

The Role of Emotional Intelligence in Predicting a Successful Career for Plastic Surgeons: A Systematic Review

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Summary: The definition of a successful career in plastic surgery is both a highly variable and personal one. Career success is underpinned by a combination of skills and is often multifactorial in nature. Although clinical and academic factors have long been key determinants of success, modern medical practice is now underlining the previously understated non-clinical skills as a major contributory element. Emotional intelligence (EI) has shown clear benefits in a successful career in the business world, where it was originally popularized. As a successful career in surgery also requires proficient understanding of human emotions, the clear similarities drawn with corporate success have resulted in a growing interest in EI in the medical domain. Despite such interest, the role of EI as a predictor of career success in plastic surgery has been poorly defined. This systematic review aims to define EI, to explore its role in medical and nonmedical fields, and to investigate its impact on a successful career in plastic surgery. (*Plast Reconstr Surg Glob Open* 2020;8:e2699; doi: 10.1097/GOX.0000000000002699; Published online 26 March 2020.)

INTRODUCTION

The definition of a successful surgical career is both a highly variable and personal one. It encompasses both clinical and personal aspects, such as surgical results, academic performance, financial rewards, job gratification, and patient satisfaction among others. Several personality traits have been proposed as potential determinants of a successful surgical career over the years.¹ The path to training and working as a plastic surgeon is a well-known competitive process, thereby highlighting the importance of such traits in yielding a successful career. Although the benefit of emotional intelligence (EI) as a personality trait in plastic surgery training has been discussed,² its role in guiding career success has been poorly defined. This systematic review aims at defining EI, exploring its role in medical and non-medical fields and investigating its impact on a successful career in plastic surgery.

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Search Strategy

A search of the MEDLINE and Google Scholar databases for all publications in the English language up to December 2019 was performed by the first author (A.T.) to identify all relevant studies for this review. The search strategy included the Medical Subject Headings “emotional intelligence” AND “surgery.” In addition, the bibliographic reference list of all eligible studies was also reviewed to include articles not present in the initial search criteria.

Inclusion Criteria

Eligibility criteria included all studies evaluating the role of emotional intelligence in a surgical career or training pathway. In addition, studies describing the role of emotional intelligence in non-medical careers were also included.

Exclusion Criteria

Full-text review was performed for all selected articles. Abstracts and presentations without full text were excluded due to the lack of information available for accurate evaluation. Duplicate articles were also excluded.

Selection Criteria

Extracted data included the author name, year of publication, population and outcome studied, and the role of emotional intelligence.

RESULTS

This study followed the guidelines outlined in the Preferred Reporting Items for Systematic reviews and

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Meta-Analyses (PRISMA flowchart). A total of 3,138 articles were included from the systematic search strategy. After references were included and duplicates removed, 3,037 articles were available for title and abstract reviewing. Of these, 3,013 articles did not meet the inclusion criteria and were excluded. Following a full-text review of the remaining articles, all 24 articles were included in this systematic review. A detailed flow diagram of the process is provided in [Figure 1](#). Details of the included studies are provided in [Table 1](#).

Emotional Intelligence

Emotional intelligence, or emotional quotient, is a multifaceted term described by Mayer, as an individual's awareness, understanding and control of emotions in oneself and others, and using this perception in guiding thinking and behavior.²⁷ Goleman later expanded on the phenomenon and described five distinct aspects allowing leaders to maximize their own performance as well as that of their followers.²⁸ These include self-awareness, self-regulation, motivation, empathy, and social skills. In contrast to the relatively static intelligence quotient, EI is thought of as a flexible trait which can be learnt and which evolves.²⁹

Since EI was originally popularized in the corporate world—leading to improved performance, academic success, increased productivity, and job satisfaction—its application to the medical field has remained far less studied for a long time.³⁰ As a successful career in surgery also

requires proficient understanding and response to human emotions, the role of EI in surgical performance is now rapidly gaining interest in the medical community.

In a study by Arora,³¹ it was found that higher levels of EI correlated with improved doctor–patient relationships, empathy, teamwork, and communication skills. These characteristics align naturally with modern medical practice, where clinicians working in a multidisciplinary setting are increasingly expected to demonstrate interpersonal attributes in addition to the required clinical knowledge and skills.

