

Knowledge and Perceptions of Facial Cosmetic Procedures among Women in Karbala, Iraq

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Abstract

Background: Currently, facial cosmetic procedures is among the most popular procedures performed worldwide, including in Iraq. The number of individuals requesting this type of care is rising. Both surgical and non-surgical procedures are referred to as cosmetic procedures. Rhinoplasty, surgical face-lift, and blepharoplasty are referred to as surgical procedures, while dermal filler, botox, and other minimally invasive cosmetic procedures are referred to as non-surgical procedures. This study is aimed to assess knowledge, attitude, and practice of facial cosmetic procedures among women in Karbala.

Methods: A cross-sectional descriptive study among 307 women participants in Karbala. College students and teachers were used as sample sources who were aged between 18 and 61 years. The study was conducted from April 2023 to March 2024 using a self-administered questionnaire.

Results: The mean age of the participants was 27.93. The study findings indicate about 98.7% of the participants have heard about facial cosmetic procedures and the main information source was the Social Networks account 87.3%. They reported that filler, rhinoplasty, and botox were the main three types of facial cosmetic procedures available in Karbala City. Two-thirds (66.1%) of the participants agreed that low self-esteem makes people undergo this procedure. About 20.5% of the participants reported that they had practiced facial cosmetic procedures. Personal desire was the primary source of motivation to undergo such procedures formed about 49.2%.

Conclusions: The majority of the participants revealed good knowledge about facial cosmetic procedures. More than a quarter of participants had a neutral attitude about such a procedure.

Keywords: knowledge, procedures, cosmetic, facial.

Introduction

Cosmetic procedures are considered a subset of plastic surgery and are used to improve a person's overall appearance by visibly improving natural anatomy by reshaping and altering it. It is divided into two primary categories: reconstructive procedures and cosmetic procedures. The goal of reconstructive procedures is to correct abnormalities brought on by trauma, illness, or birth defects and to restore function and normal appearance [1]. Cosmetic procedures are not seen as medically required, in contrast to reconstructive procedures [2]. Many people seek cosmetic procedures to correct age-related changes such as loose skin, reduced volume of tissue around the face and neck, fine lines on the forehead, lack of definition in the jawline,

drooping jowls, and double chins [3]. Both surgical and non-surgical procedures are referred to as cosmetic procedures. Rhinoplasty, surgical face-lift, and blepharoplasty are referred to as surgical procedures rather than dermal filler, botox, and other minimally invasive cosmetic procedures are referred to as non-surgical procedures. In recent years, there has been a significant rise in individual interest in cosmetic procedures and the number of professionals providing these services [4]. Throughout 2022, minimally invasive procedures gained popularity because they provided nearly instantaneous results and a quicker recovery time. Dermal fillers and neuromodulator injections became popular, rising nearly two times as popular as they were in 2019. The popularity of skin-rejuvenating procedures like

chemical peels, laser pulse therapy, and skin resurfacing has also increased [5].

Facial cosmetic procedure knowledge in the Arab world varies among different populations. In Saudi Arabia, all of the participants heard about cosmetic procedures. The majority of participants demonstrated a respectable level of awareness regarding the existence of cosmetic procedures. However, only 18.66% of participants had good knowledge, 47.01% of people had poor knowledge, and 34.33% had moderate knowledge [5].

Knowledge about facial cosmetic procedures in the United States is increasing, with a significant number of surgical and nonsurgical procedures being performed each year [6]. According to Aesthetic Plastic Surgery in 2019, surgical procedures increased by 54% and non-surgical procedures were up 44% in the United States and increased by 55% in 2021 [7]. The knowledge of facial cosmetic procedures in Iraq is relatively low, a cross-section study with 400 female participants was done in Baghdad's primary healthcare centers. The participants' average level of knowledge of cosmetic procedures was 61.5% [8]. Attitudes towards facial cosmetic procedures in the Arab world vary based on different factors. Factors such as female gender, religious attitude, evaluation of one's health, contentment with life, self-satisfaction, use of social media, exposure to television, influence from family and friends, and internalization of beauty standards have been found to influence attitudes towards cosmetic procedures in Arabic women [9]. In Jordan, self-esteem, fear of aging, and social acceptance were found to significantly impact women's attitudes toward cosmetic treatment [10]. With a rapid increase in and trends of cosmetic procedures nowadays in Iraq with the financial burden on the community, this research was conducted to find out the knowledge, attitude, and practice of facial cosmetic procedures among women in Karbala city.

Material and Methods

Patients

A cross-sectional descriptive study with 307 women participants (188 college students and 119 school teachers) who were aged between 18-61 years was carried out in the city of Karbala. The study was conducted from April 2023 to March 2024 using a self-administered questionnaire. The questionnaires were distributed to those who agreed to be recruited in the study and then were recollected from them on

the same day. The questionnaire was filled by the participants in Arabic language.

