

ORIGINAL ARTICLE

The impact of personality character on choosing the medical specialty among medical students in the Kingdom of Saudi Arabia

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ABSTRACT

Background: As the emerging number of medical students globally and in Saudi Arabia is rising each year, personality characteristics and their association with the specialty of choice for medical students have not been still completely studied.

Objectives: This study aimed to assess the impact of personality characteristics of medical students on choosing their medical specialty.

Material and Methods: This cross-sectional study was conducted across multiple medical universities in Saudi Arabia from October 2021 to June 2022. All adult medical students studying at medical universities in Saudi Arabia were included. A self-administered google form survey was distributed to medical students through different social media platforms (WhatsApp university groups, Twitter, and Telegram). A minimum sample size of 377 was calculated. We assessed the participants' personalities using The Big Five inventory, which is the most commonly used scale across different countries to examine normal adult personality traits; it consists of five personality dimensions which are: extraversion which refers to social tendency, conscientiousness refers to being oriented, openness refers to the tendency of curiosity, and neuroticism referring to the tendency to be anxious and feel negative emotions.

Results: Findings indicate that among 15 included specialties, choosing orthopedic surgery was significantly associated with the highest mean scores in extraversion, agreeableness, and conscientiousness. Furthermore, choosing Ear, Nose, Throat (ENT) and orthopedic surgery were significantly associated with the highest openness scores.

Conclusion: This study has shown that each personality trait seems to be attracted to different medical specialties. So, identifying personality traits might be helpful for medical students to decide on the best future medical specialty that suits their personality and characteristics.

Keywords: Medical students, specialty, personality character.

Introduction

With the increase of medical students seen nationwide and the competitive nature of the medical field, a question that arises is whether certain personality characteristics align better with some medical specialties than others. Currently, students are prone to competing for popular specialties due to monetary benefits, overall trend, and perceived esteem associated with these popular specialties while unpopular ones are receiving lesser applications [1].

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Received: 17 October 2022 | **Accepted:** 26 October 2022



While multiple factors are associated with the decision-making process, personality characteristics can be playing a hidden pivotal role in these decisions. Personality is a collection of relatively constant characteristics and psychological tendencies of a person, which are different from other individuals [2]. Previous research suggests a relationship between personality traits and medical school acceptance, success in medical field, clinical performance, and physician overall well-being. Literature has also examined whether personality can predict medical professional choice [3].

Anna Muscatello et al. [4] studied the personality traits to predict a medical student's preference to pursue a career in surgery. Investigating medical students at a single university, the author used PPIR and discovered that 23.6% of students interested in a surgical career had a higher PPIR total score and that certain medical specialties appear to attract doctors with certain personality characteristics.

In the available literature, the five-factor personality trait model, also known as the "Big Five" personality model, was found to be widely used. The model specifies the five attributes of human personality: openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism.

The openness to experience is associated with creativity and a thirst for knowledge. Conscientiousness can be linked to being achievement-oriented and self-disciplined. Extroversion is a tendency to be active and positive. Agreeableness is manifested in the form of trust, empathy, and friendship. Neuroticism is associated with negative emotions [5].

The decision of choosing the specific specialty to train in is of utmost importance and is a pivotal decision in the career and life of physicians. It can impact physicians' lives negatively if a wrong choice is made [6]. However, despite this decision's importance, an evidence gap is seen in the impact of personality in choosing the medical specialist career [7].

Current evidence suggests that one of the important factors that affect the success of medical students is personality traits, and they are important for their performance and psychological health. However, its effect on decision-making over multiple medical specialties is unknown. We aim to bridge this gap by evaluating the impact of personality characteristics in choosing a medical specialty among medical students.

Subjects and Methods

This cross-sectional study was conducted at Imam Mohammed Bin Saud Islamic University, Riyadh, Saudi Arabia from October 2021 to June 2022. Medical students from Riyadh, Hail, and other cities in Saudi Arabia were included in this study. The study population was medical students in Saudi Arabia. Inclusion criteria include medical students studying in Saudi Arabia and 18 years of age or older, exclusion criteria include non-

medical students, students younger than 18 years of age, and students studying outside of Saudi Arabia.

