



Plastic surgeons as hand surgery specialists: determinant factors of public's perceptions

Cirurgiões plásticos como especialistas em cirurgia de mão: fatores determinantes da percepção do público

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■ ABSTRACT

Introduction: To assess the possible determinants that lead public to choose plastic surgeons as hand surgery specialists. **Methods:** General public members (n = 701) were asked to choose one or two specialists that they perceived to be an expert in 11 hand surgery-related scenarios. Bivariate and multivariate analyses were applied to assess the possible determinants (socio-demographic data, source of reported information, and previous plastic surgery contact) of public choice of plastic surgeons as experts in the hand surgery-related scenarios. **Results:** A significantly (all $p < 0.05$) poor understanding of the role of plastic surgeons was seen in infectious hand injury, hand tumor, hand fracture, hand tendon injury, carpal tunnel syndrome, rheumatoid arthritis deformity, and dupuytren contracture. Age was a significant (all $p < 0.05$) determinant of plastic surgeon as a response pattern. **Conclusion:** Participants' age was a determinant of public choose plastic surgeons as experts in hand surgery area.

Keywords: Brazil; Surgery plastic; Hand/surgery; Social perception.

■ RESUMO

Introdução: O objetivo deste estudo foi avaliar os possíveis determinantes para o público escolher os cirurgiões plásticos como especialistas em cirurgia de mão. **Métodos:** Membros do público (n = 701) escolheram um ou dois especialistas que eles acreditassem serem experts para 11 cenários relacionados à cirurgia de mão. Análises bivariadas e multivariadas foram aplicadas para avaliar os possíveis determinantes (dados sociodemográficos, fontes de informações e contato prévio com a cirurgia plástica) para o público escolher os cirurgiões plásticos como especialistas em cirurgia de mão. **Resultados:** Houve uma compreensão limitada ($p < 0,05$ para todas as comparações) sobre o papel dos cirurgiões plásticos em infecção da mão, tumor da mão, fratura da mão, lesão tendinosa da mão, síndrome do túnel do carpo, artrite reumatoide e contratura de Dupuytren. Apenas a idade foi um ($p < 0,05$ para todas as comparações) determinante significativo de cirurgião plástico como um padrão de resposta. **Conclusão:** A idade foi um fator determinante da escolha pública de cirurgiões plásticos como especialistas em arena de cirurgia da mão.

Descritores: Brasil; Cirurgia plástica; Mãos/cirurgia; Percepção social.

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INTRODUCTION

Plastic surgery is recognized as a broad-based medical specialty with emphasis on areas such as breast, craniofacial, burn, aesthetic, hand surgery, among others¹. Therefore, it is paramount that all of the plastic surgery community gives attention to the alarming data about the lack of knowledge, misconceptions, and underestimation of medical and nonmedical subjects regarding the field of plastic surgery practice presented in a number of studies worldwide²⁻¹⁰.

Examining public's perception of plastic surgeons' practice is the basics to support health policy decisions, to designate research funding, and to design tailored patient information to update the public regarding the diversity and nature of plastic surgeons' expertise⁵⁻⁸. However, the public's perceptions of plastic surgeons, particularly in the hand surgery arena, have received little attention in previous surveys⁵⁻⁸. Furthermore, the possible determinant factors of public's perceptions have been poorly evaluated in previous studies⁵⁻⁸.

OBJECTIVE

This cross-sectional study assessed the possible determinants that lead public to choose plastic surgeons as an experts in the hand surgery-related scenarios. We hypothesized that health care professionals and subjects who had previous exposure to plastic surgeons during clinical/surgical consultations would have a better understanding of the role of plastic surgeons as hand surgery specialists compared with their peers who did not have contact with this specialists.

METHODS

An anonymous survey with closed-ended questions was randomly applied to general public members at public places in southeastern Brazil from September to October 2014. All questions were multiple-choice, included 11 hand surgery-related scenarios, and were adapted from previous surveys^{2-5,7-10}.

