



# Indian Perspective of Burnout Among Plastic Surgeons

Ankur Karanjkar<sup>1</sup> Nikhil Panse<sup>1</sup> Smita Panse<sup>2</sup> Parag Sahasrabudhe<sup>1</sup>

<sup>1</sup>Department of Plastic & Reconstructive Surgery, BJ Government Medical College and Sassoon Hospital, Pune, Maharashtra, India

<sup>2</sup>Department of Psychiatry, PCMC's Post Graduate Institute & YCM Hospital, Pimpri, Pune, India

**Address for correspondence** Ankur Karanjkar, MCh (Plastic & Reconstructive Surgery), DNB (Plastic Surgery), BJ Government Medical College & Sassoon Hospital, Jai Prakash Narayan Road, Near Pune Railway Station, Pune 411001, Maharashtra, India (e-mail: ankur1596@gmail.com).

Indian J Plast Surg 2023;56:153–158.

## Abstract

**Introduction** Over the last decade, the term “*Burnout*” has become familiar term in all walks of life, particularly medicine. Emotional exhaustion, depersonalization, and a low sense of personal accomplishment make up the triad. At least a third of plastic surgeons are having burnout according to the western literature. Data on burnout in Indian plastic surgeons is lacking. We have made an attempt to analyze the incidence and factors responsible for burnout among plastic surgeons in India.

**Materials and Methods** An online survey was conducted in India to assess burnout among plastic surgeons from June to November 2019. Consent, demographic information, stress-related factors, the abbreviated Maslach Burnout Inventory (aMBI), and Satisfaction with Medicine were all included section wise in the survey. Both used scales were validated. Data were gathered using Google forms, then uploaded to an Excel file and analyzed. A multivariable and univariable analysis of factors associated with burnout was carried out.

**Results** Twenty-two percent of 330 plastic surgeons who responded were assessed to have moderate to high emotional exhaustion, 5% had moderate to high depersonalization, and 3% had low personal accomplishment. The overall burnout rate was 8.2%. Seventy-three percent of plastic surgeons enjoyed a good to very good quality of life. Great over-volume of work, mid-career practicing plastic surgeons and professional satisfaction with work were found to have a significant association with burnout on multivariate analysis.

**Conclusions** Plastic surgeons in India suffer an overall burnout rate of 8.2% with a multifactorial etiology. This occupational hazard is preventable and reversible. Plastic surgeons need to be vigilant about this and seek help whenever required.

## Keywords

- ▶ burnout
- ▶ occupational hazard
- ▶ plastic surgeon
- ▶ plastic surgery
- ▶ professional satisfaction
- ▶ mental health

## Introduction

Burnout was first defined as “a state of physical, emotional, and mental exhaustion” by the American psychologist, Herbert

Freudenberg, in the 1970s.<sup>1,2</sup> Burnout syndrome was later defined as a triad of high emotional exhaustion, high depersonalization, and a perceived lack of personal accomplishment.<sup>3</sup> Burnout (coded as QD-85) was added as an

article published online  
January 31, 2023

DOI <https://doi.org/10.1055/s-0042-1759727>.  
ISSN 0970-0358.

© 2023. Association of Plastic Surgeons of India. All rights reserved. This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial-License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)  
Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

“occupational phenomenon” in the International Classification of Diseases (ICD-11) in 2019 by the World Health Organization (WHO).<sup>4,5</sup> The very nature and scope of plastic surgery as a specialty with no anatomical boundaries, problem solving, and often unrealistic patient expectations generate tremendous physical and psychological stress. There are discussions regarding musculoskeletal injuries in the plastic surgical workforce.<sup>6</sup> However, the burnout aspect of the occupation for plastic surgeons, especially in India, remains unaddressed. Burnout has a wide-ranging impact, including a variety of negative physical outcomes, broken relationships, increased work–life conflicts, and a negative impact on the quality of life.<sup>7–9</sup> If unaddressed, it can progress to depression and even suicide.<sup>10,11</sup> Medscape’s 2019 report found 14% of plastic surgeons have suicidal thoughts.<sup>12</sup>

This article is an attempt to raise awareness about the deleterious effects of burnout amongst the plastic surgeons in India and provokes the thought on its prevention.

