



Knowledge, Attitude and Practices Concerning Cosmetic Surgery among Female Medical Students at the University Hospital, King Saud University, Riyadh, Saudi Arabia

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Authors' contributions

This work was carried out in collaboration between all authors. Authors TAD, AAS, AAH, HAF, FAM, OHAA, FGA, JAA, MQA, WQA, JQA and OB did the experimental work. Authors ARQA and AMQA did literature review and purchased some materials. Author FQA wrote the draft and did overall supervision. All authors read and approved the final manuscript.

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ABSTRACT

Background: This study investigates the knowledge, attitudes and practices of cosmetic surgery among female medical students at King Saud University (KSU).

Methods: A quantitative observational cross-sectional approach was used to carry out the study at the KSU College of Medicine. A web-based questionnaire was first developed to collect the data necessary to fulfill the objectives of the research. The population under study included a random

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sample in which the questionnaire was sent to all female medical students at KSU. The sample size was estimated by using a single proportion formula with an acceptable margin of error at 5%. The sample size obtained was 384.

Results: A response rate of 99% was achieved. The mean age of the participants was 20.9 ± 1.48 . Out of 381 KSU female medical students in our study, almost all participants (360, 94.5%) have heard about cosmetic surgery. Television was the source of knowledge for more than one third (38%) of participants who had already heard about cosmetic surgery. Just over half (51.4%) of surveyed KSU female medical students recognized the best definition of cosmetic surgery as “a surgery that modifies or improves the appearance of a physical feature electively”. A great majority of participants (86%) reported knowing of a particular type of cosmetic surgery, namely breast augmentation. Almost all participants (92.4%) agreed that “women perform more cosmetic surgery than men”. Only 9% of participants reported undergoing cosmetic surgery, where most of them (19 out of 35) went through laser treatment for the skin and almost the same number had a cosmetic surgery for personal satisfaction.

Conclusion: From this research, we recommend further studies to go beyond educational institutions to the public at large, and to study different sub-populations.

Keywords: Ovariectomy; estradiol; ibandronate; anti-oxidant enzymes; DEPPD free radical; rat's liver.

1. INTRODUCTION

Self-improvement is essential to the nature of mankind. Human beings have always sought self-fulfillment through improvement of appearance. Plastic surgery has continued to grow as a speciality to subserve this need. Plastic surgery falls into different categories and is defined as a surgical specialty customized to repair, reconstruct or replace any physical defect due to different reasons including birth disorders, trauma, burns, developmental abnormalities, infections, tumors, preference & choice, and advanced age [1]. Whereas, cosmetic surgery is an unique pathway in medicine focused on enhancing appearance toward some aesthetic ideal (because the treated areas most of the time actually already function well) [2]. In a country where lifestyle is largely dedicated by religion, Saudi Arabia has seen growing interest in the past few years in cosmetic procedures but the lack of sound information and some religious interpretations have slowed down the growth of cosmetic surgery. As a result of the increased reputation of cosmetic surgery worldwide, and due to the lack of available information in Saudi Arabia, we decided to assess, in our fellow medical students, the knowledge, attitude and practices toward cosmetic surgery among female medical students in KSU during 2014.

2. MATERIALS AND METHODS

A cross-sectional approach was used for this study. The study population was female medical students at the King Saud University, College of

Medicine (KSU). A web-based questionnaire was developed to collect data necessary to fulfill the objectives of the research. The population under study included a random sample in which the questionnaire was sent to all female medical students at KSU. The sample size was estimated by using a single proportion formula with an acceptable margin error (d) at 5%. The sample size obtained was 384. The specially designed questionnaire for this study included four sections. The first section contained personal data (age, academic year, marital status, nationality, residency, family income, weight, smoking, skin color and physical exercise). Three further sections focused on information related to knowledge, attitudes and practices towards cosmetic surgery amongst this study group.

