Data-Driven Insights on the Effects of COVID-19 on Public Interest in Medical Aesthetics: Part II (Active Analysis)

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Abstract

Background: The COVID-19 pandemic significantly affected financial and psychosocial factors that influence plastic surgery demand.

Objectives: The authors sought to actively assess public interest changes and the reasons underlying these shifts.

Methods: Using Amazons' Mechanical Turk, we crowdsourced public opinions regarding aesthetic interventions from April 30 to May 3, 2020. The survey assessed prior experience with and interest in 6 aesthetic interventions before and during the pandemic and reasons for changing interest. United States residents aged 18 years and over who passed the attention check were included.

Results: We included 704 of 838 total responses. One-half of respondents were female; the median age group was 25 to 34 years. During the pandemic, 21% of respondents had increased and 33% decreased interest in at least one intervention. Non-invasive procedures (7.3%), facial aesthetic surgery (6.6%), and medical-grade skincare (5.9%) elicited the greatest interest increase. Seeing themselves in the mirror more often (43.2%), desire to look better after the crisis (41.8%), and increased time on social media (40.4%) were the top reasons for increased interest. The most common reasons for decreased interest were changing spending priorities (58%), focusing on other health aspects (49.8%), and worrying about infection in medical facilities (46.3%). Almost one-half of respondents considered virtual consultations for interventions of increased interest.

Conclusions: The COVID-19 pandemic significantly affected interest in medical aesthetics. Offering telemedicine and discussing detailed COVID-19 infection control policies with patients will be critical to address patient needs and concerns. These findings can be used to improve patient outreach, advertisement, and counseling as practices focus on reopening.

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A variety of factors have been demonstrated to influence public interest in plastic surgery. In addition to demographic effects,[1] time on social media,[2] the experiences of public figures,[3] psychological factors, and relationships with others[4] have all been shown to affect interest in aesthetic surgery. Financial concerns and economic trends have also been associated with plastic surgery demand,[5,6] with revenues linked to indicators of the macroeconomic

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climate[7] and, in some cases, predictive of market trends.[5] Many of these factors have been influenced by the coronavirus disease 2019, or COVID-19.

Since COVID-19 was declared a national emergency in the United States on March 13, 2020, the virus has had wide-ranging effects on the health of our population and our economy. In an effort to control the viral spread, social distancing and isolation policies and recommendations were put in place on both state and national levels, with border closures, shutdown of nonessential businesses, and work from home policies instated for non-essential workers.[8,9] These policies have aided in flattening the curve; however, in the economic downturn that has followed, an estimated 22 million Americans have lost their jobs.[10] For those still employed, work-from-home policies have led to increased use of video technologies, which may magnify less desirable facial features. Regardless of job status, Americans are now spending more time than ever at home with less work and fewer social and athletic activities to occupy their time, which could lead to increased self-analysis. However, as many plastic surgery practices closed their doors during this pandemic, telemedicine is often now the primary method of seeing patients for non-urgent matters, including new consultations for aesthetic interventions. Although telemedicine has been studied within the field of plastic surgery, some patients may be hesitant to agree to a telehealth encounter instead of a traditional in-person visit.[11] These numerous circumstances all have the potential to drive changes in interest in aesthetic procedures, but the relative impact of these considerations on interest in aesthetic interventions has yet to be assessed.

In Part I, passive analysis of Google search trends revealed changes in public interest in plastic surgery procedures during the COVID-19 pandemic.[12] Importantly, public interest varies depending on the intervention or search term: for some procedures, interest has increased; some are unchanged; and for others, interest decreased and is in a varying state of recovery. These data provide valuable insight into public interest in plastic surgery services and estimates for how this interest may continue to change in the coming weeks. For Part II, we go one step further to actively assess public interest changes as well as the reasons that underly these shifts. This knowledge can be used to better target patient outreach, advertisement, and counseling as practices focus on reopening.

