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FACIAL FILLERS IN AESTHETIC PRACTICE: PATIENT SATISFACTION AND OUTLINE OF COMMON ADVERSE EFFECTS: A CROSS-SECTIONAL STUDY

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Abstract

Background

Dermal fillers are a popular non-surgical option for facial enhancement, offering affordability and minimal recovery time. They are widely used for volume restoration and wrinkle correction. Patient satisfaction is key to evaluating treatment success and psychological well-being. This study aims to assess patient satisfaction levels following dermal filler procedures and to evaluate the prevalence of common complications associated with these treatments.

Methods

A cross-sectional study was conducted at Narayan Medical College and Hospital, Sasaram, Bihar, India, from May 2023 to October 2024. A total of 100 medically eligible participants of both sexes aged 25 to 35 years were selected through convenience sampling, and data were collected using a structured questionnaire based on the Global Aesthetic Improvement Scale and WHO Quality of Life Questionnaire. Hyaluronic acid is used in our study for facial augmentations. Patient satisfaction, procedural details, and adverse effects were assessed, with follow-ups scheduled quarterly during our study period.

Results

The lips (34.5%) were the most common injection site, with 1 cc of filler being the most frequently used volume (40%). Mild to moderate complications were common, while severe reactions like necrosis were rare (0.5%). Satisfaction correlated with filler volume, with higher volumes leading to greater satisfaction. Most participants (70%) were willing to repeat the procedure, and 72% would recommend it.

Conclusion

Dermal fillers provide high patient satisfaction with minimal complications. Higher filler volumes and lip/malar injections yielded better outcomes.

Recommendation

The Utilization of hyaluronic acid in the treatment of the infraorbital hollow is recommended to facilitate the application of hyaluronidase for material dissolution in the event of adverse reactions.

Keywords: *Dermal fillers, patient satisfaction, complications, aesthetic procedures, facial augmentation.*
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Introduction

In recent years, dermal fillers have gained popularity as a non-surgical approach for attaining aesthetic improvements comparable to those offered by surgical interventions. These therapies are preferred because of their reduced expense, brief recovery duration, and satisfactory aesthetic outcomes. Data from the American Society for Aesthetic Plastic Surgery (ASAPS) indicates that more than 1.6 million dermal filler operations were conducted in the United States in 2011. Dermal fillers rank as the second most prevalent non-surgical cosmetic therapy following neuromodulators, with both treatments being delivered concurrently [1].

The global dermal filler industry is expanding, propelled by heightened consumer awareness and extensive utilization. Presently, over 50 corporations globally provide around 160 distinct filler goods, predominantly utilized for wrinkle amelioration and soft tissue repair due to aging or medical ailments [2,3]. Cosmetic procedures encompass the enhancement of facial attributes, including the cheeks and jawline, rectification of tear trough deformities, nasal contouring, augmentation of mid-face

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volume, refinement of lip contours, and correction of facial asymmetry. As the demand for these operations increases, a parallel rise in related problems is expected [4].

Patient satisfaction is an essential criterion for assessing the efficacy of aesthetic therapies. Practitioners prioritize attaining elevated levels of patient satisfaction, as individuals pursue cosmetic modifications for several motivations, including enhancing self-esteem and mitigating anxiety or sadness associated with their looks [5]. Research indicates that persons content with their cosmetic outcomes often experience enhanced physiological well-being and more engagement in social and economic activities [6].

Among aesthetic operations, lip augmentation is one of the most requested treatments. The lips play a vital part in facial aesthetics, with size, shape, and the proportion between the top and lower lips being essential for overall facial harmony. With advancing age, structural alterations in the lips and adjacent regions transpire, resulting in issues such as perioral wrinkles and the attenuation of Cupid's bow, prompting numerous persons to pursue lip augmentation [7].

Due to the complex nature of facial anatomy, a comprehensive understanding of facial features and injection procedures is crucial for attaining the best outcomes. Recent innovations in filler substances and administration techniques have improved the durability of outcomes while reducing adverse effects and treatment failures [8]. In recent decades, numerous fillers for facial rejuvenation have been created and classified according to their duration as temporary, semi-permanent, or permanent [9].

