Original Article

Knowledge, Attitude, and Perception of Plastic Surgery Among Medical Undergraduate Students, In a Medical College in Northern India

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Abstract

Background: The scope and spectrum of plastic surgery is underrepresented in the medical education resulting in its misrepresentation and misperception among medical students. We tried to understand the gaps in knowledge, attitude and perception of plastic surgery among medical students. This study aimed to comprehend the level of awareness, knowledge, and perception of plastic surgery among medical students in north-western Uttar Pradesh. **Material and Methods:** A self-administered questionnaire based cross-sectional research was conducted in 255 medical students. The responses were statistically analysed and corelations if any were evaluated. **Results:** An observation of moderate knowledge and neutral attitude and perception among medical students was made. Most of the participants were from phase I of training, were of age group and were females. The Association between various participant's socio-demographic characteristics with levels of knowledge, attitude and perception analysed using chi square, revealed statistically significant association of phase of training with knowledge and perception whereas age group was found to significantly impact perception level. However, Pearson correlation analysis found a weak positive, but non-statistically significant relationships between knowledge, attitude and perception ($r = 0.14$; $p = 0.069$), ($r = 0.087$; $p = 0.164$) and ($r = 0.046$; $p = 0.464$. **Conclusion:** Plastic surgery as a specialty has some gaps in knowledge, attitude and perception of medical students and more extensive incorporation of this speciality in form of formal training needs to be done in current medical curriculum in order to appropriately represent this surgical speciality.

Keywords: Attitude, knowledge, perception, plastic surgery, medical students.

Received: 05 January 2026 **Revised: 25 January 2026** **Accepted: 07 February 2026** **Published: 11 February 2026**

Introduction

Plastic surgery is a surgical specialty which deals with aesthetic restoration, reconstruction or augmentation or improvisation of human body appearance. It incorporates both reconstructive and cosmetic surgery.[1] According to the American Society of Plastic Surgeons, nearly 17.1 million cosmetic procedures and 5.8 million reconstructive procedures were performed in 2016 alone; this represents an increase in cosmetic procedures of 132% since 2000.[2]

The field of plastic surgery is a dynamic and evolving specialty, not restricted by anatomy or organ system; there are many facets to plastic surgery. Subspecialties of plastic surgery comprise of breast surgeries, cleft lip surgery, hand surgery, maxillofacial trauma, skin cancer, trauma reconstruction, burns, aesthetic surgery, oncology reconstruction, ophthalmic eye surgery, etc. Plastic surgery has been evolved to contribute in many complex areas, previously managed by other specialties.[3]

With the media communication and increasing dependency and use of social media platforms especially such as Instagram, and so many celebrities promoting and opening up about cosmetic surgery has made cosmetic surgery very popular.[4]

Plastic surgery as a medical specialty is poorly understood by many, including primary care physicians, nurses, medical students, and the public. There is a misunderstanding surrounding the scope of plastic and reconstructive surgery among both the public and professionals.[5]

This misperception extends to medical students worldwide. Medical students' awareness of plastic and reconstructive surgery has multiple implications. Poor awareness has repercussions for both future surgical and nonsurgical trainees. The latter is likely more significant as they will form a significant section of a plastic surgeon referral base.[6] In addition, an improved understanding would expedite the referral process, reducing the cost to both patients and the healthcare system. These misconceptions affect the specialty in a number of ways, including referral patterns and recruitment of medical students into residency programs.[7]

Despite the tremendous advancements in the field of plastic surgery, there seems to be a limited knowledge among the public

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DOI:
10.21276/amit.2026.v13.i1.357

How to cite this article: Prakash JS, Thomas M, Thomas MM.. Knowledge, Attitude, and Perception of Plastic Surgery Among Medical Undergraduate Students, In a Medical College in Northern India. Acta Med Int. 2026;13(1):387-394.

and among medical professionals regarding the spectrum of plastic surgery. We felt that understanding the attitude and perception of our medical students will be more vital than assessing the knowledge of the public.[8] To address issues around student interest and recruitment into the specialty, it is imperative to understand the factors influencing medical students and future clinicians.[9]

Many studies held in different countries worldwide discussed the perception and knowledge of plastic surgery among medical students.[10] However, after extensive literature search, we could not yield many studies done regarding the same in medical undergraduate students in India. We plan to undertake this study with an aim to ascertain current knowledge, attitude and perception among the medical students about the surgical procedures that a plastic surgeon performs.

