Medical Student Perception of Plastic Surgery and the Impact of Mainstream Media

La perception de la chirurgie plastique par les étudiants en médecine et les effets des médias de masse

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Abstract

Background: Plastic surgery as a discipline is poorly understood by many, including primary care physicians, nurses, medical students, and the public. These misconceptions affect the specialty in a number of ways, including referral patterns and recruitment of medical students into residency programs. The reason for these commonly held misconceptions has not yet been addressed in the plastic surgery literature. As such, we assessed medical students' knowledge and perceptions of plastic surgery as a discipline and explored factors influencing these opinions. **Methods:** To assess medical students' knowledge and perceptions of plastic surgery, we conducted an online survey. A total of 231 medical students responded. Interviews were then conducted with 2 focus groups, in which we explored the survey results and reasons behind these misconceptions. **Results:** As with previous studies, medical students showed a gap in knowledge with respect to plastic surgery. Although they were generally aware that plastic surgeons perform cosmetic procedures and treat burns, they were largely unaware that plastic surgeons perform hand and craniofacial surgeries. Focus groups revealed that television plays a large role in shaping their ideas of plastic surgery. **Conclusion:** Medical students have a skewed perception of the discipline of plastic surgery, and this is largely influenced by television. Interventions aimed at educating medical students on the matter are recommended, including a greater presence in the preclerkship medical school curriculum.

Résumé

Historique : La chirurgie plastique est une discipline que bien des gens comprennent mal, y compris les médecins de première ligne, les infirmières, les étudiants en médecine et le public. Ces méconnaissances nuisent à la spécialité de diverses façons, ce qui inclut le mode d'orientation et le recrutement d'étudiants en médecine au sein des programmes de résidence. Les raisons de ces méconnaissances courantes n'ont pas encore été abordées dans les publications sur la chirurgie plastique. Les auteurs ont donc évalué les connaissances et les perceptions des étudiants en médecine à l'égard de la chirurgie plastique et ont exploré les facteurs qui influencent leurs opinions. **Méthodologie :** Pour évaluer les connaissances et les perceptions des étudiants en médecine à l'égard de la chirurgie plastique, les auteurs ont procédé à un sondage en ligne. Au total, 231 étudiants en médecine y ont répondu. Ils ont ensuite organisé des entrevues auprès de deux groupes de travail, et ils en ont profité pour explorer les résultats du sondage et les raisons de ces méconnaissances. **Résultats :** Comme dans les études antérieures, les étudiants en médecine ont démontré des lacunes à l'égard de la chirurgie plastique. Même s'ils savaient généralement que les plasticiens effectuent des interventions esthétiques et qu'ils soignent les brûlures, ils ignoraient largement que les plasticiens effectuent des chirurgies de la main et des opérations craniofaciales. Les groupes de travail ont révélé que la télévision joue une large part dans leur conception

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de la chirurgie plastique. **Conclusion :** Les étudiants en médecine ont une conception biaisée de la chirurgie plastique, en grande partie à cause de la télévision. Des interventions visant à informer les étudiants en médecine à cet égard sont recommandées, y compris un plus gros volet dans le cursus médical préclinique.

Keywords

medical student, misconceptions, television, qualitative, perception, media, cosmetics, scope of practice

Introduction

Plastic surgery is a particular versatile specialty, with surgeons performing a variety of different reconstructive and aesthetic procedures. Members of the public and health professionals, however, are not always familiar with the breadth of practice within the discipline¹; it is thought of by many to be largely cosmetic in nature. Several studies have found that medical students hold misconceptions about plastic surgery; however, no recent studies have examined the factors influencing these misconceptions. Given that these medical students go on to become practicing physicians, their misconceptions about plastic surgery may influence the discipline as a whole, affecting referral patterns, attitudes, and whether medical students choose to pursue this as a career option. The purpose of this study was to assess medical student perceptions of plastic surgery and explore the influences behind particular beliefs, including the impact of media.

Materials and Methods

Approval was obtained from the research ethics board of Dalhousie University prior to proceeding. A survey was developed by our research group to assess medical student perceptions regarding the discipline of plastic surgery. The survey was first piloted among a small sample of medical students, and feedback was used to make several improvements. The preliminary data from the pilot study were not included in the final assessment.

