

# Factors Influencing Medical Students and Interns in Choosing a Career in Saudi Arabia. A Cross-Sectional Study

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## Abstract

**Purpose:** Medical students are exposed to various specialties during their medical school. There are different factors that play a role that affect their decision to choose a specialty. In our study, we aimed to identify the factors that affect and influence medical students and interns to choose a specialty as their career.

**Methods:** This is a cross-sectional survey that involved 4th, 5th, and 6th-year medical students and interns from different universities in Saudi Arabia. An online questionnaire was used to collect demographic data, information about the medical school, their preferred specialty, and what are the factors influencing their career choice. Demographics were described as numbers and percentages for categorical variables and mean and standard deviation (SD) for numerical variables. Data analysis was performed using SPSS version (26.0).

**Results:** A total of 1,178 participants with a mean age 23.1 were included. Among all participants, 40% of them were in their 6th year and the majority (84.1%) were from public medical schools. Among both genders, the most preferred specialty was internal medicine, followed by general surgery. The length of residency training ( $p=0.005$ ), performing procedures in this specialty ( $p=0.006$ ), and perceived gender bias in the specialty ( $<0.001$ ) were factors significantly different between females and males in their career choice during residency. The most important factor related to the residency training that affected the decision among both genders was lifestyle during residency.

However, factors related to being a consultant differed among both genders, where 54% of females stated that patients' outcome in the specialty was the extremely important factor, whereas in males, controllable lifestyle was the extremely important factor.

**Conclusion:** The most commonly chosen specialty was internal medicine, followed by general surgery for both genders. Different factors affected the decision among both genders. More emphasis on career planning is required during medical school to help graduates in choosing the proper specialty for them.

**Key words:** career choice, medical education, medical school, postgraduate training

## Introduction

The number of medical schools in Saudi Arabia has been increasing in the last decade.

During medical school, medical students rotate through different specialties with most of the time spent in the major core subjects including general surgery, internal medicine, obstetrics and gynecology, and pediatrics. Other subspecialties get less time and attention. Their personal experience during the rotation can affect their career choice. There are different factors that can affect their decision to choose a specialty as a career [1, 2]. Some of the common factors include income, having a controllable lifestyle, and the ability to have direct encounters with patients. On the other hand, others chose surgical specialties due to the surgeon's high prestige, social image and the practical ability to apply their knowledge [3].

Previous studies found that the major reasons for choosing a specialty included primary interest in the specialty [4-6], job satisfaction [4], personality type [7], academic and educational determinants [8], and cultural and social values [4, 9, 10]. Among Saudi students, lifestyle and social characteristics play an upper hand in career choice [11]. In a cross-sectional survey involving medical students and interns at AL Dammam university, the authors reported that students and interns were influenced mainly by the perceived lifestyle of a specific specialty when considering their career choice [9]. Moreover, they also found that internal medicine, family medicine, general surgery, pediatrics, and emergency medicine were the preferred specialties. In our study, we aimed to identify the factors that affect medical students and interns in their decision about career choice across all public and private medical schools in Saudi Arabia.

## Methods

### Study design

We conducted a cross-sectional study involving different universities in Saudi Arabia. The current study was conducted following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement for cross-sectional studies.

### Setting

The survey was administered online using SurveyMonkey ([www.surveymonkey.com](http://www.surveymonkey.com)). The URL was sent to teaching faculties, interns and medical students in different medical schools in Saudi Arabia via email or phone.

### Survey content

The survey was divided into four sections. The first section contained questions about demographics and general information about the participant. Furthermore, it contained questions about the medical school and their level of training. The second section contained questions about their first and second specialty choices, and factors affecting their decision. The third section contained the factors that influenced or will influence their decision to

choose a specialty. The fourth section explored factors that are related to being in a residency and being a consultant and how these factors affected their choice as interns and medical students. A pilot study was performed among medical students and interns to ensure the clarity of the survey.

### Statistical analysis

We analyzed the data using SPSS software for windows version 26.0. Data were presented as numbers and percentages (%) for categorical variables and mean and standard deviation (SD) for numerical variables. We used the Pearson Chi-square test to assess the relationship between categorical variables. The results were considered significant if  $p < 0.05$ .

## Results

### Baseline Characteristics

The included number of participants was 1,178, with 715 (61%) females. The mean age for all participants was 23.1. Two hundred and four (17.3%) of the participants had one of their parents in the medical field. However, 747 (63.5%) of them had a close relative in the medical field. Most participants were single (96.2% of the females and 95.4% of the males). Most of the participants were 6th year students (39.5%), followed by 4th year students (25.3%) and interns (23.7%). A total of 927 (80.7%) belonged to medical schools from the Western Region; 969 (84.1%) were from public schools. Most participants had high GPAs, with 530 (46%) scoring 4.5-5 and 305 (26.5%) scoring 4.1-4.4. Four hundred and eighty-four (43%) hadn't decided yet about the specialty they want to pursue after medical school. 648 (57.9%) of the participants have not taken any electives in the specialty of their first choice, and 681 (62%) have not attended any workshops or lectures about medical career planning, but the majority (89.1%) were planning to take an elective of their first choice. 358 (32.4%) of the participants reported that they were influenced by a mentor during their medical school to choose a specialty, most commonly being influenced by consultants (23.1%), followed by residents (7.3%).

Factors that can help participants to choose a specialty

Eight hundred and forty-eight (80%) of the participants agreed that attending a course about medical career planning would help them to choose a specialty. Nevertheless, six hundred and eighty-two (62%) have never attended any workshop or lectures about medical career planning. Nine hundred and seven participants (77.2%) reported that taking an elective in the specialty they were considering could help them to make a decision about career choice. Furthermore, 725 (61.7%) used the summer vacation to attend an elective in the specialty, and 722 (61.4%) chose to ask residents who are in the specialty they are interested in.

