

**Caspian Journal of Health Research** 

Original Article

# Knowledge of Medical Students in Pre-Clinical and Clinical Course Toward the Field of Plastic and Cosmetic Surgery, 2017

Ramyar Farzan<sup>1</sup>, Mohammad Tolouie<sup>2</sup>, Roghayeh Aghebati<sup>3</sup>, Amir Ebrahimi<sup>4</sup>, Maryam Delavar<sup>5\*</sup>

<sup>1</sup> Department of Plastic and Cosmetic Surgery, Guilan University of Medical Sciences, Rasht, Iran <sup>2</sup> School of Health, Guilan University of Medical Sciences, Rasht, Iran

<sup>\*</sup>Corresponding author: Maryam Delavar Email: m.delavar1990@gmail.com

#### ABSTRACT

**Background:** Plastic and cosmetic surgery is one of the most unique and less well-known surgical specialties. The aim of this study was to compare knowledge of medical students in pre-clinical and clinical course of Guilan University of Medical Sciences in the specialty field of plastic & cosmetic surgery.

**Methods:** This cross-sectional study was conducted in educational hospitals of Guilan University of Medical Sciences. A total of 866 students in two groups of clinical and preclinical students were participated in the study. Research instrument was a questionnaire composed of 31 questions about knowledge toward plastic and cosmetic surgery including general, craniofacial, and cosmetic questions.

**Results:** The mean age of participants was 22.5 (SD = 2.5) and 57.2% were female. Twenty-four percent had a history of plastic and cosmetic surgery. Students in clinical course had significantly higher knowledge toward all three aspects of general, cosmetic and craniofacial questions compared to clinical students. The result of multivariate linear regression showed that the course level, sex, interest score to the field of surgery, and source of information were independently associated with knowledge.

**Conclusion:** This study found that clinical students had significantly higher knowledge toward the field of cosmetic surgery than pre-clinical students.

Keywords: Knowledge, Plastic surgery, Medical students

**Citation**: Farzan R, Tolouie M, Aghebati R, Ebrahimi A, Delavar M. Knowledge of Medical Students in Pre-Clinical and Clinical Course Toward the Field of Plastic and Cosmetic Surgery, 2017. Caspian J Health Res. 2020;5(1):17-22.

#### Introduction

In contrast to other fields of surgery, plastic surgery includes different parts of body such as craniofacial, breast, limbs etc. (1). The main aim of plastic surgery is to restore the function of tissues and skin to as close to normal as possible. Improving the appearance of body parts is an important, but secondary aim of this sub-specialized discipline. In cosmetic surgery, as part of a wide range of plastic surgery, the goal is to change a person's part of body that one does not satisfy. Some of cosmetic surgeries are augmentation or reduction mammoplasty, rhinoplasty and liposuction (2, 3).

Many restorative surgeries in this field are not known for the public and they are in shadow of cosmetic surgeries and so many people and general practitioners treat it as a cosmetic cosmetic surgery (1, 4).

Much of this problem has been created due to social media, which have portrayed plastic surgery primarily under the title of cosmetic surgery, which has resulted in a misunderstanding of this sub-specialized field not only among the pubic but also

#### ARTICLE INFO

Received: December 18, 2019 Accepted: March 10, 2020 ePublished: March 20, 2020





doi: 10.29252/cjhr.5.1.17

among medical professionals (5, 6). Since a large part of patients' referral to plastic surgeons is due to reference to other physicians, the correct understanding of the performance of plastic surgeons and the wide range of this field directly affects patients' referral patterns (7).

An incorrect perception about plastic and cosmetic surgery is also reported among medical students. Medical students' knowledge of this field has many consequences since these students constitute a significant part of the referral system for plastic surgeons in near future. Moreover, a better understanding of this field contributes to accelerating the process of referral and reducing costs of patient and health care system (8, 9).

