to peri-procedural counseling is that approximately one-third of patients experienced a “major life event” such as a death of a loved one, divorce, or change in employment in the year preceding treatment. The most cited reasons in this group of patients were death of a loved one (28.6%) or divorce (19%). Such events are considered major life stressors and can be associated with a level of psychosocial distress that could contraindicate surgery. These patients may be externally motivated—seeking them in an effort to deal with the emotional distress of those events—for these procedures and, as a result, may be unlikely to meet their postoperative expectations. This hypothesis, however, awaits investigation in future studies.

Comprehensively assessing patient motivation and symptoms of psychopathology in the context of a cosmetic practice represents a significant logistical challenge. To address this issue, studies have investigated the use of mental health treatment among individuals who present for cosmetic procedures and as a potential marker of psychopathology. For example, Sarwer et al found that 19% of patients who presented for a cosmetic surgical procedure reported ongoing mental health treatment, most commonly the use of psychiatric medication. This was approximately 4 times greater than mental health treatment reported by patients who presented to the same surgeons for non-cosmetic procedures such as mole removal.

In the current study, exactly half of our patients (36/72) reported a history of mental health treatment or the use of psychiatric medication at the time of their consultation. Unfortunately, our questionnaire did not elicit the precise reasons for seeking mental professional help or psychiatric medication usage but these data mimic the findings of Sarwer and colleagues. The use of mental health treatment, both past and present, is largely consistent with estimates for the general population; in 2010 1 in 4 American women reported using psychiatric medication. While it is yet to be determined if mental health patients are more likely to pursue cosmetic procedures as a means to enhance psychological well being, these findings reinforce the need to obtain a general psychiatric history at the initial consultation. Patients should be asked about past and present psychiatric diagnoses and current psychopharmacologic and psychotherapeutic treatments.

Americans seem to be surrounded by images of youth and beauty from a variety of societal elements that may inform their views on cosmetic procedures. Interestingly, when asked, “who/what was the biggest influence in opting to pursue treatment,” an equal percentage of patients (27.8%) noted that “friends” and the “pressure to look younger in the work setting” were the most important factors. This influence may have been further enhanced by 68% of our patients knowing at least 1 friend or colleague who had undergone a similar aesthetic procedure. Prior data support the notion that patients may be more interested in cosmetic surgical procedures if they know someone who has already undergone surgery.
that pressure from spouses (2.7%), children (1.4%), or teasing from others (0%) did not appear to be a factor in patients seeking treatments.

The desire to maintain and preserve a youthful appearance is exemplified through our patients’ embrace of photoprotective measures. The overwhelming majority of patients (86%) reported daily application of sunscreen and many integrate varied topical chemopreventative treatments such as retinoids and chemical peels. Sarwer and colleagues have published previously on the seemingly greater investment in health and fitness in patients seeking cosmetic procedures. However, one-third of our cohort did disclose being active smokers. This finding reveals that smoking cessation counseling may be a worthwhile endeavor with select patients as nicotine and tobacco are known accelerants of skin aging.

Patients’ knowledge about cosmetic surgery has been shown to also influence their perception of these procedures. Individuals who report greater consumption of mass media depictions of cosmetic surgery report more favorable attitudes toward cosmetic procedures. Similarly, the Internet is rapidly becoming a major source of information for potential cosmetic patients. However, the newspaper, Internet, and television played a minor role in influencing our cohort of patients. Less than one-tenth (9.7%) of patients reported that the media was the largest influence in their decision to seek treatment. This may relate to the older age of our patients who may not be inclined to use the Web as a resource compared to younger patients. It also seems likely that the higher educational status of our cohort may have played a role in relying on trusted friends and colleagues rather than cyberspace as a resource.

The leading indicator for patients selecting their particular physician was reputation of the institution (41.7%) and reputation of the specific doctor (29.2%). Referral from a friend or loved one was noted in one-third of patients. Being referred by another physician (18.1%) and print or online marketing (8.3%) did not appear to be major factors in how our patients selected their treating physician. While it is important to note that the quality of the patient-physician relationship is an oft-cited predictor for patients selecting their treating cosmetic practitioner, our study included a number of patients new to the respective practices. Thus, our data provide helpful information on how a patient naïve to cosmetic procedures may seek out a cosmetic practitioner. Similarly, patients frequently report higher satisfaction based not on the technical aptitude of their treating physician but on the quality of the interactions with their treating physician. A prospective study that follows these patients after treatment is ongoing and will assist in understanding whether the same holds true for minimally invasive aesthetic procedures.

