

Plastic and aesthetic surgery among medical students: A cross-sectional study

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Abstract

Objectives: The wide variety of operations that a plastic surgeon can deal with creates confusion regarding its proper scope. This confusion was observed in primary physicians as well as medical students. Increasing the perception of medical students toward plastic surgery can aid in career decision-making and early referral patterns. The aim of this study is to gauge a holistic overview of how medical students and interns perceive the plastic and aesthetic surgical specialty in King Faisal University and to suggest a recommended plan.

Methods: An online questionnaire was distributed equally to male and female medical students and interns in a local medical institute. The questionnaire constituted three sections; the first included the biographical data. The second is concerned with the different case scenarios and specialties to be chosen. The third is concerned with the previous clinical exposures. The data were analyzed by SPSS version 21. Between comparison, chi-square tests, Mann–Whitney U-test, and Kruskal–Wallis tests were applied. Normality tests were conducted using the Shapiro–Wilk’s test.

Results: Two hundred ninety-two students and interns have participated and completed the questionnaire. There were 189 males and 103 females. Plastic surgery was most commonly chosen in the following case scenarios; burn of the hand (74%), broken nose (64.7%), and cosmetic nose reshaping (80.8%). However, plastic surgery was infrequently chosen (selected by <30% of students) in many areas of hands and peripheral neuropathies (severed finger extensor tendon (26.4%), fractured scaphoid (12.7%), carpal tunnel syndrome (14.4%), brachial plexus injury (16.1%)). The most common source of information was the social media, and the least one is meeting with doctors and professors.

Conclusion: Medical students and interns lack a full view of plastic and reconstructive surgery, especially in hand and peripheral neuropathies. Improving the education of medical students and interns is recommended and needed.

Keywords

Plastic surgery, medical students, perception, knowledge.

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Introduction

Plastic surgery is divided into two major parts, reconstructive and aesthetic surgeries.^{1,2} The journey of being a competent plastic surgeon is not short and straightforward. For instance, in Saudi Arabia, to be a plastic surgeon, the candidate must initially accomplish a successful 6-year post-graduate program before being considered a board-certified plastic surgeon. During the residency program, he or she must be exposed to different plastic topics, such as burn care, hand and upper extremity surgery, pediatric plastic procedures, craniofacial trauma and cosmesis, reconstructive and

microsurgery, as well as initial aesthetic procedures such as reduction and/or augmentation mammoplasty.³

In fact, with this diversity of procedures that plastic surgeons are involved in, there is a misunderstanding that plastic surgery

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is considered mainly as an aesthetic specialty. One study was done among the general population and found a poor understanding of plastic surgeons' role in dealing with breast reconstruction and tendon repair conditions. This misunderstanding is greatly and majorly attributed to what is displayed in the media.⁴ With that being said, television is considered a source of information to the public, which has influenced their perception about the specialty in a way that focuses only on its aesthetic aspects.⁵ As a result, due to the poor perception of plastic surgery's true scope, many studies have attempted to assess the perception of both the public and the medical professionals.⁶⁻⁹

Due to the difficulty for getting acceptance in plastic and reconstructive surgery residency program in Saudi Arabia, colleges of medicine in universities play a crucial role in helping their students to understand the diversity of the branches and operations that plastic surgeons are involved in through proper delivery in the curriculum and doctors' demonstration. Thus, students will be able to prepare early and well for the program to get accepted once they have realized that it is not only an aesthetic specialty. The late understanding of the true scope of plastic surgery has resulted in insufficient preparation by the students. As is has been shown in the literature, early exposure to the specialty during medical school can significantly enhance their perception positively; hence, early and enough preparation can be made once they have understood the true scope of the specialty.^{9,10} One study was conducted among the current and former Saudi plastic surgery program directors. Furthermore, they have stated that a good impression on the interview, prior experience, research experience, and oral poster presentations in academic events are considered significant factors that decide the acceptance of the applicants,¹¹ which all require early preparation by the students. Moreover, increasing students' awareness about plastic surgery is crucial to avoid confusion in the future through a proper medical referral process.

This is the first study of its type to be done at King Faisal University. Given the above, this study aims to assess the understanding of plastic surgery through the presentation of various clinical scenarios, identify what are the barriers to pursue as a future carrier, and define what are their sources of information among the medical students in King Faisal University, as well as to suggest the recommended plan for improvement once the problem is identified.

Methodology

Study design

This is a cross-sectional anonymous questionnaire-based study that was performed among medical students and interns in the college of medicine, King Faisal University, Saudi Arabia, as an example of a single medical institute. The data were collected in a period between June and July 2020. The sample size of participants is 292 students who have filled and completed the questionnaire.