Respondents were asked to select one or two specialists (general surgeons, dermatologists, orthopedic surgeons, ophthalmologists, vascular surgeons, plastic surgeons, otolaryngologists, head and neck surgeons, or neurosurgeons) who they perceived to be an expert for each question. All questions and specialists were randomly organized.

All respondents were not informed about the plastic surgery source and the purpose of the survey, and none of them could access a question already answered. Further questions allowed participants to indicate socio-demographic data (gender, age, marital

status, religion, education level, and professional status), source of information reported in the scenarios (e.g., mass media, personal relationship or general practitioners) and prior exposure to plastic surgery (consultation or surgery).

Participants who were younger than 18 years or did not choose at least one response for each question were excluded from the study. The study was carried out in accordance with the ethical standards of the 1964 Declaration of Helsinki and its subsequent amendments.

Statistical Analysis

For the descriptive analysis, we used means for metric variables, and percentages were given for categorical variables. Response profiles were defined as: "plastic surgeon alone" (respondents listing only plastic surgeon as expert), "plastic surgeon combined with other specialists" (respondents listing plastic surgeon and others as experts), or "no plastic surgeon" (no respondents listing plastic surgeon as expert)³.

All scenarios were also divided into two percentage response patterns: plastic surgeons most frequently chosen and plastic surgeons infrequently chosen (plastic surgeons selected by > 70% and < 30% of respondents, respectively). The frequency distribution was calculated for each specialist, and "plastic surgeons" response was identified as the primary variable of interest. We used as statistical comparisons the ANOVA, Tukey's multiple comparisons, equality of two proportions, paired student's *t*, X^2 , and confidence interval for the mean tests. The overall average of responses per plastic surgeons was used in the comparisons made among specialists.

A multiple linear regression analysis was also performed to determine which independent variables (socio-demographic data, source of reported information, and prior plastic surgery contact) were significant predictors of "plastic surgeons" as the response (dependent variable). All data were analyzed using SPSS V17.0 (Chicago, IL, USA), and values were considered significant with a confidence interval of 95% ($p < 0.05$).

RESULTS

A total of 730 participants responded the survey. Twenty-nine (3.97%) surveys were incomplete, and data were analyzed from 701 (96.03%) participants. There was a significant predominance (all $p < 0.05$) of subjects between 18 and 30 years of age (53.6%), non-health care professionals (80.3%), individuals with high school education (44.5%) or college education (university) (47.5%), and without prior plastic surgery interaction

(73.9%). The mass media (81.6%) was the main (all $p < 0.05$) source of reported information. There were no significant (all $p > 0.05$) differences in comparisons of gender, marital status and religion.

“Plastic surgeon alone” was chosen by more than 70% of respondents and less than 30% of responded none (0%) in the 11 (100%) hand surgery-related scenarios (Table 1). “Plastic surgeon combined with other specialists” was significantly (all $p < 0.05$) more identified as an expert than other response patterns in two (18.18%) hand surgery-related scenarios (hand burn management and hand transplantation surgery), whereas “no plastic surgeon” was significantly (all $p < 0.05$) more recognized as an expert in nine (81.81%) hand surgery-related scenarios (Table 1).

A comparative analysis of the overall average of responses (all 11 hand surgery-related scenarios) revealed that plastic surgeons (3.57 ± 2.39) were significantly (all $p < 0.05$) more identified as experts than all other overlapping specialists (neurosurgeon: 2.05 ± 1.50 ; vascular surgeon: 1.69 ± 1.75 ; general surgeon: 0.39 ± 0.49 ; ophthalmologist: 0.003 ± 0.05 ; head and neck surgeon: 0.001 ± 0.04 ; dermatologist: 0.001 ± 0.001 ; and otolaryngologist: 0.001 ± 0.001), except for orthopedic surgeon (7.91 ± 2.04). In the bivariate and multivariate analyses, only age was (all $p < 0.05$) a determinant of the plastic surgeon response (Tables 2 and 3).