The financial impact of minimally invasive treatments was also investigated. Almost 40% of patients reported that financial limitations were the greatest hindrance to pursuing treatment in the prior 6 months. This is consistent with recent studies that demonstrated, although the revenue generated from minimally invasive procedures has risen dramatically over the past decade, that these procedures are more prone to fluctuate with microeconomic conditions such as disposable income. Surgical cosmetic procedures, however, appear to be independent of the economic state or more likely tied to the macroeconomic indicators such as the unemployment rate. The hypothesis behind these notions relates to the extensive planning and financial savings involved for procedures such as rhytidectomy and rhinoplasty. Minimally invasive procedures, on the other hand, can be quick decisions for patients because of their reduced downtime and costs. While we do not have prior data from which to compare, our findings support this hypothesis.

While not yet conclusive, there appears to be a correlation between fulfillment of preoperative expectations and higher satisfaction for some surgical procedures. Therefore, carefully defining patient expectations at the time of surgical decision making could improve the informed consent process and prepare patients for their postoperative recovery in addition to the possibility of complications. In our cohort, more than half (59%) of patients reported that they anticipated “moderate” improvements in their appearance. It seems that with realistic pre-existing expectations such as these, the majority of our patients could be poised for greater satisfaction, a value that will be measured as the patients are followed longitudinally. Interestingly, a quarter of patients believed that the minimally invasive procedure would “significantly” improve their appearance, expectations that may be difficult to satisfy and could introduce a discrepancy in subjective and objective postoperative outcomes. Identifying patients with lofty preoperative expectations provides the practitioner an opportunity to counsel about realistic anticipated results so that expectations may better align with outcomes.

Measuring the true success of cosmetic procedures remains challenging and subjective. Objective clinical measures conventionally used to evaluate surgical procedures, such as postoperative complication rates, have limited utility when applied to nonsurgical aesthetic procedures. Unlike invasive surgical procedures such as cardiac surgery and neurosurgery, there is little, if any, impact on morbidity. Additionally, few objective measures exist whereby the success of the cosmetic procedures may be judged. Consequently, the measurement of patient reported outcomes (PRO) such as quality of life (QOL), body image, and patient satisfaction have become increasingly important to assess the quality of care and success of aesthetic interventions. As the integration of psychosocial measures to judge treatment success increases, it is instructive to understand the type of patients seeking minimally invasive aesthetic treatments and their underlying motivations and goals. Our study contributes new insights to our understanding of the
motivations for minimally invasive treatments, but also has some limitations. Our sample size was relatively small and rare data points were missing due to patient omissions. Given the relative sample size and lack of identifiable pattern to the missing data, we elected to report the findings ‘as is’ rather than implement statistical modeling to account for the minimal amount of missing data points. Additionally, since the study was performed in an academic setting, our findings may not be applicable to cosmetic physicians that practice in rural, community-based, and/or private practices. Patients are being followed in a prospective study to identify post-treatment changes such as QOL and self-esteem. These data will be analyzed and published in the future.

CONCLUSIONS

In summary, our findings reveal that patients who sought injectable aesthetic treatments in an urban outpatient academic center were mostly employed, highly educated women who believed that their procedure would positively impact their appearance. These patients tended to understand the importance of sunscreen and skin care in their overall appearance compared to their peers. A significant minority of these patients experienced a major life event within the past year, a salient finding that an astute clinician should address in the initial patient consultation. Interestingly, in the age of the Internet and social media, trusted friends and word of mouth were more influential to our patients’ decision making than websites or newspaper advertisements. We believe that the results of this study will lead to a better understanding and increased awareness of the psychosocial factors characterizing patients seeking minimally invasive aesthetic rejuvenation. In ongoing long-term follow-up studies, our cohort of patients will be further examined to determine if injectable cosmetic procedures can significantly improve patient-reported psychosocial outcomes.

Supplementary Material

This article contains supplementary material located online at www.aestheticsurgeryjournal.com.

Disclosures

Dr Percec is a paid consultant for Galderma (Fort Worth, TX). The other authors have nothing to disclose.

Funding

Data compilation and analysis for this research was funded in part by a research grant provided by the Center for Human Appearance at the Hospital of the University of Pennsylvania.

REFERENCES