## Materials and Methods

An online survey to assess burnout among plastic surgeons in India was conducted using Google forms from June to November 2019 after receiving approval from the institutional ethical committee (ND-Department 0419056-056). The survey was voluntary and anonymous. Only qualified plastic surgeons in India were included in the survey. Consent, demographic information, stress-related factors, the abbreviated Maslach Burnout Inventory (aMBI), and satisfaction with medicine were included in the survey. Data were collected using Google forms, transferred to an Excel spreadsheet, and analyzed. The aMBI scale has nine items and three subscales: emotional exhaustion (“EE”), depersonalization (“DP”), and personal accomplishment (“PA”). Its validity and reliability have already been established.<sup>13</sup> Three statements are used to evaluate each subscale. There is a 7–point Likert scale for each statement, ranging from never (0) to every day (6). Each plastic surgeon’s score for each statement was added. Categories were rated on a scale from 0 (minimum) to 18 (maximum). Higher EE and DP scores corresponded to greater burnout; lower PA scores corresponded to greater burnout. We combined the scores of ‘EE and DP’ to calculate the overall burnout score, as described by Shaikh et al<sup>14</sup> and Panse et al.<sup>15</sup> A subscale score of 0 to 9 was considered “no-to-low burnout” for EE and DP, whereas a subscale score of 10 to 18 was considered “moderate-to-severe burnout.” To assess professional satisfaction, the questionnaire used by McManus et al was used.<sup>16,17</sup>

## Statistical Analysis

Online Google form data were extracted into an MS-Excel file and the data was cleaned with coding as per the questionnaire. SPSS (Statistical Package for Social Sciences) version 25.0 was used to analyze the data. Incomplete surveys were not included in the data analysis. Frequency and percentage were used to express qualitative data variables. The association between burnout and other qualitative data characteristics was deter-

mined using the Chi-square test/ Fisher’s exact method. Multivariable modeling was done on the variables that were significant in the univariable analysis. For multivariate analysis, binary logistic regression analysis was utilized using an outcome variable and various risk variables. A *p*-value of less than 0.05 was considered significant.

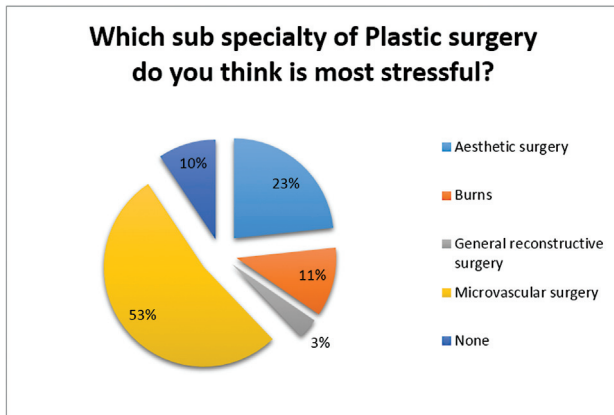
## Results

Out of a total of 362 respondents, 334 completed the survey. Responses from Indian plastic surgeons practicing outside India were eliminated. The data was analyzed based on the responses of 330 plastic surgeons. Demographic details of plastic surgeons are shown in **Table 1**. The majority of plastic surgeons were M.Ch. (*Magister Chirurgiae*) degree holders (76.4%). The remaining participants either held both degrees or a DNB (Diplomate of National Board) degree. Also, 38.2% of plastic surgeons reported being unsatisfied with their residency training in the field. Early career plastic surgeons (less than 10 years of practice) were 48.2% of total, mid-career plastic surgeons (11–20 years of practice) were 26.6%, and late career plastic surgeons (11–20 years of practice) accounted for 24. % of respondents. Retired plastic surgeons were 1.2%. Majority of plastic surgeons worked in corporate hospital practice (26.1%). Only 15.8% of plastic surgeons were purely in academic practice.

