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## Prevalence of Minimal Invasive of Facial Cosmetics among Undergraduate Students at Ishtar Medical Institute, Baghdad, Iraq

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#### Abstract

*Cosmetic procedures have become increasingly popular* worldwide among youths, reflecting changing societal norms and technological advancements. This study intends to investigate the prevalence of minimally invasive facial cosmetic procedures among undergraduate students, and factors affect the use of these procedures. An institution-based cross-sectional study conducted among undergraduate students of Ishtar Medical Institute from October 2025 to March 2026. The data collected by using an online questionnaire that covered many domains, including socio-demographic data and data related to invasive facial cosmetic procedures. The number of respondent students to the online questionnaire was 594. About 13.8% of them underwent minimal invasive facial cosmetic procedures. Student age, gender, residency, region of residence, and family income were found to be statistically significant predictors for cosmetic procedure use. The percentages of the students seek cosmetic interventions were 46%, and 39.6%, for the desire of beautify and attraction, and social media influence respectively. While, 43% of the students who had no cosmetic procedures reported that IFC procedures were not necessary. The most reported procedures were lip filler (42.7%) and laser hair removal (25.6%). Among those who had IFC, 35.4% did it in beauty centers and 26.8% in clinics. In conclusion, the moderate prevalence of IFCs among the undergraduate students underscores the need to understand the psychological factors influencing the desire to undergo these procedures. Additionally, factors like age, gender, living situation, and housing status are significant predictors. to determine the role of phage therapy in routine clinical practice.

**Keywords:** Prevalence, Invasive facial Cosmetics, students. Institution/ Baghdad, Iraq.

## Introduction



Invasive facial cosmetic (IFC) are the procedures intending to change the facial structures. They include both minimally invasive and non-surgical options like Botox, dermal fillers, laser peels, and micro needling, as well as surgical options, such as facelifts, rhinoplasties, and blepharoplasties. These procedures aim to improve physical appearance through elective surgical or non-surgical methods. They can make individuals feel more attractive and satisfied with their looks by helping to create and maintain a balanced appearance (1-2). The increasing in cosmetic dermatology reflects a growing focus on improving appearances. This trend stems from new technologies, the strong impact of social media, and changing cultural beliefs about beauty. As a result, these treatments have shifted from being specialized options to common and accepted medical practices (3-4). The increasing frequency of IFCs may be linked to greater social acceptance of cosmetic surgery and its affordability. These procedures are less invasive and traumatic, have fewer postoperative complications, and allow for quicker recovery (5). The number of students interested in cosmetic procedures was significantly higher than the number of students who had undergone them. This suggests that cosmetic procedures may become increasingly popular among young people (6). A cosmetic medicine is gaining popularity and acceptance in many countries in Arab world including Iraq. There is a noticeable increase in trends related to facial cosmetic procedures, especially among young individuals. Social media fuels these trends. Many young people express interest in these procedures, but fewer actually follow through, indicating a growing focus on aesthetics within the university population (7-8). Review of literature regarding the Prevalence of minimally invasive facial cosmetics among youth revealed scarce publications worldwide and in Iraq. Consequently, this study intends to determine the prevalence of IFC among undergraduate students at Ishtar Medical Institute in Baghdad, Iraq. It also examined the factors that encourage students to undergo these procedures.

## **Subjects and methods**

### **Ethical approval**

This study approved by research and ethical committee Ishtar Medical Institute with order (12) on (15/9/2025). Each participant approved through an online questionnaire after being informed about the study's purpose, and had the right to withdraw at any time without any obligation to the study team. The research protocol, subject information, and consent form was reviewed. Additionally, participants' information kept confidential, and the collected data was used solely for scientific research. No incentives or rewards provided to the participants.

### **Study design**

This is a descriptive, cross-sectional study done at IMI in Baghdad, Iraq, from October 2025 to March 2026. Researchers sent an online questionnaire to a convenience sample of undergraduate students at IMI.

### **Inclusion criteria**



This included students from IMI who completed the online survey, aged 18 to 26 years old, signed electronic informed consent, and in good health.

### Exclusion criteria

Any student whose mother or father had passed away, those who did not finish the online survey (questionnaires with more than three unanswered questions), poorly filled-out forms, under 18 years old, and those who did not provide informed consent were excluded from the research.