EI and Plastic Surgery

The only study investigating EI in plastic surgery relates to its effect on resident burnout rates.⁸ This cross-sectional study by Bin Dahmash et al⁸ explored the role of EI in plastic surgery residents in Saudi Arabia and noted that higher levels of EI positively correlated with personal accomplishment, but negatively correlated with emotional exhaustion and depersonalization. It was suggested that this protective role against burnout was largely attributed to residents with higher levels of EI being better able to manage work-related stress. Although these findings only relate to plastic surgery residency, the prevalence of similar stressors following board certification could justify extrapolating the conclusions to predict a successful plastic surgery career.

The association of EI with general malpractice claims has also been studied.²⁰ Surgical specialties are consistently associated with an increased risk of litigation, with previous studies estimating a 5–12-fold increase compared with medical specialties.^{32,33} Published data on litigation patterns revealed that a minority of physicians generate the majority of lawsuits, suggesting that physician characteristics are the strongest drivers of lawsuits.³⁴ In a current era of medicine where patient satisfaction is essential, communication between physicians and patients has never been more vital. A report published by the NHS Litigation Authority revealed a substantial rate of litigation claims of 2.7% in plastic surgery.³⁵ Shouhed et al²⁰ noted an indirect negative correlation between a physician's level of EI and his or her risk of litigation. As such claims may directly impact on a successful plastic surgical career, the results of this study are of clear relevance and lower levels of EI may be associated with a less successful career.

EI in Residents

Thirteen studies have been published on the role of EI in surgical residency.

EI and Resident Burnout Rates

The relationship between EI and burnout rates in surgical residents has been reported in five studies, all of which concluded that higher levels of EI were associated with lower burnout rates. In general surgery residents, Lindeman et al¹⁶ performed a longitudinal cohort study of 69 residents over a year and noted that high levels of EI were an independent predictor of lower burnout. Similarly, studies by Beirle,⁵ Cofer et al⁷ and Gleason et al¹² also reported a negative correlation between EI and

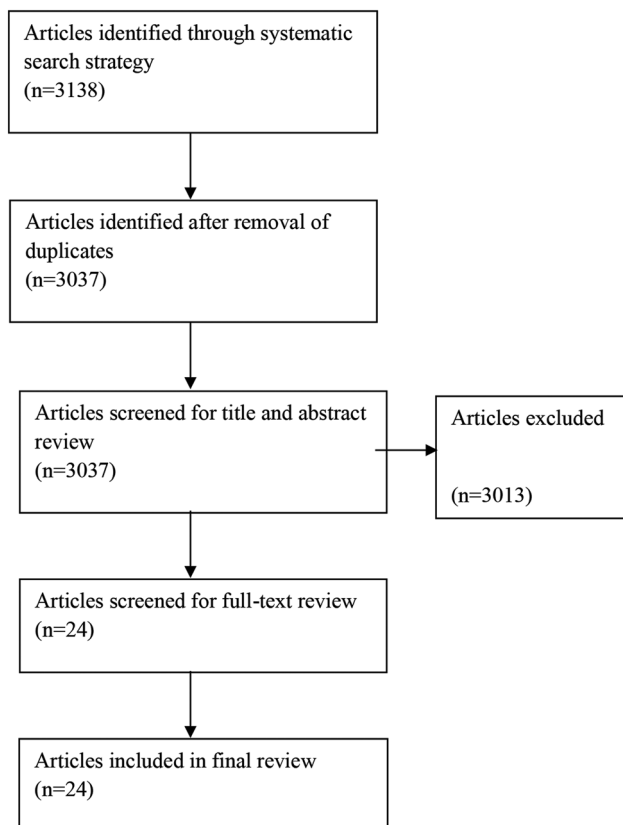


Fig. 1. Flow diagram detailing search process.

