Original Research Article

Factors influencing medical students' choice regarding Anaesthesiology as a future career at King Abdulaziz University Hospital Jeddah, Saudi Arabia

ABSTRACT

Aims: our study aimed to identify whether anesthesiology is a desired specialty among medical students at King Abdulaziz University and what factors may have influenced or hindered their decision.
Study design:cross-sectional study.
Study setting:at King Abdulaziz University Hospital, Jeddah, Saudi Arabia between June 8th, 2019 till June 25th, 2019.
Methodology: An online questionnaire was distributed to all 700 5th and 6th year medical students at King Abdulaziz University Hospital and they were asked to fill it anonymously. Pre-clinical medical students (2nd, 3rd and 4th years) were excluded due to their lack of exposure to the field of anesthesiology. The estimated sample size was a random 248 medical students of KAUH.
Results: Our results showed that the most preferred specialties were Internal medicine (37.9%), followed by surgery (35.5%), then family medicine (27%). While the field of anesthesiology was chosen by 14.5% of the participants. however, in response to a separate question, 79.8% of the respondents have not considered it as their future career.

Many considered Doctor-patient relationship to have the greatest influence (81.7%), followed by controllable lifestyle (80%), while income 71% and prestige 63.2% were less influential factors for those career decisions.

Conclusion:it is essential to show medical students that anesthesiologists do interact with patients and increase their interaction with influential individuals in this field since they are capable of positively adjusting their viewpoints.

Keywords: Medical students, Anesthesia, Future career, Factors

1. INTRODUCTION

Anesthesiology is a field of medicine that deals with the alleviation of pain by administration of anesthetics, a drug which promotes a temporary loss of sensation or awareness during certain procedures or tests. [1] There are different types of anesthesia: general, local, and monitored care. General anesthesia is often required for major or prolonged surgeries and results in loss of awareness. Whereas in local anesthesia, the patient is aware, and the drug

affects a specific area only. The use of anesthetics is not limited to anesthesiologists; several medical professionals can provide anesthesia, especially local anesthesia, to a certain extent. [1]

In the mid-50s the anesthesia was presented for the first time in Saudi Arabia. And in the '80s medical schools started officially to give the anesthesiology training courses. [2]

Medical school provides lots of specialties for undergraduate students to choose between, such as Surgery, Internal medicine, Pediatrics, and Anesthesia. Studies have stated several reasons on factors which may affect the decisions of medical students regarding their career choices, these include but are not limited to; the personal interests of the students, career stability, reputation, and prestige as well as income. [3] Also, some studies have shown that being a senior student and having prior knowledge about the specialties have a significant impact on the students' decision. These indicate that clinical rotation affects the students' judgment of the specialty. [4]

A recent local study was done on 236 students showed that the distribution of medical field interest was as follows: 22% internal medicine, 15% pediatrics, 38% surgery, 9% family medicine, 3% obstetrics and gynecology and 12% other fields (including 1% anesthesiology). [5] Another stated that "The least popular specialties were Community Medicine, (6.6%), Anesthesia, (6%) and Forensic Medicine (4.6%)." Based on these results we can conclude that anesthesiology remains one of the least favored specialties among medical students. [4]

However, their attitude towards anesthesiology as a future career and which specialties are preferred as well as what factors display the most considerable magnitude in impacting students' choices locally remains uncertain. [5] Determining this is of great importance to adjust education systems to further peak student interest. Fundamentally, the medical field chosen by medical specialists as a career specifies the future supply of physicians available for the healthcare services in the country. [4,6]

So, in this study we aimed to identify whether anesthesiology is a desired specialty among medical students at King Abdulaziz University, and what factors may have influenced or hindered their decision.