METHODS

To cross-sectionally crowdsource public opinions regarding aesthetic surgery, we distributed a survey (Appendix A) through Amazon's Mechanical Turk (MTurk, amazon.com, Seattle, WA). The survey was created by the authors (A.C. and H.E.J.) and was administered from April 30, 2020 to May 3, 2020. This study was conducted under guidance of and in compliance with the ethical principles of the Declaration of Helsinki; the survey was fully anonymous, and respondents participated under a waiver of documentation of consent.

Survey

The survey contained 7 base items discussing demographics, prior experience with 6 aesthetic interventions, interest in these interventions before the COVID-19 pandemic, and how this interest changed during or since the pandemic. The 6 aesthetic interventions of interest were medical-grade skincare, injectables (eg, Botox, dermal fillers, Kybella), non-invasive procedures (eg, lasers, coolsculpting), facial cosmetic surgery (eg, rhinoplasty, facelift, necklift, browlift, eyelid surgery), breast cosmetic surgery (eg, breast augmentation, breast lift), and body cosmetic surgery (eg, abdominoplasty, liposuction, brachioplasty, thighplasty). An additional 3 questions were presented to respondents who had increased interest in 1 or more interventions since the pandemic, assessing the reasons for this increased interest, consideration of a virtual consultation, and likelihood of making an in-person appointment with a plastic surgeon when possible. For those with decreased interest in 1 or more intervention, an additional item was presented to assess the reasons for this decreased interest.

Inclusion and Exclusion Criteria

Participants were included if they were residents of the United States, over the age of 18 years, and spoke English as their primary language. Participants were excluded if they did not complete the survey or failed an attention check question placed in the middle of the survey. To optimize quality of responses, participants were also excluded if they completed the survey in less than 20 seconds. Participants included in the study received $0.15 upon completion of the survey.

Data Analysis

Descriptive and statistical analysis of survey data was conducted using SPSS version 20.0 (IBM Corp., Armonk, NY). Because all outcomes were categorical, univariate analysis was conducted employing chi-squared. Binary logistic regression was utilized for multivariate analysis to control for and identify the effect of respondent age, gender, and income.

Table 1. Respondent Demographics

Characteristic	No. (%)
Age, y	
18-24	83 (11.7)
25-34	285 (40.5)
35-44	178 (25.3)
45-54	96 (13.6)
55-64	45 (6.4)
>65	17 (2.4)
Income	
<$20,000	65 (9.2)
$20,000-$34,999	95 (13.5)
$35,000-$49,999	125 (17.8)
$50,000-$74,999	152 (21.6)
$75,000-$99,999	142 (20.2)
$100,000-$124,999	45 (6.4)
$125,000-$149,999	43 (6.1)
>$150,000	37 (5.3)
Gender	
Male	355 (50.4)
Female	339 (48.2)
Transgender male	5 (0.71)
Transgender female	2 (0.28)
Other/prefer not to say	3 (0.43)
Marital status	
Single	219 (31.1)
In a relationship	144 (20.5)
Married	293 (41.6)
Divorced	39 (5.5)
Widowed/prefer not to say	9 (1.3)

RESULTS

A total of 838 respondents completed the survey. After excluding respondents who failed the attention check or completed the survey in less than 20 seconds, a total of 704 respondents were included. Just under one-half of respondents were female (48.2%), the median age group was 25 to 34 years of age, and the majority of respondents had an annual household income greater than $50,000 (59.6%; Table 1). The majority of respondents were either currently married or in a relationship (62.1%), and just under one-third were single (31.1%). When asked about prior experience with or interest in aesthetic interventions prior to the COVID-19 pandemic, 21.6% reported prior experience with or interest in non-invasive procedures, 21.0% medical-grade skincare, 15.1% injectables, 14.2% facial aesthetic surgery, 10.4% breast aesthetic surgery, and 9.1% body aesthetic surgery. During or since the COVID-19 pandemic, 146 respondents (20.7%) had increased interest and 231 (32.8%) had decreased interest in at least 1 intervention. Seventy-seven of these respondents reported a mix of increased and decreased interest in different procedures, whereas the remaining reported only increased and unchanged (69, 47.3%) or decreased and unchanged interests (154, 66.6%), respectively.