3. RESULTS

Out of 385 KSU female medical students, almost all (360, 94.5%) had heard about cosmetic surgery. All participants (360, 100%) who had heard about cosmetic surgery also reported their source of knowledge. Over one third (38%) of them had used television as their main source of knowledge. Medical school was reported to be the origin of awareness and knowledge for about one fifth of the participants (22.3%). Just over half (51.4%) of surveyed KSU female medical students responded correctly to the best definition of cosmetic surgery, which is “a surgery that modifies or improves the appearance of a physical feature electively”. Just over half (51.4%) of surveyed KSU female medical students recognized the *best definition of*

cosmetic surgery as “a surgery that modifies or improves the appearance of a physical feature electively”.

We also found that 45 % of female students sampled selected the definition, which is more applicable to plastic surgery, “a surgery to restore function or normal appearance by remaking defective organs or parts” (Table 1). A great majority of our sample (86%) reported knowing about breast augmentation. Based on KSU female medical students’ opinions, the most common age group *who receive* cosmetic surgery is from 30 to 34 providing a response of 91 students (24%).

We asked about the most common type of cosmetic surgery for young girls (<21 years) and, according to female medical students, rhinoplasty came in first place, whether they were married or not. Even though, in their opinion, the percentage of liposuction procedures was high among married females, a high percentage of medical students agreed that cosmetic surgery is generally acceptable. When comparing men and women, the participants believed that females receive cosmetic surgery than males.

4. DISCUSSION

Cosmetic surgery is becoming increasingly popular in different parts of the world, both among men and women [3]. Hardly any study has been performed in the Middle Eastern region to investigate the awareness, perceptions and practices with respect to cosmetic surgery.

This study aims to assess the knowledge about cosmetic surgery among female medical students in King Saud University. Out of 381 KSU female medical students, almost all of the students (360, 94.5%) had heard about cosmetic surgery. Our alternative hypothesis states that KSU female medical students have a good knowledge about cosmetic surgery and this was clearly shown in the results of (Table 1). On the other hand, only 21 students haven’t heard about cosmetic surgery (5.5%). It would be interesting to investigate the reasons why they had not heard about cosmetic surgery.

A study in 2012 at a health care facility in Pune, India [4,5] aimed to understand the level of awareness and knowledge of plastic surgery in

healthcare professionals in a tertiary centre. It also aimed to highlight the perception of medical professionals about plastic surgery and what they think a plastic surgeon does. After analyzing the results, they showed that there is little awareness about plastic surgery as a specialty amongst health care providers. It was clear that there is not much understanding of the specialty in members of the medical community, and that plastic surgery is poorly understood in that environment [5].

Knowledge:

Table 1A. The distribution of the study sample by the knowledge about cosmetic surgery, KSU female medical students, 2014

Q14: Have you ever heard about cosmetic surgery?	
	Freq. (%)
Yes	360 (94.5%)
No	21 (5.5%)
Total	381 (100%)

Table 1B. The distribution of the study sample by the source of knowledge about cosmetic surgery, KSU female medical students, 2014

Q15: If yes, where did you get your knowledge about cosmetic surgery?	
	Freq. (%)
Internet	79 (21.9 %)
Medical school	81 (22.3%)
Television	137 (38%)
Others	68 (17.8%)
Total	360 (100%)

Table 1C. The distribution of the study sample by definition of cosmetic surgery, KSU female medical students, 2014

Q16: What is the best way to define cosmetic surgery?	
	Freq. (%)
A surgery to restore function or normal appearance by remaking defective organs or parts	172 (45.1%)
A Surgery that modifies or improves the appearance of a physical feature electively	196 (51.4%)
A surgery for removal or addition of parts.	6 (1.6%)
A surgery that restores functions	7 (1.8%)
Total	381 (100%)

Table 1D. The distribution of the study sample by the types of cosmetic surgeries that is known by KSU female medical students, 2014

Q17: What cosmetic surgeries do you know?	
	Freq. (%)
Breast augmentation	326 (85.6%)
Blepheroptasty (eyelid)	14 (3.7%)
Rhinoplasty (nose job)	20 (5.2%)
Others	16 (5.4%)
Total	381 (100%)

Table 1E. The distribution of the study sample by the most common age group that performs cosmetic surgery, KSU female medical students, 2014