Aim and Objectives:

Aim: To assess the knowledge, attitude, and perception of Plastic surgery among medical undergraduate students.

Objectives:

1. To assess the knowledge of Plastic Surgery among medical undergraduate students.
2. To assess the attitude towards Plastic Surgery among medical undergraduate students.
3. To assess the perception of Plastic Surgery among medical undergraduate students.

Materials and Methods

A cross sectional survey was conducted to assess the knowledge, attitude and perception of medical undergraduate students regarding Plastic Surgery, in a Medical College in Northern India. Approval for conducting this study was obtained (bearing reference number; IRB/118/2024) from Institutional Review Board (IRB). The filling of the questionnaire will be considered as giving consent by the participants. s constructed based on literature review of previously published relevant questionnaires and shared with the participants via social media platforms such as WhatsApp or email. The questionnaire comprised of three sections: demographic data, knowledge, attitude and perception sections. A pilot study on 25 (approximately 10 percent of total estimated sample size) medical undergraduate students was conducted and its face and content validities was examined by specialists in the field establishing a resulting in a Cronbach's alpha coefficient value of 0.824, indicating good internal consistency. In accordance with the findings of the pilot study, the questionnaire was modified. The participants included in the pilot study were excluded from the main study. In order to sustain the collected data's integrity, minimise response duplicity and have unique datasets from each participant, a technique was used to allow only one response per participant.

Study sampling: Using the standard formula for finite population correction, the sample size for this study was calculated. Keeping confidence interval 95%, the margin of error 5%, population proportion 50% and population size 750 the sample size was calculated to be 255 medical students. Representative sample of medical undergraduate students studying at Medical College were included.

Statistical analysis: SPSS version 25 was utilised for analysis. Descriptive statistics were used to describe the socio-demographic parameters of the participants and to describe their responses. Inferential statistical tests involved use of chi-square to test association of levels of knowledge, attitude and perception with socio-demographic variables while Pearson corelation utilised to see relationship between observed KAP sores. P value <0.05 was set as significant level.[11]

Results

A total of 255 participants were enrolled in the study. [Table 1] depicts the socio-demographic profile of the participants. Most of the participants were from phase II of their MBBS training. Mostly participants were from age group 21 -23 years i.e. 98 (38.4%). Gender-wise, 149 (58.4%) of the participants were females, while 106 (41.6%) were males.

Table 1: Sociodemographic profile of the participants

Characteristic	N	%
Phase of Training		
Phase I	69	27.1
Phase II	91	35.7
Phase III (Part I)	54	21.2
Phase III (Part II)	41	16.1
Age group		
18-20	71	27.8
21-23	98	38.4
24-26	45	17.6
more than 26	41	16.1
Gender		
Female	149	58.4
Male	106	41.6

[Table 2] depicts the assessment of participant's knowledge toward plastic surgery. Majority (72.5%) of the responders knew about the training required to become a plastic surgeon and procedures done by them (65.9%). Also, mostly the participants were aware that plastic surgery is not same as cosmetic surgery (69.4%), reason it's called "plastic" surgery (71%), the people it caters to (54.5%), it not being a 'scarless' surgery (52.2%) and possibility of being made into a ditto copy of a person of choice (56.5%). However, majority (61.5%) of the participant's still considered plastic surgery as a branch dealing with improving one's look or appearance.