Sampling

The questionnaire used in this study was formulated and with the clinical scenarios in Table 2 being obtained from a previous study in the literature with similar research objectives.⁹ Following a pilot study with a sample of 10 subjects, the questionnaire was modified and reviewed until it was determined to be valid and reliable for the purposes of this study. The questionnaire has been distributed to all students of both genders among the entire academic years. The exclusion criteria are medical students who are not from King Faisal University and participants who did not complete the questionnaire.

Statistical analysis

For the descriptive analysis, the mean \pm SD was used for metric variables, and percentages were given for categorical variables as multiple response patterns were allowed for the different clinical scenarios. A total (frequency distribution) was calculated for each specialist, defined as the number of questions for which specialist had been chosen as one of the responses. The frequency distribution per plastic surgeon was identified as the primary variable of interest. Between comparison, chi-square tests, Mann-Whitney U-test, and Kruskal-Wallis tests were applied. Normality tests were conducted using the Shapiro-Wilk's test. All analyses were performed using the software program Statistical Packages for Software Sciences (SPSS), version 21, Armonk, New York, IBM Corporation. Values were considered significant with a confidence interval of 95% ($p < 0.05$).

Ethical considerations

Ethical approval was obtained by the Institutional Research Board (IRB) and the Research Ethics Committee of King Faisal University in Al-Ahsa after fulfilling all the needed ethical issues, Research number: 2020-12-06.

Results

Two hundred ninety-two medical students participated in the study. Junior medical students were 174 (59.6%), while the remaining 118 (40.4%) were senior students and interns. Table 1 reported the demographic and general perception of the participants. The percentage of total male students that participated is 64.7%. About 30.8% reported having great interest in plastic surgery, but only 5.5% indicated previous exposure. Furthermore, 38.4% indicated that they sometimes research the topic online. The most common source of information about plastic surgery was social media (68.8%), followed by TV (34.6%) and the Internet (31.8%), least to be chosen was meeting with professors or doctors (0.70%). When comparing to academic year level, previous exposure in plastic surgery ($p = 0.018$), personal experience ($p < 0.001$),

Table 1. Basic demographic characteristics and the general knowledge of medical students regarding plastic surgery in accordance to year academic level.

Study variables	Overall N (%) (n=292)	Junior N (%) (n=174)	Senior N (%) (n=118)	P value ^a
Gender				
Male	189 (64.7)	109 (62.6)	80 (67.8)	0.366
Female	103 (35.3)	65 (37.4)	38 (32.2)	
Previous exposure to plastic surgery				
Yes	16 (05.5)	05 (02.9)	11 (09.3)	0.018**
No	276 (94.5)	169 (97.1)	107 (90.7)	
Interested in plastic surgery procedure				
Yes	90 (30.8)	56 (32.2)	34 (28.8)	0.541
No	202 (69.2)	118 (67.8)	84 (71.2)	
Frequency of researching the topic online				
Never	142 (48.6)	83 (47.7)	59 (50.0)	0.938
Occasionally	31 (10.6)	20 (11.5)	11 (09.3)	
Sometimes	112 (38.4)	67 (38.5)	45 (38.1)	
Often	07 (02.4)	04 (02.3)	03 (02.5)	
Sources of information about plastic surgery				
Nothing specific	06 (02.1)	05 (02.9)	01 (0.80)	0.231
Surfing the internet	93 (31.8)	55 (31.6)	38 (32.2)	0.915
TV series	101 (34.6)	65 (37.4)	36 (30.5)	0.227
Personal experience	61 (20.9)	23 (13.2)	38 (32.2)	<0.001**
Social media	201 (68.8)	120 (69.0)	81 (68.6)	0.954
Clinical rotations	32 (11.0)	11 (06.3)	21 (17.8)	0.002**
Meeting with doctors and professors	02 (0.70)	0.00	02 (01.7)	0.085
Elective course	05 (01.7)	0.00	05 (04.2)	0.006**

^aP value has been calculated using chi-square test.

**Significant at $p < 0.05$ level.

clinical rotations ($p=0.002$), and elective courses ($p=0.006$), were associated with a significant relationship to senior medical students.

Figure 1 depicted the most common desired future specialty comparing to the academic year level. The most commonly chosen desired specialty was internal medicine, followed by orthopedics and general surgery. Plastic surgery was the least to be chosen. In comparison to the academic year level, internal medicine was observed to have a significant relationship with academic year level ($p < 0.05$), indicating that the choice of internal medicine was widely prevalent among senior students.

