

Rate and Predictors of Satisfaction after Noninvasive Facial Cosmetic Procedures: A National Study in Saudi Arabia

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Background: In response to the growing popularity of noninvasive facial cosmetic procedures, this study assessed the rate and predictors of satisfaction with such procedures in Saudi Arabia, filling a research gap and emphasizing the role of patient satisfaction in optimizing care and understanding the economic implications for healthcare.

Methods: This cross-sectional study was conducted from May to June 2023 using an online self-administered questionnaire distributed across all regions of Saudi Arabia. Eligible participants were Saudi adults aged 18 years and older who had undergone noninvasive facial cosmetic procedures. Patients who underwent surgical/invasive cosmetic procedures, nonfacial interventions, or interventions performed by doctors other than plastic surgeons or dermatologists were excluded.

Results: Most participants reported satisfaction with their procedures. Significant predictors of satisfaction included sex, income, and residential area. Women, higher-income individuals, and residents of certain areas were more likely to report satisfaction. Participants also expressed a high level of satisfaction with the friendly and polite treatment they received from their doctors but showed dissatisfaction with the difficulty they faced in securing immediate postprocedure appointments.

Conclusions: This study provides valuable insights into the rate and predictors of satisfaction after noninvasive facial cosmetic procedures in Saudi Arabia. These findings underscore the importance of considering sociodemographic factors in patient satisfaction and suggest areas for improvement in patient care, particularly in facilitating immediate postprocedure appointments. Future research should continue to explore these and other potential predictors to further improve patient outcomes in the field of noninvasive facial cosmetic procedures. (*Plast Reconstr Surg Glob Open* 2024; 12:e5607; doi: 10.1097/GOX.0000000000005607; Published online 8 February 2024.)

INTRODUCTION

Facial cosmetic procedures are interventions used to optimize facial aesthetics by enhancing symmetry, facial

contours, and proportions for a more youthful appearance. Noninvasive cosmetics, such as botox, fillers, fat injections, and reduction, have become increasingly accepted and desirable.¹ Botox and fillers are common noninvasive cosmetic procedures (38.4% and 23.8%, respectively). Collectively, these procedures are intended to improve patients' levels of satisfaction with their appearance and quality of life. When deciding on noninvasive cosmetic procedures, it is important to prioritize patient satisfaction by choosing the correct provider (whether a dermatologist or a plastic surgeon) and procedure.

The American Society for Dermatologic Surgery conducts annual surveys with dermatologists to gather

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procedure-related information. However, gender-specific data are only provided for neurotoxins and dermal fillers, and this is limited to the years 2011–2014.² Patient satisfaction is vital for maintaining relational continuity, which ultimately improves the quality of care. Moreover, a patient's satisfaction with the services of a doctor indicates the success of the service providers and the extent to which they meet their patients' expectations.³ Healthcare professionals and researchers use various tools to assess patient satisfaction and capture patients' experiences to enhance the quality of care. Moreover, patient feedback carries economic significance, as hospitals are reimbursed according to patients' evaluations of the care they receive,^{4,5} which also affects hospitals' reputations.

Various studies have investigated patient satisfaction after filler injections, botulinum injections, and other cosmetic procedures. However, no nationwide study has shed light on all the different noninvasive facial cosmetic procedures, indicating the need for further research in this field. To fill this research gap, this study has assessed the rate and predictors of satisfaction following noninvasive facial cosmetic procedures in Saudi Arabia.

METHODS

Study Settings and Participants

This cross-sectional study was conducted using an online self-administered questionnaire distributed to all regions of Saudi Arabia between May and June 2023. Eligible participants were Saudi adults aged 18 years or older who had undergone noninvasive facial cosmetic procedures, including botox, fillers, threads (facial/nasal), fat injection, fat reduction, and microneedling. Participants who had undergone surgery/invasive cosmetic procedures, nonfacial interventions, or procedures performed by a doctor other than a plastic surgeon or dermatologist were excluded.

Data Collection

A nonprobability sampling technique was used. The questionnaire consisted of four parts: an informed consent statement; demographic data (age, sex, marital status, educational level, job, monthly income, and region of residency in Saudi Arabia); procedure type and results; and patient satisfaction assessment.