Study protocol

The questionnaire was divided into 4 parts to include a total of 32 questions. The first parts include personal and sociodemographic data. The knowledge about facial cosmetic procedures which consists of 4 questions was included in the second part. The third parts about the attitude toward the facial cosmetic procedure consist of 8 questions. The fourth part is about the Practice of facial cosmetic procedures which is divided into two categories according to the undergoing of participants of facial cosmetic procedures or not.

Regarding the overall knowledge level, the three knowledge questions in the questionnaire form questions 1, 2, and 3 were considered to obtain the overall knowledge score. For each question, the correct answer was given 2 points while the incorrect given 1 point yielding a total score ranging from 3 to 6 points. For each participant, good knowledge was considered when the total scores of the participants reached 5 points and above, whereas a score of 3 or 4 points was considered poor knowledge.

Regarding the overall attitude level, the eight attitude questions in the questionnaire form were considered to obtain the overall attitude score. For each question, if the answer was "Agree" it was given 3 points while the "Neutral" was given 2 points, and the "Disagree" was given 1 point. The total score ranged from 8 to 24 points. For each participant, a positive attitude was considered when the total scores of the participants reached 20 points and above, whereas a score of 14 or 19 points was considered neutral and a score between 8-13 points was regarded as a negative attitude.

Ethical approval

The study was performed after ethical approval from the research ethical committee at the College of Medicine in the University of Kerbala and Karbala Health Directorate on number 10 and dated 4 February 2023. The facilitation form was received and delivered to the directorate of education in Karbala and the presidency of Kerbala University. The faculty of medicines ethical committee has evaluated and approved the study protocol.

Statistical analysis

The data of the current study was analyzed using the Statistical Package for the Social Sciences (SPSS 23.0 for Windows). The descriptive statistics were used in terms of frequency and percentage and mean

± SD in appropriate tables and graphs. A possible association between the two groups was made through the chi-square test. The significance level was considered when $p < 0.05$.

Results

A total of 307 participants (188 college students and 119 school teachers) were included in this study. Nearly half of the participants (55.7%) were single. The majority of the participants were urban residents (88.6%) as shown in Table 1.

Table 1. Socio-demographic characteristics of the study participants

Variables	Categories	Total No. (%)
Age in years	mean ±SD	27.93±9.30
	Range	18- 61
Marital status	Single	171 (55.7)
	Married	130 (42.3)
	Divorced	3 (1)
	Widow	3 (1)
Education	Undergraduate	182 (59.3)
	Bachelors	107 (34.9)
	Master/ Doctorate	18 (5.8)
Occupation	College student	188 (61.2)
	School teacher	119 (38.8)
	Monthly income (Iraqi Dinars)	< 1 million
0.5-1 million		92 (30)
1-1.5 million		31 (10.1)
>1.5 million		12 (3.9)
Residence	Urban	272 (88.6)
	Rural	35 (11.4)

303 (98.7%) of the participants had heard about cosmetic procedures and 267 (87%) of them mentioned that cosmetic procedures were available in Karbala city as shown in Table 2.

The main facial cosmetic procedures available were filler, rhinoplasty, and botulinum toxin injection. They also reported that the main source of information was the social Network as illustrated in Figures 1 and 2.

The knowledge levels of the participants about facial cosmetic procedures (86.6%) had good knowledge and 13.4% had poor knowledge (Figure 3).

The data analysis revealed that there were no significant associations of demographic characteristics with the total knowledge level as shown in Table 3. The attitude about facial cosmetic procedures showed that 53.7% of participants disagree that social media affects their decision regarding facial cosmetic procedures. More than one-half (57.3%) of the participants agreed that facial cosmetic procedures were accepted socially.

Table 2. Knowledge of the participants about facial cosmetic procedures

Knowledge questions	Categories	No. (%)
Q1. Are there general rules to do facial cosmetic procedure?	If there is a congenital facial deformity	149 (48.5)
	If there is facial disfigurement due to an accident	106 (34.5)
	Not change God's creation	80 (26.1)
	Advancing age (signs of aging)	68 (22.1)
Q2. Have you heard about facial cosmetic procedures?	Yes	303 (98.7)
	No	4 (1.3)
Which type you heard about?	Surgical	27 (8.9)
	Non-surgical	24 (7.9)
	Both	252 (83.2)
Availability of facial cosmetic procedure in Karbala city	Available	267 (87)
	Not available	40 (13)

