

More Internists, Family Physicians, and Paediatricians and Less Obstetricians/ Gynaecologists: Challenges to the Workforce

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Abstract: Background: Given that a particular specialty choice is also a key factor that determines the distribution of physicians and specialists at primary, secondary and tertiary healthcare centres, it is important to study students' preferences for specialties and the factors that influence their choices to identify gaps in medical workforce placement. This study aims to examine the specialty choice of medical students and interns and the factors that influenced their preferences. **Methods:** A cross-sectional survey was performed between December 2013 and March 2014 on medical students and interns at King Abdulaziz University Hospital. A self-administered questionnaire was used to collect demographic data and information regarding specialty choice as well as factors that influenced student decision-making. Chi-square tests were performed to examine the relationship between categorical variables. **Results:** Of the 301 respondents, 257 (85.4%) knew what specialty they planned to pursue. The most common specialty choices were medicine (n=34; 13.2%), family medicine (n=29; 11.3%) and paediatrics (n=27; 10.5%). A higher proportion of females selected paediatrics, family medicine, medicine, and cardiology as compared to their male peers who indicated an interest in orthopaedics, neurology, and surgery. Interns were more likely than sixth year medical students to select a specialty because of their inclinations before medical school ($p=0.01$); male students were more likely to select a specialty for future financial expectations ($p=0.002$) as well as promotion and career prospects ($p=0.04$). **Conclusion:** Students and interns expressed interest in paediatrics, family medicine, internal medicine, and surgery. Financial expectations, promotion, career prospects, and inclinations developed prior to joining the medical school influence their choices.

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1. Background

In this era of advanced medical technology where a wide variety of specialties and subspecialties exist, medical students have a large number of specialty options to choose from select. Besides shaping the future of medical students, a particular specialty choice is also a key factor that determines the distribution of physicians and specialists at primary, secondary and tertiary healthcare centres. It is therefore important to study students' preferences for specialties and the factors that influence their choices in order to identify gaps in medical workforce placement.

Several studies have been conducted in Saudi Arabia and abroad to understand specialty choice among medical students^[1-5] and the factors that influence their preferences.^[3, 6] Results show that students' choice of specialty is influenced by various factors, including cultural, social, personal, and financial conditions.^[6-8] Other factors that have been reported to influence medical students' specialty preferences include demographic characteristics, life style, work settings,^[9] academic performance,^[1] and career counselling.^[10]

While studies conducted at various medical colleges in Saudi Arabia in 2013 pointed towards a preference for general surgery, internal medicine, paediatrics, and otorhinolaryngology-ophthalmology,^[4, 8] findings of another study conducted in 2012 showed that surgery, internal

medicine, paediatrics, orthopaedics, and ophthalmology were the most preferred specialties.^[10] In another study conducted in 2010, the authors noticed a preference for internal medicine, anaesthesia, pathology, cardiac surgery, dermatology, general surgery, and occupational medicine.^[2] However, medical students from one medical school in Jeddah were found to have an unfavourable attitude towards neurology, with 84.4% reporting that the specialty was difficult.^[11]

This study aimed to examine the specialty choice of medical students and interns and the factors that influenced their preferences.

2. Subjects and Methods

A cross-sectional study was conducted between December 2013 and March 2014 among the medical students and interns at King Abdulaziz University Hospital, an academic hospital, in Jeddah, Saudi Arabia. We included only students who provided informed consent to participate in the study. The Biomedical Ethics Committee of King Abdulaziz University granted approval to conduct the study.

A self-administered questionnaire was distributed to sixth year medical students and interns working at the hospital. The questionnaire consisted of questions that elicited demographic data and assessed specialty choice as well as factors that influenced student decision-making.

Statistical analysis

The data were collected and analysed using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA), version 21. Descriptive statistics were computed for all variables. A chi-square test was performed to examine the relationship between categorical variables. Results are expressed as frequency (percent) and mean \pm standard deviation. Statistical significance was set at alpha level 0.05, with two-tail probability.

3.Results

This survey was conducted on 301 sixth year medical students and interns (mean age, 23.6 \pm 1.06 years; range, 21–26 years). Of these, 54.8% were females. Over half of the students were \leq 23 years old; most students were in the sixth year, (Table 1) also other demographic characteristics of the respondents are shown in Table 1.

Most of the participants (n=257; 85.4%) were sure about the specialty they planned to pursue and indicated their preference; 14.6% did not indicate their preferred specialty or were unsure about their specialty choice.