Table 2. Change in Interest in Aesthetic Interventions During/Since COVID-19 Pandemic

	Decreased interest No. (%)	Unchanged interest No. (%)	Increased interest No. (%)
Medical-grade skincare	113 (16.0)	553 (78.1)	42 (5.9)
Injectables	113 (16.0)	563 (79.5)	32 (4.5)
Non-invasive procedures	114 (16.1)	542 (76.6)	52 (7.3)
Facial aesthetic surgery	135 (19.1)	526 (74.3)	47 (6.6)
Breast aesthetic surgery	111 (15.7)	567 (80.1)	30 (4.2)
Body aesthetic surgery	115 (16.2)	553 (78.1)	40 (5.6)

Change in interest during the COVID-19 pandemic was similar between each intervention, with unchanged interest for 3 out of 4 respondents (Table 2). For those who did have a change in interest, more respondents had decreased interest in aesthetic interventions. Non-invasive procedures elicited the greatest increase in interest along with facial aesthetic surgery and medical-grade skincare. Overall, facial aesthetic surgery saw the most change in interest, because it also elicited the highest decrease in interest as well.

To understand respondents' change in interest during the pandemic as it relates to prior experience or interest in an intervention, respondents were separated by these 2 factors in Figure 1. For each aesthetic intervention, a smaller proportion of respondents who had prior experience with or interest prior to COVID-19 subsequently had unchanged opinions during COVID-19 than those without