Table 2: Assessment of participant's knowledge of Plastic Surgery

Question	N	%
Training required to be a plastic Surgeon in India is:		
Three years in general surgery post MBBS	24	9.4
Three years in general surgery post MBBS followed by three years residency in plastic surgery	185	72.5
MBBS	0	0
Don't know	46	18.0
Plastic surgeon does the following:		
Cleft lip and palate repair	25	9.8
Blepharoplasty	12	4.7
Burn Management	44	17.3
Thumb replantation	6	2.4
All of the above	168	65.9
Plastic surgery means the same as cosmetic Surgery		
Yes	43	16.9
No	177	69.4
Don't know	35	13.7
Plastic surgery called "plastic surgery" because:		
Plastic is utilised in surgical procedures	7	2.7
Post-surgery appearance becomes Plastic	21	8.2
Derived Greek word 'plastikos' meaning malleable or mouldable	181	71.0
Don't know	46	18.0
Plastic Surgery is a surgical speciality which caters only the eminent and the affluent people		
Yes	70	27.5
No	139	54.5
Don't know	46	18.0
Plastic Surgery is a" scarless" surgery		
Yes	78	30.6
No	133	52.2
Don't know	44	17.3
Plastic Surgery can make me a ditto copy of any famous person I choose to be		
Yes	54	21.2
No	144	56.5
Don't know	57	22.4
Plastic surgery is the branch of surgery which deals with improving one's looks/appearance		
Yes	157	61.6
No	93	36.5
Don't know	5	2

[Table 3] depicts the participants' attitude towards plastic surgery. It revealed a general positive or a neutral attitude towards plastic surgery. Most of the participant's displayed a negative attitude towards undergoing a plastic surgery themselves (67.5%) and had a neutral attitude towards plastic surgery being socially acceptable (45.1%). Majority of the participants demonstrated a positive attitude towards plastic surgery being a relevant super-speciality (92.9%), life changing field for patients (90.1%), while most of them implied a neutral attitude towards plastic surgery playing an essential role in trauma management (54.5%). As a career, majority of the participants had a neutral desire to pursue plastic surgery as a career (45.1%) however majority of them had positive attitude towards it being a career offering intellectual stimulation and variety (91.3%) and expressed positive attitude towards knowing more about the super-speciality (70.5%).

Table 3: Assessment of participant's attitude towards Plastic Surgery

Question	n	%
Would you at any point in life get plastic surgery done on yourself		
Positive	22	8.6
Negative	172	67.5
Neutral	22	8.6
Cosmetic Surgery is socially accepted		
Positive	54	21.2
Negative	86	33.7
Neutral	115	45.1
Do you think this surgical super-speciality is relevant in the field of healthcare		
Positive	237	92.9
Negative	4	1.6
Neutral	14	5.5
Plastic Surgery is a life changing field for patients		
Positive	230	90.1
Negative	4	1.6

Neutral	21	8.2
Plastic surgery offers intellectual stimulation and variety		
Positive	233	91.3
Negative	4	1.6
Neutral	18	7.0
Would you like to pursue plastic surgery as a career		
Positive	54	21.2
Negative	86	33.7
Neutral	115	45.1
Plastic surgery plays an essential role in trauma management		
Positive	54	21.2
Negative	62	24.3
Neutral	139	54.5
Would you like to know more about the plastic surgery super speciality		
Positive	180	70.5
Negative	45	17.6
Neutral	30	11.7

[Table 4depicts the participants' perception towards plastic surgery showing an overall neutral perception of plastic surgery. Most (36.5%) of the participants expressed desire to be familiarised more with plastic surgery through mandatory clinical postings. Majority (45.1%) of the participants had no apprehensions about getting plastic surgery done. Most of the participants (87.8%) had no religious or cultural conflict in getting plastic surgery done.