DISCUSSION

Different specialists (e.g., general surgeons, orthopedic surgeons, and plastic surgeons) played a pivotal

role in the creation, development, and establishment of hand surgery as a specialty worldwide^{1,11}. However, several surveys²⁻¹⁰ have revealed a lack of knowledge and comprehension of plastic surgeon's practice in the hand surgery field. These previous surveys²⁻¹⁰ evaluated the perceptions of outpatients, medical students, primary care physicians, among others.

However, only few prior surveys^{5,7-10} included the public's perception of plastic surgeons in the hand surgery arena, and there is limited similar data from a Brazilian plastic surgery perspective¹²⁻¹⁵. In fact, we¹²⁻¹⁵ previously demonstrated that Brazilian medical residents' and public's perceptions of plastic surgery practice are limited in Brazil. We are not aware of any data on the relationship of independent variables with public's perceptions of the plastic surgeons as hand surgery specialists. Therefore, we sought to statistically correlate independent variables with the public's choice of plastic surgeons in hand surgery area.

We showed that plastic surgeons were significantly less identified as experts than other specialists in different hand surgery-related scenarios, including hand interventions fundamental to plastic surgery as a broad-based medical specialty such as hand tumor surgery, hand fracture management, hand tendon surgery, carpal tunnel release surgery, rheumatoid arthritis deformity surgery, and dupuytren contracture surgery.

These findings demonstrated that the knowledge and perceptions of plastic surgeons as hand surgery specialists are not well-known and widespread among Brazilian public members, similar to the trends

Table 1. Public's perception of the plastic surgeons as hand surgery specialists (n = 701).

Hand surgery-related scenarios	PS alone	PS + others	No PS n (%)	p-value
Infectious hand injury management	0 (0.0)	58 (8.3)	643 (91.7)	*
Hand tumor surgery	16 (2.3)	163 (23.3)	522 (74.5)	*
Hand fracture management	76 (10.8)	183 (26.1)	442 (63.1)	*
Hand tendon surgery	0 (0.0)	40 (5.7)	661 (94.3)	*
Hand burn management	178 (25.4)	306 (43.7)	217 (31.0)	**
Carpal tunnel release surgery	2 (0.3)	177 (25.2)	522 (74.5)	*
Rheumatoid arthritis deformity surgery	0 (0.0)	51 (7.3)	650 (92.7)	*
Dupuytren contracture surgery	0 (0.0)	58 (8.3)	643 (91.7)	*
Congenital hand defect surgery	60 (8.6)	292 (41.7)	349 (49.8)	***
Finger replantation surgery	84 (12)	297 (42.4)	320 (45.6)	****
Hand transplantation surgery	74 (10.6)	388 (55.3)	239 (34.1)	*****
Total (M ± SD)	44.54 ± 56.59 (6.36 ± 8.07)	183 ± 123.12 (26.12 ± 17.56)	473.45 ± 170.09 (67.55 ± 24.25)	*

N: Number of respondents; M: Mean; SD: Standard Deviation; PS: Plastic surgeon; PS alone: Respondents listing only plastic surgeon as expert; PS + others: Respondents listing plastic surgeon and others as experts; No PS: No respondents listing plastic surgeon as expert; NS: No significant.

* PS alone < PS + others < No PS ($p < 0.001$ for all comparisons);

** PS + others > No PS > PS alone ($p < 0.001$ for all comparisons, except PS alone versus No PS with NS p -value);

*** PS alone < PS + others < No PS ($p < 0.001$ for all comparisons, except PS + others versus No PS with NS p -value);

**** PS alone < PS + others = No PS ($p < 0.001$ for all comparisons, except PS + others versus No PS with NS p -value);

***** PS + others > No PS > PS alone ($p < 0.001$ for all comparisons).

Table 2. Bivariate analysis for plastic surgeon response.