Specialty choice

Among the 257 students who identified a specialty choice, 34 students (13.2%) planned to pursue a career in medicine; 29 (11.3%) chose a career in family medicine. Paediatrics was the third most common specialty choice (n=27; 10.5%), followed by neurology (n=23; 8.9%). Less common choices included orthopaedics (n=19; 7.4%), cardiology (n=16; 6.2%), surgery (n=15; 5.8%), ophthalmology (n=15; 5.8%), dermatology (n=10; 3.9%), emergency medicine (n=10; 3.9%), obstetrics and gynaecology (n=9; 3.5%), and plastic surgery (n=9; 3.5%). Participants were least interested in radiology (n=5; 1.9%), rheumatology (n=5; 1.9%), psychiatry (n=4; 1.6%), allergy and immunology (n=1; 0.4%), community medicine (n=1; 0.4%), haematology (n=1; 0.4%), nephrology (n=1; 0.4%) and genetics (n=1; 0.4%).

A higher proportion of females selected paediatrics, family medicine, medicine and cardiology as compared to their male peers who

indicated an interest in orthopaedics, neurology, and surgery (Figure 1).

Factors that influenced career choice

Male students were more likely than their female peers to select a specialty for future financial expectations ($p=0.002$) and promotion and career prospects ($p=0.04$). Male and female students did not significantly differ in their response to other factors, including domestic circumstances, working hours and conditions, advice from others, current financial circumstances, self-appraisal of own skills and attitudes, previous experience of chosen specialty, and influence of teachers (Table 2).

We also found that interns were more likely than sixth year medical students to select a specialty because of their inclinations before entering medical school ($p=0.01$). Interns and sixth year students did not significantly differ in their response to other factors, including domestic circumstances, working hours and conditions, advice from others, current financial circumstances, self-appraisal of own skills and attitudes, previous experience of chosen specialty, and influence of teachers (Table 3).

Career counselling

As shown in Table 4, about one third of the participants received career counselling on specialty selection (n=97; 33.0%). The likelihood of receiving career counselling did not significantly differ between the two genders or nor between interns and sixth year students.

Residency training

Of the 293 participants who indicated their plans regarding future studies, 203 (69.3%) were interested in getting residency training outside the Kingdom of Saudi Arabia (KSA). Preferred locations for residency training included the USA, Canada, or Europe. Table 5 shows that male respondents were significantly more likely to prefer continuing medical education abroad compared to female respondents ($p=0.003$). Similarly, a significantly higher proportion of sixth year students planned to continue residency abroad compared to interns ($p=0.02$).

Table 1. Demographic Characteristics of the Respondents

Variable	Frequency (per cent)
Gender	
Male	136 (45.2)
Female	165 (54.8)
Nationality	
Saudi	286 (95)
Non-Saudi	15 (5.0)
Marital status	
Married	63 (20.9)
Single	238 (79.1)
Medical school year	
Intern	117 (38.9)
Sixth year	184 (61.1)

Table 2. Factors That Affect First Choice of Specialty by Gender *

Factors	Male	Female	P-value
Family member is a physician			
Affects first choice	25 (18.4)	32 (19.4)	0.470
Does not affect first choice	111 (81.6)	133 (80.6)	
Domestic circumstances			
Affects first choice	20 (14.7)	29 (17.6)	0.300
Does not affect first choice	116 (85.3)	136 (82.4)	
Hours and working condition			
Affects first choice	45 (33.1)	59 (35.8)	0.350
Does not affect first choice	91 (66.9)	106 (64.2)	
Advice from others			
Affects first choice	39 (28.7)	37 (22.4)	0.134
Does not affect first choice	97 (71.3)	128 (77.6)	
Current financial circumstances			
Affects first choice	24 (17.6)	28 (17.0)	0.490
Does not affect first choice	112 (82.4)	137 (83)	
Future financial prospects			
Affects first choice	51 (37.5)	36 (21.8)	0.002 [†]
Does not affect first choice	85 (62.5)	129 (78.2)	
Promotion and career prospects			
Affects first choice	55 (40.4)	50 (30.3)	0.040 [†]
Does not affect first choice	81 (59.6)	115 (69.7)	
Self-appraisal of own skills and attitudes			
Affects first choice	79 (58.1)	81 (49.1)	0.070
Does not affect first choice	57 (41.9)	84 (50.9)	
Previous experience in the chosen specialty			
Affects first choice	57 (41.9)	74 (44.8)	0.340
Does not affect first choice	79 (58.1)	91 (55.2)	
Teachers			
Affects first choice	49 (36.0)	49 (29.7)	0.140
Does not affect first choice	87 (64.0)	116 (70.3)	
Inclinations before medical school			
Affects first choice	29 (21.3)	23 (13.9)	0.060
Does not affect first choice	107 (78.7)	142 (86.1)	
Inability to secure qualification for previous choice			
Affects first choice	17 (12.5)	17 (10.3)	0.330
Does not affect first choice	119 (87.5)	148 (89.7)	
Personal preference			
Affects first choice	12 (8.8)	14 (8.5)	0.530
Does not affect first choice	124 (91.2)	151 (91.5)	

*Data are presented as frequency (percent) unless otherwise specified.