Majority of the responders perceived plastic surgery having broad scope (44.3%), requiring advanced skills and hard work (96%) and promising financial rewards and high prestige (69.8%). However, a large number (79.2%) of responders perceived that formal teaching or clinical exposure to plastic surgery within the undergraduate medical curriculum is inadequate.

Table 4: Assessment of participant's perception towards Plastic Surgery

Question	n	%
How do you think you can be familiarized more with plastic surgery		
Social Media	56	22.0
Mandatory clinical postings on a rotation basis	93	36.5
Frequent lectures on Plastic Surgery topics	70	27.5
Attending CMEs on Plastic Surgery	36	14.1
What are your apprehensions about getting plastic surgery done		
Permanent disfigurement	91	35.7
Mortality	19	7.5
Loss of function	30	11.8
None (Risks are same as any other surgery)	115	45.1
Plastic Surgery is not conflicting with your religious or cultural beliefs		
Positive	209	81.9
Negative	2	0.8
Neutral	44	17.3
Plastic Surgery has a broad scope of Practice		
Positive	113	44.3
Negative	11	4.31
Neutral	131	51.3
Becoming a plastic surgeon requires advanced skills and hard Work		
Positive	245	96.0
Negative	2	0.8
Neutral	8	3.13
Becoming a plastic surgeon accompanies high Financial Rewards and Prestige		
Positive	178	69.8
Negative	6	2.4
Neutral	71	27.8
Formal teaching or clinical exposure to plastic surgery within the undergraduate medical curriculum is inadequate		
Positive	202	79.2
Negative	16	6.3
Neutral	37	14.5

All KAP scores were categorised into poor (<60%), moderate (60-79%), and high (>80%) based on Bloom's cut off point. For knowledge, participants received 1 point for each correct answer and 0 points for others, resulting in a possible score range of 0 to 8. The minimum knowledge score was zero, maximum was 8 while mean was 4.35 ± 1.15.

Similarly for attitude and perception positive response was given score of 3 while neutral and negative scored 2 and 1 making attitude score range 0 to 24 and perception score 0 to 5 making perception score ranging from 0 to 15 with their respective means being 17.83 ± 3.5 and 10.51 ± 2.5.

[Figure 1] depicts the level of the participants knowledge,

attitude and practices regarding plastic surgery. Majority (42.7%) of the participants were having moderate knowledge about plastic surgery. While majority responders had neutral attitude (46.6%) and perception (44.3%) towards plastic surgery.

Table 5: Association between participant characteristics and level of knowledge, attitude and perception of plastic surgery

		Knowledge Level	Attitude level	Perception Level
Characteristics	**Category**	**X², p value**	**X², p value**	**X², p value**
Phase of training	Phase I	13.187, 0.04*	7.963, 0.241	37.04, 0.0005*
	Phase II			
	Phase III (Part I)			
	Phase III (Part II)			
Age Group (in years)	18 -20	8.201, 0.2241	1.961, 0.063	50.54, 0.0005*
	21 -23			
	24 -26			
	More than 26			
Gender	Female	0.315, 0.854	8.825, 0.062	0.496, 0.780
	Male			

*: statistically significant p value

Pearson correlation analysis found weak, non-statistically significant positive relationships between knowledge, attitude, and perception (r = 0.14; p = 0.069), (r = 0.087; p = 0.164), and (r = 0.046; p = 0.464), as depicted in [Table 6].

The Association between participants' socio-demographic characteristics and levels of knowledge, attitude, and perception was analysed using chi-square tests, revealing a statistically significant association between the phase of training and learning and perception. In contrast, age group was found to affect perception levels, as depicted in [Table 5], significantly.