### Data collection tool

Data were collected using a self-administered online questionnaire adapted from the Acceptance of Cosmetic Surgery Scale and previous research (9-10). The questionnaire was written in Arabic to ensure clarity and provided to the undergraduates, through Telegram a common social media platform in Iraq. The semi-structured questionnaire had two sections. The first section focused on sociodemographic information of the participants, including age, gender, academic stage, marital status, parents' education, and family monthly income, residence, and health status. The second section covered information about cosmetic procedures, including types like laser, dermal filler, Botox, and skin peels, rhinoplasty, and blepharoplasty. It also inquired about reasons for undergoing or not undergoing these procedures, history of postoperative complications, satisfaction with the procedures done in beauty cosmetic clinic, saloon, private hospital and by whom, and why.

### Pilot study

A pilot study with 23 undergraduate used to test the questionnaire and evaluate responses to its various items. The reliability and validity of the questionnaire also were assessed. The pilot sample was not included in the main study sample

### Sample size calculation

The initial sample size (N) was calculated using the Raosoft Sample Size Calculator, (11) which recommended a minimum of 357 participants based on a population of 5,000, a 95% CI (confidence interval), a 5% margin of error, and a proportion (P) of 50%.

The calculation was done according the following equation:

$$N = Z^2 P (1 - P) / d^2. \text{ Thus, } N = 1.96^2 * 0.5 (1 - 0.5) / (0.05)^2 = 384.$$

The final sample size was increased to 594 due to the assumption of a response rate of 55%, and to improve reliability and account for potential bias and skipped or incorrectly answered questions.



## Data processing and analysis

Data entry and analysis were completed using Statistical Package for Social Sciences version 25 (SPSS, Chicago, IL, USA) (12). Descriptive statistics presented as frequencies and valid percentages used to summarize the socio-demographic and pattern of cosmetic interventions variables. The Chi-square test explored the association between IFC variables and the sociodemographic characteristics of the participants. A binary logistic regression used to assess factors that influence the use of IFCs among participants undergoing cosmetic procedures. The adjusted odds ratio (AOR) and its 95% CI showed the strength of association and statistical significance of predictors. A  $P < 0.05$  is considered statistically significant.