Respondents	Plastic surgeon M ± SD	p-value
Sex		
Female	3.64 ± 2.46	NS
Male	3.51 ± 2.33	
Age (years)		
18-30	3.63 ± 2.42	*
31-45	3.03 ± 2.27	
46-85	3.91 ± 2.38	
Marital status		
Single	3.34 ± 2.31	NS
Married	3.77 ± 2.21	
Others	3.39 ± 2.17	
Religion		
Catholicism	3.73 ± 2.38	NS
Protestantism	3.39 ± 2.44	
Others	3.40 ± 2.27	
Education level		
Elementary school	3.29 ± 2.50	NS
High school education	3.38 ± 2.41	
Higher education	3.79 ± 2.34	
Health care professional		
No	3.56 ± 2.36	NS
Yes	3.63 ± 2.53	
Source of reported information		
Mass media	3.56 ± 2.43	NS
Personal relationship	3.90 ± 2.28	
General practitioners	3.35 ± 2.17	
Prior plastic surgery contact		
No	3.48 ± 2.37	NS
Yes	3.81 ± 2.43	

M: Mean; SD: Standard Deviation; NS: No significant. * 18-30 = 46-85 > 31-45 ($p \leq 0.023$ for all comparisons, except for 18-30 versus 46-85 with NS p -value).

previously described in plastic surgery surveys from the Brazil, United Kingdom, Australia, United States, Ireland, and India^{5,7-10,12,13,15}.

We also sought to correlate independent variables with the plastic surgeons response, as its statistics were not fully investigated in previous studies^{2-10,13}. Interestingly, our bivariate and multivariate analyses demonstrated that the age variable was a significant predictor of selecting plastic surgeon as expert. In the literature, few surveys^{3,7} evaluated the statistical impact of sex and showed that women had a higher perception of the scope of plastic surgeons' practice.

Different from our study, Dunkin et al.⁷ reported no significant association between age of members of

Table 3. Multiple linear regression analysis of possible predictors for plastic surgeon response.

Independent variables	Plastic surgeon	
	β	p-value
Constant	2.159	< 0.001
Sex (0 = male, 1 = female)	-0.102	NS
Age (years)*		
18-30	0.700	0.002
46-85	0.887	0.001
Marital status*		
Single	0.009	NS
Married	0.047	
Religion*		
Catholicism	0.127	NS
Protestantism	0.023	
Educational level*		
High school education	0.099	NS
Higher education	0.567	
Health care professional(0 = No, 1 = Yes)	0.006	NS
Prior plastic surgerycontact (0 = No, 1 = Yes)	0.341	NS
Source of reported information*		
Mass media	0.478	NS
Personal relationship	0.828	
R ²	3.4%	
ANOVA test	0.004	

* Dummy variables (n-1); R²: Coefficient of determination; NS: No significant; ANOVA: Analysis of variance.

the public and the responses they gave. In addition sex and age were not significant determinants of plastic surgeons as the main response our¹⁴ previous bivariate and multivariate analyses of public perception of plastic surgeons as craniofacial surgery specialists. However, as these previous authors^{3,7} could not offer a rational explanation for the difference between sex, we do not own plausible explanations for the absence of differences between women and men or significant differences in the age.

In addition, we believe that an increased education level would determine a greater choice of plastic surgeons, because the breadth of accumulated general knowledge (including plastic surgery-related information) would be potentially greater. However, contrary to our hypothesis, health care professionals were not determinants of selecting plastic surgeon as expert. Interestingly, different professionals (medical students, primary care physicians in training, general practitioners) with potentially greater knowledge (including medical knowledge) did not recognize the full scope of plastic surgeons practice in previous studies^{2,3,7,12}.

Moreover, the increase in the postgraduate year of training of the primary care physicians did not determine an increase in the respondent choosing plastic surgeons³; on the other hand, there were mixed results regarding the association between the year of medical student training and plastic surgeons chosen^{2,7}.