Factor/s that contributed to the overall stress in the past 6 to 8 weeks according to plastic surgeons were noted. Having a great volume of work, suffering from medical co-morbidities, and loss of work–life balance due to a busy schedule were found to be independent stressors for burnout. Plastic surgeons who pursued fitness activities were found to have 2.5

**Table 1** Demographic characteristics of plastic surgeons in India

<i>n</i> = 330 <i>n</i> (%)
Gender
Male 293 (88.8)
Female 37 (11.2)
Marital status
Married 314 (95.2)
Single 10 (3.0)
Was married 6 (1.8)
Children
Yes 291 (88.2)
No 39 (11.8)
Do you pursue any activities for fitness (at least twice a week)
Yes 215 (65.2)
No 115 (34.8)
Do you pursue any hobbies (at least once in two weeks)
Yes 151 (45.8)
No 179 (54.2)



**Fig. 1** Most stressful sub-specialty of plastic surgery.

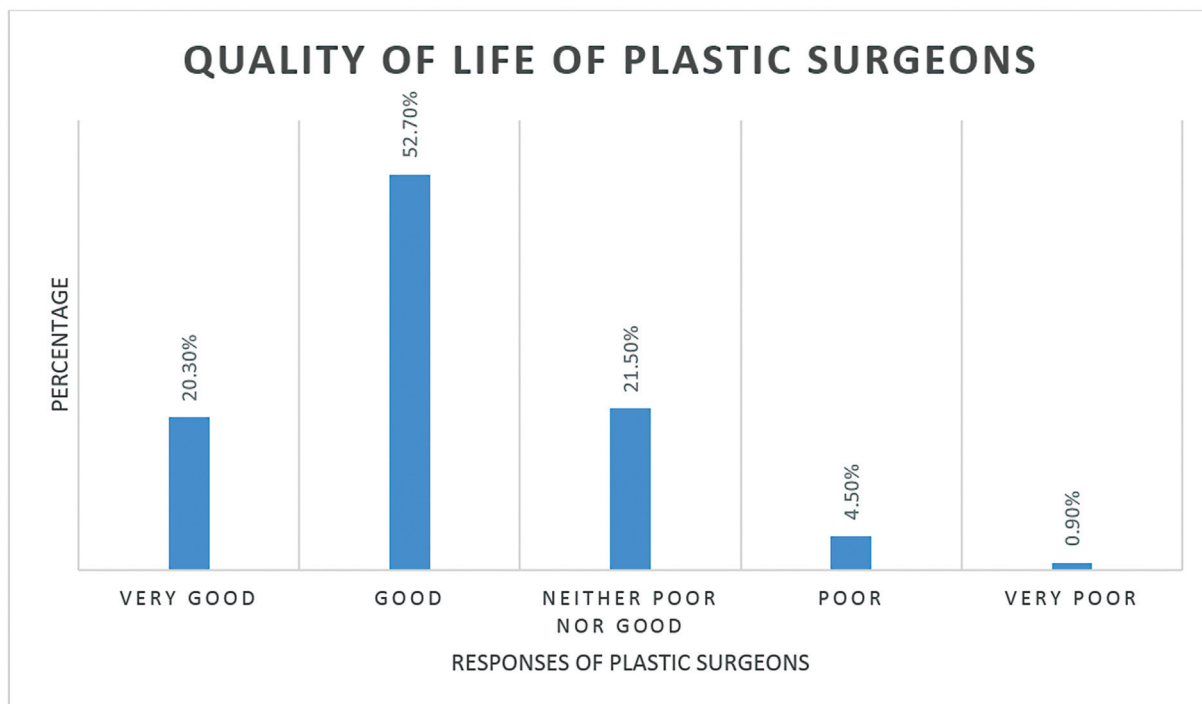
times less burnout. Those who were not satisfied with post-graduation training in plastic surgery had three times more burnout than their counterparts. Burnout was found to be significantly related to suboptimal patient management due to a lack of skill or resources. Burnout was also significantly related to lack of satisfaction, meaning, and worthiness in one’s work. The results of the univariable analysis of factors associated with burnout are depicted in **►Supplementary Table S1**, available online only. Using multivariate regression analysis, “too great overall volume of work,” “work satisfying to plastic surgeons,” and “mid-career practising plastic surgeons” were found to have a significant association with burnout. **►Supplementary Table S2**, (available online only), shows the details of the multivariable model for independent factors associated with burnout. For plastic surgeons in India, micro-surgery was the most stressful subspecialty, followed by aesthetic surgery (**►Fig. 1**).