The sample size of 377 was calculated by the Raosoft sample size calculator based on a confidence level of 95% and a 5% of margin error. A self-administered google form survey was distributed to medical students through different social media platforms (WhatsApp university groups, Twitter, and Telegram). The Big Five inventory was created [8], which is the most commonly used scale across different countries. It consists of five personality dimensions which are: extraversion which refers to social tendency, conscientiousness refers to being oriented, openness refers to the tendency of curiosity, and neuroticism refers to the tendency to be anxious and feel negative emotions.

The approval to conduct this study was obtained from the Institutional Review Board of Imam Mohammad Ibn Saud Islamic University. The participants' consent to participate in the study was obtained on the first page of the questionnaire. Data were kept confidential and the participants were provided with informed consent.

The data analysis was performed using Statistical Package for the Social Sciences (SPSS) version 25 (SPSS Inc., Chicago, IL). Numerical data were presented as the mean (standard deviation, SD), and categorical data for participants' characters were presented as the numbers (percentage). A comparison of mean scores of the main five domains between the specialties was made using a Kruskal-Wallis H test. However, the Mann-Whitney U test was used to compare mean scores between participants who chose a specialty and who did not choose one. $p < 0.05$ was taken as statistically significant.

Results

Out of 857, a total of 805 participants had completed our survey with a response rate of 93.9%, all participants lived in the kingdom of Saudi Arabia. Female gender presented 52.7% of the sample ($n = 424$). Only 6 participants (0.7%) were 18 years old while 81 (10.1%) were 25 years or older, and the remaining participants were between 19 and 24 years of age. The majority of participants were single (96.4%). Most of the participants were from Al-Imam Muhammad Ibn Saud Islamic University College of Medicine (46.5%) followed by King Saud bin Abdulaziz University and King Saud University, 17.3% and 17%, respectively. Approximately, half of the participants were in the fifth (20.2%) and sixth year (30.4%), and only 3.2% were in the first year (Table 1).

Among the 15 specialties (which have been chosen by more than 10 participants), significant differences were noted between four of the five dimensions of the survey: extraversion, agreeableness, conscientiousness, and openness. Participants who chose orthopedic surgery showed significant highest mean scores in extraversion, agreeableness, and conscientiousness ($p < 0.001$). Both participants who chose ENT and orthopedic surgery were

Impact of personality on medical specialty chosen

Table 1. Characteristics of our participants.

	Frequency (N)	%
Gender		
Female	424	52.7
Male	381	47.3
Age		
18	6	0.7
19	18	2.2
20	92	11.4
21	119	14.8
22	148	18.4
23	185	23.0
24	156	19.4
25 and older	81	10.1
Marital status		
Married	29	3.6
Single	776	96.4
University		
Al-Imam Muhammad Ibn Saud Islamic University College of Medicine	374	46.5
King Saud bin Abdulaziz University for Health Sciences	139	17.3
King Saud University College of Medicine	137	17.0
Princess Nourah Bint Abdulrahman University College of Medicine	121	15.0
Alfaisal University College of Medicine	12	1.5
Dar Al Uloom University College of Medicine	10	1.2
Almaarefa College of Medicine	4	0.5
College of Medicine, Vision Colleges	2	0.2
Global Colleges College of Medicine, Riyadh	2	0.2
Prince Sattam Bin Abdulaziz University	1	0.1
Hail university	1	0.1
Shaqra university	1	0.1
Unaizah college of medicine	1	0.1
Medical year		
First year (Prep year)	26	3.2
Second year	109	13.5
Third year	112	13.9
Fourth year	118	14.7
Fifth year	163	20.2
Sixth year	245	30.4
Internship year	32	4.0
Do you currently know which specialty is your first choice to apply for?		
Yes	484	60.1
No	321	39.9

noted to have the highest score of openness, ($p = 0.007$) as shown in Figure 1.