In recent years, some studies have been designed in some countries about the level of knowledge and perception of medical students regarding plastic surgery (5, 7). The results of these studies have shown that exposure to plastic surgery increases students' knowledge of this field increasingly and significantly (10). These findings reflect the unique role of medical colleges to train future physicians in the field of plastic surgery and the necessity of providing plastic surgery as an independent part of the educational program for medical students. Another study showed a gap between medical students' perception and the reality of plastic surgery scope (7). However, the number of medical colleges which offer plastic surgery as an independent part of the training program is decreasing. Therefore, considering the above mentioned cases, and according to the lack of a similar study over the recent years in Guilan province, the aim of this study was to compare the knowledge of medical clinical students regarding the scope of this sub-specialized with pre-clinical courses in order to assess the relationship between attending a theoretical course on clinical students' knowledge.

# Methods

This analytic-cross sectional study was conducted on all medical students studying in pre-clinical and clinical courses at Guilan University of Medical Sciences, in 2017. A total of 1123 students were selected based on inclusion and exclusion criteria.

This study was conducted after receiving ethical permission (ethical code) from Ethics Committee of Guilan University of medical sciences and chief of Faculty of Medicine.

Research instrument was a questionnaire composed of 31 questions about knowledge toward plastic and cosmetic surgery (1). Validity of this instrument was evaluated through content validity method and calculating Content Validity Index (CVI) and Content Validity Ratio (CVR) of an expert panel including 7 faculty members and plastic and cosmetic surgery specialist from Guilan University of Medical Sciences.

The CVR values greater than 0.99 was acceptable. Four items were not achieved to desirable value and were re-inspected. The CVI index of the questionnaire was greater than desired value of 0.7. Reliability was assessed using Cronbach alpha for internal consistency and equivalent forms reliability on 10 students. The Pearson correlation coefficient of the two equivalent forms was obtained as 0.9. The Cronbach alpha was obtained as 0.743 which indicates internal consistency of questions in measuring students' knowledge.

The first part of this questionnaire included individual characteristics and the second part included 31 items in five-

point Likert-type rating scale including 1 (it is exclusively in the scope of plastic and cosmetic surgery), 2 (it is both in the scope of plastic and cosmetic surgery and other fields), 3 (I am not able to distinguish between (1) and (2) options; 4 (it is in the scope of other fields), and 5 (I do not know). Questions were structured in 3 parts including general questions (13 questions), craniofacial questions (10 questions) and cosmetic questions (8 questions). Questions in general section included knowledge on reduction mammoplasty, chest wall reconstruction surgery, burning injury treatments (chemical, heating, electrical), melanoma surgery (skin melanoma, squamous cell carcinoma, and basal cell carcinoma), benign skin lesion surgeries (scare, verruca, lipoma surgery), skin graft surgery, hernia repair surgery, pressure sore treatment (bed sore), repair of limb peripheral nerve cut, repair of hand's cut tendons, surgery after mastectomy (breast prosthesis implantation, breast reconstruction with natural tissue), external genitalia surgery and gender transformation surgery. In craniofacial section, knowledge about head and neck cancer surgery, cleft lip and cleft palate surgery, facial bone reconstruction surgery, vascular abnormalities, treatment of head and neck infection, surgery of facial abnormalities and fractures were measured. In cosmetic questions, knowledge about rhinoplasty, liposuction, otoplasty, skin rejuvenation, face lifting, augmentation mammoplasty and blepharoplasty was measured. Knowledge score were categorized into weak as scores below 33.3%, moderate as scores between 33.3-66.6%, and high as scores above 66.6%. Level of interest to choose the field of plastic and cosmetic surgery was determined using a visual numerical scale from 1 to 10, which higher scores indicate greater interest to choose the field of plastic and cosmetic surgery. The level of interest was categorized into low (< 3), medium (3-7), and high (7-10).

Data was analyzed with SPSS version 21. Data were described as mean and standard deviation or frequency and percent. Normal distribution was assess using Kolmogorov Smirnov test. Mann Whitney u test, Kruskal Wallis, chi square or independent t tests were used for comparison between groups. Multivariate linear regression method was used to explore adjusted estimate of association between study variables and knowledge. Those variable with a P-value less than 0.05 were entered the model.