## Results

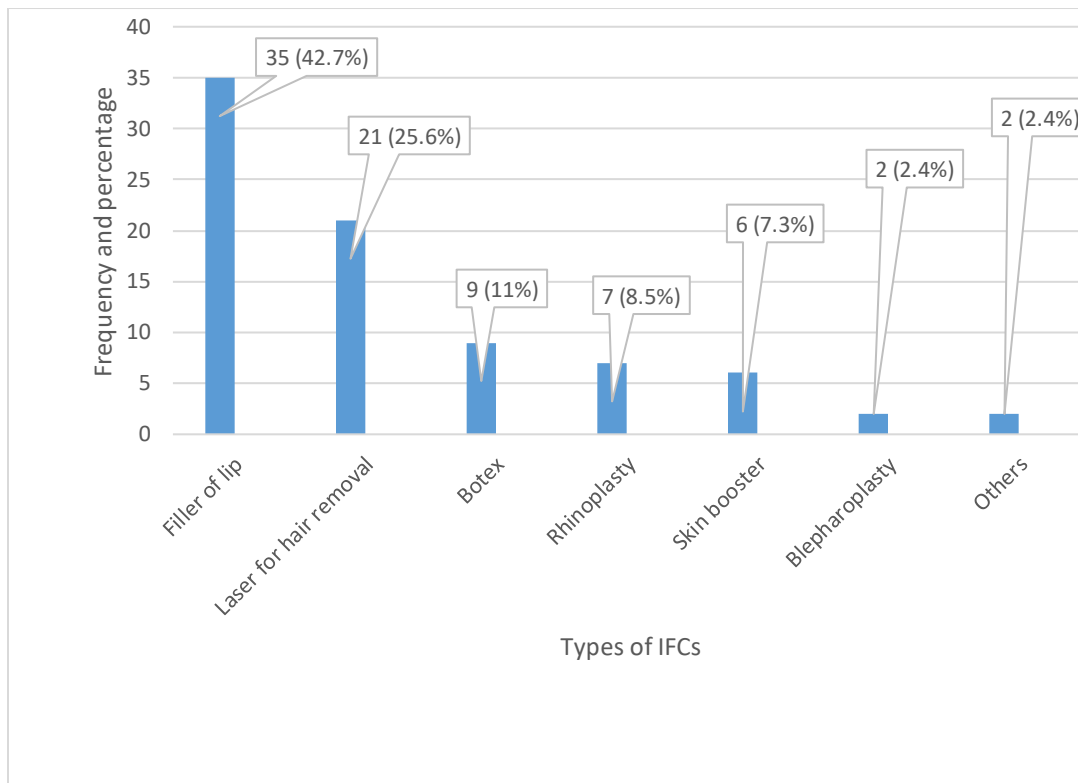
The total number of undergraduate students participated in this study was 594. The range of age extended between 18 to 26 years, with an average age of  $20.61 \pm 1.84$ . According to gender, the participants comprised 366 (61.6%), and 228 (38.4%) for female and male respectively. The ratio of female-to- male was 1.6:1. The percentages of participants were 76.6% at age group 18-22 years; 60.1% from the first academic stage; 87.2% single; 87% from urban residents; and 61.3% lived in the Baghdad governorate. Additionally, 48.8% had a monthly income of less than one million Iraqi Dinar. The participant's parents education level were undergraduate or diploma with percentages of 38.7% and 23.1% for father and mother respectively (Table 1). The percentage of history of students' family members was 75.1% for no IFC procedures. Out of the participants who had IFC, seven (8.5%) reported post-operative complications, 29(35.4%) underwent IFC in beauty centre clinics and 22 (26.8%) in saloon (Table. 1). Only 82 (13.8%) students had IFC procedures, while 512 (86.2%) did not (Table. 2). The results of the current study showed a significant percentage 20.1% for participant aged 23 years and older of IFC in compare to aged group 18-22 years with 11.9% ( $P=0.013$ ). There was also a significant link between female students undergoing IFC and males ( $P=0.0023$ ). No significant association was found between IFC procedures and academic stage, marital status, or the education levels of the students' parents. Notably, a significantly higher prevalence of IFC was reported among students from Baghdad compared to those from other governorates ( $p=0.0032$ ). Students in urban areas also showed a significantly higher prevalence than those in rural areas ( $p=0.0452$ ). The results of the current study showed that lip fillers or lip beautification were the most common IFC procedures, constitutes 42.7%, while blepharoplasty was the least common at 2.4% (Figure 1). Regarding the reasons for performing IFCs, the highest percentage of participants wanted to be more beautiful and attractive (46%), while the lowest percentage mentioned medical reasons (6%) (Figure. 2). The reasons for not getting IFC displayed in (Figure.3). Among the participants, 43% felt that IFCs were unnecessary, 25% had religious concerns, 15% afraid of side effects, and 14% cited financial reasons. When it comes to the sources of information about IFC, 39.6% of students learned about it from social media, 26.4% from friends, 20.2% from family members, and 4.2% from television (Figure. 4).



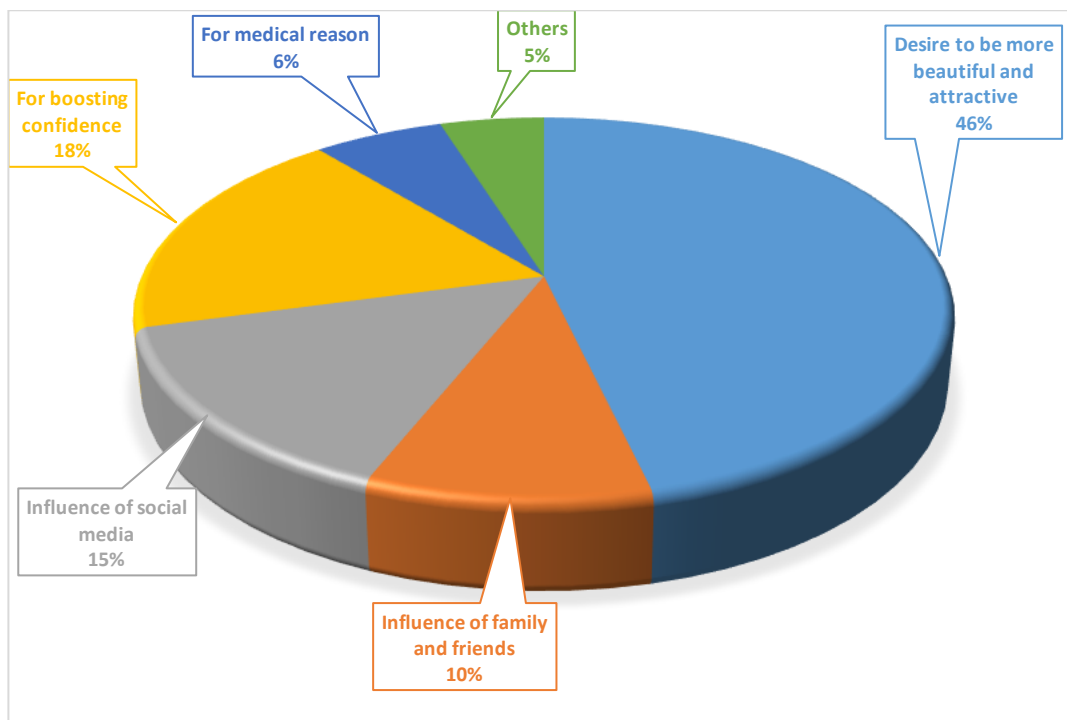
The logistic regression results in Table 3 show the factors that predict whether students undergo IFC procedures. Age, gender, region of residence, and residency were significant predictors. Students aged 23 years and older had a 16% higher chance of undergoing IFC compared to those aged 18-22 years, OR=1.16. Female students were 46% more likely to have IFC than males, OR=1.46. Students from Baghdad had a 72% higher chance of having IFC than those from other governorates (OR=1.72). Additionally, students in urban areas had a 60% higher chance of undergoing IFC compared to those in rural areas, OR=1.60.