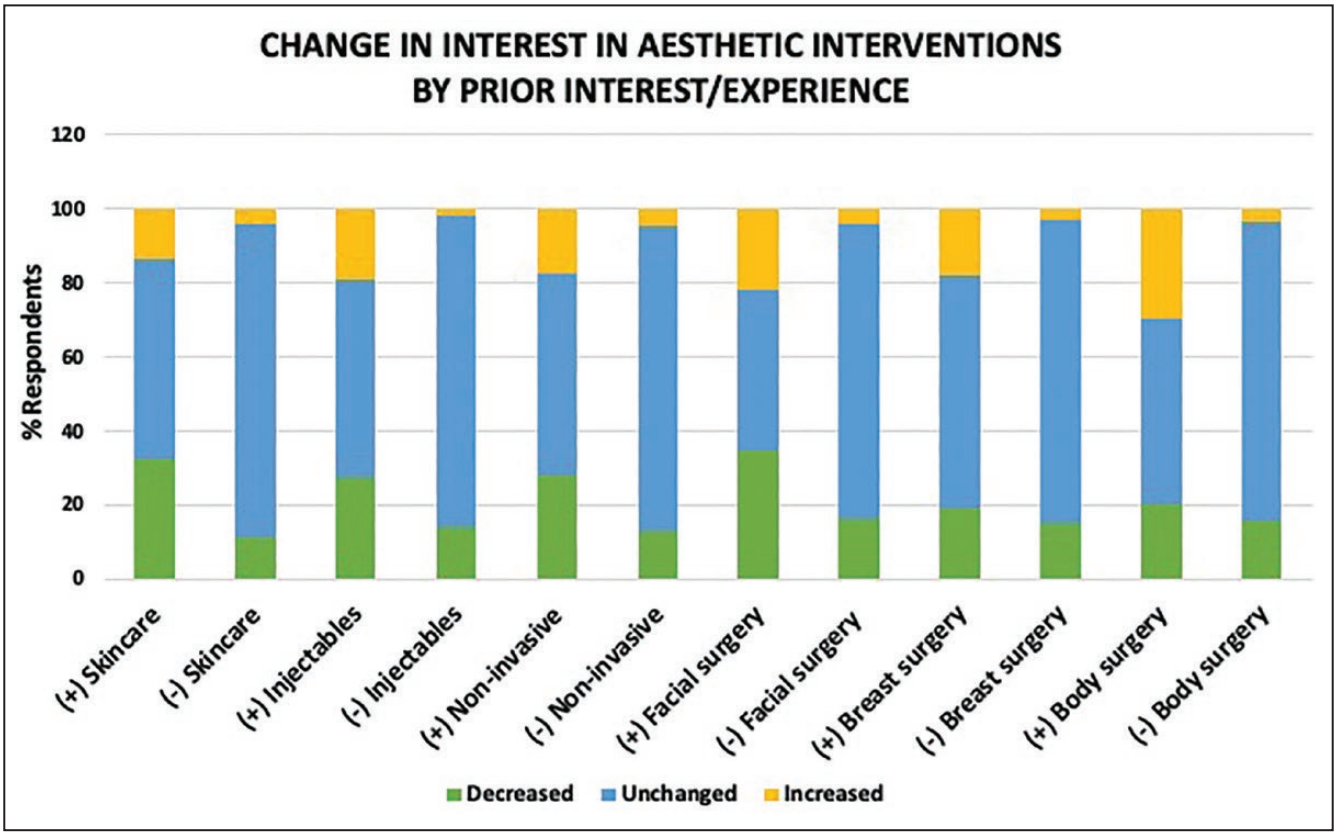

Figure 1. Change in interest in aesthetic procedures during the COVID-19 pandemic and prior interest/experience prior to pandemic. (+) Indicates respondents with either prior experience or expressed interest in that intervention prior to COVID-19. (−) Indicates no prior experience or expressed interest in that intervention prior to COVID-19.

prior experience or interest. Chi-squared and binary logistic regressions controlling for age, gender, and income demonstrated a significant association between increased interest during the pandemic and prior experience with or interest in injectables (OR = 5.3, $P < 0.001$), face aesthetic surgery (OR = 3.3, $P = 0.003$), breast aesthetic surgery (OR = 7.1, $P < 0.001$), and body aesthetic surgery (OR = 8.0, $P < 0.001$). There were no significant or persistent relationships between patient demographics and likelihood of increased or decreased interest during the pandemic.

Across all interventions, a change in spending priorities was the most common reason for decreased interest in aesthetic interventions, followed by focusing on other aspects of health, worrying about infection in a medical facility, and a loss or change in job or income (Table 3). Seeing themselves in the mirror more often was the top reason given for increased interest, followed by a desire to look better when the crisis is over, increased time spent on social media, and change in weight. Binary logistic regression showed that increased time spent on social media was not associated with respondent age, gender, or income ($P = 0.54$, 0.81, 0.95, respectively). Of those with increased interest in any intervention, 42.5% had considered a virtual consultation with a plastic surgeon; 53.4% stated they would probably or definitely make an in-person appointment with a plastic surgeon to pursue the treatment they are interested in receiving.

Respondents with increased interest in different interventions reported different driving factors for these opinions (Figure 2). Weight change was most often reported as a driving factor for respondents interested in surgical interventions (52.5% for body, 46.8% for facial, and 43.3% for breast aesthetic surgery). Seeing themselves in the mirror was most significant for those interested in body aesthetic surgery (57.5%) and medical-grade skincare (47.6%). A desire to look better after the crisis is over was a significant factor for all interventions (36.2%-54.8%) and more frequently noted than a desire for self-pampering (17.0%-31.3%). However, almost twice as many respondents interested in injectables (31.3%) and medical-grade skincare (28.6%) reported a desire to pamper than those interested in facial (17%) or body aesthetic surgery (17.5%). Opinions of others in the household was reported twice as often by those interested in facial (21.3%) and body (20%) aesthetic surgery as non-invasive procedures (9.6%) or breast surgery (10%), and change in relationship status or a desire to

Table 3. Reasons for Change in Interest in Aesthetic Interventions During/Since COVID-19 Pandemic