# Results

Of 1123 students, 866 individuals completed the questionnaire (response rate: 77.1%). Pre-clinical group included 475 students, which 67 students (14.1%) were reluctant to participate in the study and 39 students (8.21%) were excluded based on exclusion criteria. Clinical group included 648 students, which 92 students (14.19%) were reluctant to participate in the study and 58 students (8.95%) were excluded from our study based on exclusion criteria.

The mean age of participants was 22.5 (SD = 2.5). Of total, 57.2% were female students, 89% were married, 24.2% had a history of plastic and cosmetic surgery, and 34% had not decided to choose any filed of medicine to continue. The most common source of information was social media (41%) followed by university education (29%).

Characteristics	Educational level					
-	Clinical	Pre-clinical	Total			
Gender				0.458		
Female	290 (58.2)	205 (55.7)	495 (57.2)			
Male	208 (41.8)	163 (44.3)	371 (42.8)			
Age in years [Mean (SD)]	24.2 (1.6)	20.3 (1.6)	22.5 (2.5)	0.001		
Marital status				0.001		
Single	422 (84.7)	349 (94.8)	771 (89)			
Married	76 (15.3)	19 (5.2)	95			
History of plastic and cosmetic surgery				0.001		
No	308 (83.7)	348 (69.9)	656 (75.8)			
Yes	60 (16.3)	150 (30.1)	210 (24.2)			
Level of interest to choose the field of plastic	3.71 (2.72)	3.92 (2.66)	3.83 (2.68)	0.264		
and cosmetic surgery, Mean (SD)						
Desire to choose the field of:				0.001		
Surgery	120 (32.6)	100 (20.1)	220 (25.4)			
Internist	41 (11.1)	46 (9.2)	87 (10)			
Others	64 (17.4)	204 (41)	268 (30.9)			
Not decided yet	143 (38.9)	148 (29.7)	291 (33.6)			
Sources of information				0.001		
Media	46 (12.5)	24 (4.8)	70 (8.1)			
Personal studies	79 (21.5)	111 (22.3)	190 (21.9)			
University education	43 (11.7)	206 (41.4)	249 (28.8)			
Social media	200 (54.3)	157 (31.5)	357 (41.2)			

Table 1. Individual and Field Related Characteristics of Study Participants in Clinical and Pre-Clinical Groups

Abbreviation: SD, Standard deviation, value in the parenthesis are percent unless otherwise indicated

There was no significant difference with respect to gender distribution between clinical and pre-clinical groups (P-value = 0.458). Clinical group students were in average 4 years older than pre-clinical group (P-value < 0.001). Table 1 illustrates individual and field related characteristics of study participants in the two groups.

Figure 1 shows frequency of knowledge in the two preclinical and clinical groups in three aspects of general, craniofacial, and cosmetic questions. There was significant association between course of study and knowledge. The frequency of high knowledge in clinical course students was significantly higher compared to preclinical course students in all three aspects of general, craniofacial, and cosmetic questions.

Table 2 illustrates the mean distribution of knowledge in terms of study variables. Female students had significantly higher knowledge compared to male students. Students interested in the field of internist and those who not decided yet had significantly lower score of knowledge. The score of knowledge from media was significantly lower compared to other sources of information. Regarding to the interest in the field of surgery, students with low level of interest had significaly lower knowledge compared to other students.

According to multivariate linear regression model, course level, sex, interest score to the field of surgery, and source of information were independently associated with knowledge. The average of knowledge score among students in clinical course was 5.99 unit higher than pre-clinical students. Male students had lower score compared to female. There was significantly direct association between level of interest to the field of surgery and knowledge. The mean score of Knowledge gained from personal studies and university education was significantly higher than media. According to standardized coefficient, course level was the most important predictor of knowledge in students. Table 3 shows the results of multivariate linear regression model.

#### Discussion

This study aimed to identify and to compare level of knowledge among medical students at Guilan University of Medical Sciences in clinical and pre-clinical courses with respect to the scope of plastic and cosmetic surgery during the second semester of 2017.