Previous authors^{9,10} also hypothesized that respondents with prior plastic surgeon interactions would have a better understanding of the field of plastic surgery than their peers without prior plastic surgery contact. Plastic surgeons may be an import basis for transference of accurate information to the general public, as previously demonstrated in a medical student survey (prior clinical exposure to plastic surgery increased the selecting plastic surgery)².

We included subjects with previous plastic surgery interaction to assess if exposure to plastic surgery through clinical/surgical encounters may have resulted in a greater understanding of the plastic surgery field. However, we showed that prior plastic surgery exposure was not independent variable determinants of plastic surgeons response in bivariate and multivariate analyses. Caution should be taken when interpreting our data, as we have not quantified the rate of real contact between the included subjects and plastic surgeons, and further surveys should expand these findings.

There are different factors that might have contributed to the explanation of why public members did not recognize plastic surgeons as hand surgery specialists. First, the field of plastic surgery practice is so broad that there are overlaps and cross-scope activities among different medical and nonmedical specialties²⁻¹⁵.

Hand surgery as a particular field of practice also sits at the intersection of overlapping specialties including plastic surgeons, orthopedic surgeons, general surgeons, neurosurgeons, and vascular surgeons^{1,2,11}. As the lines that divide these specialties are tenuous and sometimes non-existent, the public may be confused about the work of each specialty within the health care system. In addition, the high proportion of respondents that considered specialists other than plastic surgeons may also be a reflection of increasing marketing and education by all other overlapping specialties³.

Second, several investigations^{3-10,12,13,15} have revealed that plastic surgeons are primarily recognized as aesthetic surgeons. Such perceptions are most likely derived from the exposure given to cosmetic/aesthetic surgery by pervasive social media and popular “reality television” shows broadcasted worldwide. It was previously highlighted in a report¹⁶ that demonstrated both the growing and predominant aesthetic side of specialty (plastic surgery) in the mass media. It was also demonstrated that aesthetic surgery

“reality television” viewing negatively influences the public perception of the broad scope of plastic surgery¹⁵.

In Brazil, the mass media in particular has been very positive about aesthetic surgery, viewing the growth of the industry and aesthetic surgery tourism as an indicator of economic health or national pride¹⁷. In addition, the mass media recently disseminated that Brazil edges out the United States in terms of the number of aesthetic surgical procedures performed, according to the most recent International Society of Aesthetic Plastic Surgery (ISAPS) Global Statistics¹⁸.

In this context, the Brazilian Aesthetic surgical culture has been overshadowing the work of plastic surgeons outside of the aesthetic area. This is probably because aesthetic plastic surgery in Brazil has become a mass phenomenon with important implications for society and individuals, and it has been highlighted as a high value assigned to the body by Brazilians, because body has been identified as a status symbol, and it has demonstrated physical appearance as an essential element to the construction of the national identity¹⁷.

Interestingly, we demonstrated that respondents’ identified plastic surgeons as experts in hand transplantation surgery, although no hand transplantation has ever been performed in Brazil according to the most recent world data (International Registry on Hand and Composite Tissue Transplantation)¹⁹, and microsurgery-based complex reconstructions is not as widespread in Brazilian plastic surgery practice as in another country that also showed this trend⁴.

One explanation for this particular finding could be that worldwide mass media plays a role in the dissemination of information related to hand transplantations performed by multidisciplinary teams (including plastic surgeons)¹⁹.

This hypothesis is supported by a previous plastic surgery survey⁹ revealing that Australian’s mass media disseminated information about the care of burn patients, and public members identified more plastic surgeons in burn-related scenarios. We also observed this identification in our survey related with hand burn management. However, further research should investigate the real explanations for this specific finding, because mass media primarily provides information on the aesthetic side of plastic surgery practice^{15,16}, and mass media was not a determinant of plastic surgeons response in our analysis, although this has been the main source of reported information in our and other surveys^{6,8}.