As a response to an open-ended question about additional comments, encroachment from other specialties, lack of support from management, unethical and money-minded-practice due to competition, commission-based practice, lack of general awareness in society regarding the spectrum of plastic surgeons, and poor understanding of the complexity of the procedure by relatives were among the other causes that led to frustration.

Five percent of plastic surgeons had moderate-to-high burnout when it came to DP, and 22% had moderate-to-high burnout when it came to EE. However, 97% of the plastic surgeons had a no-to-low burnout score in PA. A higher score in EE and DP indicates more burnout. In all, 8.2% of plastic surgeons reported moderate-to-high burnout. (**►Supplementary Table S3**, available online only) A total of 73% of plastic surgeons rated their quality of life from good to very good (**►Fig. 2**). Also, 22.7% of plastic surgeons considered leaving medicine for another career a few times every year. Seventy-six percent of plastic surgeons never had any regret to have chosen plastic surgery. The details for the assessment of professional satisfaction are enumerated in (**►Supplementary Table S4**, available online only).

**Discussion**

Burnout among residents in plastic surgery in India has been addressed.<sup>15</sup> However, burnout among plastic surgeons in India has not yet been studied. Working as a plastic surgeon in India comes with its own set of difficulties. There is a very wide spectrum of overlap between plastic surgery and other broad specialties. There are not enough opportunities in academic institutions. It is a “dependent” branch, as the majority of our work depends on referrals from co-workers of different specialties. Burnout among plastic surgeons in the



**Fig. 2** Quality of life of plastic surgeons.

**Table 2** Comparison of burnout score among plastic surgeons with other countries

Sr. No.	Study by	Year	Design	Country	Sample size of Plastic surgeons	Burnout scale used	Burnout rate
1.	Balch et al <sup>20</sup>	2008	Survey	America	458	MBI	37.4%
2	Qureshi et al <sup>18</sup>	Sept'2010 to Aug.'2011	Survey	United states	1691	MBI	29.7%
3	Medscape Physician Lifestyle Report 2015 <sup>23</sup>	2015	Survey	United state	Across various specialties	–	37%-53%
4	McIntire et al <sup>24</sup>	March to April 2019	Survey	America	156 (facial plastic surgeons)	Tedium index	46.8%
5	Streu et al <sup>21</sup>	2013	Survey	United states	506	MBI-HSS	29%
6	Riberiro et al <sup>19</sup>	2018	Meta-analysis	United states, Israel	2670	MBI	32.32%
7.	Nathan et al <sup>25</sup>	2018	Survey	America	595 (hand surgeons)	Mini Z [v2.0]	49%
8.	Our Study	2019	Survey	India	330	aMBI	8.2%

western literature and in other countries has been studied by various authors.<sup>18–22</sup> Our study shows burnout among plastic surgeons in India to be significantly lower than in other countries (► **Table 2**). This is most likely owing to differences in geographical areas, healthcare system policies, and burnout definitions and scales.<sup>23,24</sup> Surgical subspecialty was found to be an independent predictor of burnout and job satisfaction.<sup>25</sup> Burnout rates in plastic surgery are usually lower than those in other disciplines. The relatively healthy patient population that plastic surgeons treat may be the reason for this finding.<sup>18</sup> Studies cannot be generalized owing to the significant heterogeneity in the prevalence of burnout in various surgical subspecialties. Therefore, it is crucial to identify the causes of burnout among Indian plastic surgeons to comprehend the problem.