There are different factors that influenced the decision of the participants. 963 (82%) of the participants chose personal interests as the most important factor that influenced or

will influence their decision. Other factors included lifestyle (62.4%), salary (41%), and job availability (40.7%), Tables 1&2., Figure 1. However, when they were asked about the single most important factor that influenced or will influence their decision, 55% chose personal interest.

**Table 1. Baseline characteristics of the included population according to gender-wise distribution**

Variables	All	Female	Male
<b>Age*</b>	23.15 (1.67)	23.01 (1.59)	23.37 (1.76)
<b>Parents education</b>			
Medical field	203 (17.3%)	109 (15.2%)	94 (20.5%)
Other fields	970 (82.7%)	606 (84.8%)	364 (79.5%)
<b>Relatives education</b>			
Medical field	745 (63.5%)	447 (62.5%)	298 (65.1%)
Other fields	428 (36.5%)	268 (37.5%)	160 (34.9%)
<b>Marital status</b>			
Single	1127 (95.9%)	689 (96.2%)	438 (95.4%)
Married	35 (3%)	21 (2.9%)	14 (3.1%)
Others	13 (1.1%)	6 (0.8%)	7 (1.5%)
<b>Having children</b>			
Yes	11 (0.9%)	8 (1.1%)	3 (0.7%)
No	1163 (99.1%)	707 (98.9%)	456 (99.3%)
<b>Level of training</b>			
4th year	291 (25.3%)	205 (29.2%)	86 (19.2%)
5th year	132 (11.5%)	76 (10.8%)	56 (12.5%)
6th year	454 (39.5%)	270 (38.5%)	184 (41%)
Intern	273 (23.7%)	150 (21.4%)	123 (27.4%)
<b>Medical school region</b>			
Northern Region (Northern borders, Jawf, Hail)	10 (0.9%)	7 (1%)	3 (0.7%)
Southern region (Baha, Jizan, Asir, Najran)	18 (1.6%)	12 (1.7%)	6 (1.3%)
Central Region (Qassim, Riyadh)	136 (11.8%)	45 (6.4%)	91 (20.2%)
Eastern Region (Eastern province)	58 (5%)	42 (6%)	16 (3.6%)
Western Region (Tabuk, Madinah almonawara, Makka almokaramah)	927 (80.7%)	593 (84.8%)	334 (74.2%)
<b>Type of medical school</b>			
Public	969 (84.1%)	590 (84%)	379 (84.2%)
Private	183 (15.9%)	112 (16%)	71 (15.8%)
<b>Last year GPA</b>			
4.5 - 5	530 (46%)	352 (50.1%)	178 (39.6%)
4.1 - 4.4	305 (26.5%)	183 (26%)	122 (27.2%)
3.6 - 4.0	184 (16%)	97 (13.8%)	87 (19.4%)
3.1 - 3.5	56 (8%)	44 (9.8%)	100 (8.7%)
2.6 - 3.0	12 (1.7%)	12 (2.7%)	24 (2.1%)
2.1 - 2.5	2 (0.3%)	3 (0.7%)	5 (0.4%)
2.0 or below	1 (0.1%)	3 (0.7%)	4 (0.3%)

Data are presented as numbers and percentages (%) except \* mean (SD)