Increased interest	N = 146 (%)
Seeing self in mirror more often	63 (43.2)
Desire to look better when crisis is over	61 (41.8)
Increased time on social media	59 (40.4)
Weight change	55 (37.7)
Desire to pamper yourself when crisis is over	30 (20.5)
Opinion of others in household	19 (13)
Noticed something on video conference	15 (10.3)
Change in relationship status/resuming dating	14 (9.6)
Stimulus check	35 (4.9)
Decreased interest	**N = 231 (%)**
Spending priorities have changed	134 (58)
Focusing on other aspects of health	115 (49.8)
Worried about infection in a medical facility	107 (46.3)
Loss/change in job or income	92 (39.8)
Positive changes in my appearance	25 (10.8)
Will not have time	24 (10.4)
Change in relationship status/resuming dating	11 (4.8)

get back to dating was reported significantly more often by those with greater interest in non-invasive procedures (15.4%), injectables (12.5%), and body surgery (12.5%) than those interested in skincare (7.1%) or facial aesthetic surgery (8.5%). Lastly, although stimulus check was least often reported out of all respondents (4.9%), a higher proportion of those with increased interest in each specific intervention cited this as one of their reasons for increased interest (21.9%-34.0%).

Changing spending priorities was most reported by those with a decreased interest in injectables (68.1%) and non-invasive procedures (67.5%), whereas worry about infection in a medical facility was most reported by those with decreased interest in medical-grade skincare (58.4%), non-invasive procedures (54.4%), and body aesthetic surgery (52.2%; Figure 3). Loss of job/change in income was most reported by those with a decreased interest in body aesthetic surgery (46.1%). A positive change in appearance was reported most often by those with decreased interest in surgical interventions (14.1%, 13.0%, and 10.8% for facial, body, and breast aesthetic surgery, respectively); this was reported twice as often by those with decreased interested in facial aesthetic surgery than those with less interest in medical-grade skincare (7.1%).

DISCUSSION

The COVID-19 pandemic is an unprecedented time both for the population and for the health care system. Although some commentaries have been published both in the literature and lay press discussing how plastic surgery practice and education have been affected by the pandemic,[13,14] this 2-part study is the first to our knowledge to objectively characterize both the effect of COVID-19 on public interest in medial aesthetics and the reasons behind shifting interest. These survey results can be employed in combination with Google interest trends from Part I to gauge and predict public interest in aesthetic procedures as the pandemic evolves.[12] Although Google revealed initially decreased searches for aesthetic interventions, these inquiries have been increasing and will likely continue to increase as the pandemic resolves. Similarly, in this Part II, more respondents reported decreased (16%-19%) rather than increased (5%-7%) interest in aesthetic interventions. This coincides with other studies demonstrating interest in aesthetic surgery may function as a leading economic indicator, corresponding with and often predicting macroeconomic shifts in similar ways as other leading indicators such as the federal funds rate, quarterly gross domestic product, and unemployment.[5-7] Therefore, although the COVID-19 pandemic is unprecedented for modern times, it may share similar traits with other periods of economic downturn,[5-7] with interest expected to increase as the economy stabilizes.

However, some respondents reported increased interest in aesthetic interventions despite the economic climate, indicating other factors also affect the public's relationship with medical aesthetics. For some respondents, this may also reflect increased interest towards the end of self-isolation as many regions began considering or implementing phases of reopening. In these instances, the increased interest may then anticipatorily indicate economic recovery as businesses resume normal operations. These data can also be utilized to inform staffing and estimated resource utilization as practices move towards reopening. As interest increased the most for non-invasive procedures and facial surgery, surgeons may expect increased demand for those interventions above others. Additionally, as some regions are still within the pandemic peak, it may be useful to consider offering or increasing availability for telehealth consultations. Because 4 out of 10 respondents with an increase in any intervention had considered a telehealth appointment, offering this service may be critical to patient recruitment and satisfaction.