A total of 484 participants (60.1%) reported that they knew their first choice of specialty. According to the five dimensions of the survey, participants who chose a specialty showed a higher mean score in the extraversion

and conscientiousness domains compared to those who have not chosen their specialty with 3.06 ± 0.58 versus 2.99 ± 0.54 in extraversion and 3.45 ± 0.58 versus 3.39 ± 0.55 in conscientiousness, respectively. However, this difference was not statistically significant. While almost similar means of agreeableness domains were noted

Impact of personality on medical specialty chosen

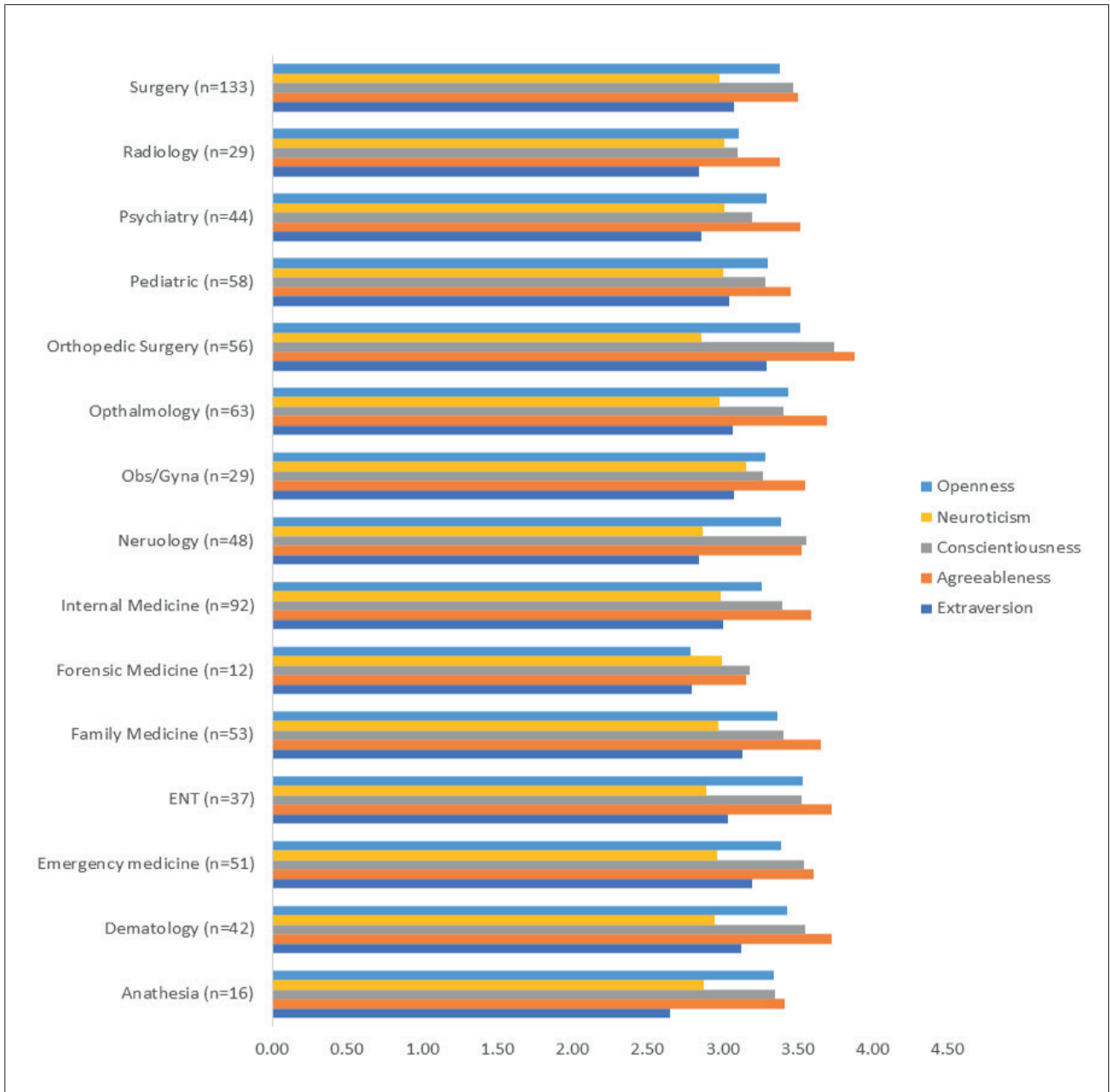


Figure 1. The 15 medical specialties and their scores in the five dimensions.

between both groups. Participants who choose a specialty showed lower scores in neuroticism (mean \pm SD = 2.94 ± 0.55) and openness (mean \pm SD = 3.35 ± 0.58) than participants who did not choose a specialty (mean \pm SD = 3 ± 0.61 for neuroticism and 3.4 ± 0.53 for openness). No significant difference was noted (Table 2).