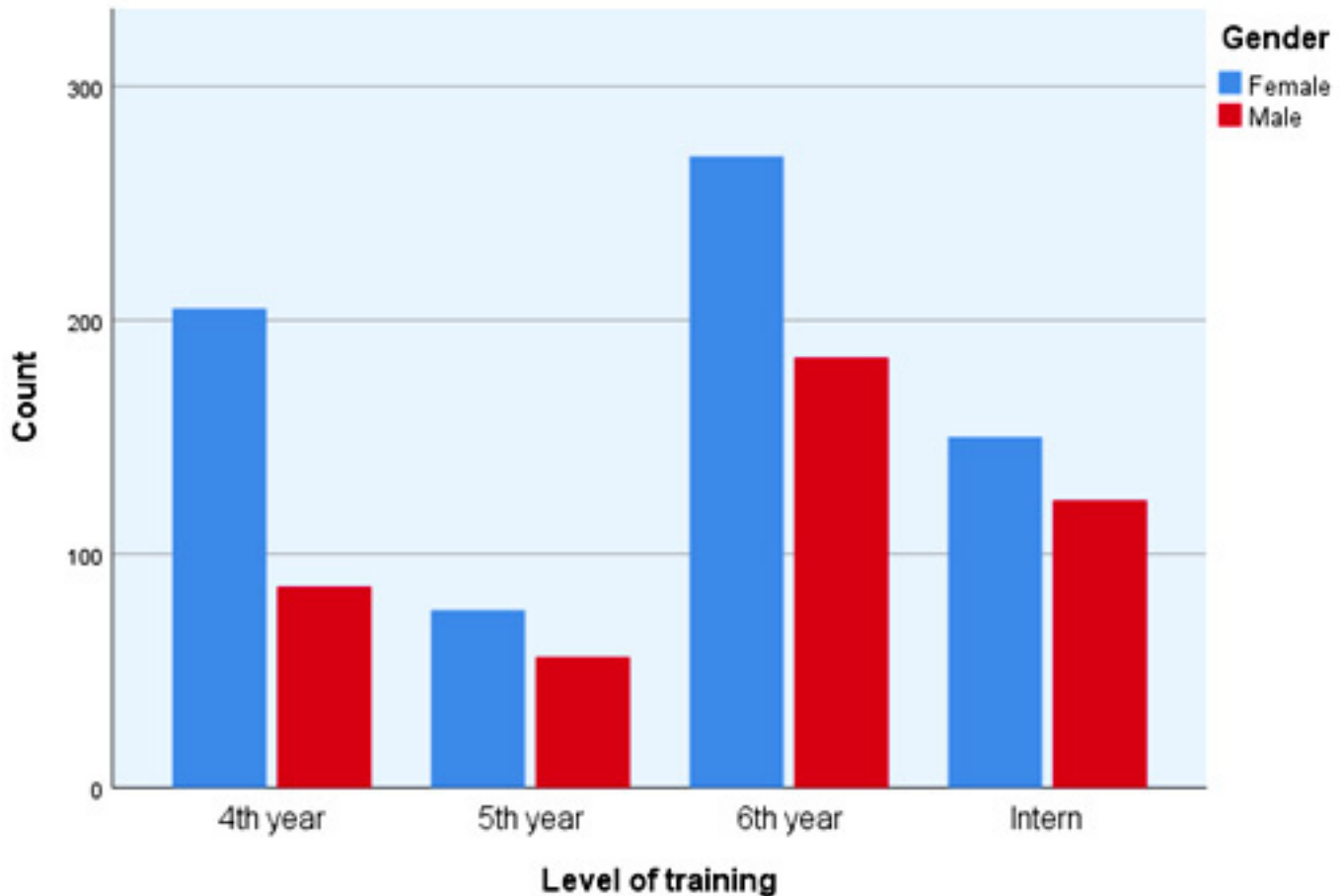


Table 2. Gender-wise distribution of the factors affecting career choice

Variables	Total	Female	Male
<b>Have you taken any electives in the specialty of your first choice?</b>			
Yes	471 (42.1%)	290 (42.3%)	181 (41.8%)
No	648 (57.9%)	396 (57.7%)	252 (58.2%)
<b>Who is (are) the mentor(s) who influenced your decision?</b>			
Resident	86 (7.3%)	53 (7.4%)	33 (7.2%)
Consultant	271 (23.1%)	160 (22.3%)	111 (24.2%)
Parent	32 (2.7%)	16 (2.2%)	16 (3.5%)
Relative	47 (4%)	26 (3.6%)	21 (4.6%)
Others	28 (2.4%)	20 (2.8%)	8 (1.7%)
<b>Have you ever attended any workshops/lectures about medical career planning?</b>			
Yes	418 (38%)	290 (42.8%)	128 (30.3%)
No	681 (62%)	387 (57.2%)	294 (69.7%)
<b>What do you think will help you to make a decision about your career choice?</b>			
Incorporate lectures about career planning into the curriculum	382 (32.5%)	219 (30.6%)	163 (35.5%)
Having a mentor to guide you	687 (58.5%)	431 (60.2%)	256 (55.8%)
Doing elective(s) in the specialty(ies) you are considering	907 (77.2%)	563 (78.6%)	344 (74.9%)
Asking residents about the specialty	722 (61.4%)	435 (60.8%)	287 (62.5%)
Asking consultants about the specialty	580 (49.4%)	357 (49.9%)	223 (48.6%)
Increase the time spent in the rotation in some of the specialties	527 (44.9%)	338 (47.2%)	189 (41.2%)
Using the summer vacation to attend an elective in the specialty you are considering	725 (61.7%)	468 (65.4%)	257 (56%)
Other	35 (3%)	24 (3.4%)	11 (2.4%)
<b>What are the factors that influenced or will influence you to decide on the specialty you want?</b>			
Personal interest	963 (82%)	603 (84.2%)	360 (78.4%)
Influence of a family member	129 (11%)	72 (10.1%)	57 (12.4%)
Influence of a mentor or a teaching faculty	227 (19.3%)	137 (19.1%)	90 (19.6%)
Lifestyle	733 (62.4%)	429 (59.9%)	304 (66.2%)
Salary	488 (41.5%)	246 (34.4%)	242 (52.7%)
Job availability	478 (40.7%)	271 (37.8%)	207 (45.1%)
Predictability in working hours	359 (30.6%)	218 (30.4%)	141 (30.7%)
No emergencies in the specialty	187 (15.9%)	110 (15.4%)	77 (16.8%)
Contact with patients	375 (31.9%)	239 (33.4%)	136 (29.6%)
Prestige	155 (13.2%)	69 (9.6%)	86 (18.7%)
Others	51 (4.3%)	34 (4.7%)	17 (3.7%)

Data are presented as numbers and percentages (%).

Figure 1: Level of training and gender distribution among the study population



#### Preferred first and second specialties among participants

The most preferred first specialty among all participants was internal medicine (18.9%) followed by general surgery (13.4%). Among participants who chose general surgery, (65.3%) were females. Among all participants, one hundred and sixty-nine (15.4%) participants had not decided about their second choice of specialty. However, among participants who had decided, the most common chosen specialty as second choice was also internal medicine (14.6%), followed by surgery (11.9%), (Table 3), (Figure 2 & 3)