2. MATERIAL AND METHODS

2.1 Study design and Study setting

A cross-sectional study was conducted among medical students at King Abdulaziz University Hospital, Jeddah, Saudi Arabia in 2019. An online questionnaire was distributed to all 700 5th and 6th year medical students at King Abdulaziz University Hospital and they were asked to fill it anonymously. Pre-clinical medical students (2nd, 3rd and 4th years) were excluded due to their lack of exposure to the field of anesthesiology. The estimated sample size was a random 248 medical students of KAUH and was determined using the single proportion equation in Raosoft software package (10) [7] with a confidence interval of 95% and 5% margin of error.

2.2Data collection

Data were collected from June 8th, 2019 till June 25th, 2019. Were acquired through an online questionnaire that was obtained from previous studies done on similar topics. [5] It consisted of 19 Multiple-choice questions that contained demographic features, specialty choices including: Internal Medicine, Pediatrics, Surgery, Obstetrics and gynecology, Family medicine, Anesthesiology, Radiology, and others, and what factors influenced their desired specialty. The factors covered were the type of residency program chosen, influence from others, presence of doctor-patient relationship, controllable lifestyle, prestige, and income. We also asked about their outlook on anesthesiology as a future career. The participants' confidentiality was guaranteed as we did not take names or numbers. Ethical approval was obtained from the Research Ethics Committee of KAUH.

2.3Data analysis

The data were entered using Microsoft Excel, and were statistically analyzed using IBM Corp, released 2011. IBM SPSS Statistics for windows, version 21.0. descriptive analysis of the data was expressed as numbers and proportions. We used a 5-point Likert scale to measure students' attitudes toward the choice of residency program and were expressed as mean, standard deviation and percent.

3. RESULTS AND DISCUSSION

3.1 Results

3.1.1 Demographics

A total of 700 medical students, 248 (35.4%) of which, have participated in the study. There were 144 females (58.1%) and 104 males (41.9%). More than half of the of respondents (52.4%) were 5th year medical students, and 47.6% were 6th year medical students. Most students had a GPA between 3.50-4.49 (55.2%), those with a GPA of more than 4.50 compromised (36.3%), and the rest had a GPA between 2.50-3.49 (8.5%). Majority of students were single (95.2%) and had no children (98.8%). Table 1presents the summary statistics for the demographic characteristics of the participants.

Table 1. ***Demographic characteristics of 5th and 6th year medical students at King Abdudulaziz University Hospital***

Information		Male (n=104) n (%)	Female (n=144) n (%)	Total (n=248) n (%)
Level in medical school	5th year	41 (39.4%)	89 (61.8%)	130 (52.4%)
	6th year	63 (60.6%)	55 (38.2%)	118 (47.6%)
GPA	>than 4.5	29 (27.9%)	61 (42.4%)	90 (36.3%)
	4.49-3.5	61 (58.7%)	76 (52.8%)	137 (5.2%)
	3.49-2.5	14 (13.5%)	7 (4.9%)	21 (8.5%)
	< than 2.5	0	0	0
Marital status	Married	5 (4.8%)	7 (4.9%)	12 (4.8%)
	Single	99 (95.2%)	137 (95.1)	236 (95.2%)
Children	Yes	0	3 (2.1%)	3 (1.2%)
	No	104 (100%)	141 (97.9%)	245 (98.8%)

3.1.2Specialty preference

As shown inTable 2, students were permitted to select several fields of interest and the result is as follows: Internal medicine (43.5%), surgery (36.7%), family medicine (27.4%), pediatrics (23.4%), obstetrics and gynecology (18.1%), radiology (14.5%),

Table 2. ***Specialty preferences among 5th and 6th years in medical school at King Abdulaziz university Hospital according to gender and level***