The questionnaire was validated by two plastic surgeons and translated by two linguists. Participants rated each item from 1 (not relevant) to 4 (highly relevant), with a content validity index above 0.80.⁶ The questionnaire was translated into Arabic by a proofreader and an expert translator. A pilot study was conducted with 20 participants to test the suitability.

Statistical Analysis

The statistical analysis was done by SPSS, version 26 (IBM). Demographic data, being categorical variables, were presented as frequencies and percentages except for age, which was presented as median and interquartile range because it was a numerical variable. Complications,

Takeaways

Question: How satisfied are Saudi adults who have undergone noninvasive facial cosmetic procedures, and what factors influence this satisfaction?

Findings: Most participants were satisfied with their procedures. Women, individuals with higher income, and residents of the capital city reported higher satisfaction. However, some participants struggled with identifying areas for improvement and securing postprocedure appointments.

Meaning: The study emphasizes the need for personalized guidance during consultations, improved scheduling, and consideration of demographic factors to enhance patient satisfaction with noninvasive cosmetic procedures.

symptoms, type of cosmetic intervention, and satisfaction rate were presented as frequencies and percentages. Chi-square test was used to compare between the demographic data and satisfaction. Regarding age, Mann-Whitney test was used to compare between age and satisfaction. *P* values were presented by chi-square and Mann-Whitney tests. Logistic regression was used to present the predictors of satisfaction after cosmetic intervention.

Ethical Approval

Ethical approval was obtained from the King Abdullah International Medical Research Center, NRC23R/206/03, May 7, 2023. Informed consent was obtained from participants, ensuring confidentiality and anonymity. Questionnaires were assigned serial numbers and were used for research purposes only.

RESULTS

Demographic Data

The total number of the participants was 1171. Most participants were women 1062 (90.70%) and Saudi 1144 (97.70%). More than half of the participants [802 (68.50%)] had a bachelor's degree. Most of the participants [642 (54.80%)] were single, employed [485 (41.40%)] had a monthly income of 10,000–20,000 riyals [354 (30.20%)], and lived in the middle area [385 (32.90%)]. The largest age group was 15–30, comprising 694 (59.30%) of the participants (Table 1).

Types of Cosmetic Surgery

Among the participants, 714 (61.00%) underwent filler injections. Dermatologist was the specialty of the doctor who performed the last cosmetic intervention for 670 (57.30%) of the participants. There were 853 (72.80%) participants who advised others to undergo the cosmetic intervention that they did, and 804 (68.70%) paid for the procedure themselves. After cosmetic intervention, 155 (13.20%) of the participants had asymmetry, 178 (15.20%) had scars, 21 (1.80%) had infection, 70 (6.00%) had loss of facial expression, and 46 (3.90%) had wound infection. In addition, less than half of the participants had

Table 1. Demographic Characteristics of the Participants

Parameter	Category	N	%
Sex	Male	109	9.30%
	Female	1062	90.70%
Nationality	Non-Saudi	27	2.30%
	Saudi	1144	97.70%
Educational level	Elementary school	2	0.20%
	Middle school	10	0.90%
	High school	145	12.40%
	Diploma	90	7.70%
	Bachelor's degree	802	68.50%
	High education	122	10.40%
Marital status	Single	642	54.80%
	Married	469	40.10%
	Divorced	43	3.70%
	Widowed	17	1.50%
Occupation	Student	409	34.90%
	Unemployed	243	20.80%
	Employee	485	41.40%
	Retired	34	2.90%
Income	<5000	232	19.80%
	5000–10,000	286	24.40%
	10,000–20,000	354	30.20%
	>20,000	299	25.50%
Residential area	Northern area	152	13.00%
	Southern area	265	22.60%
	Eastern area	186	15.90%
	Western area	183	15.60%
Age	Middle area	385	32.90%
	15–30	694	59.30%
	31–40	246	21.00%
	41 or more	230	19.70%

swelling [513 (43.80%)], pain [461 (39.50%)], redness [466 (39.90%)], face lift [184 (15.80%)], and bruises [397 (34.00%)] after cosmetic intervention. The vast majority of participants did not visit the emergency department after the cosmetic intervention [1143 (97.60%)], and they did not visit/contact the specialist regarding any concerns about the intervention before the scheduled follow-up [1065 (90.90%); Tables 2 and 3].