**Table 3. First and second specialty of choice among both genders**

Variables	First choice			Second choice		
	Female	Male	Total	Female	Male	Total
General Surgery	98 (14.2%)	52 (12%)	150 (13.4%)	80 (11.9%)	51 (12%)	131 (11.9%)
Internal Medicine	117 (17%)	95 (21.9%)	212 (18.9%)	95 (14.1%)	65 (15.3%)	160 (14.6%)
Obstetrics and Gynecology	43 (6.3%)	12 (2.8%)	55 (4.9%)	38 (5.6%)	9 (2.1%)	47 (4.3%)
Pediatrics	78 (11.3%)	29 (6.7%)	107 (9.5%)	65 (9.7%)	23 (5.4%)	88 (8%)
Ophthalmology	38 (5.5%)	24 (5.5%)	62 (5.5%)	26 (3.9%)	16 (3.8%)	42 (3.8%)
Radiology	13 (1.9%)	20 (4.6%)	33 (2.9%)	27 (4%)	26 (6.1%)	53 (4.8%)
Family medicine	51 (7.4%)	30 (6.9%)	81 (7.2%)	57 (8.5%)	53 (12.5%)	110 (10%)
Pathology	3 (0.4%)	4 (0.9%)	7 (0.6%)	1 (0.1%)	3 (0.7%)	4 (0.4%)
Orthopedics	14 (2%)	25 (5.8%)	39 (3.5%)	14 (2.1%)	23 (5.4%)	37 (3.4%)
Dermatology	20 (2.9%)	11 (2.5%)	31 (2.8%)	18 (2.7%)	6 (1.4%)	24 (2.2%)