[†] Statistically Significant difference, at alpha level 0.05.**Table 3.** Factors That Affect First Choice of Specialty by Medical School Year *

Factors	Intern	Sixth Year	P-value
Family member is a physician			
Affects first choice	27 (23.1)	30 (16.3)	0.09
Does not affect first choice	90 (76.9)	154 (83.7)	
Domestic circumstances			
Affects first choice	19 (16.2)	30 (16.3)	0.56
Does not affect first choice	98 (83.8)	154 (83.7)	
Hours and working condition			
Affects first choice	45 (38.5)	59 (32.1)	0.15
Does not affect first choice	72 (61.5)	125 (67.9)	
Advice from others			
Affects first choice	34 (29.1)	42 (22.8)	0.14
Does not affect first choice	83 (70.9)	142 (77.2)	
Current financial circumstances			
Affects first choice	23 (19.7)	29 (15.8)	0.23
Does not affect first choice	94 (80.3)	155 (84.2)	
Future financial prospects			
Affects first choice	39 (33.3)	48 (26.1)	0.11
Does not affect first choice	78 (66.7)	136 (73.9)	
Promotion and career prospects			
Affects first choice	47 (40.2)	58 (31.5)	0.07
Does not affect first choice	70 (59.8)	126 (68.5)	
Self-appraisal of own skills and attitudes			
Affects first choice	63 (53.8)	97 (52.7)	0.47
Does not affect first choice	54 (46.2)	87 (47.3)	
Previous experience in the chosen specialty			
Affects first choice	54 (46.2)	77 (41.8)	0.26
Does not affect first choice	63 (53.8)	107 (58.2)	
Teachers			
Affects first choice	40 (34.2)	58 (31.5)	0.36
Does not affect first choice	77 (65.8)	126 (68.5)	
Inclinations before medical school			
Affects first choice	28 (23.9)	24 (13.0)	0.01 [†]
Does not affect first choice	89 (76.1)	160 (87)	
Inability to secure qualification for previous choice			
Affects first choice	17 (14.5)	17 (9.2)	0.11
Does not affect first choice	100 (85.5)	167 (90.8)	
Personal preference			
Affects first choice	9 (7.7)	17 (9.2)	0.40
Does not affect first choice	108 (92.3)	167 (90.8)	

*Data are presented as frequency (percent) unless otherwise specified.

[†] Statistically Significant difference, at alpha level 0.05.

Table 4. Career Counselling Categorized by Gender and Medical School Year *

Variables	Received Career Counselling		Total	p-value
	Yes	No		
Gender				
Male	40 (30.1)	93 (69.9)	133 (45.2)	0.20
Female	57 (35.4)	104 (64.6)	161 (44.8)	
Medical school year				
Intern	44 (38.6)	70 (61.4)	114 (38.8)	0.06
Sixth year	53 (29.4)	127 (70.6)	180 (61.2)	

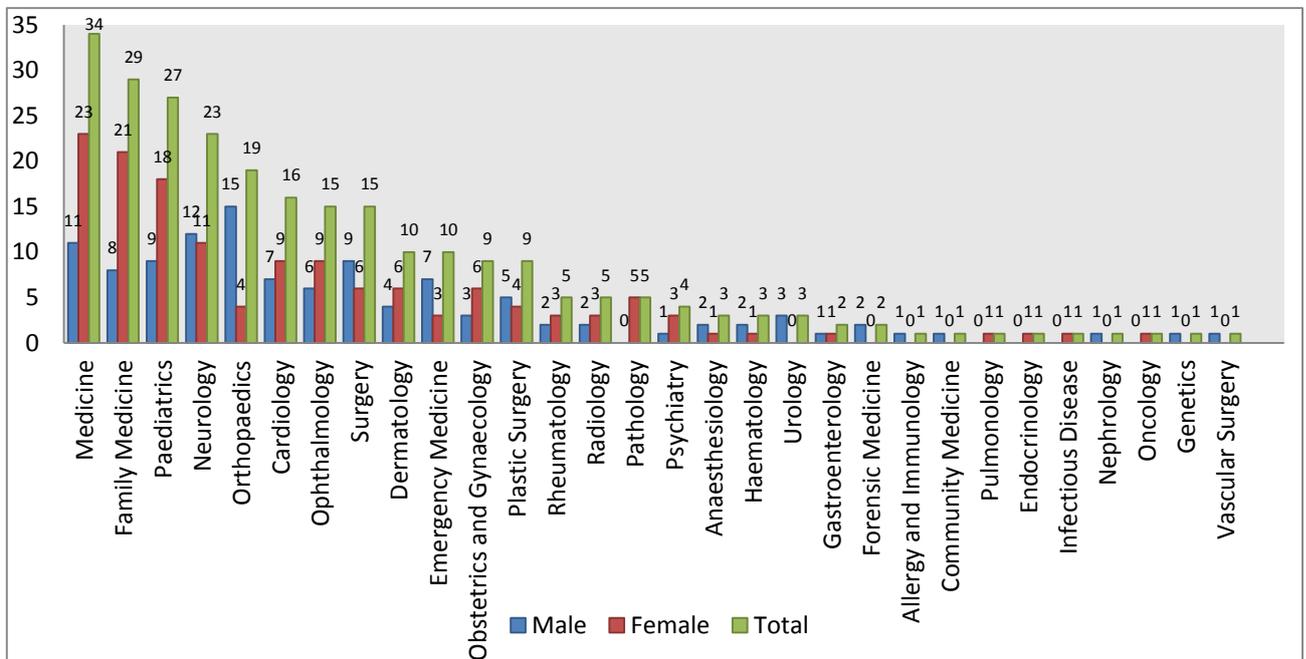
* Data are presented as frequency (percent) unless otherwise specified.