Anesthesia

Among 16 participants who chose anesthesia as their specialty, the highest mean score was noted in the agreeableness domains (3.4 ± 0.4) followed by

conscientiousness (3.35 ± 0.5) and openness (3.34 ± 0.65). The least scores were noted in the extraversion domains (2.65 ± 0.7) and neuroticism domains (2.9 ± 0.6).

Dermatology

A total of 42 participants who chose dermatology showed high agreeableness, conscientiousness, openness, and extraversion scores (3.7 ± 0.6 , 3.5 ± 0.55 , 3.4 ± 0.5 , and 3.1 ± 0.7 , respectively). Otherwise showed a low neuroticism score (2.9 ± 0.7).

Table 2. Comparison between participants who knew their first-choice specialty and student who didn't know yet.

	Chose a specialty (n = 484)	Have not chosen specialty (n = 321)	p-value
Extraversion	3.06 ± 0.58	2.99 ± 0.54	0.099
Agreeableness	3.57 ± 0.62	3.6 ± 0.55	0.390
Conscientiousness	3.45 ± 0.58	3.39 ± 0.55	0.150
Neuroticism	2.94 ± 0.55	3 ± 0.61	0.323
Openness	3.35 ± 0.58	3.4 ± 0.53	0.305

Emergency medicine

A total of 51 participants who chose emergency medicine reported high scores of agreeableness and conscientiousness (3.6 ± 0.6 and 3.5 ± 0.66) followed by openness and extraversion (3.4 ± 0.57 and 3.2 ± 0.5) with low neuroticism score (2.96 ± 0.6).

ENT

A total of 37 participants who chose ENT reported high scores of agreeableness, conscientiousness, and openness (3.7 ± 0.6 , 3.5 ± 0.6 , and 3.5 ± 0.4) followed by extraversion (3 ± 0.4) with low neuroticism score (2.89 ± 0.6).

Family medicine

A total of 53 participants who chose family medicine reported high scores of agreeableness, conscientiousness, and openness (3.65 ± 0.5 , 3.4 ± 0.5 , and 3.36 ± 0.5) followed by extraversion (3.1 ± 0.5) with low neuroticism score (2.97 ± 0.6).

Forensic medicine

A total of 12 participants who chose forensic medicine reported high scores of agreeableness and conscientiousness (3.15 ± 0.56 and 3.17 ± 0.58) followed by low neuroticism (2.99 ± 0.65), extraversion (2.79 ± 0.6), and openness scores (2.78 ± 0.7).

Internal medicine

A total of 92 participants who chose internal medicine reported high scores of agreeableness (3.59 ± 0.6), conscientiousness (3.39 ± 0.6), and openness (3.25 ± 0.5) followed by extraversion (3 ± 0.5) with low neuroticism score (2.98 ± 0.5).

Neurology

A total of 48 participants who chose neurology reported high scores of conscientiousness (3.56 ± 0.6), agreeableness (3.52 ± 0.5), and openness (3.38 ± 0.5) followed by low neuroticism (2.86 ± 0.6) then extraversion (2.83 ± 0.5).

Obs/Gyn

A total of 29 participants who chose Obs/Gyn reported high scores of agreeableness (3.55 ± 0.6), openness (3.3 ± 0.5), and conscientiousness (3.27 ± 0.7), followed by neuroticism (3.2 ± 0.6) then extraversion (3.1 ± 0.66).

Ophthalmology

A total of 63 participants who chose ophthalmology reported high scores of agreeableness (3.69 ± 0.6), openness (3.4 ± 0.58), and conscientiousness (3.4 ± 0.57), followed by extraversion (3.1 ± 0.5) then neuroticism (2.98 ± 0.6).