Finally, the Brazilian hand surgery setting can also explain our findings. As described in other countries²⁰⁻²², there are many gaps in Brazilian hand surgery education. Few Brazilian plastic surgery residency programs offer

hand surgery training and/or hand surgery fellowships²³, and the number of graduating plastic surgery residents who completed plastic surgery training and pursued hand surgery fellowships is extremely low, compared with data from the United States²⁴.

In addition, the status of the unstable national economy²⁵, and the distribution of hand surgery centers within the national territory²⁶, may also influence the plastic surgeon's practice in the field of hand surgery, and consequently, the public perceptions.

All this lack of knowledge about plastic surgeons as hand surgery specialists showed in our and previous surveys^{2-10,12,13,15} requires educational measures to be established immediately. As previously highlighted in a survey from the United States², if Brazilian plastic surgeons want to continue to be recognized as hand surgeons, the Brazilian plastic surgery community (Brazilian Society of Plastic Surgery [SBCP], all plastic surgery residency programs accredited by SBCP, and Brazilian plastic surgeons) should actively participate in the public's education about the plastic surgeon's role in the hand surgery arena.

Multiple educational pathways can be adopted, for example: sending activity reports by email and to local newsletters; publishing an overview of plastic surgery articles/summaries in popular magazines and journals; using web-based technologies such as social media platforms and high-quality websites with reliable content; and educating and sensitizing the mass media regarding the role of plastic surgeons within the hand surgery field^{3,8,15,16}.

Additionally, as differences in clinical exposure during training (residency and fellowship type) are reflected in hand surgery clinical practice and persist over time²⁷, the next generation of plastic surgeons should be encouraged to embrace the entire scope of the specialty, including "part-time hand surgery" practice¹.

As previously described in others fields¹⁴, we believe that a Brazilian task force committed to the endeavor of improving, strengthening, and encouraging hand surgery training within the plastic surgeon community is necessary, following previously established models²⁸⁻³⁰.

Caveats of the current study should be addressed. As in similar previous reports^{2,5,8,12-15}, our data are susceptible to regional bias, because only public members from a single geographical area were included. As there is currently no consensus on what constitutes the scope of hand surgery practice within plastic surgery²², we included 11 hand surgery-related scenarios based on previous investigations^{2-5,7-10}; however, we did not assess the full field of hand surgery practice.

In addition, sending this survey to other subjects (medical students and primary care physicians) may provide a better overall understanding of the perceptions of plastic surgeons as hand surgeons in Brazil. Although we have included possible explanations for our findings, we do not present causal investigation.

Finally, as our coefficient of determination for the multiple linear regression model was relatively low, additional independent variables could explain the plastic surgeons response. Despite these limitations, we believe that our data can yield several benefits and modifications for the future of hand surgery practice. Further surveys should be performed to address our limitations.

CONCLUSIONS

Age was a determinant factor of public choice of plastic surgeons as experts in hand surgery-related scenarios.

COLLABORATIONS

- RD** Analysis and/or interpretation of data; conception and design of the study; final approval of the manuscript; writing the manuscript or critical review of its contents; completion of surgeries and/or experiments; statistical analyses.
- KCA** Analysis and/or interpretation of data; final approval of the manuscript; completion of surgeries and/or experiments.
- ASP** Analysis and/or interpretation of data; final approval of the manuscript; completion of surgeries and/or experiments.
- HSJ** Analysis and/or interpretation of data; final approval of the manuscript; completion of surgeries and/or experiments.
- AD** Analysis and/or interpretation of data; final approval of the manuscript; completion of surgeries and/or experiments; statistical analyses.
- CER** Final approval of the manuscript; writing the manuscript or critical review of its contents.