Agreement and Satisfaction with Cosmetic Surgery

Over half of the participants visited one doctor before undergoing the procedure [654 (55.80%)]. The majority (73.50%) were satisfied with the outcome. Recommendations from others influenced the choice of doctor for 56.10% of participants. Self-assessment of procedure success was reported by 81.40% of participants. Most of the participants disagreed that they were not financially burdened by the intervention [324 (27.70%)], expressed concerns about the lack of enough time or opportunity with a cosmetic provider [426 (36.40%)], felt that doctors sometimes ignored what they told them [532 (45.40%)], and found difficulties in getting an appointment after the procedure [385 (32.90%)]. However, participants acknowledged doctors' proficiency in explaining the purpose of medical examinations for cosmetic procedures [493 (42.10%)], and conducting thorough checks [387 (33.00%)]. Some had to pay more for tests for a non-invasive procedure than they could afford [338 (28.90%)], and some had easy access to the cosmetic specialist or dermatologist they needed [515 (44.00%)]. Doctors acted in a practical/impersonal [482 (41.20%)] or friendly/polite

Table 2. Type of Cosmetic Surgery and the Part of the Face on Which the Surgery Was Performed

Parameter	Category	N	%	
Which of the nonsurgical cosmetic procedures have you had in the past 5 years?	Botox	No	673	57.50%
		Yes	498	42.50%
	Filler injection	No	457	39.00%
		Yes	714	61.00%
	Face or nose threads	No	1076	91.90%
		Yes	95	8.10%
	Fat injection	No	1129	96.40%
		Yes	42	3.60%
	Liposuction	No	1076	91.90%
		Yes	95	8.10%
	Microneedling	No	988	84.40%
		Yes	183	15.60%
On which part of your face have you had a nonsurgical cosmetic procedure in the last 5 years?	Forehead	No	723	61.70%
		Yes	448	38.30%
	Eyes	No	898	76.70%
		Yes	273	23.30%
	Cheeks	No	758	64.70%
		Yes	413	35.30%
	Nose	No	1047	89.40%
		Yes	124	10.60%
	Lips	No	594	50.70%
		Yes	577	49.30%
	Jaw/chin	No	809	69.10%
		Yes	362	30.90%
	Neck	No	26	96.30%
		Yes	1	3.70%

Table 3. Complications and Symptoms of Cosmetic Surgery

Parameter	Category	N	%
What is the specialty of the doctor who performed your last cosmetic procedure?	None	19	1.60%
	I do not know	5	0.40%
	Dermatologist	670	57.30%
	Plastic and reconstructive surgery	463	39.60%
	Other	10	0.90%
	All	2	0.20%
Do you advise others to undergo the cosmetic procedure that you did?	No	318	27.20%
	Yes	853	72.80%
Approximately, how much did the total cosmetic procedures you underwent cost you?	<1000	270	23.10%
	1000–5000	596	50.90%
	5000–10,000	194	16.60%
	10,000–20,000	60	5.10%
	> 20,000	51	4.40%
Who pays for the procedure?	None	11	0.90%
	Self-pay	804	68.70%
	Guardian	5	0.40%
	Husband	91	7.80%
	Parents or one of the parents	228	19.50%
	Multiple sources	5	0.40%
	Other	26	2.20%
Did you experience any complications after the cosmetic procedure?	Asymmetry	155	13.20%
	Scars	178	15.20%
	Infection	21	1.80%
	Loss of facial expressions	70	6.00%
	Wound infection	46	3.90%
Did you experience any of these symptoms after the cosmetic procedure?	Swelling	513	43.80%
	Pain	461	39.50%
	Redness	466	39.90%
	Face lift	184	15.80%
	Bruises	397	34.00%
Did you visit the emergency department after you had the cosmetic procedure?	No	1143	97.60%
	Yes	28	2.40%
Did you visit/contact your specialist regarding any concerns regarding the intervention before the scheduled follow-up appointment?	No	1065	90.90%
	Yes	106	9.10%

manner [570 (48.70%)]. Participants had a clear idea of what they wanted to improve [559 (47.70%)] and wanted doctors to tell them what they needed to improve even if they did not feel like they need it [437 (37.30%)]. (See **table, Supplemental Digital Content 1**, which provides agreement and satisfaction with cosmetic surgery. <http://links.lww.com/PRSGO/D69>)