Urology	3 (0.4%)	10 (2.3%)	13 (1.2%)	5 (0.7%)	4 (0.9%)	9 (0.8%)
Psychiatry	22 (3.2%)	13 (3%)	35 (3.1%)	11 (1.6%)	5 (1.2%)	16 (1.5%)
Plastics	9 (1.3%)	10 (2.3%)	19 (1.7%)	4 (0.6%)	1 (0.2%)	5 (0.5%)
Otorhinolaryngology (ENT)	39 (5.7%)	22 (5.1%)	61 (5.4%)	35 (5.2%)	13 (3.1%)	48 (4.4%)
Pediatric surgery	15 (2.2%)	6 (1.4%)	21 (1.9%)	19 (2.8%)	10 (2.4%)	29 (2.6%)
Cardiac surgery	19 (2.8%)	15 (3.5%)	34 (3%)	24 (3.6%)	17 (4%)	41 (3.7%)
Undecided	59 (8.6%)	31 (7.2%)	90 (8%)	112 (16.6%)	57 (13.4%)	169 (15.4%)
Other	47 (6.8%)	24 (5.5%)	71 (6.3%)	42 (6.2%)	43 (10.1%)	85 (7.7%)

Data are presented as numbers and percentages (%).

The Chi-square test determined significance; if  $p < 0.05$ , the results were considered significant.



Figure 2: The most frequently preferred first specialty among both genders

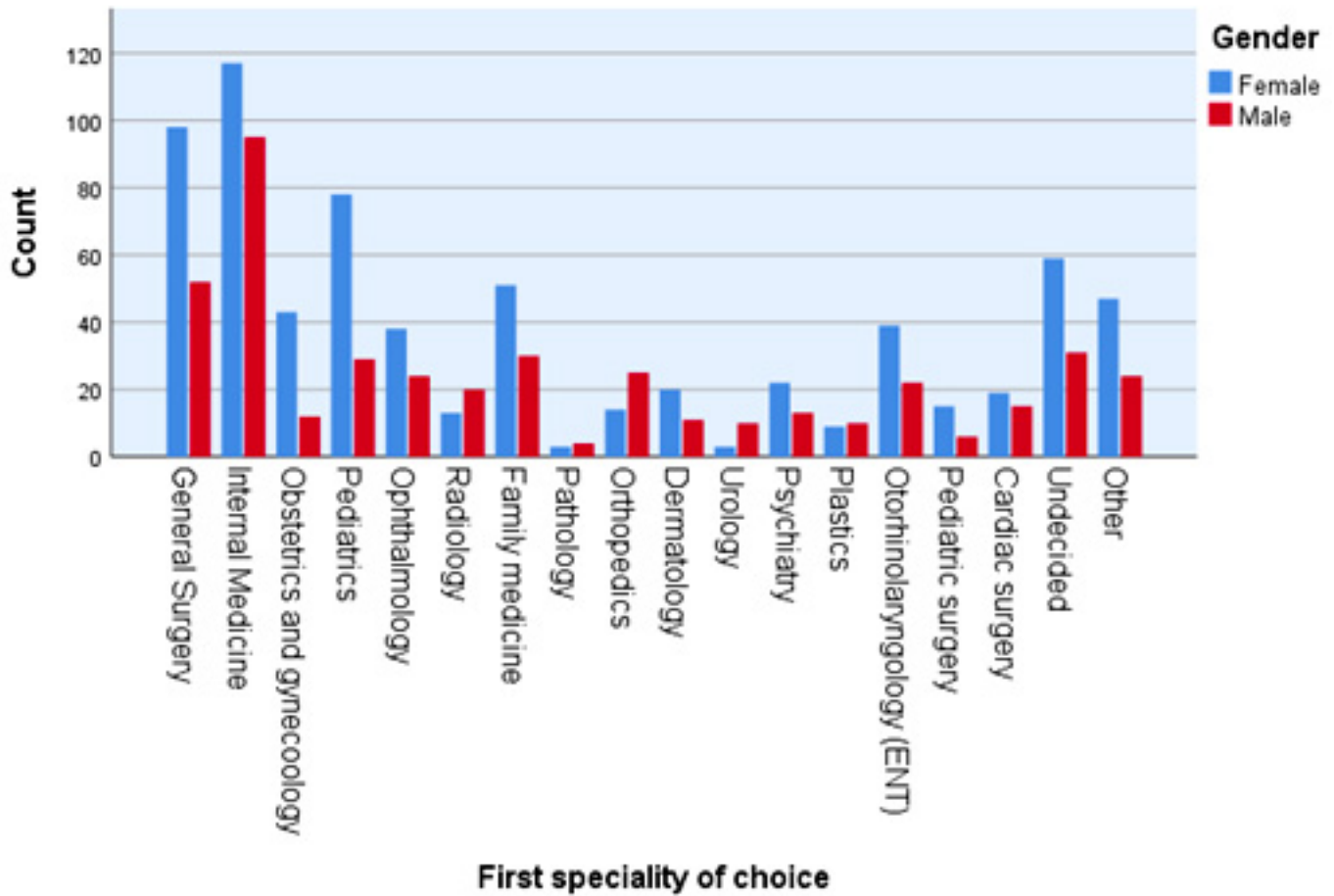
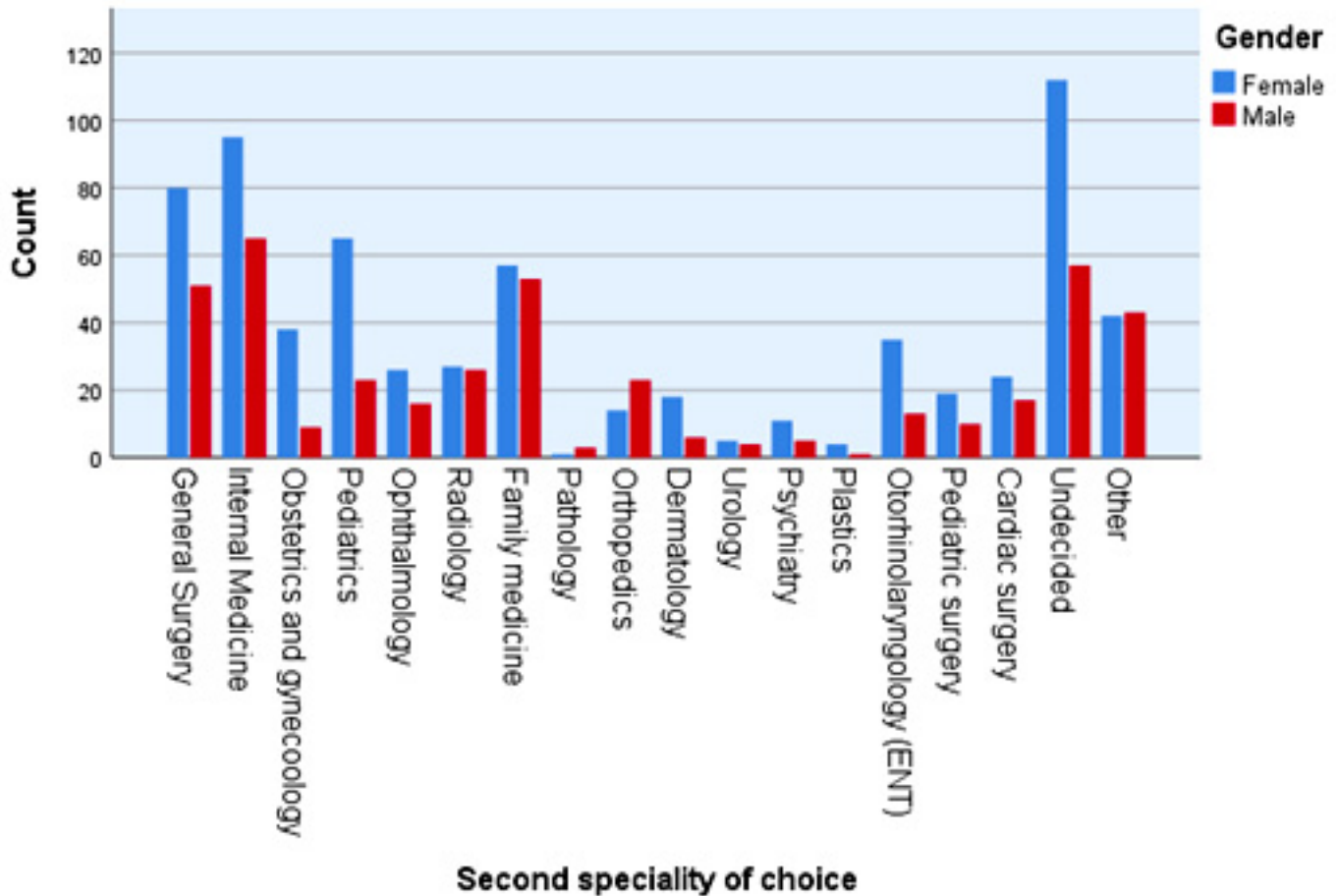