The final version of the survey was comprised of 17 questions, including demographic information, such as age, sex, and year of study. Other background information was investigated, including medical students' exposure to various surgical disciplines, their area of interest for future practice, and their prior exposure to medical-themed television. Respondents were asked to compare plastic surgery to 6 other surgical disciplines (general surgery, neurosurgery, ophthalmology, oral and maxillofacial surgery, orthopaedics, and otolaryngology) to determine whether which discipline:

- required the most skill,
- was most deserving of pay,
- was most deserving of research funding,
- was the most hardworking, and
- made the greatest impact on patients' lives.

Finally, the participants' understanding of the scope of plastic surgery was tested by asking them which specialty was most appropriate to deal with a variety of medical conditions, most of which would generally fall under the purview of a plastic

surgeon. These included brachial plexus injuries, correction of congenital craniofacial abnormalities, ectropion repair, hand fractures, breast reconstruction, and burn care. Several non-plastic surgery conditions were included (eg, inguinal hernia, shoulder dislocation) in an attempt to blind the respondents to the nature of the question.

The first part of the study involved inviting all medical students attending Dalhousie Medical School (Nova Scotia, Canada) during 2013 to participate in an online survey. A total of 214 students across all 4 years of study provided informed consent and completed the study. Students accessed and completed the survey through a weblink, using the survey program *Opinio*. At the completion of the survey, an information box appeared informing them that the purpose of the study was to assess knowledge and perceptions of plastic surgery.

The second component of the study involved interviews with focus groups to obtain more qualitative data on the students' perceptions and the factors influencing these attitudes. After the online survey was completed and the purpose of the study was revealed, respondents were asked to participate in a focus group interview. An honorarium was offered as compensation for participation. Sixteen respondents participated and were divided into 2 groups of 8. Each session was 90 minutes in length, and a set of guiding open-ended questions with prompts were used to direct the discussions. The sessions were audio recorded and later transcribed for analysis. Results were analyzed by grouping the transcribed text into major themes, which were then summarized. Pertinent quotations were also included.

Results

Participants

Two hundred fourteen students completed the survey. Participant age ranged from 21 to 46 years. Forty-two percent of respondents were male and 58% were female. Respondents spanned all 4 years of medical school, with a majority of respondents in the first and second year of medical school.

Knowledge of Plastic Surgery

Both the survey and the focus groups identified that there exists a gap in knowledge among medical students regarding the scope of practice of plastic surgeons. Although most students in the survey said they would refer to a plastic surgeon for breast reconstruction, fewer students would consider referring to plastic surgeons for hand surgeries (Figure 1). Similarly, in the focus groups, all students knew that plastic

Figure 1. Survey respondents: Percentage of medical students who would refer to plastic surgery versus other disciplines for the listed surgical procedures.

Figure 3. Percentage of medical students who would refer to plastic surgery versus other disciplines for the listed surgical procedures.

Figure 2. Percentage of medical students who would refer to plastic surgery versus other disciplines for the listed surgical procedures.

Figure 4. Number of respondents who ranked each surgical specialty in "top 2" for making the most amount of difference in patients' lives.

surgeons perform breast reconstruction; however, several first year students in the groups were unaware that plastic surgeons routinely perform hand surgery.

In the survey, a high proportion (93%) of students indicated that plastic surgeons are the most appropriate specialty for burn management (Figure 1). Focus group participants were also highly aware that plastic surgeons routinely treat patients with burns. However, only 40% of respondents chose plastic surgery as the specialty for management of pressure ulcers (Figure 2). The majority of respondents believed that general surgeons, rather than plastic surgeons, are the most appropriate consult service for managing pressure ulcers.

The largest gap in knowledge apparent in the survey was with respect to craniofacial surgery (Figure 3). For example, only 15% of respondents indicated that plastic surgeons should be referred to for orbital floor fractures and only 39% said that plastic surgeons should be involved in cleft lip/cleft palate surgeries. Interestingly, otolaryngology was felt by the respondents to be the most popular choice for cleft lip/cleft palate surgeries.

Students were also asked which surgical specialties made the most difference in their patients' lives, required the most skill, and were the hardest working. Interestingly, students felt that the practice of general surgeons and neurosurgeons made the most difference in their patients' lives, with ENT ranking low and plastic surgery in the mid-range (Figure 4). Plastic surgery was felt to require a significant level of skill, comparable to that of neurosurgery and OMF, in contrast to general surgery and orthopedic surgery (Figure 5). Finally, general surgeons and neurosurgeons were felt to be the most hardworking specialists, with plastic surgeons ranking in the middle of the specialties, and ENT and ophthalmology viewed as the least intensive.