**Table.1:** Distribution of the participants according to the socio-demographic characteristics and cosmetic interventions (N=594).

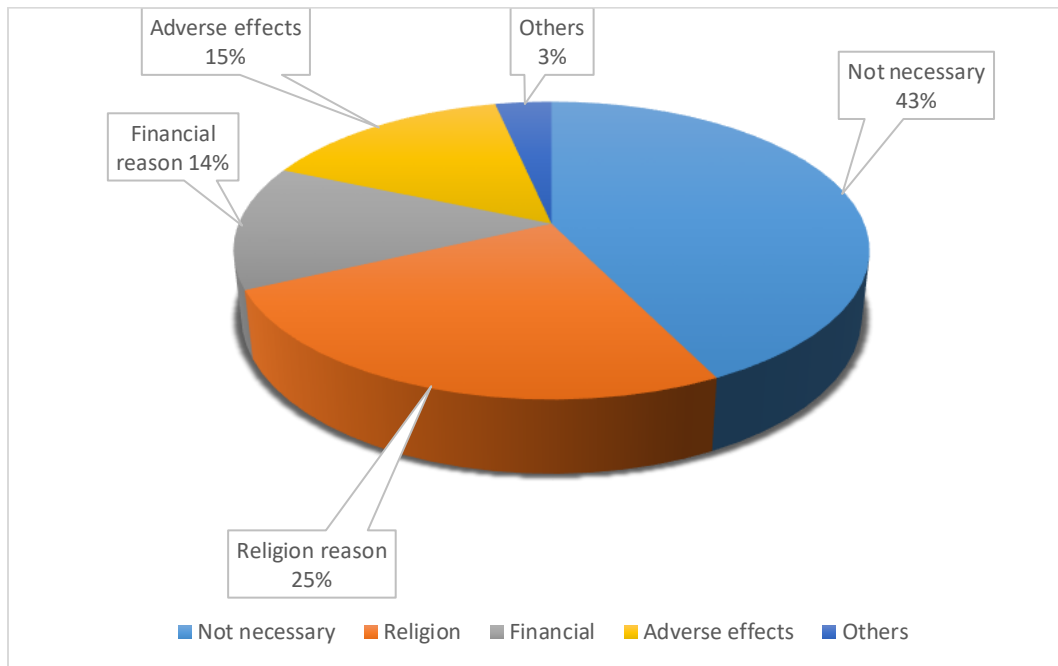
Socio-demographic characteristics	Categories	Frequency	%
Age (Year)	18 – 22	455	76.6
	≥23	139	23.4
Gender	Females	366	61.6
	Males	228	38.4
Academic stage	1 <sup>st</sup> stage	357	60.1
	2 <sup>nd</sup> stage	237	39.9
Marital status	Single	518	87.2
	Married	76	12.8
Origin of residence	Capital (Baghdad)	364	61.3
	Governorates	230	38.7
Residency	Urban	517	87.0
	Rural	77	13.0
Monthly income of the student's families	< 1 million IQD	290	48.8
	1 –2 million IQD	176	18.9
	> 2 million IQD	128	20.6
Educational level of the student's fathers	Primary or lower	130	21.9
	Secondary/ tertiary	203	34.2
	Undergraduate /diploma	230	38.7
	Postgraduate	31	5.2
Educational level of the student's mothers	Primary or lower	204	34.3
	Secondary/ tertiary	225	37.9
	Undergraduate / diploma	13	23.1
	Postgraduate	28	4.7
Family members undergo IFCs	Yes	148	24.9
	No	446	75.1
Post IFCs procedure complications (n=82)	Yes	7	8.5
	No	75	91.5
Place of doing IFCs procedure (n=82)	Beauty center Clinic	29	35.4
	Saloon	22	26.8
	Private hospital	17	20.7
	General hospital	10	12.2
		4	4.9
Note/ data presented as n=Frequencies, % =Percentages			