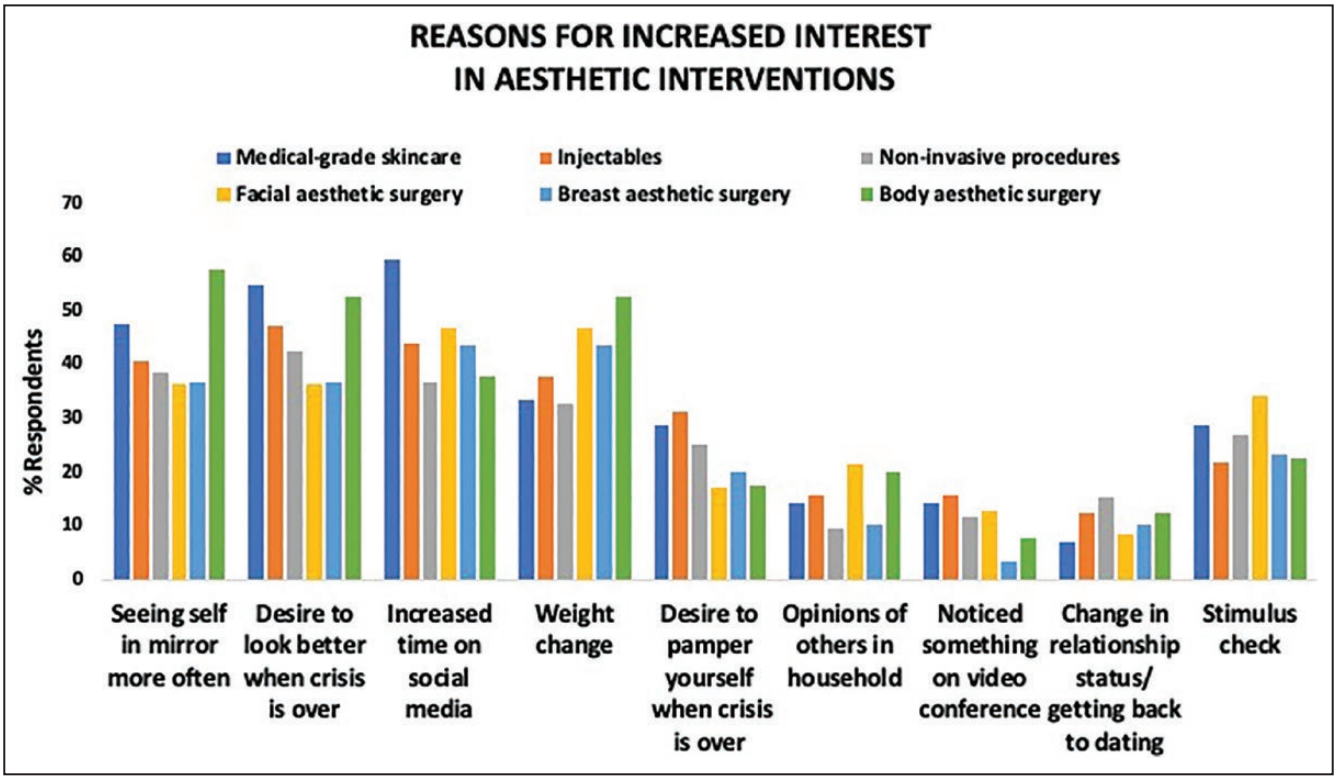

Figure 2. Reasons for increased interest in aesthetic interventions.

The effect of prior experience with or interest in plastic surgery is also important to note, because this group comprised the pre-pandemic potential patient population. It is encouraging to note that prior experience with or interest in injectables or any surgical procedure was statistically associated with increased interest during the pandemic. However, interest decreased for a subset of patients with prior interest or experience, indicating that some potential patients may be lost due to pandemic-related factors. This survey is therefore a powerful tool to identify potential patient subgroups who may need to be addressed differently: previously interested patients with continued or increased interest through COVID; previously interested patients with decreased interest; and, surprisingly, a previously uncaptured patient who developed new interest in medical aesthetics during the pandemic. These findings may enable the surgeon to further augment their patient base by segmenting their marketing approach.