Figure 3: The most frequently preferred second specialty among both genders



### **Factors Related to Being a Resident That Affected Their Decision to Choose a Specialty**

There were different factors related to the residency training that affected the decision of the participants. Lifestyle during residency was the single extremely important factor among both genders that affected their decision to choose a specialty. Among female participants, performing procedures in the specialty was the second extremely important factor (34.1%). However, in males, choosing a specialty allowing them to have direct contact with patients was the second extremely important factor (32.1%), (Table 4). One of the differences among both genders is the length of residency training, where 18.2% of the females found it an extremely important factor compared to males (12.8%).

### **Factors Related to Being a Consultant That Affected Their Decision to Choose a Specialty**

Among both genders, the most extremely important factor related to being a consultant that affected their decision in the future was the type of patient outcomes in the specialty (50.7%). That was followed by a controllable, and predictable lifestyle (47.4%).

Next page (opposite):

**Table 4. Factors related to the residency training that affect the career choice**

(Table 4 continued on page 94)



Variables	Level of importance	Gender				Parents education				Marital status									
		Female		Male		P-value		Medical field		Other fields		P-value		Single		Married		Others	
Length of residency training	Extremely important	115 (18.2%)	51 (12.8%)	27 (14.8%)	139 (16.4%)	164 (16.6%)	1 (3.2%)	1 (8.3%)											
	Very important	158 (25%)	129 (32.4%)	54 (29.7%)	233 (27.5%)	272 (27.5%)	11 (35.5%)	4 (33.3%)											
	Neutral	244 (38.7%)	129 (32.4%)	73 (40.1%)	299 (35.3%)	352 (35.6%)	17 (54.8%)	4 (33.3%)											
	Not so important	81 (12.8%)	58 (14.6%)	19 (10.4%)	121 (14.3%)	138 (14%)	1 (3.2%)	2 (16.7%)											
	Not at all important	33 (5.2%)	31 (7.8%)	9 (4.9%)	55 (6.5%)	62 (6.3%)	1 (3.2%)	1 (8.3%)											
Working hours during residency	Extremely important	120 (19%)	61 (15.3%)	32 (17.5%)	149 (17.6%)	172 (17.4%)	5 (16.1%)	4 (33.3%)											
	Very important	239 (37.9%)	160 (40%)	69 (37.7%)	330 (39%)	380 (38.4%)	14 (45.2%)	5 (41.7%)											
	Neutral	210 (33.3%)	123 (30.8%)	62 (33.9%)	270 (31.9%)	323 (32.7%)	10 (32.3%)	1 (8.3%)											
	Not so important	49 (7.8%)	40 (10%)	14 (7.7%)	76 (9%)	86 (8.7%)	2 (6.5%)	2 (16.7%)											
	Not at all important	12 (1.9%)	16 (4%)	6 (3.3%)	22 (2.6%)	28 (2.8%)	0 (0%)	0 (0%)											
Competitiveness to get into a residency	Extremely important	208 (33.1%)	119 (29.8%)	62 (34.1%)	265 (31.3%)	310 (31.4%)	13 (41.9%)	4 (33.3%)											
	Very important	232 (36.9%)	132 (33.1%)	62 (34.1%)	302 (35.7%)	352 (35.7%)	9 (29%)	4 (33.3%)											
	Neutral	140 (22.3%)	105 (26.3%)	46 (25.3%)	199 (23.5%)	237 (24%)	7 (22.6%)	2 (16.7%)											
	Not so important	36 (5.7%)	33 (8.3%)	9 (4.9%)	60 (7.1%)	66 (6.7%)	2 (6.5%)	1 (8.3%)											
	Not at all important	13 (2.1%)	10 (2.5%)	3 (1.6%)	20 (2.4%)	22 (2.2%)	0 (0%)	1 (8.3%)											
Performing procedures in this speciality	Extremely important	215 (34.1%)	106 (26.6%)	55 (30.4%)	268 (31.6%)	316 (32%)	4 (12.9%)	3 (25%)											
	Very important	214 (34%)	136 (34.1%)	54 (29.8%)	296 (34.9%)	332 (33.6%)	14 (45.2%)	4 (33.3%)											
	Neutral	149 (23.7%)	103 (25.8%)	50 (27.6%)	200 (23.6%)	239 (24.2%)	10 (32.3%)	3 (25%)											
	Not so important	37 (5.9%)	30 (7.5%)	15 (8.3%)	52 (6.1%)	64 (6.5%)	1 (3.2%)	2 (16.7%)											
	Not at all important	15 (2.4%)	24 (6%)	7 (3.9%)	32 (3.8%)	37 (3.7%)	2 (6.5%)	0 (0%)											
Having direct contact with patients (e.g. pathology versus internal medicine)	Extremely important	209 (33.1%)	128 (32.1%)	74 (40.7%)	263 (31%)	323 (32.7%)	11 (35.5%)	3 (25%)											
	Very important	233 (36.9%)	133 (33.3%)	52 (28.6%)	315 (37.1%)	352 (35.6%)	10 (32.3%)	6 (50%)											
	Neutral	130 (20.6%)	107 (26.8%)	43 (23.6%)	193 (22.8%)	228 (23.1%)	8 (25.8%)	1 (8.3%)											
	Not so important	43 (6.8%)	24 (6%)	11 (6%)	56 (6.6%)	63 (6.4%)	2 (6.5%)	2 (16.7%)											
	Not at all important	16 (2.5%)	7 (1.8%)	2 (1.1%)	21 (2.5%)	23 (2.3%)	0 (0%)	0 (0%)											
Type of patients you are going to deal with (pediatrics vs. adults)	Extremely important	213 (33.8%)	120 (30%)	60 (33%)	273 (32.2%)	327 (33%)	4 (12.9%)	2 (16.7%)											
	Very important	224 (35.5%)	142 (35.5%)	55 (30.2%)	312 (36.7%)	350 (35.4%)	15 (48.4%)	3 (25%)											
	Neutral	158 (25%)	104 (26%)	53 (29.1%)	208 (24.5%)	248 (25.1%)	9 (29%)	5 (41.7%)											
	Not so important	29 (4.6%)	20 (5%)	11 (6%)	38 (4.5%)	44 (4.4%)	3 (9.7%)	2 (16.7%)											
	Not at all important	7 (1.1%)	14 (3.5%)	3 (1.6%)	18 (2.1%)	21 (2.1%)	0 (0%)	0 (0%)											
Lifestyle during residency	Extremely important	229 (36.5%)	151 (37.8%)	66 (36.5%)	314 (37.1%)	363 (36.8%)	11 (35.5%)	6 (50%)											
	Very important	221 (35.2%)	127 (31.8%)	65 (35.9%)	281 (33.2%)	334 (33.8%)	11 (35.5%)	3 (25%)											
	Neutral	142 (22.6%)	89 (22.3%)	37 (20.4%)	195 (23%)	222 (22.5%)	8 (25.8%)	2 (16.7%)											
	Not so important	30 (4.8%)	26 (6.5%)	11 (6.1%)	46 (5.4%)	55 (5.6%)	1 (3.2%)	1 (8.3%)											
	Not at all important	6 (1%)	7 (1.8%)	2 (1.1%)	11 (1.3%)	13 (1.3%)	0 (0%)	0 (0%)											
Perceived gender inequality in the speciality	Extremely important	104 (16.5%)	39 (9.8%)	28 (15.3%)	116 (13.7%)	139 (14.1%)	4 (12.9%)	1 (8.3%)											
	Very important	107 (17%)	51 (12.8%)	22 (12%)	135 (15.9%)	151 (15.3%)	5 (16.1%)	2 (16.7%)											
	Neutral	246 (39%)	182 (45.5%)	74 (40.4%)	353 (41.7%)	405 (41%)	18 (58.1%)	5 (41.7%)											
	Not so important	98 (15.6%)	45 (11.3%)	26 (14.2%)	118 (13.9%)	140 (14.2%)	3 (9.7%)	1 (8.3%)											
	Not at all important	75 (11.9%)	83 (20.8%)	33 (18%)	125 (14.8%)	154 (15.6%)	1 (3.2%)	3 (25%)											
Data are presented as numbers and percentages (%).																			