Q18: What do you think is the most common age group that performs cosmetic surgery?	
	Freq. (%)
25-29	89 (23.4%)
30-34	91 (23.9%)
35-39	77 (20.2%)
40-49	66 (17.3%)
Others	58 (15.3%)
Total	381 (100%)

Table 1F. The distribution of the study sample by the genders that perform more cosmetic surgeries, KSU female medical students, 2014

	Strongly agree	Agree	Don't know	Disagree	Strongly disagree	Total
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Q19: Women perform more cosmetic surgeries than men?	185 (48.6%)	167 (43.8%)	24 (6.3%)	3 (0.8%)	2 (0.5%)	381 (100%)
Q20: Men perform more cosmetic surgeries than women?	1 (.3%)	16 (4.2%)	104 (27.3%)	193 (50.7%)	67 (17.6%)	381 (100%)

Table 1 also shows the sources of knowledge about cosmetic surgery among the female medical students surveyed at KSU. We found that television was the most common source of knowledge in this study, where more than two thirds of the students reported they used it for information. This meant that that television was far more important than medical school (KSU) as a source of their knowledge. Cosmetic surgery is defined as “a Surgery that modifies or improves the appearance of a physical feature electively”. As shown in (Table 1), just over half of students (51.4%) responded correctly to the “best” definition of cosmetic surgery. It is also noted that 45% of students sampled selected a definition which is actually more applicable to plastic surgery, i.e. “a surgery to restore function or normal

appearance by remaking defective organs or parts”. This choice is perhaps because cosmetic surgery is considered to be a part of plastic surgery, or the participants were masked with “normal appearance”. The most common type of cosmetic surgery that was known to KSU female medical students was breast augmentation, where most KSU female medical students (86%) knew of it. On the other hand only 5.2% of KSU female medical students knew about rhinoplasty. Six of the medical students in this survey had previously undergone rhinoplasty.

3.7% of the female medical students surveyed knew of blepharoplasty, i.e. modification of the eyelid (Table 1). The female medical students in this study showed variation concerning what was

the most common age group that receives cosmetic surgery.

Ninety one students reported that the most common age group that receives cosmetic surgery is from 30 to 34 years. Eighty nine said that the second most common age group is from 25 to 29 years, 77 students gave the answer 35 to 39 years, and 66 thought the most common age range for cosmetic surgery was from 40 to 49 years.

The part of the questionnaire that explored KSU female student attitudes to cosmetic surgery attitude showed that rhinoplasty was most commonly reported with the highest frequency and percentage when asking students about the commonest types of cosmetic surgery for young girls (<21 years old), and also in the non-married adult women (21 years and above) (Table 2). On the other hand, when asking about the most common performed cosmetic surgery for adult married women (21 years and above) we found that abdominoplasty (a “tummy tuck”) had the highest percentage after those surgeries that were labeled ‘other’ (Table 2). Other group found that the most common procedure in women no matter what their age were nonsurgical, with laser hair removal, chemical peels, and botulinum toxin type A injections. In the same study it was found that rhinoplasty was of similarly importance [6]. Female medical student’s attitude towards cosmetic surgery was reasonable.

Attitude:

Table 2-A. The distribution of the study sample by the most common performed cosmetic surgeries for young girls (<21years), for adult non-married women (21 years above) and adult married women (21 years and above) KSU female medical students

		Frequency (%)
Q21: In your opinion, What is the commonest type of cosmetic surgeries for young girls (<21 years)?	Rhinoplasty (nose job)	149 (39.1%)
	Lip enhancement	50 (13.1%)
	LASER for skin	126 (33.1%)
	Others	56 (14.7%)
Q22: In your opinion, What is the commonest type of cosmetic surgeries for adult non-married women (21 years and above)?	Breast augmentation	71 (18.6%)
	Rhinoplasty (nose job)	98 (25.7%)
	Lip enhancement	48 (12.6%)
	LASER for skin	67 (17.6%)
Q23: In your opinion, What is the commonest type of cosmetic surgeries for adult married women (21 years and above)?	Other	97 (25.5%)
	Breast augmentation	58 (15.2%)
	Mastopexy (breast lift)	32 (8.4%)
	Abdominoplasty(tummy tuck)	67 (17.6%)
	Liposuction	61 (16.0%)
	LASER for skin	32 (8.4%)
	Others	131 (34.4%)
	Total	381 (100.0%)