Identifying the factors that most influence interest in different interventions can further characterize the pandemic's effect on plastic surgery demand and provide guidance to mitigate or address patient concerns. For example, weight change was a significant factor for those with increased interest in any surgical intervention: body, face, and breast. The combination of gym closures and self-isolation at home may have hindered fitness routines while food and snacks are more accessible, making weight change an understandably significant consideration for our patient population. It is important to note that respondents were asked about weight change rather than specific alterations such as weight gain or muscle and adipose redistribution; an individualized patient approach is therefore needed to address specific patient concerns. Social media has also increased interest in multiple procedures, particularly skincare and facial surgery. Although some physician social media accounts can provide accurate information and realistic outcomes, other accounts can spread misinformation, and counseling is critical for expectation management. Having more time at home may have also afforded respondents more time to critically evaluate themselves in the mirror, leading to an interest in skincare and body aesthetic surgery. Assessing patients for body dysmorphic disorder or otherwise unhealthy preoccupation with small flaws will continue to be important in patient selection and expectation management.

Financial factors were paramount for those with decreased interest in aesthetic interventions, and changes in spending priorities particularly affected interest in injectables and non-invasive procedures. Loss of or change in job or income was also an important factor, particularly for those with decreased interest in body aesthetic surgery. The COVID-19 pandemic has caused the loss of an estimated