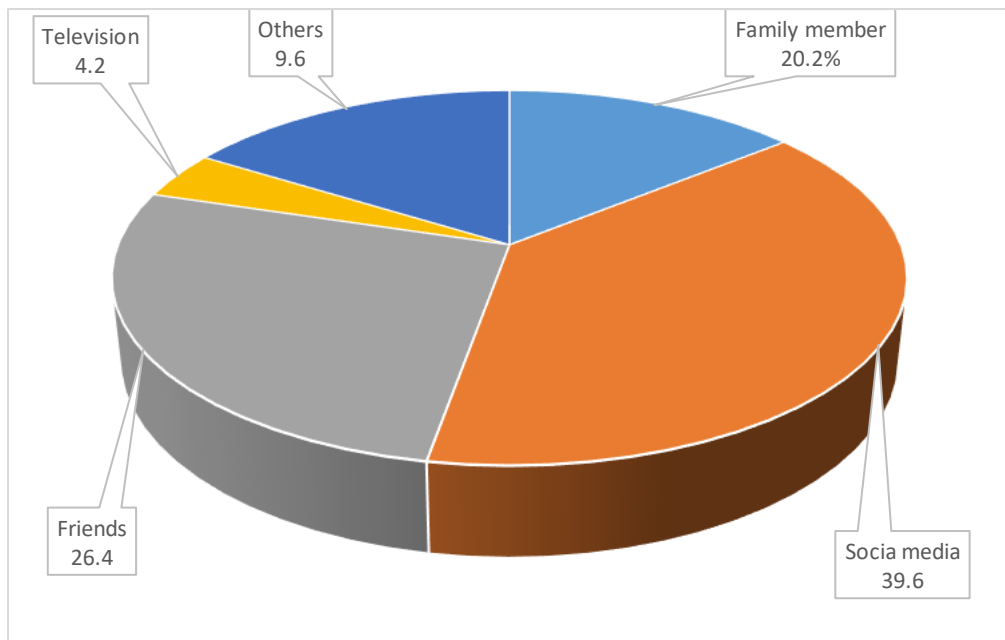
**Figure. 1:** Distribution of the participants performing IFCs according to the type of procedure used.