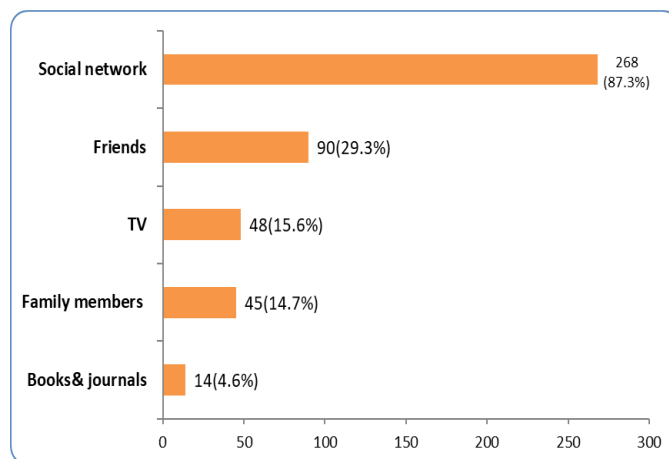


Figure 1. Source of information of the study participants about facial cosmetic procedures.

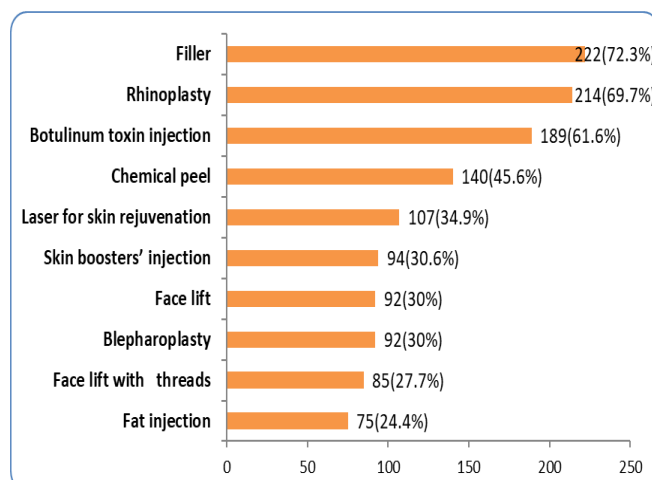


Figure 2. Study participants' knowledge about the types of facial cosmetic procedures available in Karbala city

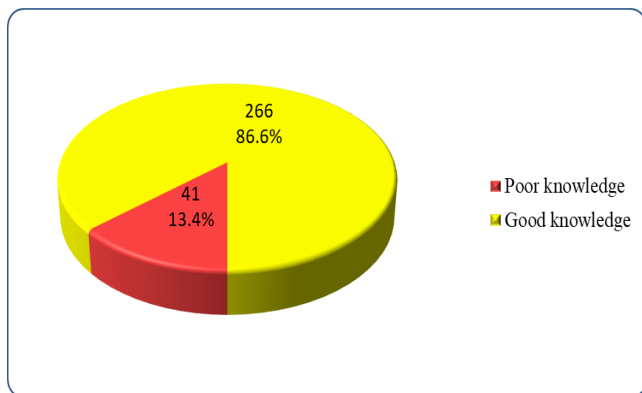


Figure 3. The overall knowledge level of the study participants about the facial cosmetic procedures.

Table 3. Association of the demographic characteristics with the Total Knowledge Score among the study participants

Variables	Categories	Total Knowledge Score (mean SD)	P value
Marital status	Single	5.32±0.76	0.302
	Married	5.45±0.73	
	Divorced	5±1	
	widow	5±1	
Education	Undergraduate	5.32±0.75	0.326
	Bachelors	5.41±0.78	
	Master/	5.56±0.75	
	Doctorate		
Occupation	College student	5.32±0.75	0.182
	School teacher	5.44±0.76	
Monthly income (Iraqi Dinars)	< 1 million	5.30±0.76	0.111
	0.5-1 million	5.46±0.73	
	1-1.5 million	5.29±0.82	
	>1.5 million	5.75±0.45	
Residence	Urban	5.39±0.75	0.106
	Rural	5.17±0.79	

Two-thirds (66.1%) of the participants agreed that low self-esteem makes people to undergo facial cosmetic procedures. About 39.4% of participants believed that people who have undergone cosmetic procedures look better and more attractive (Table 4). Only 12.4% of the participants had negative attitudes about the facial cosmetic procedures, whereas, 76.2% and 11.4% had neutral and positive attitudes about the facial cosmetic procedures respectively (Figure 4).

The data analysis shows that there were no significant associations of demographic characteristics with the total attitude level as shown in Table 5.

One-fifth of the participants (63 participants) reported that they had practiced facial cosmetic procedure of any type previously, attributed the reasons behind it mainly to personal desire and secondly to look better and to a lesser extent to the influence of social media (Figure 5 and 6) and could be more than one reason to practiced facial cosmetic procedures.