REFERENCES

1. Lineaweaver W. Confessions of a part-time hand surgeon. *Ann Plast Surg.* 2011;66(3):217-8. PMID: 21317569 DOI: <http://dx.doi.org/10.1097/SAP0b013e31820e6e68>
2. Agarwal JP, Mendenhall SD, Hopkins PN. Medical student perceptions of plastic surgeons as hand surgery specialists. *Ann Plast Surg.* 2014;72(1):89-93. DOI: <http://dx.doi.org/10.1097/SAP0b013e3182583f3b>
3. 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):643-50. DOI: <http://dx.doi.org/10.1097/PRS.0b013e3181de1a16>
4. 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):947-56. PMID: 24675195
 5. Kim DC, Kim S, Mitra A. Perceptions and misconceptions of the plastic and reconstructive surgeon. *Ann Plast Surg.* 1997;38(4):426-30. DOI: <http://dx.doi.org/10.1097/0000637-199704000-00020>
 6. Park AJ, Scerri GV, Benamore R, McDiarmid JG, Lamberty BG. What do plastic surgeons do? *J R Coll Surg Edinb.* 1998;43(3):189-93.
 7. Dunkin CS, Pleat JM, Jones SA, Goodacre TE. Perception and reality-a study of public and professional perceptions of plastic surgery. *Br J Plast Surg.* 2003;56(5):437-43. DOI: [http://dx.doi.org/10.1016/S0007-1226\(03\)00188-7](http://dx.doi.org/10.1016/S0007-1226(03)00188-7)
 8. Agarwal P. Perception of plastic surgery in the society. *Indian J Plast Surg.* 2004;37(2):110-4.
 9. Gill P, Bruscano-Raiola F, Leung M. Public perception of the field of plastic surgery. *ANZ J Surg.* 2011;81(10):669-72. DOI: <http://dx.doi.org/10.1111/j.1445-2197.2011.05753.x>
 10. de Blacam C, Kilmartin D, Mc Dermott C, Kelly J. Public perception of Plastic Surgery. *J Plast Reconstr Aesthet Surg.* 2015;68(2):197-204. PMID: 25455297 DOI: <http://dx.doi.org/10.1016/j.bjps.2014.10.008>
 11. Szabo RM. What is our identity? What is our destiny? *J Hand Surg Am.* 2010;35(12):1925-37.
 12. Denadai R, Muraro CAS, Raposo-do-Amaral CE. Cirurgiões plásticos como cirurgiões de mão: a visão dos residentes. *Rev Bras Cir Plást.* 2014;29(3):422-31.
 13. Denadai R, Samartine Junior H, Denadai R, Pinho AS, Raposo-do-Amaral CE. A cirurgia de mão como uma área de atuação dos cirurgiões plásticos. *Rev Bras Cir Plást.* 2015;30(3):408-12.
 14. Denadai R, Samartine Junior H, Denadai R, Raposo-Amaral CE. The Public Recognizes Plastic Surgeons as Leading Experts in the Treatment of Congenital Cleft and Craniofacial Anomalies. *J Craniofac Surg.* 2015;26(8):e684-9. DOI: <http://dx.doi.org/10.1097/SCS.00000000000002157>
 15. Denadai R, Araujo KM, Samartine Junior H, Denadai R, Raposo-Amaral CE. Aesthetic Surgery Reality Television Shows: Do they Influence Public Perception of the Scope of Plastic Surgery? *Aesthetic Plast Surg.* 2015;39(6):1000-9.
 16. Sadri A, Nassab R. Cosmetic surgery and the press: a 22 year review of a growing relationship. *J Plast Reconstr Aesthet Surg.* 2015;68(2):269-70. PMID: 25455293 DOI: <http://dx.doi.org/10.1016/j.bjps.2014.10.017>
 17. Dorneles de Andrade D. On norms and bodies: findings from field research on cosmetic surgery in Rio de Janeiro, Brazil. *Reprod Health Matters.* 2010;18(35):74-83. DOI: [http://dx.doi.org/10.1016/S0968-8080\(10\)35519-4](http://dx.doi.org/10.1016/S0968-8080(10)35519-4)