Variables	Level of training					Type of school		P-value	Last year GPA	P-value
	4th	5th	6th	Intern	Public	Private	P-value			
Length of residency training	53 (20.6%)	16 (13.7%)	64 (15.6%)	32 (13%)	137 (15.8%)	29 (17.8%)	156 (15.5%)	9 (34.6%)		
	78 (30.4%)	37 (31.6%)	103 (25.2%)	69 (27.9%)	240 (27.6%)	47 (28.8%)	281 (28%)	6 (23.1%)		
	84 (32.7%)	40 (34.2%)	148 (36.2%)	101 (40.9%)	304 (35%)	69 (42.3%)	366 (36.5%)	7 (26.9%)		
	33 (12.8%)	18 (15.4%)	66 (16.1%)	24 (9.7%)	128 (14.7%)	13 (8%)	139 (13.8%)	2 (7.7%)		
	9 (3.5%)	6 (5.1%)	28 (6.8%)	21 (8.5%)	59 (6.8%)	5 (3.1%)	62 (6.2%)	2 (7.7%)		
Working hours during residency	45 (17.5%)	17 (14.3%)	77 (18.9%)	41 (16.6%)	147 (16.9%)	34 (20.9%)	175 (17.4%)	6 (22.2%)		
	98 (38.1%)	52 (43.7%)	146 (35.8%)	103 (41.7%)	339 (39%)	60 (36.8%)	388 (38.6%)	10 (37%)		
	85 (33.1%)	40 (33.6%)	134 (32.8%)	75 (30.4%)	281 (32.3%)	53 (32.5%)	329 (32.8%)	5 (18.5%)		
	23 (8.9%)	6 (5%)	39 (9.6%)	22 (8.9%)	77 (8.9%)	13 (8%)	86 (8.6%)	4 (14.8%)		
	6 (2.3%)	4 (3.4%)	12 (2.9%)	6 (2.4%)	25 (2.9%)	3 (1.8%)	26 (2.6%)	2 (7.4%)		
Competitiveness to get into a residency	84 (33.1%)	32 (26.9%)	145 (35.4%)	65 (26.4%)	282 (32.5%)	45 (27.8%)	314 (31.3%)	13 (48.1%)		
	88 (34.6%)	45 (37.8%)	132 (32.2%)	100 (40.7%)	306 (35.3%)	59 (36.4%)	361 (36%)	3 (11.1%)		
	56 (22%)	30 (25.2%)	101 (24.6%)	59 (24%)	199 (22.9%)	47 (29%)	238 (23.8%)	8 (29.6%)		
	21 (8.3%)	10 (8.4%)	21 (5.1%)	17 (6.9%)	59 (6.8%)	10 (6.2%)	67 (6.7%)	2 (7.4%)		
	5 (2%)	2 (1.7%)	11 (2.7%)	5 (2%)	22 (2.5%)	1 (0.6%)	22 (2.2%)	1 (3.7%)		
Performing procedures in this specialty	89 (34.8%)	28 (23.7%)	123 (30.1%)	83 (33.6%)	275 (31.6%)	48 (29.6%)	315 (31.4%)	8 (29.6%)		
	94 (36.7%)	41 (34.7%)	139 (34%)	76 (30.8%)	298 (34.3%)	52 (32.1%)	344 (34.3%)	6 (22.2%)		
	57 (22.3%)	35 (29.7%)	99 (24.2%)	60 (24.3%)	204 (23.5%)	48 (29.6%)	244 (24.3%)	7 (25.9%)		
	14 (5.5%)	10 (8.5%)	25 (6.1%)	18 (7.3%)	57 (6.6%)	10 (6.2%)	67 (6.7%)	0 (0%)		
	2 (0.8%)	4 (3.4%)	23 (5.6%)	10 (4%)	35 (4%)	4 (2.5%)	33 (3.3%)	6 (22.2%)		
Having direct contact with patients (e.g. pathology versus internal medicine)	86 (33.6%)	32 (26.9%)	130 (31.8%)	89 (36%)	283 (32.6%)	54 (33.1%)	331 (33%)	6 (22.2%)		
	87 (34%)	38 (31.9%)	151 (36.9%)	91 (36.8%)	318 (36.6%)	50 (30.7%)	362 (36.1%)	5 (18.5%)		
	62 (24.2%)	31 (26.1%)	98 (24%)	46 (18.6%)	195 (22.4%)	42 (25.8%)	224 (22.3%)	13 (48.1%)		
	16 (6.3%)	14 (11.8%)	20 (4.9%)	17 (6.9%)	53 (6.1%)	14 (8.6%)	66 (6.6%)	1 (3.7%)		
	5 (2%)	4 (3.4%)	10 (2.4%)	4 (1.6%)	20 (2.3%)	3 (1.8%)	21 (2.1%)	2 (7.4%)		
Type of patients you are going to deal with (pediatrics vs. adults)	98 (38.3%)	37 (31.1%)	130 (31.7%)	68 (27.5%)	284 (32.6%)	49 (30.1%)	323 (32.1%)	10 (37%)		
	80 (31.3%)	50 (42%)	148 (36.1%)	89 (36%)	316 (36.3%)	52 (31.9%)	358 (35.6%)	9 (33.3%)		
	62 (24.2%)	28 (23.5%)	100 (24.4%)	72 (29.1%)	209 (24%)	53 (32.5%)	256 (25.5%)	6 (22.2%)		
	11 (4.3%)	2 (1.7%)	21 (5.1%)	15 (6.1%)	41 (4.7%)	8 (4.9%)	49 (4.9%)	0 (0%)		
	5 (2%)	2 (1.7%)	11 (2.7%)	3 (1.2%)	20 (2.3%)	1 (0.6%)	19 (1.9%)	2 (7.4%)		
Lifestyle during residency	87 (34%)	53 (44.9%)	156 (38.2%)	83 (33.6%)	307 (35.4%)	73 (45.1%)	368 (36.7%)	12 (44.4%)		
	97 (37.9%)	33 (28%)	132 (32.4%)	86 (34.8%)	301 (34.7%)	47 (29%)	341 (34%)	6 (22.2%)		
	55 (21.5%)	27 (22.9%)	89 (21.8%)	61 (24.7%)	201 (23.2%)	31 (19.1%)	227 (22.7%)	5 (18.5%)		
	15 (5.9%)	1 (0.8%)	25 (6.1%)	16 (6.5%)	47 (5.4%)	10 (6.2%)	54 (5.4%)	3 (11.1%)		
	2 (0.8%)	4 (3.4%)	6 (1.5%)	1 (0.4%)	12 (1.4%)	1 (0.6%)	12 (1.2%)	1 (3.7%)		
Perceived gender inequality in the specialty	42 (16.3%)	17 (14.3%)	57 (14%)	28 (11.3%)	121 (13.9%)	23 (14.2%)	137 (13.6%)	7 (25.9%)		
	47 (18.3%)	13 (10.9%)	58 (14.2%)	39 (15.8%)	134 (15.4%)	24 (14.8%)	154 (15.3%)	3 (11.1%)		
	96 (37.4%)	57 (47.9%)	175 (42.9%)	100 (40.5%)	360 (41.4%)	68 (42%)	418 (41.6%)	10 (37%)		
	37 (14.4%)	12 (10.1%)	57 (14%)	38 (15.4%)	124 (14.3%)	20 (12.3%)	142 (14.1%)	2 (7.4%)		
	35 (13.6%)	20 (16.8%)	61 (15%)	42 (17%)	131 (15.1%)	27 (16.7%)	153 (15.2%)	5 (18.5%)		