Focus group participants in the third and fourth year of medical school from both groups explained that as they progressed through their training, they became more familiar with the breadth of scope of practice of plastic surgeons. Even those who had not completed rotations in plastic surgery gained an increased knowledge through their interactions with plastic surgery in a consult context.

Role of Media in Perceptions

In both focus groups, when participants were asked what they thought of when they heard the words "plastic surgery," the

Figure 5. Number of respondents who ranked each surgical specialty in “top 2” for the most skilled.

immediate emerging themes were Hollywood, television, and cosmetics. Within the first minute of both sessions, a discussion of popular television programming featuring plastic surgeons ensued without any specific prompting questions. Across both focus groups, students followed programs such as Gray’s Anatomy, Nip/Tuck, and The Swan; by far, the most popular was Gray’s Anatomy. The survey revealed that 95% of medical students had seen at least 1 episode of Gray’s Anatomy and 75% had viewed more than 3 seasons.

Of note, several students in both focus groups commented that prior to medical school, most of their plastic surgery knowledge was related to what they heard on television. One student reported that “All of my knowledge about plastic surgery is from Gray’s Anatomy.” Most students agreed that Hollywood, television programming, and the media contribute to the image that plastic surgery is a discipline consisting mainly of cosmetic surgery. One student pointed out that these perceptions of plastic surgery as a cosmetic discipline exist outside of just medical-themed television, particularly in reality shows, and is generally seen in a negative light. One student dissented, explaining that “[On Gray’s Anatomy] the plastic surgeons do a lot of reconstructive surgery too. They work in the burn units—not only with cosmetics. That’s how I know plastic surgeons do more than just cosmetics—from the show. I think the show actually helps dispel the idea that plastic surgery is just cosmetics.”

Interventions

When asked whether they thought interventions were necessary, such as increased education regarding the scope of practice of plastic surgeons, focus group participants had mixed views. In general, they did not believe that public intervention would be beneficial. They did, however, see a need for more education of medical students. They said that medical students could not only benefit from education about plastic surgery but also about surgical disciplines more generally. Both groups emphasized that they had little-to-no exposure to plastic surgery in the preclerkship years, unless they chose to do an

Figure 6. Number of respondents who ranked each surgical specialty in “top 2” for the hardest working.

elective in this area. They did, however, receive lectures from other surgical disciplines (eg, general surgeons, oromaxillofacial surgery). One student suggested that there be social nights, where medical students could get to know plastic surgeons and residents, with a chance to ask pertinent questions about the specialty. Other students believed that a booklet geared towards educating first year medical students on the different surgical specialties could be developed and distributed.

The students also questioned whether the same knowledge gaps were occurring among other physicians. One participant suggested the creation of a “consult database,” where students, residents, and physicians alike could look up options if they were unsure about who to consult for a given condition.

We also raised this issue with the focus participants. Some would have preferred to have had the option to rank all specialties as the same. However, others said that being obligated to rank the disciplines forced them to truly reflect on what they believed. One participant commented that students often want to complete surveys as soon as possible, and ranking the specialties as “same” down the line would have been a convenient shortcut. Another participant felt that it was difficult to discriminate, for example, their fourth choice versus fifth, but that it was easier to rank their top couple of choices versus their last. Analyzing the data in terms of participants’ top 2 choices was done for this reason. Another potential weakness is with respect to assessing student knowledge. When asking which specialty they would choose for referral of the given conditions, we did not permit more than 1 selection, which could have skewed our results.

Discussion

Misconceptions about the discipline of plastic surgery are held by various groups, including the public,² primary care physicians,³ residents,³ and medical students.⁴ Of the studies addressing medical student knowledge, there is a consensus that students, like other groups, are more knowledgeable about the cosmetic side of plastic surgery and about also burns.^{4,5} In a South African study, only 36% of medical students appreciated

that plastic surgeons routinely performed hand surgeries.⁴ In a British study, only 33% of students surveyed would refer patient with a cleft lip to a plastic surgeon; oromaxillofacial surgery and otolaryngology were instead selected.⁵ Despite the geographical difference, these results are highly aligned with our study, substantiating that medical students do not have a full understanding of what plastic surgeons do.