	Female		Male		Total
Medical fields	5th (n=89) n (%)	6th (n=55) n (%)	6th (n=55) n (%)	6th (n=63) n (%)	(n=248) n (%)
Internal medicine	32 (29.6%)	24 (22.2%)	16 (14.9%)	36 (33.3%)	108 (43.5%)
Surgery	28 (30.8%)	14 (15.3%)	21 (23.1%)	28 (30.8%)	91 (36.7%)
Family Medicine	32 (47.0%)	17 (25%)	8 (11.8%)	11 (16.2%)	68 (27.4%)
Pediatrics	32 (55.2%)	12 (20.7%)	9 (15.5%)	5 (8.6%)	58 (23.4%)
Ob/Gyn	20 (44.4%)	7 (15.6%)	11 (24.4%)	7 (15.6%)	45 (18.1%)
Radiology	12 (33.3%)	7 (19.4%)	5 (14%)	12 (33.3%)	36 (14.5%)
Anesthesiology	22 (61.1%)	3 (8.3%)	6 (16.7%)	5 (13.9%)	36 (14.5%)
Others					
ER	5 (33.3%)	4 (26.7%)	1 (6.7)	5 (33.3%)	15 (6.0%)
ENT	2 (25%)	1 (12.5%)	4 (50%)	1 (12.5%)	8 (3.2%)
Ophthalmology	4 (50%)	2 (25%)	1 (12.5%)	1 (12.5%)	8 (3.2%)

3.1.3Factors affecting career choice

Training in 5th and 6th years of medical school have displayed the greatest impact upon medical students' decisions regarding their residency program (73.4%), while 19.4% were influenced by training programs during their 3rd and 4th years, the remaining 7.3% had already made their decision based on experience prior to medical school.

When asked which individuals most heavily influenced their choice of residency training, 34.7% answered the faculty in the training program that they are planning to apply to, 27.4% said the residents, 12.5% attributed it to the health care providers before entering medical school, 8.5% of students responded with family members/family expectations, while the remaining 16.9% of students stated that none of these individual had any influence on their choice of residency program.

Respondents were asked to rate each of the following factors that may affect their choice regarding residency programs according to its importance. Results were measured using Likert scale and showed that Doctor-Patient relationship had the most considerable influence (82.1%), followed by Controllable lifestyle (80.1%), while Income (70.8%) and Prestige (63.1%) were less chosen by the respondents, as presented inTable 3.

Table 3. ***Main factors affecting participants career choice***

Factors	Mean	Standard deviation	Percentage
Doctor-patient relationship	4.10	1.086	82.1%
Controllable lifestyle	4.00	1.047	80.1%
Income	3.54	1.083	70.8%
Prestige	3.15	1.221	63.1%

3.1.4Anesthesiology as a specialty

With regards to anesthesiology, 79.4% of the respondents have not considered it as their future career. Many of the participants' parents and relatives were not anesthesiologists with a percentage of (99.6%) and (83.1%), respectively. The results showed that 93.5% of the students were exposed to a mandatory anesthesia rotation, of which 80.3% finished the rotation in two weeks, 10.4% in one week and 9.3% in Three weeks or above. However, almost the same percentage did not take part in a voluntary elective anesthesia rotation (93.1%).

We asked those who took part in the anesthesiology rotations about their stance on anesthesia as a career, and a higher number of the respondents have decided against a career in anesthesia (53.2%), and 25.3% did not apply because they thought that they couldn't successfully match into this field. Nonetheless, 7.4% of the students claimed that other factors heavily influenced their decision towards anesthesia other than clinical rotations. While 10.5% stated that the rotation had inspired them to pursue a career in anesthesia and the other 3.7% had already decided to pursue a career in anesthesia prior to the rotation.

According to Business Insider newspaper, anesthesia is the highest-paying job in the USA. We asked the students if this information would change their choice, 87.9% answered with "No," and 12.1% answered with "Yes." Then we asked them, approximately, how much the average income per month for an anesthesiologist is, and over half answered within the range of 30.000-50.000.