Association of gender, having children and, hobbies has been studied in relation to burnout by various authors. Women are more likely to experience burnout than men.<sup>8,10,26,27</sup> According to studies, female gender is an independent predictor of dissatisfaction with work-life balance and, as a result, a higher risk of burnout and depressive symptoms.<sup>28,29</sup> Having children seems to lessen the likelihood of burnout.<sup>18,24,25,30</sup> In addition, having no hobbies is associated with increased levels of burnout.<sup>31,32</sup> We found no association between gender, marital status, having children, or engaging in any hobbies and the prevalence of burnout in our study. Our findings are similar to study by Streu et al.<sup>21</sup> The literature has shown that physical activity has a positive impact on preventing or reducing burnout.<sup>33,34</sup> Burnout was shown to be significantly lower among people who exercised regularly.<sup>35</sup> In our study, we found that pursuing fitness activities was significantly associated with less burnout. The development of burnout is positively impacted by the general health of plastic surgeons.<sup>21</sup> Poor emotional health and fitness of physicians are known risk factors for burnout.<sup>10,36</sup> Our study findings also corroborate with them that

medical co-morbidities hampering the quality of life of a plastic surgeons are significantly associated with burnout.

Persistent burnout had an impact on memory, attention, and intellectual health.<sup>30,37</sup> This lack of engagement at work could lead to a drop in work performance, increasing the risk of medical errors.<sup>23,38,39</sup> Even so, burnout is more typically linked to malpractice litigation.<sup>23,40,41</sup> In our study, we found that 13.9% of the respondents had faced legal action from patients. There was no correlation between burnout and perceived medical errors, in our study. Time spent on activities that elicit a sense of meaningful achievement is related to decreased burnout.<sup>25</sup> In our study, we noted that plastic surgeons who did not feel worthwhile at work, were unsatisfied with work, and who did not feel work was meaningful (i.e., patient care, teaching, research) were exhibiting burnout. The role of practice setting in plastic surgeons' burnout is unclear. As per research, surgeons in private practice have a higher risk of burnout and have a lower level of career satisfaction than those in academic practice.<sup>20</sup> Professional burnout rates were not significantly different in practice settings,<sup>42</sup> although academic practice had a much higher quality of life and career satisfaction. There was no significant association between burnout and the type of practice in our study. Microsurgeons and cosmetic surgeons had a higher risk of burnout.<sup>18</sup> The reason could be a higher number of hours worked or nights on call. They may be at risk due to a deteriorating work-to-reimbursement ratio, increasing commercial pressures and patient expectations.<sup>43,44</sup>

On univariate analysis, we did not find significant correlation between different sub-specialties of plastic surgery and burnout. For plastic surgeons in India, microsurgery was the most stressful subspecialty followed by aesthetic surgery. Less concern over income is generally associated with less burnout.<sup>18,45</sup> In our study, 74.5% of plastic surgeons in India felt poorly paid for their job. Income was not associated with burnout. According to one study, plastic surgeons

become happier over time.<sup>46</sup> In India too, the burnout percentage declines from residency to consultancy from 48.4% to 8.2%.<sup>15</sup>

Plastic surgeons were among the surgical specialties with the greatest career satisfaction rate.<sup>25,30,47</sup> Career satisfaction is consistently associated with less burnout.<sup>23-25</sup> In our study, most plastic surgeons were satisfied with their branch. This might be the reason for less burnout among plastic surgeons in India. Burnout is often linked to increased workload, working nights, and increased on-call shifts.<sup>18,21,24,25,32,45,48-50</sup> Studies have noted that burnout rates among physicians vary by career stage, with mid-career physicians having the greatest rate.<sup>51-53</sup> In our study, having too great an overall volume of work and mid-career practice were significantly associated with professional burnout.

Achieving work-life balance is challenging for plastic surgeons due to their long and unpredictable schedules. Failure to do so results in decreased job and life satisfaction, weakened mental health, and eventually burnout.<sup>29,54,55</sup> Burnout is a multifaceted issue and can be handled effectively by joint responsibility of the individual, the department, and the hospital.<sup>44</sup>

## Limitations

This study should be read in the context of its limitations. Because this is a cross-sectional study, the findings are only applicable at one moment in time. Following the burnout plastic surgeon cohort over time will provide a more accurate trend estimate as well as verify causation. As for all surveys, we relied on self-reporting. This is inherently prone to interpretation bias, memory bias, and social desirability bias. The role of psychological factors such as emotional intelligence, personality factors in professional burnout has not been considered in this study.