**Figure.2:** Reasons for performing IFC procedures by the participants' perspective.



**Figure. 3:** Reasons for not undergoing IFC procedures by the participant's perspectives.



**Figure. 4:** Sources of information for undergoing IFC procedures by the participant's perspectives

**Table. 2:** Distribution of undergoing IFC procedures by the student's socio-demographic characteristics, (N=594)

Socio-demographic data	Done IFC procedures				Total	X <sup>2</sup> = P-value Df
	Yes		No			
	No.	%	No.	%		
	82	13.8	512	86.2		
<b>Age (Year):</b>						
18 – 22	54	11.9	401	88.1	455	X <sup>2</sup> =6.118 P=0.013 Df=1
≥ 23	28	20.1	111	87.9	139	
<b>Gender:</b>						
Females	63	17.2	303	82.8	366	X <sup>2</sup> =9.31 P=0.0023 Df=1
Males	19	8.3	209	91.7	228	
<b>Academic level:</b>						
1 <sup>st</sup> stage	46	12.9	311	87.1	357	X <sup>2</sup> =0.635 P=0.4252 Df=1
2 <sup>nd</sup> stage	36	15.2	201	84.4	237	
<b>Marital status:</b>						
Married	10	13.2	66	86.8	76	X <sup>2</sup> =0.031 P=0.861 Df=1
Unmarried	72	13.9	446	86.1	518	
<b>Origin of residence:</b>						
Capital (Baghdad)	65	17.9	299	82.1	364	X <sup>2</sup> =12.974 P=0.0003 Df=1
Governorates	17	7.4	213	92.6	230	
<b>Residency:</b>						
Urban	77	14.9	440	85.1	517	X <sup>2</sup> =3.974 P=0.0462 Df=1
Rural	5	6.5	72	93.5	77	
<b>Family income:</b>						
< 1 million IQD	31	10.7	259	89.3	290	X <sup>2</sup> =9.451 P=0.0089 Df=2
1-2 million IQD	23	13.1	153	86.9	176	
> 2 million IQD	28	21.9	100	78.1	128	
<b>Educational level of student's father:</b>						
Primary and lower	13	10.0	117	90.0	130	X <sup>2</sup> =3.710 P=0.2945 Df=3
Secondary / Tertiary	25	12.7	172	87.3	197	
Undergraduate/ Diploma	39	17.0	191	83.0	230	
Postgraduate	5	13.5	32	86.5	37	
<b>Educational level of student's mother:</b>						
Primary and lower	29	14.2	175	85.8	204	X <sup>2</sup> =3.864 P=0.2766 Df=3
Secondary / Tertiary	34	15.1	191	84.9	225	
Undergraduate/ Diploma	13	9.5	124	90.5	137	
Postgraduate	6	21.4	22	78.6	28	

**Table. 3:** Bivariate logistic regression analysis for association of various risk factors with the prevalence of IFCs procedures among the participants.

Variable	Categor ies	IFCs Yes (%)	No(%)	S.E	AOR	95% C.I for OR	P-value
Age	19-22	54(11.9)	401(88.1)	0.25	1.16	0.323-0.882	0.0321
	≥23	28 (9.7)	111(90.3)				



<b>Gender</b>	Females	63(17.2)	303(82.8)	0.27	1.46	1.329-3.934	0.0023
	Males	19(8.3)	209(91.2)				
<b>Region of residence</b>	Baghdad	65(17.9)	299(82.1)	0.29	1.72	1.553 – 4.779	0.0003
	Governorates	17 (7.4)	213(92.6)				
<b>Residency</b>	Urban	77 (14.9)	440(85.1%)	0.47	1.60	0.9866.448	0.0463
	Rural	5 (6.5%)	72(93.5)				

## Discussion

This study found a prevalence rate of 13.8% for IFCs among undergraduate students at IMI. This prevalence percentage agrees with previously published study from Sulaymaniyah (7), which was 15.5%. It reflects the trends between the Iraqi general population (13.4%) (13) and among Saudi university students (13%) (14). However, the findings of the current study showed lower percentages in compare with previously published Iraqi studies focusing only on women, which reported rates as high as 37.2 % (15). This difference suggests that factors such as gender, socioeconomic status, and cultural beliefs affect how people view cosmetic procedures. While international rates in China and Singapore were much lower (below 3%) (16-17). The moderate prevalence in this study may be linked to a lasting conservative cultural preference for natural appearances in many areas of Iraqi society. "Variations in IFC rates are driven by sample sizes, study definitions, demographic and access disparities, cultural and socioeconomic practices, social media influence, and varying personal attitudes toward the procedures. IFC rate variations stem from methodological, demographic, socioeconomic, cultural, and individual attitudinal differences (18). Notably, the Iraqi population values natural beauty, which has led to a less favorable view of IFC procedures in recent years, resulting in a significantly lower occurrence of minimal IFC (16, 18). The statistical findings from this study show that older students were more likely to seek IFC procedures. Students aged 23 and above had a significantly higher participation rate (20.1%) compared to younger students (11.9%). This pattern agrees with findings from Egypt (19) and Saudi Arabia (14). This trend may stem from increased concern about facial aging and appearance-related issues as students get older. The results of the current study showed obvious a statistical significant variation between the percentages of female students 16.8% in compare to a half percentage 8.4% in male students, this suggests that more females are interested in cosmetic procedures. This reflects trends in Kuwait (20) and suggests that women may feel more social pressure to meet specific beauty standards to maintain their social status. The data indicate that living in urban areas and having a high income are key factors in seeking IFC. Students from families earning over two millions IQD were more likely to pursue these procedures compared to those from lower-income families. This economic gap likely reflects better access to specialized clinics in urban areas and the greater disposable income needed for elective treatments. A critical finding in this study is the concerning dependence on non-medical staff for procedures. More than 60% of