In Figure 2, the most commonly mentioned barrier to pursuing a surgical specialty was difficulty entering the residency program, followed by lack of information about the topic and religious reasons. When comparing to the academic year level, it was revealed that difficulty entering the residency program was significantly mentioned by the senior students ($p < 0.05$), while having a lack of information was significantly mentioned by the junior students ($p < 0.05$).

Table 2 showed the ratings of medical students in choosing surgical specialties in each of the clinical scenarios. Medical students selected plastic surgery for the following clinical scenarios; burn of the hand (74%), broken nose (64.7%), cosmetic nose reshaping (80.8%), creation of an ear

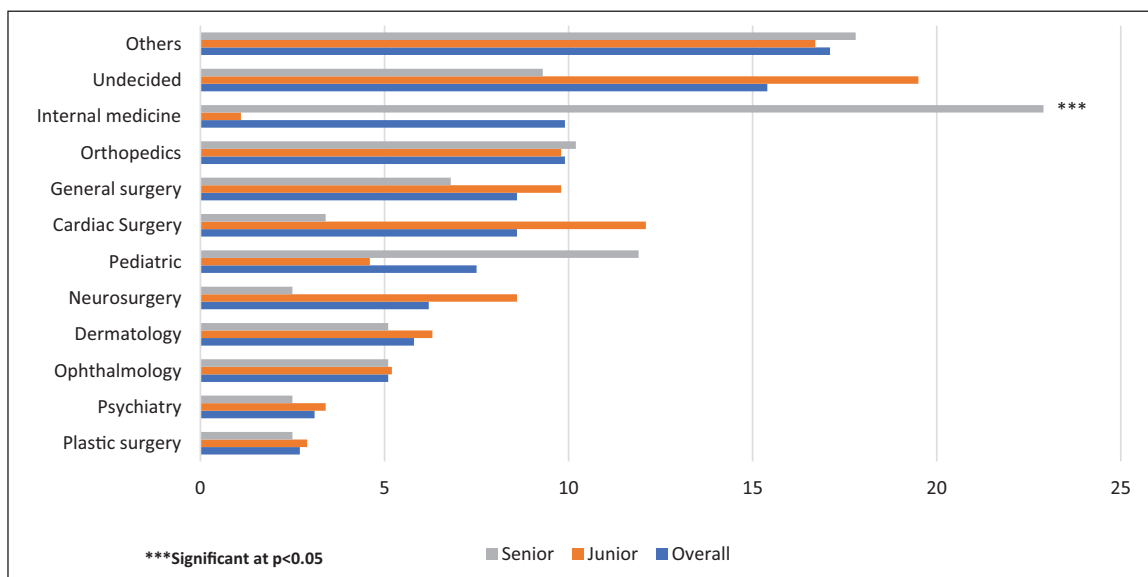
(67.8%), deviated nasal septum (62%), 50% Total Body surface Area (TBSA) burns to the body (65.4%), gender reassignment (54.5%), breast reconstruction (69.5%), and treatment of facial wrinkles (54.5%). However, plastic surgery was infrequently chosen (selected by $< 30\%$ of students) in many areas of hands and peripheral neuropathies (severed finger extensor tendon, fractured scaphoid, carpal tunnel syndrome, rheumatoid arthritis deformity, ulnar nerve repair, and brachial plexus injury) as well as eyelid ptosis (24.7%), pressure sore surgery (21.9%), chest wall repair (23.6%), and facial paralysis (25.7%).

On the contrary, orthopedics mainly was selected by the students to manage hand conditions and peripheral neuropathies (such as severed finger, severed finger extensor tendon, fractured scaphoid, carpal tunnel syndrome, and rheumatoid arthritis deformity), broken jaw (69.9%), chest wall repair (42.8%), and exposed tibia (50%). Furthermore, general surgery was chosen to manage conditions such as pressure sore surgery (42.8%) and chest wall repair (42.8%). Likewise, students chose neurosurgery to manage congenital skull deformity (53.4%). In comparison, congenital skull deformity was only chosen in plastic surgery by 32.9% of students. Furthermore, ulnar nerve repair (63.4%), brachial plexus injury (59.2%), and facial paralysis (53.1%) were all chosen to be under general surgery. At the same time, eyelid ptosis

Table 2. Percentages of students choosing the surgical specialties in each clinical scenario.