Dermal fillers are categorized into biological and synthetic forms based on their chemical composition. Biological fillers comprise ingredients like bovine collagen, animal-derived hyaluronic acid, and autologous fat, while synthetic fillers consist of non-animal hyaluronic acid and calcium hydroxyapatite. Hyaluronic acid is the most often utilized substance for facial augmentations. An optimal filler must be economical, non-resorbable, biocompatible, non-immunogenic, and easily storable. Furthermore, it must be both safe and effective, with the provision for facile removal if necessary [10,11].

While severe problems are uncommon with most dermal fillers, the proficiency of the injector and the skillfulness of the procedure can greatly influence patient results. Before treatment, acquiring informed consent guarantees that patients understand all possible options and associated risks [12]. All filler procedures entail injections, which may result in mild, unpleasant effects, including needle marks, swelling, bruising, discomfort, itching, herpes flare-ups, and infections. Moreover, procedure problems may encompass asymmetry, excessive prominence, overcorrection, undercorrection, allergic reactions, hypersensitivity responses, and nodule formation [13]. Despite meticulous procedures, specific tissue reactions may arise from the filler's composition, while additional difficulties may result from inappropriate application methods [14].

The efficacy of any cosmetic procedure is ultimately assessed by patient satisfaction. Self-perception significantly influences the decision to pursue cosmetic operations, with results closely associated with enhancements in self-esteem, which directly affects total patient satisfaction [15].

Aim of the Study

This study aims to assess patient satisfaction levels following dermal filler procedures and to evaluate the prevalence of common complications associated with these treatments.

Methods

Study Design and Setting

A cross-sectional study was conducted at Narayan Medical College and Hospital, Sasaram, Bihar, India, from May 2023 to October 2024 (1 year 6 months) to evaluate patients' self-reported experiences and improvements in their appearance following filler augmentation.

Sample Size and Participant Selection

The study included approximately 100 participants, encompassing 49 males and 51 females. The sample size was estimated using an online sample calculator. Medically healthy individuals capable of understanding and completing the questionnaire in the age group of 25 to 35 years were selected through convenience sampling, and written informed consent was taken. Patients with medical conditions contraindicating filler augmentation, those who had undergone surgeries affecting the procedure, pregnant women, and those with unrealistic expectations were excluded.

Questionnaire and Assessment Tools

The questionnaire was based on the Global Aesthetic Improvement Scale [16] and the WHO Quality of Life Questionnaire [17]. It consisted of four sections:

- **Part 1:** Demographic data, including age, education level, and place of residence.
- **Part 2:** Details of the procedure, such as the number of administrations, injection sites, and filler volume used.
- **Part 3:** Assessment of improvement, patient satisfaction, willingness to repeat the procedure, and recommendations to others.
- **Part 4:** Information on side effects experienced and their severity.

Follow-Up and Translation

A certified translator translated both the consent form and the questionnaire into the local language. Patients provided feedback within one year or less of their most recent filler treatment. Clinical follow-ups were scheduled quarterly to assess outcomes.

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Ethical Considerations

Informed consent was gathered from all patients.

Results

The demographic and clinical attributes of the study group reveal the most common anatomical sites for filler injections, with the lips (34.5%) being the predominant area, followed by the malar region (20.5%) and nasolabial folds (13.2%). The least common areas were the temple (2.9%) and the chin (2.3%). The volume of filler administered varied, with 1 cc being the most frequent (40%), followed by 1–2 cc (38.7%) and more than 3 cc (21.3%). Clinical complications such as redness, ecchymosis, numbness, swelling, and tenderness were primarily mild to moderate, with severe reactions being less common. Notably, necrosis was rare, occurring in only 0.5% of cases (Table 1).

Table 1: Demographic and Procedural Characteristics of Participants

Parameter	Classification	Frequency	Percentage
Injection Site	Lips	34	34.0%
	Malar	18	18.0%
	Nasolabial	14	14.0%
	Tear Trough	12	12.0%
	Jawline	9	9.0%
	Glabella	5	5.0%
	Nose	4	4.0%
	Temple	2	2.0%
	Chin	2	2.0%
Filler Volume (mL)	1 mL	40	40.0%
	1–2 mL	38	38.0%
	3+ mL	22	22.0%
Clinical Reactions	Mild Redness	57	57.0%
	Mild Ecchymosis	46	46.0%
	Mild Swelling	44	44.0%
	Necrosis Present	1	1.0%

Satisfaction levels varied based on the amount of filler injected, with the highest proportion of very satisfied patients in the 1-2 mL group (28 %), while those receiving lower volumes showed more moderate satisfaction. The statistical analysis indicated a significant correlation between satisfaction and filler volume (Table 2).