The number of facial surgical procedures practiced by the participants was 31 procedures and the main surgical facial cosmetic procedures were rhinoplasty and blepharoplasty (Figure 7).

On the other hand, the number of non-surgical procedures practiced by the participants was 54 procedures and the main procedure was botulinum toxin injection followed by filler (Figure 8).

Dermatologists and plastic surgeons were the main two specialists reported by the participants and to a lesser extent by the dentists (Figure 9).

Table 4. Attitude of the participants about facial cosmetic procedures

Attitude questions	Agree No. (%)	Neutral No. (%)	Disagree No. (%)
1- Doing cosmetic facial procedure on oneself	119 (38.8)	47 (15.3)	141 (45.9)
2 believe that social media influences decisions about getting facial cosmetic procedures	110 (35.8)	32 (10.4)	165 (53.7)
3- telling others about decision to undergo a facial cosmetic procedure	160 (52.1)	65 (21.2)	82 (26.7)
4- doing facial cosmetic procedures upon request of others	23 (7.5)	15 (4.9)	269 (87.6)
5- think that facial cosmetic procedures accepted socially	176 (57.3)	69 (22.5)	62 (20.2)
6- low self-esteem makes people to do facial cosmetic procedure	203 (66.1)	31 (10.1)	73 (23.8)
7- People who are getting facial cosmetic procedures appear more better appearance	121 (39.4)	96 (31.3)	90 (29.3)
8- - feeling of hesitation if decided to have facial cosmetic procedures	176 (57.3)	65 (21.2)	66 (21.5)

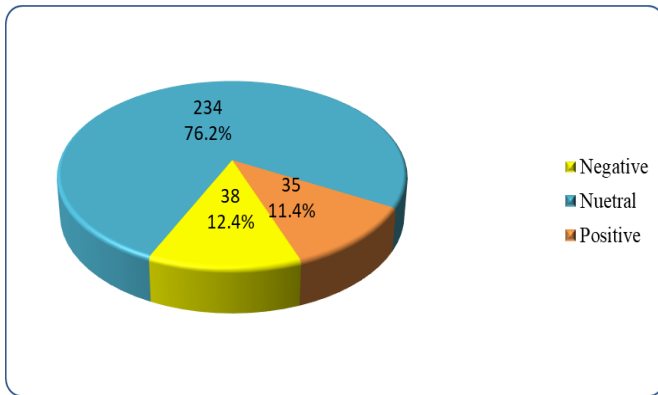


Figure 4. The study participant's attitude about the facial cosmetic procedures

Table 5. Association of the demographic characteristics with the Total Attitude Score among the study participants

Variables	Categories	Total Attitude Score (mean SD)	P value
Marital status	Single	16.35±2.47	0.167
	Married	16.59±2.60	
	Divorced	16±3.46	
	widow	17±3	
Education	Undergraduate	16.28±2.51	0.167
	Bachelors	16.82±2.48	
	Master/	16.06±2.86	
	Doctorate		
Occupation	College student	16.31±2.50	0.216
	School teacher	16.68±2.57	
Monthly income (Iraqi Dinars)	< 1 million	16.55±2.48	0.393
	0.5-1 million	16.12±2.65	
	1-1.5 million	16.94±2.41	
	>1.5 million	16.42±2.50	
Residence	Urban	16.48±2.52	0.673
	Rural	16.29±2.61	

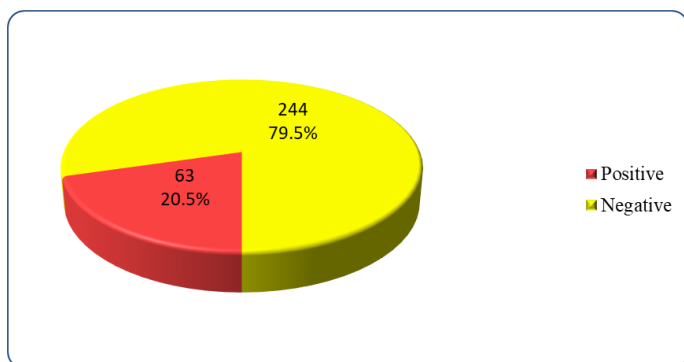


Figure 5. History of any type of facial cosmetic procedure of the study participants.