Clinical scenario	GS	Ortho	PS	ENT	Neuro	OB	CS	Urol	Derma	Ophth	VS	Hand
Severed finger	54.5	56.5	50.7	01.0	21.6	0.00	0.30	0.00	09.6	0.00	25.0	47.6
Severed finger extensor tendon	27.4	57.5	26.4	0.00	16.4	0.00	0.00	0.30	0.70	0.00	11.3	30.8
Fractured scaphoid	17.5	86.0	12.7	01.0	08.6	01.0	0.30	0.30	02.1	0.00	07.2	13.7
Burn of the hand	18.8	09.9	74.0	01.7	08.9	0.30	0.30	01.0	37.0	0.30	08.9	19.9
Carpal tunnel syndrome	24.0	43.2	14.4	01.7	47.9	0.30	0.30	0.00	0.30	0.30	03.8	19.9
Rheumatoid arthritis deformity	17.5	75.0	06.5	0.00	11.3	0.30	0.00	0.00	0.70	0.70	04.1	20.5
Broken jaw	20.5	69.9	51.0	15.4	03.8	0.30	0.00	0.70	0.30	0.00	03.1	0.70
Broken nose	14.4	32.2	64.7	47.3	01.7	0.00	02.1	0.00	0.70	0.70	02.4	0.00
Cosmetic nose reshaping	10.3	12.3	80.8	25.0	01.7	0.00	0.00	0.00	01.7	0.70	01.4	0.00
Cleft lip	24.7	06.8	76.0	18.5	04.5	0.70	0.00	0.00	01.7	0.00	01.4	0.30
Congenital skull deformity	17.8	42.8	32.9	07.2	53.4	01.4	0.00	0.00	0.30	01.0	03.8	0.00
Creation of an ear	15.1	05.5	67.8	44.5	05.8	01.7	0.00	0.00	0.30	0.70	01.7	0.30
Deviated nasal septum	14.0	14.4	62.0	52.7	03.1	01.7	0.00	0.00	0.30	0.70	02.1	0.30
Ulnar nerve repair	25.7	26.0	17.5	02.7	63.4	0.30	0.00	0.00	01.7	0.00	09.6	13.7
Brachial plexus injury	29.1	34.2	16.1	01.4	59.2	01.0	01.0	0.00	0.00	0.00	11.3	08.2
Eyelid ptosis	12.3	07.2	24.7	06.8	24.0	0.00	0.00	01.4	01.4	51.0	02.4	01.0
Pressure sore surgery	42.8	12.3	21.9	03.4	30.1	0.70	01.0	01.0	08.6	01.0	05.1	01.7
50% TBSA burn to body	22.3	09.6	65.4	01.7	06.2	0.00	0.00	0.00	30.8	0.70	03.8	01.0
Gender reassignment, F to M	27.4	06.2	54.5	02.7	06.5	26.4	02.4	18.5	01.0	01.4	03.4	0.30
Breast reconstruction	33.2	10.3	69.5	0.30	01.0	10.3	01.7	01.0	02.4	01.7	0.30	01.4
Chest wall repair	42.8	42.8	23.6	01.4	01.0	02.4	25.3	0.70	02.7	0.30	04.5	01.0
Facial paralysis	18.2	05.5	25.7	20.9	53.1	01.0	0.00	0.00	0.30	01.0	01.7	0.30
Treatment of facial wrinkles	21.6	13.0	54.5	01.4	07.5	01.0	0.00	0.00	16.1	01.7	0.70	0.00
Exposed tibia	38.0	50.0	39.7	01.0	02.1	01.0	01.0	0.00	01.0	01.0	05.1	01.4

GS: general surgery; Ortho: orthopedics; PS: plastic surgery; ENT: ear, nose and throat; Neuro: neurology/neurosurgery; OB: obstetrics and gynecology; CS: cardiothoracic surgery; UROL: urology; OPHTH: ophthalmology; VS: vascular surgery; HAND: hand specialist; TBSA: total body surface area.

**Figure 1.** Most common desired specialty in accordance to academic year level.

was the only condition chosen by the medical students to be managed by ophthalmologists (51%).

Per Table 3, plastic surgeon most commonly chosen to manage cosmetic nose reshaping (80.8%), followed by cleft

lip (76%) and burn of the hand (74%), while rheumatoid arthritis deformity was the least mentioned (6.5%). When measuring its relationship to academic year level, it was observed that burn of the hand ($p=0.004$), 50% TBSA burn