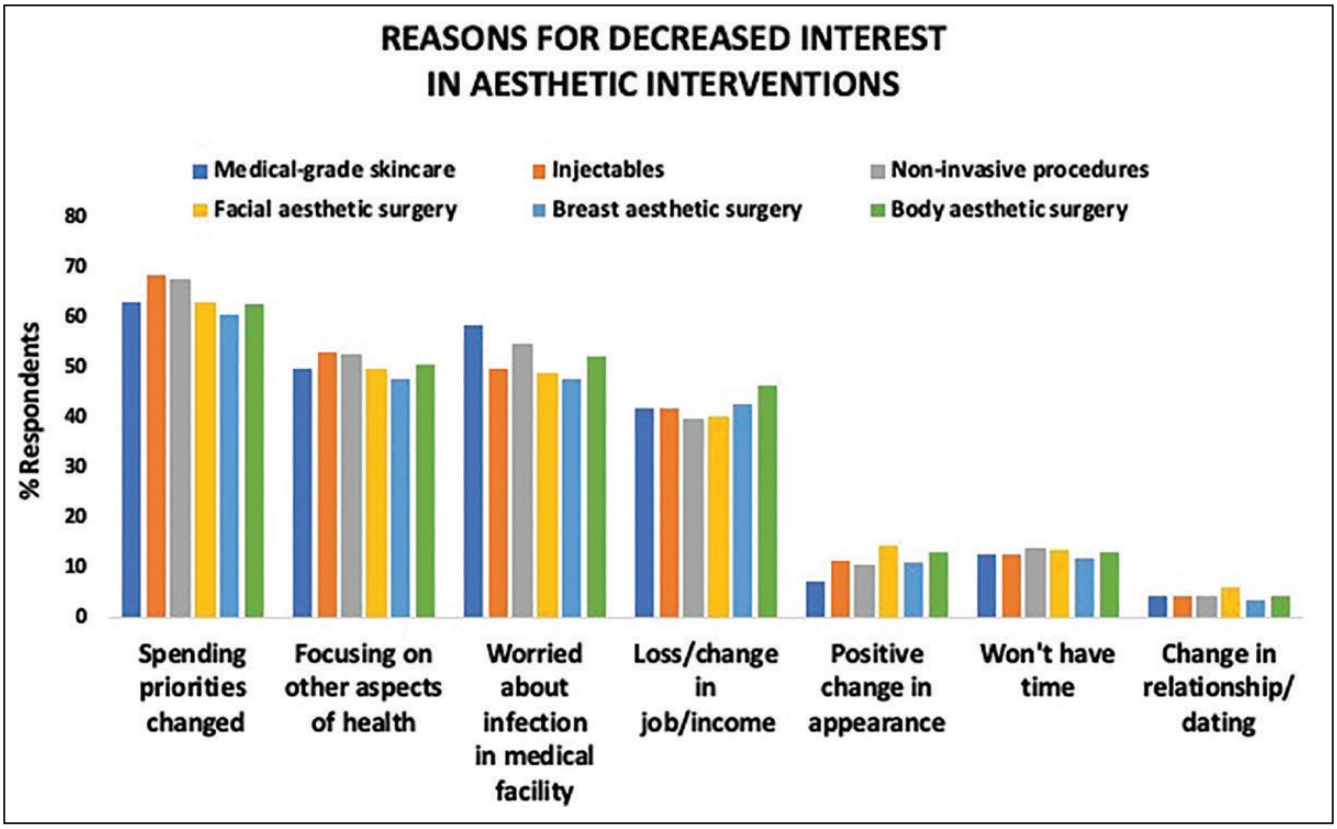

Figure 3. Reasons for decreased interest in aesthetic interventions.

22 million jobs in April alone, resulting in an estimated unemployment rate of 17%.[10] Although many areas are considering or currently lifting business restrictions, further job losses are expected in May. As rehiring is also projected to occur at a slower rate than jobs were lost, some economists predict close to 12 million will still be unemployed at the end of the year. Therefore, potential patients may have financial concerns for the remainder of the year. These concerns could be addressed through creative financing options and thorough financial counseling prior to any surgery. Some respondents also cited the government stimulus check as a reason for increased interest in aesthetic interventions. Interestingly, although this was the least common reason reported by all participants with increased interest, subdividing by specific intervention (Figure 2) revealed the stimulus check was cited by a larger proportion of those interested in each intervention. This corresponded to a group of participants with increased interest in many or all interventions who listed the stimulus check as one of multiple reasons for this change in interest. These potential patients may have experienced a more global interest in aesthetic interventions rather than deciding on a specific procedure of highest interest and would likely benefit from consultation with a plastic surgeon.

Lastly, the mindset of potential patients is important to consider. Although the pandemic has been stressful for many and has increased public awareness of self-care, the desire to look better was a stronger driving force than the desire to pamper themselves. However, pampering was relatively more important for those interested in medical-grade skincare and injectables rather than those interested in surgical intervention, which may not be perceived as a form of self-care in the same way as skincare or injectables. Therefore, consumers' emotional goals should be considered when targeting patient populations and managing the advertisement strategy for the reopening of a practice. Anxiety is another emotional factor that influenced respondents' interest. Worry about infection risk in a medical facility was one of the most important reasons for decreased interest in all interventions and was surprisingly reported most by those who developed a decreased interest in skincare, which has the lowest requirement for in-person contact. These findings reinforce the importance of not only developing a detailed infection control plan for each practice but also providing this information to patients to assuage COVID-19–related fears. Additionally, continuing to incorporate telemedicine when possible, even after resuming in-person appointments, may help

both reduce infection risk and address patient anxiety by avoiding exposure.

This study has some limitations. Demographics are self-reported, and respondent demographic distribution was skewed to younger respondents compared with the national population. Additionally, because this is a cross-sectional assessment of respondent opinions, these are likely to continue to change with current events. Lastly, although these opinions come from respondents across the United States, each country has had its own experience with the COVID-19 pandemic, and therefore public interest may vary between countries. Further assessments of public interest will be needed as prevalence of the COVID-19 virus decreases, unemployment statistics shift, and the potential for a second wave evolves. Therefore, repeated cross-sectional studies will enable the critical understanding of how interest in aesthetic interventions will continue to shift as the reasons underlying current changes are affected by phased economic reopening.

CONCLUSIONS

The COVID-19 pandemic has affected public interest in plastic surgery. Although for the majority interest is unchanged, some are experiencing a decreased or increased interest in medical aesthetic treatments. Financial concerns and worry about infection in medical facilities function as chief reasons for decreased interest, while seeing themselves in the mirror more often, a desire to look better after the crisis, and increased time spent on social media were all motivating factors to increase interest in aesthetic interventions. Additionally, because a significant proportion of respondents have considered virtual consultations, offering these may be critical for patient recruitment and satisfaction. Considering the reasons underlying changes in public interest in aesthetic interventions may guide practice reopening and improve practice advertisement and patient counseling.

Supplementary Material

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

Disclosures

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