Among the following factors, lifestyle was found to be the most important factor to affect their choice to pursue a career in anesthesia (44.0%), followed by patient care aspect (35.1%), and others with a lesser impact such as: personality/interest (12.5%), income (3.6%) and pressure from family/peers (2.4%) similarly, basic science/ research aspect research (2.4%). Figure1

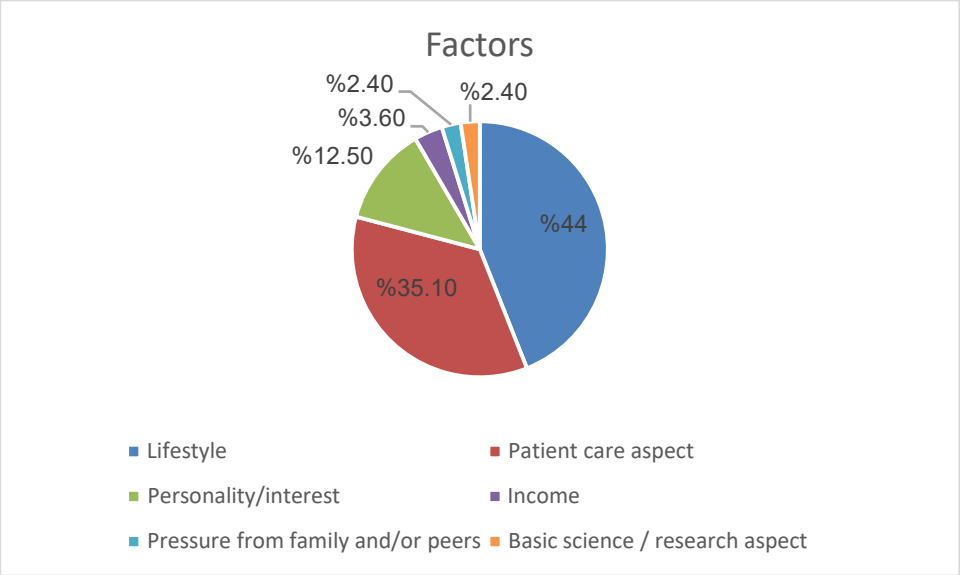

Figure1*. The most Important influencing factors regarding choosing Anesthesia as a career choice.*

Further analysis indicated that neither taking a mandatory rotation (P = 0.536) nor having an anesthetist parent (P = 1.000) or an anesthetist relative (P = 0.106) would have a significance on choosing anesthesiology as a future career, whereas taking a voluntary elective course revealed a positive correlation (P = 0.0000). These results are significant at the P< 0.05 level.

3.2Discussion

In our study, we aimed to identify whether anesthesiology is a desired specialty among medical students at King Abdulaziz University, and what factors may have influenced or hindered their decision.

The current study found that the top three specialties among male and female medical students were the same. Males preferred internal medicine, surgery and family medicine, respectively. While internal medicine was the first choice among females, followed by family medicine and surgery. It has been found that exposure via clinical rotations and prior background information influences medical students regarding their career choices.

Many studies have tried to establish the factors that affect students' specialty preferences. In our study, the doctor-patient relationship (82.1%) was the major factor which assesses students' career choice, suggesting that they desire meaningful patient relationships. Other studies also showed this to be a significant factor. [6,8,9] Some researches assumed that the students' characteristics, among them controllable lifestyle, to be major influences.[9,10] Likewise, our research strongly confirms that medical students consider the lifestyle a compelling factor in selecting a specialty. Students tend to avoid specialties with long and difficult work hours, demands on time and effort, and high amounts of stress. [9] Like most researches [5,10,11], our results showed that income is a highly ranked factor amongst medical students (70.8%) whereas prestige was the least prominent factor for determining the right specialty (63.1%).