Table 2: Satisfaction Levels Based on Filler Volume

Filler Volume (mL)	Very Much Improved	Much Improved	Improved	No Change	Worse	Total
1 mL	7%	14%	13%	4%	2%	40%
1–2 mL	10%	18%	8%	2%	0%	38%
3+ mL	6%	10%	4%	2%	0%	22%
Total	**23%**	**42%**	**25%**	**8%**	**2%**	**100%**

A strong association was found between anatomical injection sites and satisfaction. Lip and malar injections resulted in the highest satisfaction, whereas areas like the glabella and nose had lower levels of satisfied patients. Patients receiving temple and chin injections showed moderate satisfaction (Table 3).

Table 3: Satisfaction Levels by Injection Site

Injection Site	Very Much Improved	Much Improved	Improved	No Change	Worse	Total
Lips	7%	15%	8%	3%	1%	34%
Malar	3%	7%	6%	2%	0%	18%
Nasolabial	1%	7%	5%	1%	0%	14%
Tear Trough	5%	3%	2%	1%	1%	12%
Jawline	2%	5%	1%	1%	0%	9%
Glabella	0%	2%	1%	1%	1%	5%
Nose	2%	1%	1%	0%	0%	4%

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Temple	1%	1%	0%	0%	0%	2%
Chin	1%	1%	0%	0%	0%	2%
Total	**22%**	**42%**	**24%**	**9%**	**3%**	**100%**

The assessment of satisfaction based on age groups showed no significant variation, with both age groups (≤30 and >30) demonstrating similar levels of satisfaction. The majority of patients in both groups reported positive aesthetic outcomes post-treatment (Table 4).

Table 4: Satisfaction Levels by Age Group

Age Group	Very Much Improved	Much Improved	Improved	No Change	Worse	Total
≤30	10%	26%	10%	3%	1%	50%
31+	4%	24%	16%	5%	1%	50%
Total	**14%**	**50%**	**26%**	**8%**	**2%**	**100%**

Most participants (70%) expressed a willingness to repeat the treatment, and 72% would recommend it to others. A small fraction (5%) were unsure, while around 25% reported they would not undergo the procedure again (Table 5).

Table 5: Willingness to Repeat or Recommend the Treatment

Response Type	Yes	No	Unsure
Repeat Treatment	70%	25%	5%
Recommend Filler	72%	23%	5%

Discussion

Existing research highlights that those individuals undergo aesthetic interventions for various reasons, including enhancing their appearance, boosting attractiveness, and improving both physical and psychological well-being. Consequently, achieving patient contentment following cosmetic treatments is a primary objective for practitioners. In recent years, numerous studies have examined levels of patient satisfaction across different cosmetic procedures, utilizing diverse self-assessment instruments to evaluate outcomes. Some of these investigations have also compared different filler substances and injection techniques to assess patient-reported satisfaction as a key measure [18,19].

A distinctive aspect of this study is its focus on facial enhancement in a younger demographic, contrasting with the majority of previous studies, which predominantly analyzed outcomes in older individuals [7,19,20]. The significance of this distinction arises from two key factors: first, the objectives and motivations for aesthetic procedures vary among younger patients, directly influencing their perception of the results; second, the condition of the skin, facial support structures, and the extent of volume loss significantly change with age, impacting procedural effectiveness. Therefore, assessing patient-reported satisfaction within a younger age range provides valuable insights for clinicians [21].