Orthopedic surgery

A total of 56 participants who chose orthopedic surgery reported high scores of agreeableness (3.88 ± 0.67), conscientiousness (3.7 ± 0.53), and openness (3.5 ± 0.56) and followed by extraversion (3.3 ± 0.6) then neuroticism (2.9 ± 0.5).

Pediatric

A total of 58 participants who chose pediatric reported high scores of agreeableness (3.45 ± 0.6), openness (3.3 ± 0.5), and conscientiousness (3.3 ± 0.54), followed by extraversion (3 ± 0.5) then neuroticism (3 ± 0.5).

Psychiatry

A total of 44 participants who chose psychiatry reported high scores of agreeableness (3.5 ± 0.6), openness (3.3 ± 0.7), and conscientiousness (3.2 ± 0.5) and followed by neuroticism (3 ± 0.6), then extraversion (2.9 ± 0.57).

Radiology

A total of 29 participants who chose radiology reported high scores of agreeableness (3.38 ± 0.5), openness (3.1 ± 0.5), and conscientiousness (3.1 ± 0.5), followed by neuroticism (3 ± 0.5) then extraversion (2.8 ± 0.5).

Surgery

A total of 133 participants who chose surgery reported high scores of agreeableness (3.5 ± 0.6), conscientiousness

(3.5 ± 0.5), and openness (3.38 ± 0.6), followed by extraversion (3.1 ± 0.6) then neuroticism (2.98 ± 0.57).

In addition, a comparison between the 15 specialty choices in relation to the five domain scores in the Big Five inventory, arranging it from the most common specialty to the least common specialty in each domain was done (Table 3).

Extroversion

The scores from highest to lowest were: Orthopedic Surgery, Emergency Medicine, Family Medicine, Dermatology, Obs/Gyn, Surgery, Ophthalmology, Pediatric, ENT, Internal Medicine, Psychiatry, Radiology, Neurology, Forensic Medicine, and Anesthesia.

Agreeableness

The scores from highest to lowest were Orthopedic Surgery, Dermatology, ENT, Ophthalmology, Family Medicine, Emergency medicine, Internal Medicine, Obs/Gyn, Neurology, Psychiatry Surgery, Pediatric, Anesthesia, Radiology, and Forensic Medicine.

Conscientiousness

The scores from highest to lowest were Orthopedic Surgery, Neurology, Dermatology, Emergency Medicine, ENT, Surgery, Family Medicine, Ophthalmology, Internal Medicine, Anesthesia, Pediatric, Obs/Gyn, Psychiatry, Forensic Medicine, and Radiology.

Openness

The scores from highest to lowest were ENT and Orthopedic Surgery, Ophthalmology, Dermatology, Neurology, Emergency Medicine, Surgery, Family Medicine, Anesthesia, Pediatric, Psychiatry, Obs/Gyn, Internal Medicine, Radiology, and Forensic Medicine.

Discussion

In this study, we aimed to determine whether there was an association between different personality traits and choosing a specific specialty among the 15 included ones. Our findings indicate that among 15 included specialties, choosing orthopedic surgery was significantly associated with the highest mean scores in extraversion,

agreeableness, and conscientiousness. Furthermore, choosing ENT and orthopedic surgery were significantly associated with the highest openness scores. These findings are not consistent with the findings of previous investigations. Kwon and Park [9] showed that choosing non-surgical departments was more significantly associated with higher openness scores. On the other hand, the authors demonstrated that choosing clinical over basic medicine was significantly associated with higher agreeableness scores. Another study reported no significant differences between their included specialties in terms of emotional stability, conscientiousness, agreeableness, and extraversion traits. Only the openness trait was significantly different among specialties [10].

Regarding the openness trait, an investigation by Mullola et al. [7] showed that it is more consistently associated with preferring a specialty than other traits. Previous studies also mentioned that medical students and psychiatrists that prefer psychiatry usually have the highest openness scores [9,11]. This trait is usually associated with divergent thinking and academic abilities. Evidence shows that it is also important for clinical and applied settings rather than academic ones [7]. This might explain why choosing ENT and orthopedic surgery was significantly associated with the highest openness scores in this study. In this context, evidence shows that openness can facilitate the required adaptation to situational changes, flexibility, and acceptance [7]. Moreover, Fino et al. [11] concluded that individuals with higher openness scores are more people-oriented and open-minded, reducing their fear of contacting patients and being more intellectually curious.