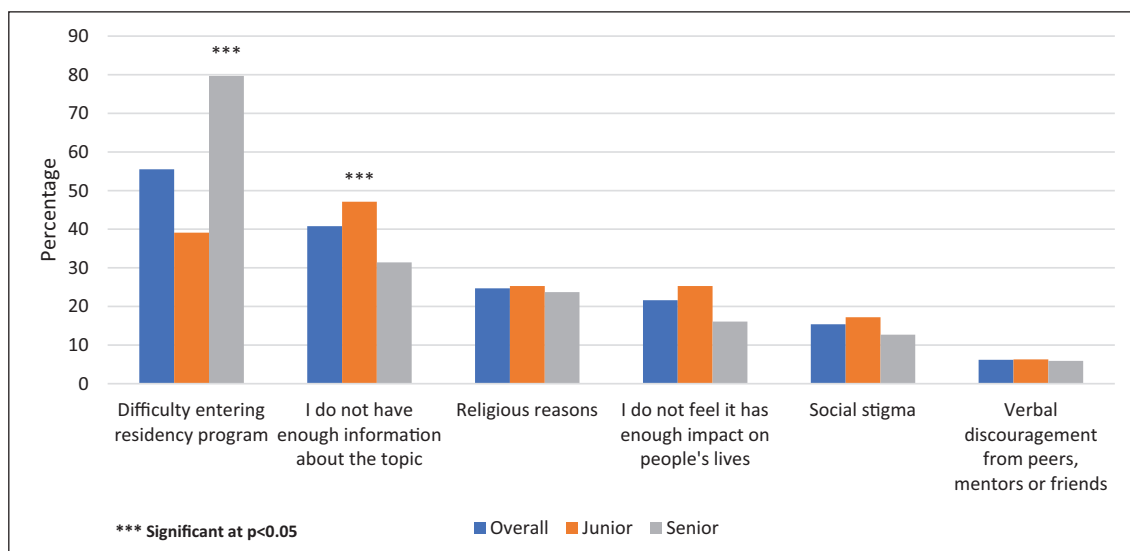


Figure 2. Barriers to pursue surgical specialty in accordance to academic year level.

to the body ($p=0.027$), severed finger ($p=0.001$), exposed tibia ($p=0.003$), ulnar nerve repair ($p=0.008$), and carpal tunnel syndrome ($p=0.041$) were more significantly associated to be chosen by senior students compared to junior students.

Figure 3 depicted the influence of previous clinical exposure to plastic surgery in relation to different clinical scenarios. Our investigation showed that prior clinical exposure to plastic surgery significantly improved the selection of gender reassignment and chest wall repair to be treated by plastic surgeons ($p < 0.05$) while burn of the hand, deviated nasal septum, broken nose, and cosmetic nose reshaping were significantly more related to non-exposure ($p < 0.05$).

Discussion

Plastic surgery has been divided into many branches according to its indications as well as the body's different anatomical areas. Moreover, plastic surgeons are usually members of a collaborative multidisciplinary team. These may include orthopedic surgeons, vascular surgeons, otorhinolaryngology surgeons, and dermatologists.⁴ However, the scope of plastic surgery have not yet been fully perceived and elaborated by the community or even medical students and junior doctors in King Faisal University, Saudi Arabia. This study aimed to measure the perceptual level of medical students and interns regarding the notion that plastic surgery is an essential separate sub-surgical specialty in King Faisal University, to put the recommended adjustment plan for the curriculum once the lack of perception is identified.

Two hundred ninety-two medical students and interns participated in this study. There are 174 students from years 1 to 3, 118 students from years 4 to 6. Compared to previous studies, one study was conducted in both Birmingham and

McGill enrolled 243 medical students,¹⁰ while a study conducted in Jeddah enrolled 886 medical students in total.¹² However, it is observed that although 90 (30.8%) medical students are interested in plastic surgery, only 16 (05.5%) students had previous clinical exposure. Furthermore, half of the total participants had never researched plastic surgery. This can be an influential underlying factor for the lack of proper understanding of plastic surgery.

As demonstrated in Figure 1, the most desired specialty was internal medicine, followed by orthopedics and general surgery, while plastic surgery was the least to be chosen. A study conducted in Saudi Arabia has found similar results, with internal medicine being the top choice. However, plastic surgery was one of the least choices.¹³ This can be due to plastic surgery being not well taught to our students and not sufficiently included within our curriculum, in contrast to other specialties which are very well included within King Faisal University's curriculum.

It is observed in Table 1 that the most common sources of information for students' perception about plastic surgery were social media, TV series, and the Internet, while meeting with professors and doctors was a neglected source. This is similar to the two studies conducted in Birmingham and Jeddah.^{10,12} At McGill University, medical students chose clinical teaching as the most influential factor due to plastic surgery included in the undergraduate curriculum.¹⁰

This highlights the importance of re-evaluating our institute's curriculum and encouraging doctors to guide the students toward the proper understanding of the diversity of plastic surgery subspecialties. This is supported by a study that showed that the interaction and the relationship between plastic surgeons and medical students is one of the most potent stimulus for them to choose plastic surgery as a future specialty.¹⁴ Moreover, one organization has conducted a 1-Day

Table 3. Influence of plastic surgery with the different clinical scenario in accordance to the academic year level.