## Conclusion

In comparison to global figures, India's overall burnout rate for plastic surgeons is lower, at 8.2%, with a high percentage of emotional exhaustion (22.1%). More research is needed to provide evidence-based strategies to address this problem. The findings of this study can be used as a baseline for further research on this topic to create evidence-based strategies to prevent burnout.

### Conflict of Interest

None declared.

### Acknowledgments

We would like to thank Mr. Shrivallabh Sane for his help with statistical analysis.

## References

- Freudenberger HJ. The staff burn-out syndrome in alternative institutions. *Psychotherapy Theory, Research, and Practice* 1975; 12:73-82
- Chen WS, Haniff J, Siau CS, Seet W, Loh SF, Jamil MHA. Pilot study of the Malay Maslach burnout inventory and Malay work-related quality of life scale in Malaysia. *Studies in Asian Soc Sci* 2014;1(01):20-26
- Maslach C, Jackson SE, Leiter MP, eds. *Maslach Burnout Inventory manual*. 3rd ed. Palo Alto: Consulting Psychologists Press; 1996
- World Health Organization. 2021 Burn-out an "occupational phenomenon": International Classification of Diseases. 2019. Accessed November 14, 2022 at: [https://www.who.int/mental\\_health/evidence/burn-out/en/](https://www.who.int/mental_health/evidence/burn-out/en/)
- International Classification of Diseases for Mortality and Morbidity Statistics. 11th Revision, v2020-09. *Icd.who.int*. 2021. ICD-11 - ICD-11 for Mortality and Morbidity Statistics. [online] Accessed November 14, 2022 at: <https://icd.who.int/browse/11/m/en/#>
- Nagarkar P. Personal safety of the plastic surgeon: keeping yourself healthy while you work. *Plast Reconstr Surg* 2018;142(01):76e-81e
- Grover S, Adarsh H, Naskar C, Varadharajan N. Physician burnout: a review. *Journal of Mental Health and Human Behaviour* 2018; 23:78-85
- Cheesborough JE, Gray SS, Bajaj AK. Striking a better integration of work and life: challenges and solutions. *Plast Reconstr Surg* 2017; 139(02):495-500
- Balch CM, Freischlag JA, Shanafelt TD. Stress and burnout among surgeons: understanding and managing the syndrome and avoiding the adverse consequences. *Arch Surg* 2009;144(04):371-376
- Santos PJF, Evans GRD. Practical strategies for identifying and managing burnout in plastic surgeons. *Plast Reconstr Surg* 2020; 146(04):464e-473e
- Kaschka WP, Korczak D, Broich K. Burnout: a fashionable diagnosis. *Dtsch Arztebl Int* 2011;108(46):781-787
- Kane L. Medscape plastic surgeon lifestyle, happiness & burnout report. Accessed August 29, 2019 at: <https://www.medscape.com/slideshow/2019-lifestyle-plastic-surgeon-6011148>
- Gabbe SG, Melville J, Mandel L, Walker E. Burnout in chairs of obstetrics and gynecology: diagnosis, treatment, and prevention. *Am J Obstet Gynecol* 2002;186(04):601-612
- Shaikh AA, Shaikh A, Kumar R, Tahir A. Assessment of burnout and its factors among doctors using the abbreviated Maslach burnout inventory. *Cureus* 2019;11(02):e4101. Doi: 10.7759/cureus.4101
- Panse N, Panse S, Ravi S, Mankar H, Karanjkar A, Sahasrabudhe P. Burnout among plastic surgery residents in India: an observational study. *Indian J Plast Surg* 2020;53(03):387-393
- McManus IC, Smithers E, Partridge P, Keeling A, Fleming PR. A levels and intelligence as predictors of medical careers in UK doctors: 20 year prospective study. *BMJ* 2003;327(7407):139-142
- McManus IC, Iqbal S, Chandrarajan A, Ferguson E, Leaviss J. Unhappiness and dissatisfaction in doctors cannot be predicted by selectors from medical school application forms: a prospective, longitudinal study. *BMC Med Educ* 2005;5:38. Doi: 10.1186/1472-6920-5-38
- Qureshi HA, Rawlani R, Mioton LM, Dumanian GA, Kim JYS, Rawlani V. Burnout phenomenon in U.S. plastic surgeons: risk factors and impact on quality of life. *Plast Reconstr Surg* 2015;135(02):619-626
- Ribeiro RVE, Martuscelli OJD, Vieira AC, Vieira CF. Prevalence of burnout among plastic surgeons and residents in plastic surgery: a systematic literature review and meta-analysis. *Plast Reconstr Surg Glob Open* 2018;6(08):e1854. Doi: 10.1097/GOX.0000000000001854
- Balch CM, Shanafelt TD, Sloan JA, Satele DV, Freischlag JA. Distress and career satisfaction among 14 surgical specialties, comparing academic and private practice settings. *Ann Surg* 2011;254(04):558-568
- Streu R, Hansen J, Abrahamse P, Alderman AK. Professional burnout among US plastic surgeons: results of a national survey. *Ann Plast Surg* 2014;72(03):346-350
- Haik J, Brown S, Liran A, et al. Burnout and compassion fatigue: prevalence and associations among Israeli burn clinicians. *Neuropsychiatr Dis Treat* 2017;13:1533-1540
- Peckham C. *Medscape Physician Lifestyle Report 2015*. January 26, 2015. Accessed March 1, 2015 at: <http://www.medscape.com/features/slideshow/lifestyle/2015/public/overview>