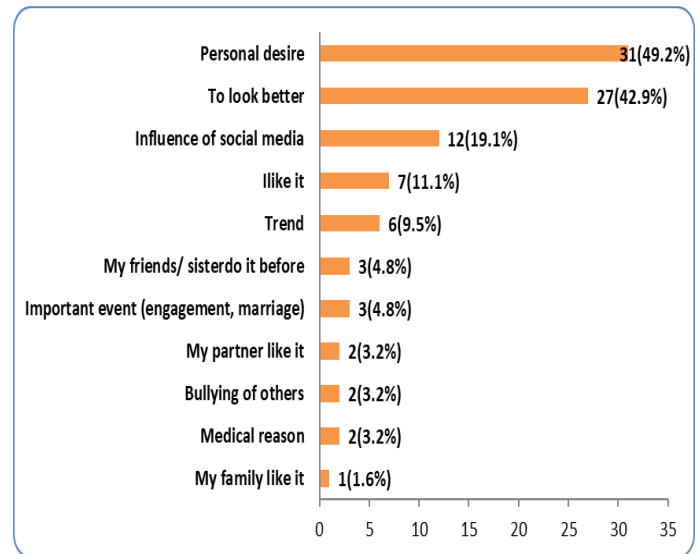


Figure 6. Reasons behind practicing facial cosmetic procedures of the study participants

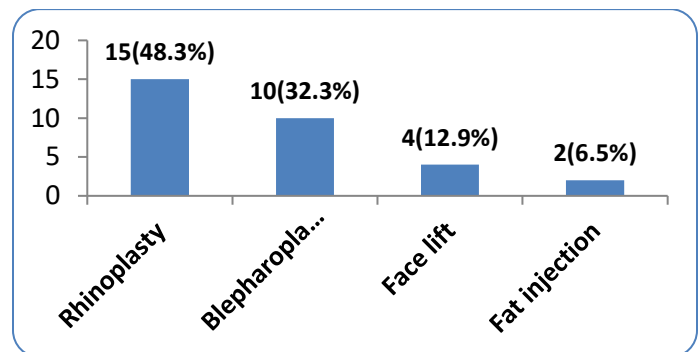


Figure 7. Frequencies of surgical procedure practiced by the study participants.

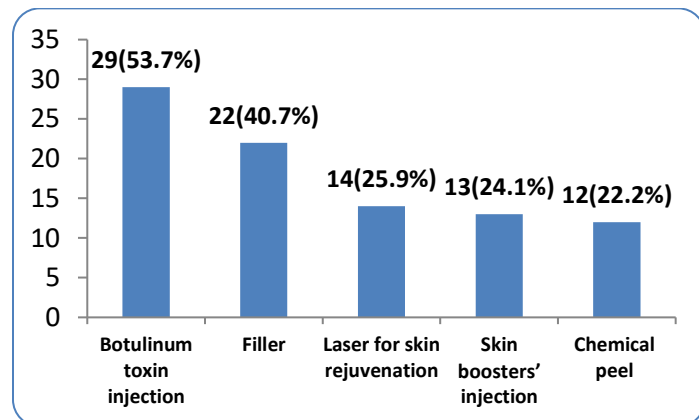


Figure 8. Frequencies of non-surgical procedure practiced by the study participants

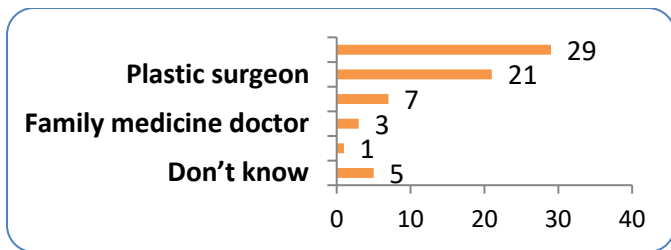


Figure 9. Frequency of specialists who made the procedure to the study participants.

Half of the reported practiced procedures to the participants were performed at the clinic, one-quarter of them at the hospital and the other quarter at the beauty center (Figure 10).

About 244 participants reported that they had not practiced facial cosmetic procedure of any type previously, attributed the reasons behind it mainly to satisfaction with their appearance followed by cost were the main barriers not practicing facial cosmetic procedures the participants and to a lesser extent a religious concern as shown in Table 6.

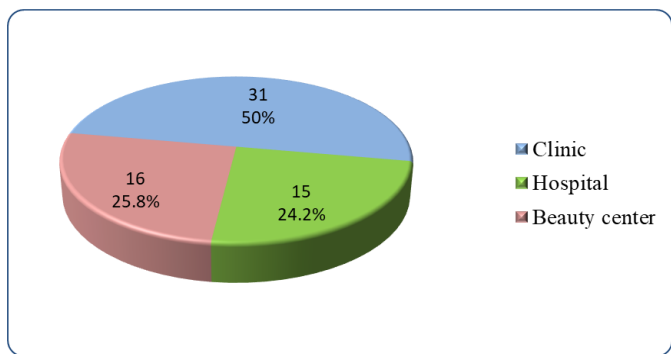


Figure 10. Sites at which the facial cosmetic procedures were performed to the study participants