Clinical scenario	Overall N (%) (n = 292)	Junior N (%) (n = 174)	Senior N (%) (n = 118)	P value ^a
1. Cosmetic nose reshaping	236 (80.8)	136 (78.2)	100 (84.7)	0.161
2. Cleft lip	222 (76.0)	126 (72.4)	96 (81.4)	0.079
3. Burn of the hand	216 (74.0)	118 (67.8)	98 (83.1)	0.004**
4. Breast reconstruction	203 (69.5)	116 (66.7)	87 (73.7)	0.198
5. Creation of an ear	198 (67.8)	113 (64.9)	85 (72.0)	0.203
6. 50% TBSA burn to body	191 (65.4)	105 (60.3)	86 (72.9)	0.027**
7. Broken nose	189 (64.7)	120 (69.0)	69 (58.5)	0.066
8. Deviated nasal septum	181 (62.0)	110 (63.2)	71 (60.2)	0.598
9. Gender reassignment, F to M	159 (54.5)	89 (51.1)	70 (59.3)	0.169
10. Treatment of facial wrinkles	159 (54.5)	91 (52.3)	68 (57.6)	0.370
11. Broken jaw	149 (51.0)	88 (50.6)	61 (51.7)	0.851
12. Severed finger	148 (50.7)	74 (42.5)	74 (62.7)	0.001**
13. Exposed tibia	116 (39.7)	56 (32.2)	60 (50.8)	0.001**
14. Congenital skull deformity	96 (32.9)	54 (31.0)	42 (35.6)	0.416
15. Severed finger extensor tendon	77 (26.4)	35 (20.1)	42 (35.6)	0.003**
16. Facial paralysis	75 (25.7)	41 (23.6)	34 (28.8)	0.314
17. Eyelid ptosis	72 (24.7)	40 (23.0)	32 (27.1)	0.422
18. Chest wall repair	69 (23.6)	35 (20.1)	34 (28.8)	0.086
19. Pressure sore surgery	64 (21.9)	38 (21.8)	26 (22.0)	0.969
20. Ulnar nerve repair	51 (17.5)	22 (12.6)	29 (24.6)	0.008**
21. Brachial plexus injury	47 (16.1)	22 (12.6)	25 (21.2)	0.051
22. Carpal tunnel syndrome	42 (14.4)	19 (10.9)	23 (19.5)	0.041**
23. Fractured scaphoid	37 (12.7)	22 (12.6)	15 (12.7)	0.986
24. Rheumatoid arthritis deformity	19 (6.5)	15 (8.6)	04 (03.4)	0.075

TBSA: total body surface area.

^aP value has been calculated using chi-square test.

**Significant at $p < 0.05$ level.

course on plastic surgery for undergraduate students, which has positively reinforced the perception of plastic surgery.¹⁵ These two solutions can be implemented in our university to enhance the perception positively.

As shown in Figure 2, one of the most influential factors among senior students to choose a specialty other than plastic surgery is its difficulty to get accepted into the program. This can explain why students realize that they want to pursue plastic surgery late, results in late and insufficient preparation compared to other universities which is similar to a study conducted at King Khalid University.¹⁶ Moreover, our students are reluctant to choose plastic surgery as a future specialty due to a lack of information about it as well as religious reasons, which was reflected on junior students more. Similarly, a study conducted in the United Kingdom found that the most deterring factor in choosing plastic surgery as a future specialty was the competitive choosing process. However, other factors are the length of training as well as work–life balance.¹⁷ To conclude, our results reflect the lack of information about the specialty which students themselves stated. This encourages paying more attention to these quite disconcerting results.

In Table 2, it is demonstrated that students believe plastic surgery is the most commonly involved in cosmetic nose

reshaping (80.8%), treatment of cleft lip (76%), burn of hand (74%), breast reconstruction (69.5%), and creation of an ear (67.8%), similar to previous studies.^{9,12,16,18} The least clinical scenarios where plastic surgery was chosen are in cases of rheumatoid arthritis deformity (06.5% vs 75% who selected orthopedics), fractured scaphoid (12.7% vs 86% who selected orthopedics), carpal tunnel syndrome (14.4% vs 47.9% who selected neurosurgery). Moreover, at the University of Utah, plastic surgery was frequently chosen to treat facial wrinkles, facial paralysis, and female-to-male gender reassignment.⁹ On the contrary, these clinical scenarios were not frequently chosen by our students. It is observed that hand and peripheral nerve injuries, chest wall defect repair, and congenital skull deformity clinical scenarios were less frequently chosen by our students. These quietly match results of studies in the University of Utah, King Khaled University, King Abdulaziz University, and Griffith University.^{9,12,16,18} This reveals the importance of providing more shadowing opportunities, clinical rotations, and hands-on workshops that can significantly improve the awareness of the plastic surgery field.