Naturally, the type of residency program selected by medical students is most heavily influenced by training during senior years of medical school (73.4%), due to student exposure to a variety of specialties via clinical programs .[12]Specific individuals have been found to leave an impression on medical students as well, mainly faculty members as stated by 34.7% of the respondents, indicating that they can attract or discourage medical students towards their residency programs. Followed by residents in the same training programs, 27.4%, whereas family members were not as impressionable (8.5%). These results comply with other researches. [5,13]

It was somewhat surprising that 14.5% of the participants chose Anesthesiology. This percentage is higher than other recent local studies where anesthesia ranks as one of the lowest chosen fields. [4,5,10,14] However, the most prominent finding to emerge from the analysis is that many of the respondents stated that they are not considering anesthesiology as a future career (79.4%). Theseresults match those observed in earlier studies. [5,15]

In compliance with others [5,10,16], females (58.1%) have shown greater interest in considering anesthesiology as a future career compared to males (41.9%). This finding is attributed to the controllable lifestyle that attracts females to this field. [16] The majority of the participants (93.5%) have taken a mandatory anesthesiology rotation during their 5th and 6th years of medical school. But it did not show any significance in altering students' desire in choosing anesthesiology as a prospective career as most students have already decided against a career in anesthesia, and others did not think that they could successfully match into this field. This verdict is contrary to previous studies which have shown that clerkships in anesthesia have significantly improved the students' attitude towards anesthesia as a specialty. [1] Whereas taking voluntary elective rotations in anesthesia have shown to have a significant impact upon students' perspective towards anesthesia.

In addition to asking senior students about the factors that influenced their career decisions in general, we also inquired about these factors concerning anesthesiology. Lifestyle was the leading factor in choosing anesthesiology as a career or not (44.0%), some literature considered anesthesiology as a career with a controllable lifestyle along with dermatology, ophthalmology, and ENT. [9,17] Another important factor is patient care aspect as chosen by 35.1% of the respondents, since many may consider anesthesiology to be a specialty with minimal direct patient interaction [1]which may or may not be desirable. A group of our sample voluntarily mentioned lack of personal interest in anesthesiology as a significant factor (12.5%) but did not give any reason particularly. Income was a less significant factor (3.6%), even when asked whether it would affect their choice knowing that anesthesiology is one of the highest paying jobs in the USA, 87.9% of students confirmed that it would not.

This survey has several limitations. It was conducted in King Abdulaziz University Hospital in Jeddah; the findings may or may not be generalizable to other colleges in Jeddah or in other regions of Saudi Arabia. We surveyed Undergraduate students prior to their internship year. During this time, opinions and choices will likely change. Thus, Additional investigations will be required to asses any changes in attitudes of medical students toward anesthesiology.
Other factors such as marital status and gender have not been addressed appropriately as confounding factors that may affect students' choice in our study. Also, by the cross-sectional nature of the research, Non-response Bias and the obvious Female/Male response ratio have been introduced into the results.

4. CONCLUSION

In conclusion, this study has shown that anesthesia is somewhat one of the least desired specialties as a prospective career for medical students. Whereas the most popular fields

were internal medicine, surgery and family medicine. Students acknowledged that the significant factors which influence their residency program choices were the Doctor-patient relationship and the controllable lifestyle. The most significant element of anesthesiology appeared to be the lifestyle. In comparison to the field of anesthesiology, the top three specialties selected have more significant direct patient interaction. Although we cannot adjust this variable, showing medical students that anesthesiologists do interact with patients, by evaluating the patient before surgery, managing pain, supervising care after surgery and discharging the patient from the recovery unit. Thus, removing the perception of the anesthesiologist as merely passively observing in the surgical room setting.

One of the most significant findings to emerge from this study is that taking elective rotations in anesthesiology has a role in considering it as a future career, so we recommend an obligatory rotation that is devoted to anaesthesiology only since it may change students' prospective towards anaesthesiology as per our results.

Also, the most appropriate individuals to impact medical students according to this study are the faculty members themselves and the residents. These individuals may be capable of positively adjusting students' viewpoints by explaining the specialty aspects and the demands of future anaesthesiologists.

In our research, we focused only on a few factors that would influence medical students' choices towards their future career, particularly towards anesthesiology. Thus, we recommend that future research include a broader array of factors, which may yield more fruitful results.

CONSENT

All participants have been informed that the responses that they provide for this study will remain confidential. When the results of the study are reported, they will not be identified by name or any other information that could be used to infer their identities.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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