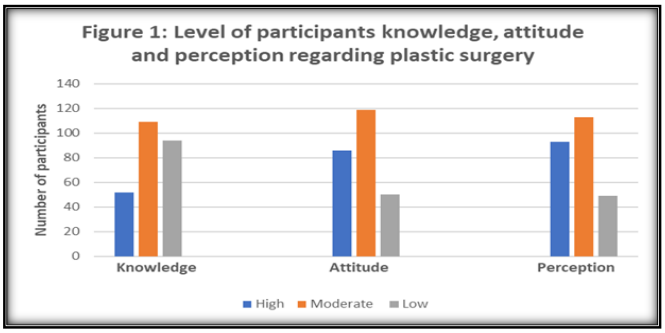

Table 6: Relationship between the participant's KAP scores

		Knowledge scores	Attitude scores	Perception scores
Knowledge scores	Pearson Correlation	1	0.114	0.046
	Sig. (2-tailed)		0.069	0.464
	N	255	255	255
Attitude score	Pearson Correlation	0.114	1	0.087
	Sig. (2-tailed)	0.069		0.164
	N	255	255	255
Perception scores	Pearson Correlation	0.046	0.087	1
	Sig. (2-tailed)	0.464	0.164	
	N	255	255	255

Discussion

This study assessed the knowledge, attitude, and perception of medical undergraduates regarding plastic surgery. Our research suggests that most participants were in phase II of their MBBS training. Mostly participants were from the age group 21 -23 years, i.e., 98 (38.4%). Gender- wise, 149 (58.4%) of the participants were females, while 106 (41.6%) were males. In another study among medical students, the majority of respondents were females (52.4%) and were from phase 1 (27.3%) of MBBS training.[12]

Most (35.7%) of our study participants were from Phase II. At the same time, another study reveals that the majority (48%) of the medical students undertaking such studies are in the third year of training.[13] Our study revealed moderate knowledge about plastic surgery. In contrast to these findings, another study of Middle Eastern medical students found poor knowledge among 78.3% of the students.[14] Similarly, a study carried out in Indian medical undergraduates revealed low knowledge regarding plastic surgery among medical students. The 15 hours of training required to be a plastic surgeon were somewhat clear to the students. This is parallel to another study that found 96% of respondents were well-versed in the prerequisite medical training to become a plastic surgeon.[15,16] However, when they were asked if they were aware of the procedures done by a plastic surgeon. Most of the respondents (65.9%) cited all of the above, i.e., they were aware of the diverse procedures performed by plastic surgeons. Our findings contrast with another study, which found that burns were the most frequently reported surgical management by plastic surgeons, according to medical students.[17]

In another study, it was observed that although medical students were familiar with cosmetic procedures and burns managed by plastic surgeons, they were unfamiliar with microvascular and maxillofacial surgeries performed by them.[18] This could be a consequence of limited or no exposure of medical students to plastic surgery in their training period. Most respondents demonstrated clear knowledge that plastic surgery is distinct from cosmetic surgery. This is in contrast to another research in

which most of the participants considered plastic surgery synonymous with cosmetic surgery. However, as per many research projects conducted, it was observed that plastic surgery is considered synonymous with cosmetic surgery.[19]

The majority of the respondents in our study were aware of the nomenclature of "plastic Surgery". These findings along with knowledge of nomenclature of "plastic surgery", the people it caters to it not being a 'scarless' surgery and no possibility of being made into a ditto copy of a person of choice reveals an upcoming clarity in the thought process of the medical students is a good indicator of spreading awareness about plastic surgery despite social media continuing to be key information provider in this context.[20]

Our research revealed that a vast majority of responders knew about plastic surgery, with a focus on enhancing one's look. This is in alignment with findings of another research that revealed that most of the participants considered plastic surgery as a branch to improve one's appearance.[21] It revealed a general positive or a neutral attitude towards plastic surgery. Another research mirrors this finding and displays an overall positive attitude toward plastic surgery.[22]

Majority of the responders reported not having a desire to undergo plastic surgery themselves. This can be attributed to reduced personal need for the same and ethical, social, and cultural concerns.[23]