Clinical scenarios of gender reassignment and chest wall defect repair were significantly increased to be chosen by

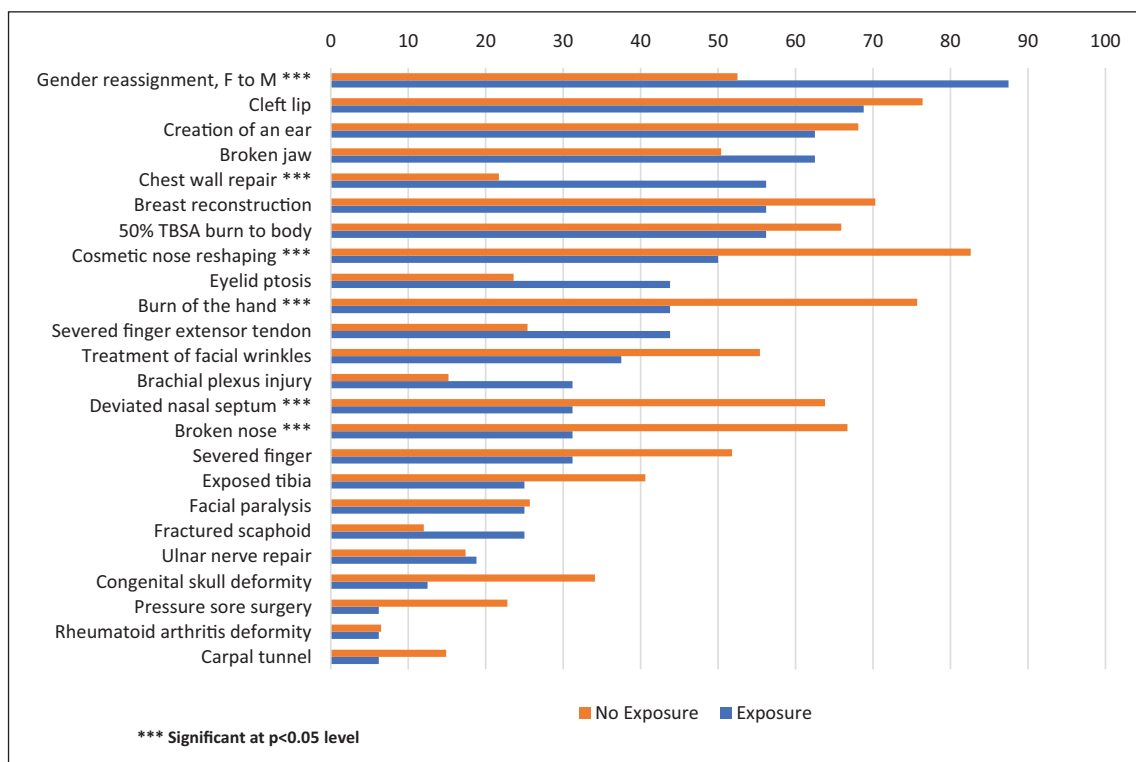


Figure 3. Influence of previous clinical exposure to plastic surgery with the different clinical scenario.

students in whom they had prior clinical exposure to plastic surgery, as seen in Figure 3. Interestingly, this was not the case for the clinical scenarios related to burn of the hand, deviated nasal septum, broken nose, and cosmetic nose reshaping. A likely reason for this is the more significant exposure to other surgical specialties, especially in the case of general surgery, and ear, nose, and throat as part of the university curriculum. This demonstrates that other specialties are not elaborating enough to the students that their procedures overlap with plastic surgery.

In Table 2, although hand and peripheral nerve injuries were not frequently chosen by our students, there is a significant increase in senior students compared to junior students to choose plastic surgery, especially in cases of a severed finger, severed finger extensor tendon, ulnar nerve repair, and carpal tunnel syndrome. Similar results were observed in the University of Utah.⁹ This is explained because senior students are more aware of the diversity of plastic surgery after their clinical exposure, as shown in Table 3.

Conclusion

In conclusion, medical students and interns in our institution need further understanding regarding the true scope of plastic and reconstructive surgery, especially in hand and peripheral neuropathies. This can be achieved through an early and extensive introduction of different branches in plastic surgery into the curriculum, better guidance during the problem-based learning (PBL) sessions, clinical

rotations, and provide more shadowing opportunities. Moreover, social media can be used as a part of medical education to guide and teach students about the true scope of plastic surgery instead of it being a negative influential factor. This will help students choose plastic surgery as one of their options early to prepare sufficiently as it is one of the highly competitive specialties. This will help significantly for appropriate future referral patterns. This study can serve as a solid ground for other individual institutions to pay more attention to their current curriculum regarding plastic surgery.