More that 80% of students agreed that cosmetic surgery is common in general and the largest percentage of the study sample presented with 300 students agreed to the fact that cosmetic surgery is generally acceptable if indicated (Table 2). Many studies have shown similar results and have explained these as a media effect and how this can influence the female attitudes toward cosmetic surgery. We asked the female students about the final results when having cosmetic surgery whether it is a male or a female surgeon who performed it. 32.2% of the female KSA students felt that women who received cosmetic surgery became better looking, meanwhile, (38.6%) considered women who received cosmetic surgery become ‘funny looking’).

Other studies have reported that 32.9% also agreed with this, for example “I think people should do plastic surgery to look good” (Table 2). On the other hand, female medical students had different opinions when it comes to men who receive cosmetic surgery. The table illustrates that 23.9% of the female medical students who agreed that men who received cosmetic surgery look better, but the highest percentage of students felt that men who receive cosmetic surgery look funny (Table 3-B). “Women receive more cosmetic surgery than men”, almost all female medical students strongly agreed to this (48.6%) and disagreed (43.8%) with this statement.

Table 2B. The distribution of the study sample by the attitudes toward cosmetic surgery, KSU female medical students, 2013

	Strongly agree	Agree	Don't know	Disagree	Strongly Disagree	Total
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Q24: Cosmetic surgeries are common.	130 (34.1%)	208(54.6%)	29(7.6%)	13(3.4%)	1 (0.3%)	381(100%)
Q25: Cosmetic surgeries are forbidden by religion.	39 (10.2%)	93 (24.4%)	169(44.4%)	72(18.9%)	8(2.1%)	381(100%)
Q26: Cosmetic surgeries are generally acceptable, if indicated.	90(23.6%)	210 (55.1%)	53(13.9%)	25(6.6%)	3(8%)	381(100%)
Q27: Women who have undergone cosmetic surgeries look better.	7(1.8%)	116(30.4%)	137(36%)	95(24.9%)	26(6.8%)	381(100%)
Q28: Women who have undergone cosmetic surgeries look funny.	11(2.9%)	136(35.7%)	146(38.3%)	75(19.7%)	13(3.4%)	381(100%)
Q29: Men who have undergone cosmetic surgeries look better.	2(0.5%)	71(18.6%)	217(57%)	66(17.3%)	25(6.6%)	381(100%)
Q30: Men who have undergone cosmetic surgeries look funny.	19(5%)	70(18.4%)	225 (59.1%)	56(14.7%)	11(2.9%)	381(100%)

Table 2C. The distribution of the study sample by the main indications of cosmetic surgery, KSU female medical students

Q31: What is the main indication for cosmetic surgeries	
	Frequency
Satisfaction	99 (26%)
Media effect	45 (11.8%)
Accident	111 (29.1%)
Looking better or more attractive	81 (21.3%)
Other	45 (11.8%)
Total	381 (100%)

On the other hand, only two students are strongly disagreed with this statement. For the other statement, that “Men receive more cosmetic surgery than women”, for this question over half of the participants (50.7%) disagreed. Only one student strongly agreed with this statement (Table 2). Based on a study that was carried out on 267 South Korean university students concerning the attitudes toward cosmetic surgery, this study revealed that women are more accepting of cosmetic surgery than men. As a result of this acceptance the vast majority who undergo cosmetic surgery are women [7]. When asking about the main indications of cosmetic surgery, female medical students in KSA said the main reason was to reach satisfaction about how people who perform (who receive cosmetic surgery actually look (Table 2) but, when searching other studies we found that the main reason was the media effect which in our study took the last place and the lowest percentage [6].