Table 1. Studies Included in the Systematic Review

Author	PMID	Year	Population	Outcome	Role of EI
Aithal et al ³	28406111	2016	200 Medical students	Academic performance	Positive association
Austin et al ⁴	17614889	2007	156 Medical students	Academic performance	No association
Beierle et al ⁵	30658946	2019	86 General surgery residents	Burnout	Inversely associated
Chew et al ⁶	23537129	2013	163 Medical students	Academic performance	Positive correlation for final year
Cofer et al ⁷	29483035	2018	40 General surgery residents	Burnout	Negative association
Bin Dahmash ⁸	31333920	2019	37 Plastic surgery residents	Personal achievement, emotional exhaustion, depersonalization	Positive association with PA, negative association with EE and DP
Dolev et al ⁹	31002640	2019	111 Medical students	Entry selection for medicine	No association
Dugan et al ¹⁰	25011036	2014	106 Otolaryngology residents	Patient satisfaction after emotional intelligence training of residents	Positive association
Faye et al ¹¹	21772646	2011	150 Postgraduate residents	Clinical anger, relationship with colleagues and seniors	Negative correlation, positive correlation
Gleason et al ¹²	31785888	2019	69 General surgery residents	Burnout	Inversely associated
Humphrey-Murto et al ¹³	24556771	2014	333 Medical school applicants	Future academic performance	No association
Hollis et al ¹⁴	28032557	2017	31 General surgery residents	Job satisfaction and USMLE performance	Positive association with both
Lin et al ¹⁵	27182037	2016	73 General surgery residents	Well-being	Positive association
Lindeman et al ¹⁶	29198973	2017	69 General surgery residents	Burnout	Negative association (inverse)
Nayar et al ¹⁷	31425880	2019	18 Surgical residents	Self-assessment of surgical task	Positive association
Park et al ¹⁸	26527584	2016	16 Otolaryngology residents	Competency outcomes	Positive association
Ranasinghe et al ¹⁹	28219419	2017	471 Medical undergraduates	Academic performance	Positive
Shouhed et al ²⁰	30698614	2019	—	Risk of litigation	Indirect negative effect
Suleman et al ²¹	31291333	2019	186 Undergraduate students	Academic success	Positive association
Swami et al ²²	24758443	2013	56 Medical and surgical residents	Burnout	Inverse correlation
Talarico et al ²³	23523976	2013	36 Anesthesiology residents	Resident performance	Positive correlation
Wagner et al ²⁴	12448645	2002	16 Resident physicians	Patient satisfaction	Limited correlation
Weng et al ²⁵	21287265	2011	50 Surgeons	Patient–surgeon relationship	Positive correlation
Wijekoon et al ²⁶	28946877	2017	130 Medical students	Academic success at MBBS exam	Positive association

burnout rates. Similarly, findings from Hollis et al¹⁴ demonstrated a positive relationship between EI and job satisfaction in surgical trainees. Furthermore, the role of emotional intelligence extending to residents of different specialities has also been investigated by McKinley et al and noted that global EI of all residents was comparable with, but less variable than the general population. Interestingly, no statistical difference between surgery, pediatric, and pathology residents was noted.³⁶ Results from Swami et al's study,²² which also included medical residents, also concurred with the above. These findings also strongly support those from Bin Dahmash⁸ in plastic surgery residents, suggesting that higher levels of EI could play a favorable role in a plastic surgical career.

EI and Patient Satisfaction

Two articles assessed the relationship between EI and patient satisfaction. Dugan et al¹⁰ noted a positive association between EI training of 106 otolaryngology residents and patient satisfaction. In addition, Weng et al²⁵ found that high levels of EI correlated with better patient–surgeon relationship in a study of 50 surgeons. However, Wagner et al²⁴ noted contrasting results, whereby no

association between resident physicians' scores on a test of EI and patient satisfaction was found. Patient satisfaction lies at the center of any successful medical or surgical career and, thus, the role of EI in this domain remains ambiguous but offers an exciting avenue for future research.

EI and Relationship with Colleagues

Faye et al¹¹ conducted a study on 150 postgraduate residents and noted that high levels of EI resulted in a negative correlation with clinical anger and a positive correlation with relationship with colleagues and seniors.

EI and Resident Performance

Two studies have evaluated the impact of EI on resident performance. Park et al's¹⁸ study of 16 otolaryngology residents noted that EI positively influenced faculty-rated competency outcomes. Talarico et al²³ also noted a positive correlation between EI and resident performance in anesthesiology residents. Plastic surgery training is a particularly competitive area where excellent resident performance is often desirable. Thus, the high levels of EI may thus promote such a successful career pathway.