the procedures were performed by beauty center staff or salon workers, while only 20.7% were done by qualified dermatologists. This trend challenges findings by Lafta and Kareem, (2024) (21), who reported that most patients sought care from qualified professionals. This raises potential issues with adherence to the Iraqi Ministry of Health's safety regulations. Lip fillers (42.7%) were the most common treatment, followed by laser hair removal and Botox injections. This results compatible with previously published studies conducted in Iraq (22) and Saudi Arabia, which found that filler injections were the most popular (57.5%) (23). However, the results of the current study differs from previous studies done in Iraq (14) and Saudi Arabia.(14 ,24). The desire to improve attractiveness (46%) and boost self-confidence (18%) drove these choices, consistent with other broader regional trends. Social media (39.6%) and peer groups (26.4%) were the main sources of information. This highlights the role of the digital environment in shaping views on aesthetics. Frequent exposure to cosmetic content fosters positive attitudes toward these treatments. As information technology has improved, undergraduate students have increasingly turned to it for information on IFC procedures (25). The study found that most participants learned about cosmetic procedures from social media (39.6%) and friends (26.4%). This agrees with another study in Iraq, which found that 45.2% of students got their information from social media and friends (22). Nevertheless, those who frequently engage with cosmetic surgery content on social media are more likely to hold positive views about these procedures. Several factors influenced the prevalence of IFC procedures among participants, especially those from families with sufficient incomes, who showed a notably higher prevalence of IFC procedures. The study indicates that a large majority of students (86.2%) did not undergo IFC procedures. The reasons included viewing these procedures as unnecessary, having religious concerns, fearing side effects, and financial constraints. They expressed high self-esteem. This finding parallels another study in Iraq, where 79.5% of participants did not have IFC procedures, citing satisfaction with their appearance, cost, and religious reasons (22). Another study found that 60% of participants did not pursue IFC procedures, believing there was no need (39%), with 19% citing religious beliefs based on Iraqi traditionalism(22). These results match a study in Saudi Arabia that reported 89.6% of participants did not have IFC procedures. The main reasons were religious concerns, viewing the procedures as unnecessary, fear of complications, and cost (26). However, this contrasts with a study involving female students at Taif University in Saudi Arabia, which found that most accepted IFC procedures (27). These differences may arise from factors such as mass media, socioeconomic status, cultural influences, family, and religion. While social media is the main source of information on IFC procedures, it did not significantly affect participants' decisions to undergo them.

## Limitations

This study faces some limitations, like others. First, it relied on a self-administered questionnaire to collect data on IFC procedures. This method can introduce bias and may be impacted by recall or selection bias, which could lead to underestimations. Second, concerns about social desirability and specific medical institutions limit the ability to generalize findings to the broader population. Third, another limitation is



the reliance on honest responses. Fear of stigma may have led some students to withhold information about any cosmetic procedures they underwent. Despite these challenges, the study still provides useful insights into how university students perceive the acceptance of cosmetic procedures.

## **Conclusions**

The moderate prevalence of IFC among undergraduates, along with its complex nature, underscores the need to understand the psychological factors that influence the choice to undergo these procedures. Factors such as age, gender, living situation, and housing status are significant predictors. The acceptance of IFCs remains widespread, indicating that aesthetic aspirations often outweigh safety concerns.

## **Declarations**

### **Acknowledgment**

The authors would like to thank any undergraduate student who agreed to participate in this study.

### **Ethics statement**

Ethics statement: The authors declare that this study was conducted in accordance with the ethical standards and guidelines outlined in the journal's "Ethics Approval" section of the author guidelines. This study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

### **Availability of Data and Materials**

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

### **Competing Interest's statement**

The authors declare that they have no competing interests (financial or non-financial) that could have influenced the work reported in this article.

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### **Authors' Contributions**

**JIS:** Study design, conception and methodology, **AKD:** Statistical analysis, and interpretation of the findings, **LJT:** Wrote –Reviewed the manuscript, **ABN:**



Supervision, and wrote the results and discussion. **QTYK:** writing and checking references. All the authors read and approved the final manuscript.

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