## Discussion

There is a steady increase in the numbers of medical students and interns across all the universities in Saudi Arabia. During the 4th, 5th, and 6th year of medical school, medical students spend their time in different rotations including surgery, internal medicine, Obstetrics and gynecology and pediatrics, with less time spent in other different specialties such as emergency medicine, pathology, anesthesia, and radiology. In this cross-sectional survey that involved medical students and interns across Saudi Arabia, we have found that among all participants, Internal medicine was the most chosen first choice specialty, followed by general surgery. We have found that there are different factors that are related to the residency training, and factors that are related to being a consultant in that specialty that affected the career choice among participants. Interestingly, the most important factor that was related to residency that affected career choice among both genders was lifestyle during residency.

These results showed similarities to what Alshahrani et al. have previously found, as internal medicine, family medicine, general surgery, pediatrics, and emergency medicine were the preferred specialties. On the other hand, unlike this study, they reported that males preferred pediatrics and emergency medicine, while females preferred internal medicine practice[9].

A recent cross-sectional study showed similar results to our study as, for medical students, the most preferred specialty was internal medicine, followed by general surgery. Moreover, males and females preferred internal medicine as their future specialty (16).

From this study and many others, it is obvious that medical students and interns lean toward the common specialties such as general surgery and internal medicine, and the minority are choosing a different less commonly wanted specialty, such as family medicine, pathology, and emergency medicine, which could lead to deficiencies in that field and unmet need in the community. In Saudi Arabia, family medicine has become exceedingly crucial and is rapidly enhancing to deal with the rise in morbidity and mortality from preventable diseases [12]

In our study, only 81 (7.2%) of the participants chose family medicine as their first choice, and 110 (10%) chose it as a second choice. Most likely the reasons for that phenomenon are that a lot of the attention during medical school is focused on a major specialty with less attention and time spent in the other specialties.

In our study, we have found that among both genders, participants considered lifestyle during residency as the most extremely important factor that is related to the residency training that affected their decision. This is similar to what has been previously found as lifestyle being the most influential factor for choosing a specialty [9]. Interestingly, we have found that the most common factor related to being a consultant that affected their

career choice was type of patient outcomes, however, that differed across both genders, where males, chose controllable lifestyle (50.3%) as the extremely important factor followed by patient outcomes in the specialty (45.4%). That was different from Alsubaie et al. who found that the three main influences in choosing a specialty are specialty interest (86.5%), specialty flexibility (64.3%), and anticipated income (61.9%) [13]. Another study found that the important reasons for selecting the specialties included the presence of interesting cases, controllable lifestyle, and impact of the specialty on patient quality of life [14].

The positive impact of mentors on specialty choice was previously described in medical education [5, 15, 16]. Additionally, a clinical role model can negatively affect the students, driving them away from certain specialties [17]. In a recent study among medical students, they showed that cardiothoracic surgery is lagging behind the other specialties, where only 4.5% of that cohort chose that specialty. They suggested that a mentorship program could help with improving the knowledge about the specialty. This study is from the initial studies in Saudi Arabia that examined the career choice among both medical students and interns across Saudi Arabia in both private and public medical schools. Our study had some limitations, including the limitations associated with the cross-sectional design of the study. Furthermore, the number of participants from the other regions in Saudi Arabia was low.

## Conclusion

Career courses, and mentorship is needed to be part of the medical school curriculum to help medical students and interns to make an educated and well-informed choice about their career. In addition, more emphasis is needed on the less popular specialties among medical students in order to meet the workforce demands.

## Declarations

Ethics approval and consent to participate  
Ethical approval of the study was obtained from King Abdul-Aziz University, Faculty of Medicine, Research Ethics Committee. All study methods were ethically justifiable. On the first page of the online form, participants gave informed consent to fill out the questionnaire for research.

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