Assessing agreement and satisfaction with nonsurgical cosmetic procedures, the highest percentage (85.20%) of participants expressed positive views about doctors treating them in a friendly and polite manner. Conversely, the aspect with the highest level of dissatisfaction was the difficulty in getting an appointment for medical care immediately after the nonsurgical procedure, with 39.10% of participants expressing negative views. Other notable results include easy access to the cosmetic specialist or dermatologist they need, with 64.40% indicating “strongly agree” and “agree,” and finding it difficult to determine what they want to improve when visiting a cosmetic specialist or dermatologist, with 78.20% combining “strongly agree” and “agree” responses.

A significant proportion (63.90%) agreed that they would appreciate suggestions for improvements, even if they did not feel the need. Responses were observed

regarding doctors’ explanations for medical examinations, with 61.70% agreeing they were good at explaining, whereas 36.70% were uncertain. Of participants, 66.10% indicated doctors thoroughly checked everything, whereas 22.00% disagreed. Regarding financial burdens, 35.50% agreed they paid more than they could afford for tests, and 26.50% were uncertain, but the majority (45.10%) disagreed. Regarding having enough time or opportunity to consult a cosmetic specialist or dermatologist, 31.00% agreed, 31.50% were uncertain, and 17.60% disagreed. Furthermore, 37.00% agreed that doctors sometimes ignored what they told them, whereas 15.00% strongly disagreed.

Association between Participants’ Satisfaction and Their Sociodemographic Characteristics

Regarding gender ($P < 0.001$), 54 (49.50%) men and 807 (76.00%) women were satisfied with the final result of the cosmetic procedure. More than half of the single [457 (71.20%)], married [355 (75.70%)], divorced [38 (88.40%)], and widowed [11 (64.70%)] participants were satisfied (P value for marital status = 0.037). Occupation also played a role, as satisfaction rates were high among students [276 (67.50%)], unemployed

Table 4. Demographic Data and Satisfaction with Cosmetic Surgery

Parameter	Category	How Satisfied Are You with the Final Results?				P value
		No		Yes		
		N	%	N	%	
Sex	Male	55	50.50%	54	49.50%	<0.001
	Female	255	24.00%	807	76.00%	
Nationality	Non-Saudi	8	29.60%	19	70.40%	0.664
	Saudi	302	26.40%	842	73.60%	
Educational level	Elementary school	2	100.00%	0	0.00%	0.126
	Middle school	5	50.00%	5	50.00%	
	High school	40	27.60%	105	72.40%	
	Diploma	25	27.80%	65	72.20%	
	Bachelor's degree	210	26.20%	592	73.80%	
	High education	28	23.00%	94	77.00%	
Marital status	Single	185	28.80%	457	71.20%	0.029
	Married	114	24.30%	355	75.70%	
	Divorced	5	11.60%	38	88.40%	
	Widowed	6	35.30%	11	64.70%	
Occupation	Student	133	32.50%	276	67.50%	<0.001
	Unemployed	63	25.90%	180	74.10%	
	Employee	100	20.60%	385	79.40%	
	Retired	14	41.20%	20	58.80%	
Income	< 5000	88	37.90%	144	62.10%	<0.001
	5000–10,000	71	24.80%	215	75.20%	
	10,000–20,000	96	27.10%	258	72.90%	
	>20,000	55	18.40%	244	81.60%	
Residential area	Northern area	62	40.80%	90	59.20%	<0.001
	Southern area	85	32.10%	180	67.90%	
	Eastern area	45	24.20%	141	75.80%	
	Western area	49	26.80%	134	73.20%	
	Middle area	69	17.90%	316	82.10%	
Age	15–30	200	28.80%	494	71.20%	0.072
	31–40	54	22.00%	192	78.00%	
	41 or more	55	23.90%	175	76.10%	

participants [180 (74.10%)], employed participants [385 (79.40%)], and retired participants [20 (58.80%)] (P value for occupation: <0.001). For monthly income (P < 0.001), participants with less than 5000 riyals income [144 (62.10%)], 5000–10,000 riyals [215 (75.20%)], 10,000–20,000 riyals [258 (72.90%)], and more than 20,000 riyals [244 (81.60%)] were satisfied. Participants who lived in the northern area [90 (59.20%)], southern area [180 (67.90%)], eastern area [141 (75.80%)], western area [134 (73.20%)], and middle area [316 (82.10%)] were satisfied (P < 0.001). Regarding age, it was statistically significant [27.0 (22.0–39.0), P = 0.006]. Nationality, educational level, and age were not statistically significant (Table 4).