The results showed that cosmetic surgery was uncommon among female medical students at King Saud University so as it appears (Table 3) that only 9% of them had received cosmetic surgery, as this result does not correspond with our alternative hypothesis that states “KSU female medical students frequently perform such surgeries”. The most common procedure that was performed is laser treatment for the skin (Table 3) and, from what we found in our literature review, we believe our study is unique since it is the first study that joined together all the three aspects of the knowledge, attitude and practices. Some similar studies about the practices of either plastic or cosmetic surgery revealed that the process of going through cosmetic surgery is growing, especially in the teen age group due to puberty

changes that reflects the teen's physical appearance [8]. Other studies have reported that the demand of perfection was remarkably enhanced in women who had cosmetic surgery compared to those who did not [9]. A huge study was conducted on female college students in different universities across the United States and which focused on their experiences with, and attitudes about, cosmetic surgery. Five percent of the women surveyed reported that they had undergone cosmetic surgery, which is a low percentage for a large research study like this [10]. As a result of fast growing medical practices of cosmetic surgery, more than 2 million Americans electively undergo cosmetic surgery each year, which is influenced by complex questions of gender, race, culture, etc [10].

Our students had a lecture on cosmetic surgery on their 6th year. Indeed, they were from different levels ranging from 1st year – 6th year, and that's may explain the accuracy and knowledge variability for cosmetic surgery.

Our study showed that most of the students who underwent cosmetic surgery was because of issues of personal satisfaction (Table 3). Of those who have not gone through cosmetic surgery it was because they think natural beauty is better, plus about twenty percent of them did not do it because of religious concerns (Table 3). Roughly 70% know someone who had undergone some kind of cosmetic surgery, and most them are their friends (Table 3). Rhinoplasty surgery was the commonest surgery that was undertaken among the people that they know (Table 4). Previous studies showed that two thirds of the students reported that they knew someone who had received cosmetic surgery, and approximately one third indicated that a family member had undergone this type of surgery [6].

Practices:

Table 3A. The distribution of the study sample by undergoing any type of cosmetic surgeries, KSU female medical students

Q32: Did you ever go through any type of cosmetic surgery?	
	Frequency (%)
Yes	35 (9.2%)
No	346 (90.8%)
Total	381 (100%)

Table 3B. The distribution of the study sample by the type of cosmetic surgeries that female medical students have undergone, KSU female medical students

Q33: If yes, what kind of cosmetic procedure you did?	
	Frequency (%)
Skin enhancement as chemical peels	6 (17.2%)
Rhinoplasty (nose job)	6 (17.2%)
LASER for skin	19 (54.2%)
Others	4 (11.4%)
Total	35 (100%)

Table 3C. The distribution of the study sample by the cause of undergoing cosmetic surgery, KSU female medical students

Q34: If yes, why have you gone through it?	
	Frequency (%)
Satisfaction	20 (57.1%)
Trend	2 (5.7%)
Influence of other	1 (2.8%)
Accident	5 (14.3%)
Looking better or more attractive	7 (20.1%)
Total	35 (100%)

Table 3D. The distribution of the study sample by the cause of not undergoing cosmetic surgery, KSU female medical students

Q35: If no, why?	
	Frequency (%)
Religious concerns	69 (19.9%)
Thinking that natural beauty is better	151 (43.6%)
Inner beauty is more important	16 (4.6%)
Not sure of the results	33 (9.5%)
Afraid of surgical complications	20 (5.7%)
Can't afford it	8 (2.3%)
Others	49 (14.1%)
Total	346 (100%)

Table 3E. The distribution of the study sample by knowing someone who undergone cosmetic surgery, KSU female medical students

Q36: Do you know someone who had preformed cosmetic surgery?	
	Frequency (%)
Yes	266 (69.8%)
No	115 (30.2%)
Total	381 (100%)

Table 3F. The distribution of the study sample by who have undergone cosmetic surgery, KSU female medical students

Q37: If yes, whom?	
	Frequency (%)
Mother	29 (10.9%)
Sister	28 (10.5%)
Friend	115 (43.2%)
Cousin	65 (24.4%)
Other	29 (10.9%)
Total	266 (100%)

Table 3G. The distribution of the study sample by the types of cosmetic surgeries for the previous people category KSU female medical students