Milić et al. [10] furtherly showed that students who preferred anesthesiology had the highest conscientiousness scores. The authors explained this by suggesting that these anesthesiologists are usually more practical, precise, responsible, and organized. However, our findings showed that orthopedic surgery had the highest score in this trait. This might also be explained that these physicians also require the same level of reported skills. We also found that choosing anesthesia was associated with modest personality scores and even with the lowest extraversion. On the other hand, other research articles demonstrated that preferring anesthesiology is usually associated with higher openness and higher extraversion scores because anesthesiologists are open to new experiences [3,12].

Our results also showed that choosing surgery was associated with high agreeableness, conscientiousness, and openness scores. Mullola et al. [7] showed that surgery was associated with higher conscientiousness. On the other hand, Milić et al. [10] and Mullola et al. [7] found it was associated with the lowest agreeableness and high emotional stability scores. This is also consistent with previous studies in the literature, which concluded that surgeons are more likely to be dominant, demanding, and tough-minded [7,13]. This might be attributed to the fact that surgeons are usually persistent, careful,

Table 3. Comparison between the 15 specialty choices in the five domain scores.

	Kruskal-Wallis H	p-value
Extraversion	40.808	<0.000
Agreeableness	39.213	<0.000
Conscientiousness	49.083	<0.000
Neuroticism	8.464	0.864
Openness	30.152	0.007

and organized. On the other hand, surgeons are usually outgoing and extroverted [7,13,14]. Coombs et al. [15] also reported that surgeons have more openness and extraversion traits. The inconsistency of these findings might be attributed to the fact that not all studies included medical students, as some recruited medical doctors. Besides, it has been suggested that medical students tend to different practice and training environments according to their specialty [14].

Evidence from previous investigations shows that internal medicine is the most preferred specialty by students, while diagnostic ones are the least preferred [16,17]. We found that participants who chose internal medicine reported high scores of agreeableness, conscientiousness, and openness, followed by extraversion with low neuroticism scores. Choosing family medicine is also associated with openness to experience, conscientiousness, and agreeableness [10].

Another aspect to be discussed is the impact and association of certain factors with choosing a specific specialty. Many studies in the literature have discussed this. For instance, previous Indian investigations demonstrated that most medical students depend on career prospects, lifestyle, income, and job satisfaction in choosing their careers [18]. Other investigations demonstrated that such factors might include the characteristics and personality of students. On the other hand, some researchers suggested that other factors like research orientation and medical education are crucial in influencing specialty choice [19-21]. It should be noted that these factors are remarkably variable and usually differ based on the culture and environment of practice. For instance, an estimate from the United Kingdom showed that female students are less likely to prefer surgery [22]. On the other hand, estimates from Germany show that the number of female surgeons has slightly increased [17]. The impact of gender was also reported in other worldwide studies [23]. Buddeberg-Fischer et al. [24] even demonstrated that the most influencing factor in choosing a specialty was gender, followed by personality traits. Another study reported that preferring a specialty is based on fewer on-call duties, increased family time, and related creativity [25]. Al-Mendalawi [26] showed that higher income and personal interest were the most significant factors associated with choosing a specialty. Moreover, intellectual content was also reported as a significant factor [27].

Conclusion

Identifying personality traits might be helpful for medical students to decide on the best specialty that suits their personality and characteristics. We found that choosing orthopedic surgery was significantly associated with the highest mean scores in extraversion, agreeableness, and conscientiousness. Furthermore, choosing ENT and orthopedic surgery were significantly associated with the highest openness scores.

List of Abbreviations

ENT Ear, Nose, Throat
PIRP Psychopathic personality inventory-revised

Conflict of interests

There was no conflict of interest while conducting this study.

Funding

There was no funding while conducting this study.

Consent to participate

Informed consent was taken from all participants of the study prior to data collection on the first page of the questionnaire used.

Ethical approval

The Institutional Review Board (IRB) approval of Imam Mohammad Ibn Saud Islamic University was taken via reference number 161-2021, dated: 03/11/2021.

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