Figure 1. Frequency of knowledge in the two preclinical and clinical groups in three aspects of general, craniofacial, and cosmetic questions

	Mean	Standard deviation	P-value
Course level			0.001
Pre-clinical	32.11	(9.53)	
Clinical	38.83	(9.35)	
Gender			0.018
Female	36.67	(10.27)	
Male	35.05	(9.54)	
Marital status			0.511
Single	35.90	(10.03)	
Married	36.61	(9.63)	
History of plastic or cosmetic surgery			0.859
Yes	35.94	(9.99)	
No	36.08	(9.68)	
Desire to choose the field of:			0.001
Surgery	36.07	(9.19)	
Internist	34.30	(9.73)	
Others	37.93	(9.88)	
Not decided	34.60	(10.5)	
Sources of information			0.001
Media	31.60	(9.40)	
Personal studies	36.88	(10.22)	
University education	38.06	(9.40)	
Social media	34.90	(9.99)	
Level of interest for surgery		(10.3)	0.001
Low	34.5	(9.5)	
Medium	37.9	(8.9)	
High	36.5		

**Table 2.** Comparison of Knowledge Score According to Individual and Field Related Characteristics in the Preclinical and Clinical Students

Regarding frequency distribution of sources of information acquisition about plastic and cosmetic surgery, percentage of information acquisition from the media for pre-clinical group was higher than clinical group. Conversely, percentage of information acquisition from university education in clinical group was higher than pre-clinical group. Also, percentage of information acquisition from other sources, such as exploring the Internet and social networks, in pre-clinical group was almost 1.5 times higher than clinical group. In Ahmad et al.'s study, the more frequent sources of information acquisition were media, personal study, friends and the Internet, respectively (5). Also, medical students' inclination to pursue their education in this field could be attributed to factors like lack of interest, lack of adequate recognition about the scope of this field, and long period of study etc. Also, the similarity between sources of information could be due to advances of social networks and virtual space and socio-cultural similarities among our society and other studied societies.

In present study, the most frequent correct answers in general questions were related to reduction mammoplasty and benign skin lesion surgeries. (scare, verruca, lipoma surgery). The most frequent correct answers in craniofacial questions belonged to face abnormality surgeries, microscopic tissue transfer surgery and cleft lip and cleft palate surgery, respectively, while the most frequent wrong answer belonged to treatment of head and neck infection. With respect to cosmetic questions, the most frequent correct answers were related to abdominoplasty.

In Kling et al.'s the most frequent correct answers in general field belonged to reduction mammoplasty and breast reconstruction after mastectomy, while less than 50% of people responded correctly to hernia repair surgery, pressure sore treatment and chest wall reconstruction surgery.

Table 3.	Variables R	elated to	Students'	Knowledge	e about Plastic a	nd Cosmetio	c Surgery	Using	Multivariate	Linear Reg	ression	Model
									,		,	

Characteristics	<b>B</b> Coefficients	Standardized Coefficients	95% Confid	ence Interval for B	P-value
Course level (Clinical)	5.99	0.297	4.84	7.64	0.001
Gender (Male)	-1.44	-0.073	-2.72	0.17	0.03
Interest score to the field of surgery	0.29	0.078	0.05	0.53	0.018
Desire to choose the field of:		-0.05			
Surgery	Ref	0.01			
Internist	-1.82	-0.07	-4.18	0.53	0.13
Others	0.27		-1.51	2.06	0.76
Not decided	-1.47		-3.17	0.21	0.09
Sources of information					
Media	Ref				
Personal studies	3.77	0.14	0.77	5.97	0.01
University education	3.06	0.14	0.48	5.93	0.02
Social media	2.43	0.12	0.02	4.84	0.05

The most frequent correct answers in craniofacial field belonged to cleft lip and cleft palate surgery and the most wrong answers belonged to vascular abnormality surgeries. In cosmetic field, less than 50% of respondents responded correctly to all questions. Percent of correct answers were 66% for general questions, 51% for craniofacial and 90.7% for cosmetic questions. Less than 50% of students answered correctly to 8 of 11 questions in general field (72.7%); 5 of 10 questions in craniofacial field (50%) and 12 of 12 questions in cosmetic field (1).