- 24 McIntire JB, Lee DD, Ohlstein JF, Williams Iii E. Career satisfaction, commitment, and burnout among American facial plastic surgeons. *Facial Plast Surg Aesthet Med* 2020. Doi: 10.1089/fpsam.2020.0086
- 25 Morrell NT, Sears ED, Desai MJ, et al. A survey of burnout among members of the American Society for Surgery of the Hand. *J Hand Surg Am* 2020;45(07):573–581.e16
- 26 Crijns TJ, Kortlever JTP, Guitton TG, Ring D, Barron GC. Symptoms of burnout among surgeons are correlated with a higher incidence of perceived medical errors. *HSS J* 2020;16(Suppl 2):305–310
- 27 Galaiya R, Kinross J, Arulampalam T. Factors associated with burnout syndrome in surgeons: a systematic review. *Ann R Coll Surg Engl* 2020;102(06):401–407
- 28 Shanafelt TD, Balch CM, Bechamps GJ, et al. Burnout and career satisfaction among American surgeons. *Ann Surg* 2009;250(03):463–471
- 29 Prendergast C, Ketteler E, Evans G. Burnout in the plastic surgeon: implications and interventions. *Aesthet Surg J* 2017;37(03):363–368
- 30 Sullivan MC, Yeo H, Roman SA, Bell RH Jr, Sosa JA. Striving for work-life balance: effect of marriage and children on the experience of 4402 US general surgery residents. *Ann Surg* 2013;257(03):571–576
- 31 Dyrbye LN, Freischlag J, Kaups KL, et al. Work-home conflicts have a substantial impact on career decisions that affect the adequacy of the surgical workforce. *Arch Surg* 2012;147(10):933–939
- 32 Khansa I, Janis JE. A growing epidemic: plastic surgeons and burnout—a literature review. *Plast Reconstr Surg* 2019;144(02):298e–305e
- 33 Contag SP, Golub JS, Teknos TN, et al. Professional burnout among microvascular and reconstructive free-flap head and neck surgeons in the United States. *Arch Otolaryngol Head Neck Surg* 2010;136(10):950–956
- 34 Aldrees T, Hassouneh B, Alabdulkarim A, et al. Burnout among plastic surgery residents. National survey in Saudi Arabia. *Saudi Med J* 2017;38(08):832–836
- 35 Dyrbye LN, Shanafelt TD, Balch CM, Satele D, Sloan J, Freischlag J. Relationship between work-home conflicts and burnout among American surgeons: a comparison by sex. *Arch Surg* 2011;146(02):211–217
- 36 Shanafelt TD, Hasan O, Dyrbye LN, et al. Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. [published correction appears in *Mayo Clin Proc*. 2016 Feb;91(2):276] *Mayo Clin Proc* 2015;90(12):1600–1613
- 37 Chaput B, Bertheuil N, Jacques J, et al. Professional burnout among plastic surgery residents: can it be prevented? Outcomes of a National survey. *Ann Plast Surg* 2015;75(01):2–8
- 38 Naczenski LM, Vries JD, Hooff MLMV, Kompier MAJ. Systematic review of the association between physical activity and burnout. *J Occup Health* 2017;59(06):477–494
- 39 Sane MA, Devin HF, Jafari R, Zahra Zohoorian. Relationship between physical activity and its components with burnout in academic members of Daregaz Universities. *Procedia Soc Behav Sci* 2012;46:4291–4294
- 40 Shanafelt TD, Oreskovich MR, Dyrbye LN, et al. Avoiding burnout: the personal health habits and wellness practices of US surgeons. *Ann Surg* 2012;255(04):625–633