Our study was the first study to explore the concept of media influence of plastic surgery in a focus group setting. Students believed television programming featuring plastic surgeons, and even programs with plastic surgery as a “side theme,” influenced their perceptions. Since medical students have a skewed understanding of the scope of practice of plastic surgeons, it is not surprising that survey respondents did not rank them very highly in terms of potential impact. This may have consequences in terms of who chooses to enter the discipline. If students enter the field of medicine in order to make a difference in the lives of their patients, why would they choose to enter a specialty where they believe they are not doing so?

Although medical student knowledge about the different surgical disciplines increases as they progress through their clerkship years,⁴ the initial lack of knowledge can have major effects. For example, matching to a residency program in plastic surgery can be challenging. In Canada in 2013, only 53% of applicants who wanted to match to the competitive specialty of plastic surgery succeeded in doing so.⁶ Completing research and electives in the discipline of plastic surgery enhances a student’s chances of obtaining a residency position, and early on in the training process is a time during training where students have more time available for such activities. However, if medical students do not realize what plastic surgeons do until their third year and thereafter decide on plastic surgery as a career, it may be more difficult to develop a competitive application.

As suggested by medical students in the focus group, a resource informing them about not only about plastic surgery, but about all surgical disciplines, would be of use. Incorporating plastic surgery into the curriculum in the first or second year of medical school is another opportunity for education. The suggestion by 1 student that having a database consisting of who to consult for which medical problem is also noteworthy.

Although the medical students in the focus groups did not believe it was important for the public to be more informed about the scope of plastic surgeons, 1 study emphasized its importance,⁵ as it is likely to influence political decisions and funding. With 95% of medical students having seen at least 1 episode of *Gray’s Anatomy* and 75% having seen at least 3 seasons of the series, the potential for such programming to influence perceptions is enormous.⁷

Interestingly, across the literature, the public, physicians, and students alike are well aware that plastic surgeons handle cosmetic procedures and burns. Even in a study by Park et al. in 1998, the public knew that plastic surgeons treated patients with burns.¹ *Gray’s Anatomy*, in addition to adding to the

stereotype that plastic surgeons are egotistical, attractive, and mainly focus on cosmetic surgery, also taught some of the medical students in the focus groups that plastic surgeons treat patients with burns.

Using media as a tool to promote more accurate and progressive images of medicine is not a novel concept.⁷ Dr Ron Stewart, former Minister of Health in the province of Nova Scotia, Canada, used the power of television to influence social change on a large level. Although working as a physician in a Los Angeles emergency department in the 1970s, he also served as a consultant for the popular medical television program “Emergency!” It was one of the first reality medical television programs and a precursor to *ER*. He was the main medical consultant for the show and helped to create a fictitious medical model that resembled the model he envisioned for a real-life emergency medical system.⁸

The program, which premiered as an authentic television series in 1972, featured paramedic units working for the Los Angeles County Fire Department providing emergency services. At the time, North America was home to few of such units, but in the 10 years that followed, prehospital care delivered by paramedics became the norm; the EMS Act was passed by the US Congress in 1973. The television program had laid the groundwork for Dr Stewart’s vision of emergency medicine.⁸ Arguably, a similar approach could be taken to help educate the public about plastic surgery. One study highlighted documentary following plastic surgeons performing cleft palate surgeries in Pakistan,⁵ and how that improved awareness of the positive impact that plastic surgeons can have on people and their quality of life. We agree that there is a need for more media productions, such as this, that portray plastic surgery in a positive light. However, the current norm in the media continues to focus on cosmetics. A new reality television series, *Botched*, premiered in 2014, where a famous Los Angeles-based plastic surgeon focuses on correcting former “botched” plastic surgeries, with additional plastic surgery.⁹ Cosmetic surgery is a core component of plastic surgery, but the current representation of plastic surgery in the media is so one-sided that it has resulted in serious misconceptions about the discipline, which could affect funding patterns and political decisions.

Limitations

The study had a number of limitations; the ranking scale used in the study is 1 example. When asking respondents to rank impact, work ethic, and level of skill, we did not let them indicate whether they thought all professions should be ranked the same. This was done intentionally in order to draw out any biases. We did leave an open-ended section so respondents could share any additional comments, and 7 respondents brought this up as an issue in this section.

In conclusion, this study has shown that medical students have many misconceptions about the scope of practice of plastic surgery. These misconceptions are based on lack of education and exposure to the discipline in their early years of training, as well as the influence of popular media. In addition to

interventions aimed specifically at medical student education, the media represents an ideal medium with which to change public perception of plastic surgery on a large scale, and for the better, so that the life-changing and quality-of-life-improving work of plastic surgeons is better recognized and appreciated.

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