Table 6. Question regarding Practice of facial cosmetic procedures by the study participants

Practice questions	Categories	No. (%)	Total
Reasons behind not undergoing facial cosmetic procedures	Satisfaction about appearance	146 (59.8)	n=244
	cost	57 (23.4)	
	Religious Concerns	38 (15.6)	
	Dislike	35 (14.3)	
	Social forbiddance (family and husband)	13 (5.3)	
	Complications	9 (3.7)	
	Post pond to an advance age	6 (2.5)	

Discussion

Cosmetic surgery is becoming progressively prevalent in different parts of the world, both among men and women. There is a continuing rise in cosmetic procedures with a notable rise in both surgical and non-surgical procedures during the last four years, with non-surgical procedures showing the largest increase [11]. Globally it was found that the prevalence of cosmetic procedures is relatively low. One-fifth of the women participants in this study practice facial cosmetic procedures for cosmetic reasons, with the majority being within the age group of 27-37 years and this might be attributed to that. This age is the time when people are concerned more about their facial look and appearance and the start of aging changes. It is comparable to the result of the study done in Baghdad which found the majority of those who had cosmetic procedures were within the age group of 20-40 years [8]. The results showed more than one-half of the participants who underwent cosmetic procedures were single. This might be attributed to the most of the participants were college students. More than half the participants in the study had a monthly income of less than one million, and most that explain the cosmetic procedures were expensive.

In the present study, the majority of the participants were urban residents with high economic levels in this intervention which may indicate more ability to access cosmetic procedures. Regarding the level of knowledge, about facial cosmetic procedures, more than three-quarters of the participants revealed good knowledge and the remaining had poor knowledge compared with results from a Saudi Arabia study that shows nearly half of the participants had poor knowledge [5]. These differences are because it is a new trend in Iraq towards facial cosmetic procedures and an increase in the number of cosmetic centers, an increase in the number of doctors who can perform such procedures, and an increase in the number of training courses for them. There are many advertisements on social media, on the street, or in advertising spaces for facial cosmetic procedures that make people want to know the largest amount of information about facial cosmetic procedures, whether true or incorrect. Regarding the general rules that should be taken into account to do cosmetic procedures, nearly half of the participants in this study believed that it should done only if indicated as there is a congenital facial deformity. About one-third mentioned that should done if there is facial

disfigurement due to an accident. Others mentioned no change in god's creation and due to signs of aging, they didn't mention beauty as the reason for undergoing a cosmetic procedure which is similar to the result of the study done in 2017 at Taif University, Saudi Arabia among female students [1].

Almost all the participants in this study heard about facial cosmetic procedures. Most of them heard about both surgical and non-surgical procedures and the most common source of knowledge about facial cosmetic procedures was from social media followed by friends. The results agreed with research findings in Baghdad City, Saudi Arabia, and Nigeria [5, 8, 12] showing that the most common source of knowledge about facial cosmetic procedures was social media.

Regarding the availability of these procedures in Karbala City, the participants reported that filler, rhinoplasty, and botulinum toxin injection were the main three types of facial cosmetic procedures. In contrast to the study undergone among female students of AL-Taif University in 2017 that showed rhinoplasty and laser for the skin was the most common type [1]. In this study, there is no significant association between knowledge or attitude and demographic characteristics of the participants which was similar to the result of the studies in Saudi Arabia and Nigeria [5, 12]. This finding could indicate that access to information about facial cosmetic procedures is broadly available and not limited to certain segments of the population.

The attitude of the participants toward facial cosmetic procedures is mostly neutral attitude inconsistency with the result among students in Saudi Arabia towards cosmetic procedures was mostly negative attitude [1]. So they stay informed about the risks, benefits, and advancements in cosmetic procedures to better understand the implications of these procedures. Regarding approval and acceptance of the cosmetic procedures, about half of the participants didn't accept the facial cosmetic procedures. This was dissimilar to the study done among female students at Taif University, Saudi Arabia, which revealed that the majority of participants accepted cosmetic procedures [5]. These differences could be affected by factors like mass media, culture, relatives, and religious beliefs in Iraq. Despite of the social media is the major source of information for potential cosmetic procedures, it didn't affect their decision to do these procedures. More than half of participants reported that the media didn't affect their decision to do facial cosmetic

procedures which is similar to the study in Saudi Arabia [13]. This might be explained by the fact that because of the large number of advertisements, the large number of cosmetic procedures advertisers, and the increasing impact of social media influencers and celebrities. All of these undermined confidence in social media. Since the majority of participants believed that cosmetic procedures were acceptable in the community, more than half of them could tell others whether they had had cosmetic procedures. Most of the participants in this study refused to do cosmetic procedures upon request to others. This is consistent with the participants' opinion of the most frequent factor leading individuals to have such procedures. The majority reported personal desire as their main motivating factor which is similar to the result by Hindi et al. (2022) [5].