In Abuakar et al.'s study, 14% of students believed that cosmetic surgery and plastic surgery are the same and 59% responded that these two field are different from each other (11). In Agrawal et al.'s study, cosmetic surgery was referred to as rhinoplasty and mammoplasty and less often for hand surgery, surgery of peripheral nerves, and scare repair by preclinical students (12). As observed, there are differences and similarities between present study and mentioned studies regarding level of knowledge about the scope of plastic and cosmetic surgery which can be attributed to the differences between sources of information, different curriculum in various geographical regions and cultural, social and economic differences. Also, the level of knowledge about plastic surgery mainly tends to cosmetic and beautification procedures which represents public's wrong images about the scope of these specialists that is especially resulted by wrong image portrayed by the media and social networks, lack of interest to study about this field and lack of adequate and correct clinical education for medical students about this subspecialty.

The results of this study showed that the level of good knowledge among clinical students was higher than preclinical students in all fields. In Abubakar et al.'s study, level of knowledge among students in grades 1-6 were investigated and the results showed that they most often recognized plastic surgery with beautification procedures (11).

The results of this study showed that highest level of knowledge was related to cosmetic questions followed by general questions and the least knowledge was about craniofacial questions. This wrong knowledge and tendency towards beautification procedures are due to public's wrong images about the scope of these specialists especially because of wrong image portrayed by the media and social networks, lack of interest to study about this field and lack of adequate and correct clinical education for medical students about this subspecialty. In Kling et al.'s study, students' knowledge in these three fields was similar to our study such a way that the most knowledge belonged to cosmetic field (90.7%) followed by general field (66%) and the least knowledge was about craniofacial field (51%) (1). The knowledge of female students was higher than males, which may be due to the greater importance they give to their apparent cosmetic and their look so learn more about the activities of the surgeons. Students who had a history of plastic and cosmetic surgery and those who was interested to pursue their education in surgery and other disciplines obtained higher scores on knowledge. In Abubakar's study, a significant relationship was found between knowledge about plastic surgery, marital status and history of plastic surgery but no statistically significant difference was found between males' and females' knowledge; only the results obtained about history of plastic surgery was consistent o our study and the two other findings was different from our study (11). This could be due to differences in curriculum in geographical regions, cultural, social and economic differences and different sources of information. We expect clinical students to be more interested to pursue their study in surgery and also in plastic and cosmetic field compared to pre-clinical students because of more passed units on general surgery, plastic and reconstructive surgery and also their more experience and knowledge. However, in this study the reverse happened and this could be due to pre-clinical students' knowledge about difficulties of surgery field and long period of education to get a specialty in subspecialty and being familiar with and interested in other fields.

A direct and significant relationship was found between age and level of interest to the field of plastic surgery with knowledge scores. Short internship for plastic and cosmetic surgery prevents students to receive accurate and complete education (10). Current preclinical curriculum is more focused on students' preparation for basic sciences like anatomy, physiology and pathology. These basic educations are fundamentals for developing personal interests and student's clinical reasoning. Also, it is a useful academic time period for students to explore faculty members to guide them how to choose their field of specialty (1).

In Conyarda et al.'s study, a gap was found between medical students' perception and reality of plastic surgery. Therefore, the authors suggested that more exposure and education is needed about this subspecialty (7). This indicates the unique role of medical universities in training future specialists in plastic surgery field and the necessity of presenting plastic surgery as an independent part of curriculum for medical students. However, the number of universities that currently offer plastic surgery as an independent part of curriculum is decreasing.

It is suggested that more attention should be paid to theoretical units on plastic surgery. Also, students should undergo a practical course about this field in their stager and internship in order to further their knowledge about this field which in turn accelerates referral processes, lower costs for patients and healthcare system.