Predictors of Satisfaction with Cosmetic Surgery

Women were predicted to be more satisfied with the final results of cosmetic intervention [OR = 2.652, 95% CI (1.715–4.101), P < 0.001]. Regarding occupation, employed participants were predicted to be more satisfied [OR = 1.735, 95% CI (1.161–2.594), P = 0.007]. Participants with more than 20,000 riyals monthly income were predicted to be more satisfied [OR = 2.144, 95% CI (1.408–3.267), P < 0.001]. Participants who lived in the middle area were predicted to be more satisfied [OR = 2.368, 95%

CI (1.528–3.669), P < 0.001]. The Hosmer and Lemeshow test was calculated and equaled 0.259 (Table 5).

DISCUSSION

Recently, the popularity of noninvasive cosmetic procedures has grown, providing individuals with the ability to enhance their physical features without invasive surgery. With the increased feasibility and popularity, many studies have examined the attitude, perception, acceptance, and patient-reported complications of such procedures; however, patient satisfaction, a vital aspect in assessing the effectiveness of these procedures, remains understudied.

Although the definition of “patient satisfaction” is unclear, researchers generally concur that it encompasses a diverse range of factors that are often evaluated by surveys to determine the effectiveness and value of various medical methods. In the realm of aesthetic procedures, outcome assessments hold particular significance for both clinical practice and patients’ perspectives. Despite the importance of the topic, this is, to the best of our knowledge, the first study to evaluate subjective patient satisfaction across all regions of Saudi Arabia. The results provide valuable insights into the rate and factors associated with satisfaction in the last 5 years (2019–2023).

Table 5. Predictors of Satisfaction with Cosmetic Surgery (Logistic Regression Analysis)

Parameter	Category	OR	95% CI		P value
			LB	UB	
Age	Numerical	0.999	0.998	1.001	0.473
Sex	Male	Ref.	Ref.	Ref.	Ref.
	Female	2.658	1.719	4.111	< 0.0001
Marital status	Single	Ref.	Ref.	Ref.	Ref.
	Married	0.873	0.599	1.272	0.479
	Divorced	2.438	0.886	6.707	0.084
	Widowed	0.634	0.213	1.886	0.413
Occupation	Student	Ref.	Ref.	Ref.	Ref.
	Unemployed	1.371	0.894	2.103	0.148
	Employee	1.748	1.168	2.614	0.007
	Retired	0.719	0.314	1.646	0.434
Income	<5000	Ref.	Ref.	Ref.	Ref.
	5000–10,000	1.47	0.975	2.216	0.066
	10,000–20,000	1.179	0.792	1.754	0.417
	>20,000	2.127	1.395	3.243	<0.0001
Residential area	Northern area	Ref.	Ref.	Ref.	Ref.
	Southern area	1.531	0.993	2.36	0.054
	Eastern area	1.679	1.029	2.74	0.038
	Western area	1.454	0.896	2.36	0.129
	Middle area	2.380	1.535	3.689	<0.0001

Overall, 73% of the participants considered themselves satisfied with their noninvasive cosmetic procedures. However, it is important to shed light on the remaining 27% and explore the factors contributing to their dissatisfaction. Furthermore, the determination of success was significantly influenced by individuals' perceptions, as 80% chose themselves as the determining factor. This further highlights the subjectivity of satisfaction, especially in cosmetic procedures, in which personal expectations plays a pivotal role in shaping the overall experience.

An encouraging result from the study was that 73% expressed their willingness to undergo the noninvasive procedure again, and 72.80% would advise others to undergo the cosmetic procedure. These results are consistent with those of Rzany et al,⁷ in which 89.2% of participants said they would repeat the procedure, and 92.0% would recommend it to family or friends. These results further suggest a high level of overall satisfaction. Additionally, they signify positive word-of-mouth for potential patients, reflecting a potential growth in the demand for such procedures.