Nearly half of the participants agreed that cosmetic procedures were accepted socially and this result is consistent with Al Doheyan and colleagues (2016) [14]. In this study, two-thirds of the participants agreed that women with low self-esteem reported a greater likelihood of doing cosmetic procedures which is similar to the result done in Al Riyadh [15]. More than half of the participants believed that people who have had cosmetic procedures look better and more attractive. Regarding hesitance when deciding to do cosmetic procedures, more than half of the participants mentioned that they felt hesitant which is similar to the study done by Hindi et al. (2022), which showed about two-thirds of the participants felt fear [5].

A high percentage of the participants have not undergone any type of cosmetic procedure. While the remaining have undergone one or more types of such procedures. One-third of them have undergone surgical cosmetic procedures whereas others have undergone non-surgical cosmetic procedures. As this study aimed to study the practice of cosmetic use in Karbala, it showed that the most common surgical procedures were rhinoplasty and blepharoplasty whereas the most common non-surgical were botulinum toxin injection followed by filler injection which was similar to the study in Saudi Arabia that show rhinoplasty and botulinum toxin injection were the major cosmetic procedure undergone [5]. Similarly to study done in Iran found that most patients requested botulinum toxin injections and filler injections [15]. So the young age, female cause, and importance of facial look affect those decision to undergo these facial cosmetic procedures.

When asked about the main cause for undergoing cosmetic procedures the answer was that the main reason is personal desire secondly to look better and to a lesser extent the influence of social media. The study is in agreement with the study among Female Medical Students in Al Riyadh, Saudi Arabia, which found most of the students underwent cosmetic surgery because of issues of personal desire [16] and in the agreement of the study in Iran shows the most important cause to undergo cosmetic procedures were requesting rejuvenation followed by friends' suggestions [15].

The study result showed that the most common motivations for doing cosmetic procedures were internally generated, designed to satisfy the participants themselves and not others, and spouses are rarely influential. Infection and bleeding were the only two types of complication reported to the surgical procedure practiced by the study participants. On the other hand, simple reactions and allergies were the main complications of the non-surgical procedure practiced by the study participants.

Dermatologists and Plastic surgeons were the main two specialists reported by the participants and to a lesser extent by the dentist who performs cosmetic procedures in their clinics. This explains that the participant prefers a dermatologist or plastic surgeon because this procedure might be done by two specialists who are more experienced than others. About half of the participants performed procedures at the clinic, one-quarter of them at the hospital, and the other quarter at the beauty center.

In this study, more than three-quarters have not done any type of cosmetic procedure and the most common reason for not doing the cosmetic procedures was satisfaction about oneself followed by higher cost of the procedures than religious concerns. The results are in agreement with the study in Saudi Arabia [5] and with the study in Nigeria [12]. According to the study's findings, over half of the participants intended to have cosmetic procedures carried out in the future, which is similar to the study in Jordan [17]. In comparison, filler injection was the most desirable procedure that they would most like to have done in the future followed by botulinum toxin injection, laser for skin rejuvenation, and rhinoplasty. In contrast to the study in Saudi Arabia that found about three-quarters of participants had no intention to do cosmetic procedures in the future [18]. The most common

reason to perform procedures in the future is to look better followed by when reaches 40 years, delay the appearance of signs of aging and others, and maintain and preserve a youthful appearance of the face. This explains why most women become aware of their skin aging around their mid-thirties when fine lines start appearing and they start to feel tired-looking.

Conclusion

This study reveals a high level of awareness regarding facial cosmetic procedures among women in Karbala. About more than one-quarter of the participants had a neutral attitude toward such a procedure. The main source of information about facial cosmetic procedures was the social network. Knowledge and attitudes about facial cosmetic procedures are consistent regardless of demographic factors such as age, income, education, or residence. This implies that information and opinions about these procedures are widespread and not confined to specific demographic groups. Previous assumptions may have held that certain demographic groups (e.g., younger women, and higher-income individuals) are more knowledgeable or have different attitudes towards cosmetic procedures. This finding challenges such assumptions and suggests a more uniform distribution of knowledge and attitudes. Future research could explore what factors, if not demographic characteristics, are influencing the knowledge and attitudes toward facial cosmetic procedures.