Limitations

Although the study achieved its aim, certain limitations need to be elaborated. Although the questionnaire was distributed to both male and female students within all academic years, the response rate was 19.46% which can be attributed to a lack of interest by students to fill the questionnaire or failure to continue filling it. Also, formal sample size calculation was not performed for this study. Moreover, the study is cross-sectional and was done at a single institution, which cannot be representative for medical students in Saudi Arabia as well as it is susceptible to institutional bias.

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Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval

Ethical approval was obtained from ethical committee in King Faisal University, Al-Ahsa, Saudi Arabia. Research number: 2020–12–06. Date: 27/12/2020.

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Informed consent

Written Informed Consent was obtained from all subjects before the study, in which before beginning answering the questionnaire, all subjects were asked whether to agree for participating or not through a Written Informed Consent, and all approved participants have been included in the study.

Supplemental material

Supplemental material for this article is available online.

References

1. Rogers AD, dos Passos G and Hudson DA. The scope of plastic surgery. *South Afr J Surg* 2013; 51(3): 106–110.
2. Gary Culbertson M. How plastic surgeons got their name, 2012. <https://www.plasticsurgery.org/news/blog/how-plastic-surgeons-got-their-name> (accessed 3 January 2021).
3. <https://www.scfhs.org.sa/MESPS/TrainingProgs/TrainingProgsStatement/Documents/Plastic%20Surgery%20new.pdf>
4. de Blacam C, Kilmartin D, Mc Dermott C, et al. Public perception of plastic surgery. *J Plast Reconstr Aesthet Surg* 2015; 68(2): 197–204.
5. Denadai R, Araujo KM, Samartine Junior H, et al. Aesthetic surgery reality television shows: do they influence public perception of the scope of plastic surgery? *Aesthet Plast Surg* 2015; 39(6): 1000–1009.
6. Alharbi AA, Al-Thunayyan FS, Alsuhaibani KA, et al. Perception of primary health care providers of plastic surgery and its influence on referral. *J Family Med Prim Care* 2019; 8(1): 225–230.
7. Lee AC, Drake DB and DeGeorge BR Jr. Medical student and primary care physician perception of the surgical management of upper-and lower-extremity peripheral nerve entrapment. *Ann Plast Surg* 2016; 76(5): 524–531.
8. Almarghoub MA, Almarzouq SF and Alissa SI. Public perception of plastic surgery in Saudi Arabia. *Plast Reconstr Surg Glob Open* 2019; 7(3): e2143.
9. Agarwal JP, Mendenhall SD, Moran LA, et al. Medical student perceptions of the scope of plastic and reconstructive surgery. *Ann Plast Surg* 2013; 70(3): 343–349.
10. Farid M, Vaughan R and Thomas S. Plastic surgery inclusion in the undergraduate medical curriculum: perception, challenges, and career choice—a comparative study. *Plast Surg Int* 2017; 9458741.
11. Shah Mardan QNM, Alamari NA, Alzahrani HM, et al. The ideal applicant to the Saudi plastic surgery residency program. *Plast Reconstr Surg Glob Open* 2021; 9(2): e3441.
12. Mortada HH, Alqahtani YA, Seraj HZ, et al. Perception of plastic surgery and the role of media among medical students: cross-sectional study. *Int J Med Res* 2019; 8(2): e12999.
13. Alshahrani M, Dhafery B, Al Mulhim M, et al. Factors influencing Saudi medical students and interns' choice of future specialty: a self-administered questionnaire. *Adv Med Educ Pract* 2014; 5: 397–402.
14. Zuo KJ, Retrouvey H and Wanzel KR. Factors that affect medical students' perception and impression of a plastic surgery program: the role of elective rotations and interviews. *Ann Plast Surg* 2019; 82(2): 224–228.
15. Spiers HV, Zargarani A, Murtaza AN, et al. Enhancing medical curricula: the role of a 1-day plastic surgery course as an educational adjunct for medical students. *J Surg Educ* 2018; 75(1): 116–121.
16. Fayi KA, Al-Sharif MN, Alobaidi AA, et al. Male medical students' perception of plastic surgery and its relationship with their cultural factors. *J Family Med Prim Care* 2018; 7(6): 1482–1487.
17. Pasha T, Lumley ES, Dwyer-Hemmings L, et al. Undergraduate plastic surgery in the United Kingdom: the students' perspective. *J Plast Reconstr Aesthet Surg* 2020; 73(11): 2086–2102.
18. Conyard C, Schaefer N, Williams D, et al. The understanding of plastic and reconstructive surgery amongst Queensland medical students. *JPRAS Open* 2016; 8: 14–18.