Q38: If yes, what?	
	Frequency (%)
Breast augmentation	36 (13.5%)
Blepheroptasty (eyelid)	9 (3.3%)
Mastopexy (breast lift)	13 (4.8%)
Skin enhancement as chemical peels	27 (10.1%)
Rhinoplasty (nose job)	104 (39.1%)
Abdominoplasty (tummy tuck)	10 (3.7%)
Lip enhancement	21 (7.8%)
Liposuction	9 (3.3%)
LASER for skin	12 (4.5%)
Cheek augmentation	14 (5.2%)
Other	11 (4.1%)
Total	266 (100%)

Table 4A. Relationship between family income and cosmetic surgeries practices

Family monthly income (in SAR)	Surgeries preformed no (%)
< 5,000	0 (0%)
5,000-<10,000	1 (2.8%)
10,000 - <20,000	6 (17.1%)
20,000 - <30,000	5 (14.2%)
30,000 - <40,000	8 (22.8%)
>40,000	15 (42.8%)
Total	35 (100%)

$$\chi^2 = 4.545 p\text{-value} = .603$$

Table 4-B. Relationship between academic year and cosmetic surgeries practices

Academic year	Surgeries preformed No (%)
1 st	7 (20%)
2 nd	6 (17.2%)
3 rd	10 (28.5%)
4 th	10 (28.5%)
5 th	2 (5.8%)
Total	35 (100%)

$$\chi^2 = 7.822 p\text{-value} = .0001$$

Table 4C. Relationship between academic year and cosmetic surgeries knowledge

Academic year	Knowledge about cosmetic surgeries no (%)
1st	88
2nd	53
3rd	79
4th	70
5th	70
Total	360

$$\chi^2 = 25.173$$

$$p\text{-value} = .0001$$

Table 4D. Relationship between skin color and cosmetic surgeries practice

Skin color	Surgeries preformed no (%)
Light	10
Medium	21
Dark Brown	4
Total	35

$$\chi^2 = 2.793$$

$$p\text{-value} = .425$$

Due to body changes in adolescence, a study conducted by Kelsey Larson and Arun K. Gosain in Cleveland, Ohio showed that there are an increased number of adolescents seeking cosmetic procedures each year. In our study, which was conducted among older age group, ranging from first to fifth academic years (18-24 year olds), showed that 10 out of 3rd and 4th year students, who participated in this questionnaire underwent cosmetic surgery. Whereas students who went through this type of surgery in their first year were in second place with 7 students out of the total 35 students. The results showed a significance difference between the academic year and number of students who underwent plastic surgery (Table 4). Where as the relation between academic year and cosmetic surgery is significant, the first year participants had the highest percentages and that is most probably because they had the highest response rate. If someone asked "would people with particular skin color have more tendency to undergo cosmetic surgery?", As shown in the results of (Table 4), we can see that there are no significance differences between skin color and undergoing cosmetic surgery. Out of the 35 students who underwent cosmetic surgery, 21 of them are medium skin colored (حظي), light skin colored (قمحي) students are 10 and four are dark brown skin colored.

We asked the students if they went through any cosmetic surgery themselves and the response was low. The reason for more than half of the students who went through cosmetic surgery was described as satisfaction. The participants who did not undergo cosmetic surgery thought that natural beauty is better, whilst some of them had religious concerns. There was a trend relationship between family income and the performance of cosmetic surgery (data not shown).

5. CONCLUSION

This unique study on the knowledge, attitude and practices of cosmetic surgery among female medical students at King Saud University revealed important information not previously available. While knowledge about, and attitudes towards, cosmetic surgery were reasonable among such educated community, receiving cosmetic surgery was not common in our study population.

- From this research we recommend further studies to go beyond educational institutions to the public at large, studying different sub-populations accordingly.
- A comparison between females and males is also advised to see the differences in knowledge, attitudes and practices between both genders and test possible effect of variables as education level, occupation or even behavior. We also think that practices can fluctuate according to the wide ranges of the socioeconomic classes and religion.
- We also encourage using an electronic method in collecting data. The web based questionnaire we used made far easier and quicker the collection and analysis of the data rather than the paper based surveys.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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