 18. International Society of Aesthetic Plastic Surgery. ISAPS Biennial Global Survey: Trends in procedures and geographic leadership. International Society of Aesthetic Plastic Surgery, New York, NY. 2014 [cited 2015 Nov 15]. Available from: <http://www.isaps.org/pt/>
 19. Shores JT, Brandacher G, Lee WP. Hand and upper extremity transplantation: an update of outcomes in the worldwide experience. *Plast Reconstr Surg.* 2015;135(2):351e-60e. PMID: 25401735 DOI: <http://dx.doi.org/10.1097/PRS.0000000000000892>
 20. Chang J, Hentz VR, Chase RA. Plastic surgeons in American hand surgery: the past, present, and future. *Plast Reconstr Surg.* 2000;106(2):406-12. PMID: 10946941 DOI: <http://dx.doi.org/10.1097/00006534-200008000-00025>
 21. Higgins JP. The diminishing presence of plastic surgeons in hand surgery: a critical analysis. *Plast Reconstr Surg.* 2010;125(1):248-60. PMID: 20048616 DOI: <http://dx.doi.org/10.1097/PRS.0b013e3181e496a2c>
 22. Lifchez SD, Friedrich JB, Hultman CS. The scope of practice of hand surgery within plastic surgery: the ACAPS national survey to assess current practice and develop educational guidelines. *Ann Plast Surg.* 2015;74(1):89-92. DOI: <http://dx.doi.org/10.1097/SAP.0000000000000365>
 23. Batista KT, Pacheco LMS, Silva LM. Avaliação dos programas de residência médica em Cirurgia Plástica no Distrito Federal. *Rev Bras Cir Plást.* 2013;28(1):20-8. DOI: <http://dx.doi.org/10.1590/S1983-51752013000100005>
 24. Herrera FA, Chang EI, Suliman A, Tseng CY, Bradley JP. Recent trends in resident career choices after plastic surgery training. *Ann Plast Surg.* 2013;70(6):694-7. DOI: <http://dx.doi.org/10.1097/SAP.0b013e3182863669>
 25. Gordon CR, Pryor L, Afifi AM, Gatherwright JR, Evans PJ, Hendrickson M, et al. Hand surgery volume and the US economy: is there a statistical correlation? *Ann Plast Surg.* 2010;65(5):471-4.
 26. Mueller MA, Zaydfudim V, Sexton KW, Shack RB, Thayer WP. Lack of emergency hand surgery: discrepancy between elective and emergency hand care. *Ann Plast Surg.* 2012;68(5):513-7. PMID: 22510897 DOI: <http://dx.doi.org/10.1097/SAP.0b013e31823b6a35>
 27. Mehta K, Pierce P, Chiu DT, Thanik V. The effect of residency and fellowship type on hand surgery clinical practice patterns. *Plast Reconstr Surg.* 2015;135(1):179-86. PMID: 25539305 DOI: <http://dx.doi.org/10.1097/PRS.0000000000000786>
 28. Noland SS, Fischer LH, Lee GK, Friedrich JB, Hentz VR. Essential hand surgery procedures for mastery by graduating plastic surgery residents: a survey of program directors. *Plast Reconstr Surg.* 2013;132(6):977e-84e. PMID: 24281644 DOI: <http://dx.doi.org/10.1097/PRS.0b013e3182a8066b>
 29. Goldfarb CA, Lee WP, Briskey D, Higgins JP. An American Society for Surgery of the Hand (ASSH) task force report on hand surgery subspecialty certification and ASSH membership. *J Hand Surg Am.* 2014;39(2):330-4. DOI: <http://dx.doi.org/10.1016/j.jhsa.2013.10.017>
 30. Sears ED, Chung KC. Future education and practice initiatives in hand surgery: improving fulfillment of patient needs. *Hand Clin.* 2014;30(3):377-86. DOI: <http://dx.doi.org/10.1016/j.hcl.2014.05.001>

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