- 41 Kuerer HM, Eberlein TJ, Pollock RE, et al. Career satisfaction, practice patterns and burnout among surgical oncologists: report on the quality of life of members of the Society of Surgical Oncology. *Ann Surg Oncol* 2007;14(11):3043–3053
- 42 Shanafelt TD, Balch CM, Bechamps G, et al. Burnout and medical errors among American surgeons. *Ann Surg* 2010;251(06):995–1000
- 43 Sandström A, Rhodin IN, Lundberg M, Olsson T, Nyberg L. Impaired cognitive performance in patients with chronic burnout syndrome. *Biol Psychol* 2005;69(03):271–279
- 44 Williams ES, Manwell LB, Konrad TR, Linzer M. The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: results from the MEMO study. *Health Care Manage Rev* 2007;32(03):203–212
- 45 Balch CM, Oreskovich MR, Dyrbye LN, et al. Personal consequences of malpractice lawsuits on American surgeons. *J Am Coll Surg* 2011;213(05):657–667
- 46 Shanafelt TD, Balch CM, Dyrbye L, et al. Special report: suicidal ideation among American surgeons. *Arch Surg* 2011;146(01):54–62
- 47 Rawlani VRR, Dumanian GA, Mustoe TA, et al. Comparative analysis of quality of life and burnout measures between academic and private practice plastic surgeons. In Abstract Presented at The American Association of Plastic Surgeons. New Orleans, LA; 2013
- 48 Zheng H, Shao H, Zhou Y. Burnout among Chinese adult reconstructive surgeons: incidence, risk factors, and relationship with intraoperative irritability. *J Arthroplasty* 2018;33(04):1253–1257
- 49 Nguyen PD, Herrera FA, Roostaian J, Da Lio AL, Crisera CA, Festekjian JH. Career satisfaction and burnout in the reconstructive microsurgeon in the United States. *Microsurgery* 2015;35(01):1–5
- 50 Carrau D, Janis JE. Physician Burnout: Solutions for Individuals and Organizations. *Plast Reconstr Surg Glob Open* 2021;9(02):e3418
- 51 Sterling DA, Grow JN, Vargo JD, Nazir N, Butterworth JA. Happiness in plastic surgery: a cross-sectional analysis of 595 practicing plastic surgeons, fellows, residents, and medical students. *Ann Plast Surg* 2020;84(01):90–94
- 52 Balch CM, Shanafelt TD, Dyrbye L, et al. Surgeon distress as calibrated by hours worked and nights on call. *J Am Coll Surg* 2010;211(05):609–619
- 53 Nahai F. Plastic Surgeons Are Happiest at Work. *Aesthet Surg J* 2019;39(05):581–583
- 54 Dyrbye LN, Varkey P, Boone SL, Satele DV, Sloan JA, Shanafelt TD. Physician satisfaction and burnout at different career stages. *Mayo Clin Proc* 2013;88(12):1358–1367
- 55 Noone RB. Commentary on: Burnout in the plastic surgeon: implications and interventions. *Aesthet Surg J* 2017;37(03):369–371
- 56 Streu R, McGrath MH, Gay A, Salem B, Abrahamse P, Alderman AK. Plastic surgeons' satisfaction with work-life balance: results from a national survey. *Plast Reconstr Surg* 2011;127(04):1713–1719
- 57 Gröpel P, Kuhl J. Work-life balance and subjective well-being: the mediating role of need fulfilment. *Br J Psychol* 2009;100(Pt 2):365–375