We could not collect demographic information and the reason for students' inclination to participate in the study because of some research limitations including lack of interest, student's inclination to give their time to complete questionnaire and also moral considerations. Therefore, it is suggested that this issue is considered in the future.

# Conclusion

Medical student's knowledge about plastic and cosmetic surgery was moderate and the most knowledge was related to cosmetic questions and the least knowledge belonged to craniofacial questions. There was a significant relationship between student's characteristics and their level of knowledge about scope of plastic and cosmetic surgery including age, education level, gender, history of plastic surgery, propensity towards surgery or other disciplines to

## Farzan et al

pursue education and also knowledge acquisition about this field from university education.

### Acknowledgements

The authors would like to thank all students participated in this study.

### Ethical consideration

The study protocol has been approved by Institutional Review Board of Guilan University of Medical Science, Rasht, Iran.

## **Conflicts of interests**

Authors declared no conflict of interest.

### Funding

None.

## References

- Kling RE, Nayar HS, Harhay MO, Emelife PO, Manders EK, Ahuja NK, et al. The scope of plastic surgery according to 2434 allopathic medical students in the United States. Plast Reconstr Surg. 2014;133(4):947-956. doi: 10.1097/PRS.00000000000164.
- Nath SS, Roy D, Ansari F, Pawar ST. Anaesthetic complications in plastic surgery. Indian J Plast Surg. 2013;46(2):445-452. doi: 10.4103/0970-0358.118626.
- Morrison CM, Rotemberg SC, Moreira-Gonzalez A, Zins JE. A survey of cosmetic surgery training in plastic surgery programs in the United States. Plast Reconstr Surg. 2008;122(5):1570-1578. doi:10.1097/PRS.0b013e318188247b.
- 4. Panse N, Panse S, Kulkarni P, Dhongde R, Sahasrabudhe P.

Professionals in Pune, India: Do They Really Know What We Do? Plast Surg Int. 2012;2012:962169. doi: 10.1155/2012/962169.

- Ahmad M, Mohmand H, Ahmad N. Views of college students on plastic surgery. World J Plast Surg. 2013;2(2):104-110.
- 6. Tanna N, Patel NJ, Azhar H, Granzow JW. Professional perceptions of plastic and reconstructive surgery: what primary care physicians think. Plast Reconstr Surg. 2010;126(2):643-650. doi: 10.1097/PRS.0b013e3181de1a16.
- Conyarda C, Schaeferb N, Williamsa D, Beemc H, McDougalld J. The understanding of plastic and reconstructive surgery amongst Queensland medical students. JPRAS Open. 2016;8:14-18. doi: 10.1016/j.jpra.2016.01.001.
- Tambyraja AL, McCrea CA, Parks RW, Garden OJ. Attitudes of medical students toward careers in general surgery. World J Surg. 2008;32(6):960-963. doi: 10.1007/s00268-008-9529-5.
- Isiguzo CM, Nwachukwu CD. Knowledge and perception of plastic surgery among tertiary education students in Enugu, South-East Nigeria. Niger J Clin Pract. 2016;19(3):327-331. doi: 10.4103/1119-3077.179293.
- 10. Aykan A, Kurt E, Avsar S, Eski M, Ozturk S. The effect of educational internships on medical students' perceptions of plastic surgery. J Pak Med Assoc. 2017;67(1):66-72.
- Abubakar A, Jamda M, Ibrahim A, Ajani A, Iyun K, Opara K. University students and cosmetic surgery in Nigeria: A survey of perception, attitudes, and experiences. Nigerian Journal of Plastic Surgery. 2016;12(1):12-16. doi: 10.4103/0794-9316.193733.
- Agarwal JP, Mendenhall SD, Moran LA, Hopkins PN. Medical student perceptions of the scope of plastic and reconstructive surgery. Ann Plast Surg. 2013;70(3):343-349. doi: 10.1097/sap.0b013e31823b6c19.

Awareness and Perception of Plastic Surgery among Healthcare