Regarding doctor selection, 56% of the participants selected their doctor based on personal recommendations from others, followed by 21% who had seen the doctor on social media. This highlights the importance of the patient–doctor relationship and the influence of positive reviews on an individual's decision to seek these procedures. This is consistent with our findings that 85.2% of the participants gave positive reviews of their encounters with the doctors whom they visited based on good recommendations. Conversely, in a 2022 national study in Saudi Arabia,⁸ 39.9% of participants considered qualifications, specifically an international board certification, as the most influential factor when choosing a provider, followed by recommendations from friends and relatives in 24% of cases.⁸

Approximately 39% of participants faced difficulty in determining their desired improvements when visiting the doctor. Around 63.9% of the participants wished for their medical providers to suggest improvements, regardless of their perceived need. This could indicate a potential communication gap and emphasize the need for improved guidance and better understanding during consultations. Additionally, 39% reported difficulty finding appointments directly after the procedure, emphasizing the importance of follow-up appointments and good scheduling, as these directly affect patient satisfaction and overall experience.

We identified three significant satisfaction predictors: sex, income, and residential area. Notably, men were more likely to be dissatisfied than women. This may be due to various factors, such as impatience, high expectations for immediate results, and intolerance of postoperative complications such as edema and bruising, as well as being reluctant to use concealers such as makeup, which may influence their satisfaction. This finding highlights the importance of sex-specific features in such interventions. Similarly, Ross investigated the use of devices to minimize postprocedure complications in men, such as the 590 nm LED, to reduce edema and erythema following laser rejuvenation.⁹ Moreover, physiological and anatomical variations between men and women also contributed to these results. For instance, botox injections, if used in the same dosage, were not as effective in men as in women, potentially due to men's greater muscle bulk.¹⁰

Participants with higher incomes (>20,000 SAR/month) expressed greater satisfaction with their procedures. This could be attributed to two factors. First, they may be able to afford more expensive consultations and procedures without experiencing financial stress. Additionally, they could have access to high-quality

services, resulting in greater personal satisfaction and a better experience than those with lower incomes (<5000 SAR/month). Residential area was also a key predictor of satisfaction, which offers a wide range of clinics and doctors with various specialties, participants who resided in the capital city reported higher scores. These findings are in accordance with a national study on patient satisfaction and experience that found a strongly positive relationship between income, education, and satisfaction levels.¹¹

Our findings reveal that retired people have a lower satisfaction rate, potentially due to the lack of suitable procedures, such as face lifts, tailored to their specific needs. For instance, an older patient arriving for facial rejuvenation is offered a medical face lift when surgical intervention is needed to achieve the desired outcome. It is crucial to highlight a holistic approach in cosmetic procedures, where physicians accurately identify patients' needs. Similarly, older persons' expectations must be managed regarding the extent to which the procedure they seek may or may not address their concerns.¹²

This study has limitations. First, the cross-sectional study design prevents the establishment of causality, although it allowed us to capture a wider view of facial noninvasive cosmetic procedures. Second, reliance on self-reported data may introduce a recall bias. Participants were asked to recall their satisfaction with cosmetic procedures over the previous 5 years, which could result in either overestimating or underestimating levels of satisfaction. Finally, psychological factors like self-esteem, peer pressure, and societal beauty standards were not considered, which may affect satisfaction. Future research should address these limitations to provide more comprehensive findings.

Patient satisfaction greatly influences future decision-making regarding choice of procedure and doctor, as well as adherence to postprocedure advice. Understanding the predictors of satisfaction is vital to the patients, enabling medical providers to have informed discussions and tailor the procedures accordingly. Furthermore, our study facilitates the development of guidelines for the proper management of patients seeking cosmetic procedures, thereby improving the quality of care.

CONCLUSIONS

This study assessed the rate and predictors of satisfaction after noninvasive facial cosmetic procedures in Saudi Arabia. The findings reveal that most participants were satisfied with their results, indicating a high overall satisfaction rate. Several predictors of satisfaction have been identified. Sex, income, and residential area emerged as significant factors, with women, individuals with higher incomes, and those residing in certain areas being more likely to report satisfaction.

These findings underscore the importance of these predictors for understanding and improving patient satisfaction after noninvasive facial cosmetic procedures. The study suggests that healthcare providers should focus on these factors to enhance patient satisfaction.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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