We recommend further studies to be conducted in cosmetic centers for more focus on reasons that motivate people to undergo cosmetic procedures. Incorporate people's perspectives through qualitative research methods such as interviews or surveys. Understanding people's motivations, expectations, satisfaction levels, and experiences with cosmetic procedures can provide a balanced view alongside clinical data.

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Patient consent: The study was performed after the verbal consent was taken from the participants and each participant received an anonymous questionnaire sheet.

References

1. Aladwan SM, Shakya AK, Naik RR, Afrashtehfar KI. Awareness of Cosmetic Procedures among Adults Seeking

- to Enhance Their Physical Appearance: A Cross-Sectional Pilot Study in Central Jordan. *Cosmetics*. 2023;10(1):19.
2. Assad Hammadi H, AA El-Shereef E. Study of Knowledge, Attitude and Practices of Plastic Surgery among Females Students at Faculty of Education, Taif University, Saudi Arabia. *American Journal of Public Health Research*. 2017;5(3):63–9.
 3. Chuang J, Barnes C, Wong B. Overview of Facial Plastic Surgery and Current Developments. *The Surgery Journal* 2016;2(1):e17–28. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5553462/>.
 4. Dadkhahfar S, Gheisari M, Kalantari Y, Zahedi K, Ehsani A, Ifa E. Motivations and characteristics of patients seeking minimally invasive cosmetic procedures in two Iranian dermatology centers: A cross-sectional study. *International Journal of Women's Dermatology*. 2021;7(5):737–42.
 5. Doheyan T, Saad A, Haidar A, Fwzan H, Askar J, Malki F, et al. Knowledge, attitude and practices concerning cosmetic surgery among female medical students at the University Hospital, King Saud University, Riyadh, Saudi Arabia. *British Journal of Medicine and Medical Research*. 2016;14(4):1–10.
 6. *European Journal of Business and Management*. The Impact of Jordanian Women's Motives, on their Attitudes towards Cosmetic Treatment. 2015.
 7. Furnham A, Levitas J. Factors that motivate people to undergo cosmetic surgery. *Plastic Surgery*. 2012;20(04).
 8. Furong M, Zhengying P, Ni L, Xueqin Z. Current situation and countermeasures for healthy development of plastic surgery. *Chinese Cosmetol*. 2011;20(11):18101.
 9. Hindi AMA, Abdalla SM, Mutairi BAA -, Alnasser FA, Alhegail RO, Ghannam RGA, et al. Knowledge, Attitudes, and Practice of Cosmetic Procedures among Population of Majmaah, Saudi Arabia, 2019-2020. *Pakistan Journal of Medical and Health Sciences*. 2022;16(2):907–13.
 10. Khattab NR, Abdelraouf N, Ashour T. Conflicting cultural and religious views on cosmesis: The Modern Women's Dilemma. *Aesthetic Plastic Surgery*. 2022;46(4):2040–52.
 11. Magee L. Cosmetic Surgical and Non-Surgical Procedures for the Face. *Encyclopedia of Body Image and Human Appearance*. 2012;350–9.
 12. Marketing. International Society of Aesthetic Plastic Surgery. ISAPS. 2015. Available from: <https://www.isaps.org/>.
 13. Otene C, Odonmeta A, Ebeye O, Enivwenae A, Ozoko L, Ebeigbe P. Knowledge, attitude and practices of cosmetic surgery among basic sciences students of University in Delta state, Nigeria. *J Dent Med Sci*. 2016; 15:28–36.
 14. Raghad Sabah Fareed, Yousif AbdulRaheem Alnuaemi. Knowledge and attitude about botulinum toxins and dermal fillers among females attending the primary health care centers in Baghdad. *World Journal of Advanced Research and Reviews*. 2023;18(2):838–46.
 15. Sindi EE, Bondagji MF, Malibary JA, Alghamdi MK, Baashar DS, Sindi SA, et al. An Evaluation of the effect of social media platforms on the general population's decision-making about cosmetic procedures in Makkah City, Saudi Arabia. *Cureus*. 2023; 28.
 16. Sobanko JF, Imadojemu S, Miller CJ. Epidemiology of Cosmetic Procedures: An Update for Dermatologists. *Current Dermatology Reports*. 2012;1(1):413. Available from: <https://doi.org/10.1007/s1367101100062>.
 17. The Aesthetic Society. Laser & Ultrasound Skin Tightening, The Aesthetic Society. www.theaestheticsociety.org. 2020 available from <https://www.theaestheticsociety.org/procedures/skin-hair/skin-tightening>.
 18. The American Society of Plastic Surgeons (ASPS). 2022 ASPS Procedural Statistics Release. 2023. Available from <https://www.plasticsurgery.org/documents/news/Statistics/2022/plastic-surgery-statistics-report-2022.pdf>.