A neutral attitude towards plastic surgery being socially acceptable was observed in the vast majority of responders. An increase in the growing acceptance of plastic surgery has been observed worldwide.[24] The majority of participants demonstrated a positive attitude towards plastic surgery as a relevant super-speciality and as a means of changing patients' lives. This observation resonates with findings from another research study, in which participants viewed surgery as a highly relevant medical super-speciality.[25]

Even though most of the responders displayed a neutral attitude towards trauma management being an integral part of plastic Surgery, and towards it being an intellectually stimulating career, a large proportion expressed a neutral desire to pursue it as a career. It is reported that several factors can be implicated in the reduced desire as a career goal, such as under-exposure of medical students to plastic surgery in their training period, perception as a highly competitive super specialty, and a skewed misrepresentation of it in social media.[26]

Moreover, plastic surgery is often associated with celebrities, social media influencers, and famous Instagram personalities, which can also be a deterring factor for students to take it as a career choice, believing it doesn't cater to the common population. Upgraded and updated reformations in education are required, along with programs spreading awareness about what this super-speciality entails and who it caters to.[27]

It revealed an overall positive or neutral perception of plastic surgery. The vast majority of participants exhibited keen interest and inquisitiveness to become more familiar with the branch of plastic surgery through rotatory clinical postings during their training period. This is consistent with other research suggesting similar findings.[28]

Most respondents expressed no hindrance due to their religious or cultural beliefs and practices in getting plastic surgery done. However, some research does suggest an impact of religious values on getting plastic surgery done.[29]

A high proportion of the subjects researched perceived that plastic surgery as a career offers a wide spectrum, demands up-to-date surgical skills, and is a highly prestigious and financially rewarding choice. These findings are similar to those observed in another study, in which participants recognised plastic surgery as a financially rewarding career choice.[30] Mostly, the responders had a perception that there is a need for formal education and teaching to be incorporated in the medical curriculum. This aligns with research findings indicating that medical students acknowledged the incorporation of plastic surgery into the medical undergraduate curriculum.[31,32]

The level of knowledge and perception was influenced by the training phase and age, as per our research findings. Another research also revealed a significant impact of the year of training on knowledge scores.[33]

Our research, despite depicting moderate knowledge, attitude, and perception, does highlight some gaps among the three parameters studied. To tackle the same, the curriculum of medical undergraduates in India can be updated and upgraded to incorporate more elaborate and mandatory formal training and exposure to plastic surgery as a speciality, with clinical postings, CMEs, and frequent lectures emphasizing the diverse spectrum and scope of the speciality. The myths about this speciality need to be busted to offer knowledge and clarity to students to consider plastic surgery as a career choice.[34,35]

Limitations: Our research is not free from limitations. First of all, the use of self-administered questionnaires can result in response bias. Secondly, the research was restricted to one institution, hence the results cannot be generalised. Thirdly, the use of convenience sampling can again limit representativeness. However, it was just an initial attempt to assess where the medical undergraduates at our institute stand in this context and take relevant steps to overcome the barriers and gaps in knowledge, attitude, and perception of medical students towards plastic surgery.

Proposed recommendations

- Incorporating a lecture solely emphasizing what this speciality of plastic surgery entails.
- Mandatory clinical postings to the plastic surgery department
- Telehealth and tele-education can be utilised to spread awareness not only in students but amongst the healthcare professionals as well as the general population. This will also encourage appropriate and timely referrals to this specialty.
- Social media can be utilised to bust the myths about the specialty and emphasize the micro-vascular and reconstructive aspects of the specialty rather than the cosmetic aspects alone.
- Embracing more exposure to plastic surgery in the current medical education curriculum

Conclusion

Post-analysis of our research findings, we observed some gaps in the knowledge, attitudes, and perceptions of the plastic surgery specialty among the trained medical undergraduates. We acknowledge that more clarity and exposure to this speciality

need to be incorporated into the current medical education curriculum to do justice to it and encourage students to consider it as a career choice.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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