Self-awareness and self-assessment are qualities which play a fundamental role in the development of a safe surgeon and often reflect maturity and experience. Emotional intelligence has been shown to predict better self-assessment of surgical quality in surgical trainees when performing simulated laparoscopic appendicectomy.¹⁷ This enables trainees to better identify strengths and weaknesses and improve both technical and non-technical aspects, while striving towards becoming better surgeons.

EI IN MEDICAL STUDENTS

EI and Academic Performance

These findings have naturally generated much interest from medical educators as a predictor tool to better identify and select potentially successful residency candidates for surgical programs.

Six studies investigated the association between EI and academic performance in medical school. Aithal et al³ concluded that a positive association existed between EI and academic performance in their study of 200 medical students. Other studies from Chew et al,⁶ Ranasinghe et al,¹⁹ and Wijekoon et al²⁶ also report similar results. However, a study by Austin⁴ only reported sparse associations between EI and academic performance, while research by Dolev et al⁹ on 111 prospective medical students reported no link to academic performance. Moreover, Humphrey-Murto et al¹³ noted that EI measured at test admissions did not reliably predict future academic performance at medical school. Although Lin et al noted EI as a strong predictor of resident well-being, various studies performed have demonstrated limited association between EI and performance outcome at both undergraduate and postgraduate levels.^{15,37,38,39} Thus, the role of EI in the resident selection process still requires refinement.

The educational implications of EI which may potentially influence a successful future career have also been studied. McKinley et al identified particular traits which may benefit from further training.³⁶ For example, pediatric resident physicians who scored low in “assertiveness” and high in “empathy” may benefit from interventions to equip them with skills to develop negotiation and conflict management aspects compared with interventions to further increase empathy. The benefits of EI development as part of residency have also been demonstrated in a study by Dugan et al,¹⁰ where a formal EI training program for otolaryngology residents including a one-day seminar, simulation and faculty mentoring resulted in higher EI scores and higher measures of patient satisfaction.¹⁰ These findings also concur with those by Nelis et al, where sustained levels of EI were noted following a robust training curriculum, thereby reinforcing the principle that EI is a developable characteristic.⁴⁰

EI in Non-medical Fields

Emotional intelligence may also influence academic success in undergraduate students. Suleman et al²¹ performed a cross-sectional, descriptive study of all undergraduate students at a university in Pakistan and noted

an association between EI and academic success in terms of a cumulative grade point average.²¹ Furthermore, “self-development” was rated as the strongest predictor followed by “emotional stability”, “managing relations”, “altruistic behavior,” and “commitment” in defining academic success positively. In contrast, “self-awareness” and “empathy” had no significant influence on academic success.

In the workplace, EI has been considered a powerful predictor of career success, partly due to its role in forming interpersonal relationships and developing successful coping strategies.⁴¹ Following initial inconclusive research by Momm et al,⁴² Rode et al⁴³ followed 126 college students over a 10-year span to full-time work in various industries and noted that higher levels of EI had a positive effect on subsequent salary levels. The authors hypothesized that individuals with higher levels of EI have stronger relationship-building skills, are more self-aware, more willing to seek out mentoring advice, and less likely to have anxiety interfering with relationships. The ability of EI to be learnt has led to specific training programs being developed. Gilar-Corbi⁴⁴ noted that EI could be improved within business environments. Thus, the incorporation of such programs into plastic surgery residency or private practice could translate into valuable career benefits.

CONCLUSIONS

The concept of EI has exponentially grown in popularity over the years, since its original application in the business world. The various elements constituting EI have shown a clear overlap with qualities also required in modern medicine and surgery and have thus naturally extended its interest to the medical community. Although several studies show a positive correlation with a successful corporate career, the impact on a successful career in plastic surgery remains poorly defined. Our study represents the only systematic review on the role of EI and surgery. Published data on the benefits of EI in medical and surgical residency training are encouraging and highlight the acute need for high-quality research on EI in plastic surgeons.

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