Post-procedural side effects can considerably influence patients' overall experience. In this study, the most frequently reported adverse effects included erythema, bruising, temporary numbness, localized swelling, and tenderness, occurring in descending order of prevalence. These reactions were primarily localized and ranged from mild to moderate in severity. This finding aligns with the literature review conducted by Stojanović and Majdić, which identified swelling and redness as the most commonly reported post-treatment complications, predominantly classified as mild [22]. One of the most serious complications associated with aesthetic procedures is skin necrosis, which arises due to compromised blood supply, vascular compression, embolization of injected material, or direct tissue trauma [4]. In this study, only two cases of necrosis were observed—both involving the glabellar region and nasal tip—following the administration of 1 cc of hyaluronic acid filler for glabellar crease correction and nasal tip refinement. These cases were promptly managed within the first 24 hours through hyaluronidase injections, intensive massage of the affected areas, antibiotic therapy, aspirin administration, and continuous monitoring.

The primary objective of this study was to evaluate patient satisfaction levels, and the findings were overwhelmingly positive. The assessment was based on four key questions designed to capture a comprehensive understanding: the extent of perceived improvement, the duration of psychological well-being post-treatment, the likelihood of repeating the procedure, and the willingness to recommend it to others. The responses demonstrated a high success rate, indicating favorable patient experiences and satisfactory treatment outcomes.

Despite variations in evaluation methods and patient age groups, the findings of this study align with the broader body of literature on aesthetic enhancement. For example, Bertucci and Nikolis reported that over 89% of individuals expressed high satisfaction following facial aesthetic treatments (18). Similarly, Eccleston and Murphy assessed satisfaction levels at one and twelve months post-procedure, reporting rates of 96.9% and 80%, respectively [22]. Another study, which measured satisfaction at an intermediate interval of six months, documented a rate of 79.7% [3]. Collectively, these studies corroborate the present findings, as none indicated significant dissatisfaction with facial enhancement procedures.

Hoffman and Fabi, in their review of patient satisfaction following aesthetic interventions, observed that individuals who underwent two treatment sessions—initial treatment followed by a touch-up—reported the highest contentment levels. Correspondingly, in this study, the greatest percentage of "much improved" and "very much improved" responses were among individuals who received more than 1 cc of filler, regardless of the number of treatment visits, with a statistically significant correlation [24].

Although several previous studies reported higher average filler volumes—1.67 ml [20] and 2 ml [19,25] in most cases—the present study found that patient satisfaction increased when the injected volume exceeded 1 ml. The required filler quantity is contingent on the degree of volume loss and soft tissue depletion, which tend to be more pronounced in older individuals.

Regarding injection sites, the highest levels of satisfaction were reported among patients who underwent lip augmentation. This outcome may be attributed to the enhancement of lower facial proportions, leading to a more harmonious and aesthetically appealing appearance. Conversely, the proportion of participants who felt their appearance worsened post-procedure was minimal, accounting for only 1.4% of the total sample.

Future investigations should incorporate varied patient satisfaction assessment tools and consider multiple time points for evaluation, given the temporary nature of dermal fillers. Monitoring satisfaction at intervals of 1, 3, 6, and 12 months post-treatment would provide a more comprehensive understanding of procedural longevity and patient perceptions over time.

Conclusion

This study highlights the high levels of patient satisfaction following facial enhancement procedures, particularly among younger individuals, a group less frequently examined in existing research. The findings emphasize the influence of factors such as treatment volume, injection site, and post-procedural effects on overall satisfaction. The most commonly reported side effects were mild and transient, aligning with previous literature. Additionally, satisfaction was notably higher among those who received greater filler volumes, with lip augmentation yielding the most positive outcomes. Given the temporary nature of dermal fillers, future research should incorporate longer follow-up periods and varied assessment tools to provide a more comprehensive understanding of patient experiences over time.

Limitations

The limitations of this study include the small sample population who were included in this study. Furthermore, the lack of a comparison group also poses a limitation to this study's findings.

Recommendation

The Utilization of hyaluronic acid in the treatment of the infraorbital hollow is recommended to facilitate the application of hyaluronidase for material dissolution in the event of adverse reactions.

Acknowledgment

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Data Availability

Data is available upon request.

Author contributions

All authors contributed to the design of the research. MA and AK collected and analyzed the data. KY and MA wrote the manuscript. AK edited the paper. All authors read and approved the paper.

List of abbreviations

ASAPS- American Society for Aesthetic Plastic Surgery
WHO- World Health Organisation

Source of funding

No funding was received.

Conflict of interest

The authors have no conflicting interests to declare.

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