Table 5. Future Residency Plan According to Gender Medical School Year *

Variables	Plan to Complete Residency Abroad		Total	p-value
	Yes	No		
Gender				
Male	104 (77.6)	30 (22.4)	134 (45.7)	0.003 [†]
Female	99 (62.3)	60 (37.7)	159 (44.3)	
Medical school year				
Intern	86 (76.1)	27 (23.9)	113 (39.6)	0.020 [†]
Sixth year	117 (65)	63 (35)	180 (61.4)	

* Data are presented as frequency (percent) unless otherwise specified.

[†] Statistically Significant difference, at alpha level 0.05

**Figure 1.** Gender-based differences in choice of specialty among the most commonly selected specialties

4. Discussion

Although similar studies have been conducted in the Kingdom of Saudi Arabia [2, 4, 8] and other countries, [1, 3, 5, 6] our study places particular emphasis on the current specialty choices of students at the Faculty of Medicine of King AbdulAziz University. Our results show that family medicine and internal medicine were highly preferred specialties. In previous studies conducted among medical students in Saudi Arabia, [2, 4, 8] it was shown that internal medicine and surgery were the most preferred specialties. In another study conducted on medical students and foundation year doctors in Japan, [11] it was found that anaesthesiology, psychiatry, radiology, dermatology, and ophthalmology were selected as

the single most probable specialty or only specialty under consideration.

Obstetrics and gynaecology was chosen by 3.0% of the participants. This percentage is lower compared to the findings of other authors. [1, 4] One report, [13] for example, found that 9.7% of undergraduate final year medical students and interns at King Saud University, Riyadh listed obstetrics and gynaecology in their top three choices. The low rate in our study may be because female students are hesitant to choose this specialty due to workload demands. Moreover, the fear of malpractice litigation makes obstetrics and gynaecology an unattractive specialty for medical graduates. [14] In our context, where cultural norms shape behaviours and expectations according to gender roles, male students hardly consider these

challenges. Nevertheless, the increasing population, with demands for obstetricians/ gynaecologists suggests the need to guide students towards this specialty—a process that can be achieved by developing strategies to improve attractiveness of obstetrics/ gynaecology practice. Orthopaedics was preferred by male students, similar to the findings of a study conducted in Madinah.^[4] We found that paediatrics was more preferred by females, contrary to the findings in the Madinah study,^[4] where male students were more interested in paediatrics. Similarly, Alshahrani *et al.*^[15] found that a higher proportion of male students at the University of Dammam were more interested in paediatrics.

Recently, an overwhelming increase interest in family medicine was reported among medical students, as reflected by the number of graduating medical students who applied to join family medicine residency training programmes in Saudi Arabia.^[16] According to a previous study conducted in 2012,^[10] medical students had reservations about pursuing a career in family medicine, with only 2.7% showing interest in careers in family medicine. However, increasing awareness regarding this specialty and increasing lifestyle satisfaction have attracted more students towards this specialty. The medical students and interns in our study showed a similar interest in family medicine. According to another report,^[17] physicians who chose family medicine as a specialty were mostly attracted by the short duration of specialty training and low investment needed to start practice.

Personal incentives have been reported to have an important effect on specialty choice although other factors, including frequent exposure to certain specialties as well as encouragement and guidance, have an important influence on orienting students and interns towards particular specialties.^[3] Results of other studies show that personal interest was the most influential factor for career choice,^[2, 6] and another study^[3] conducted at the Jordan University of Science and Technology showed 'intellectual content of specialty' to be the most influential factor. Unlike the reports of other studies,^[2, 3] we found that 'self-appraisal of own skills' was the most influential factor in students' decision-making. Furthermore, we found that 'future quality of life and controllable working hours' influenced career choice, irrespective of specialty. A similar result was reported in a study conducted in Japan.^[11] A controllable lifestyle—characterised by leisure time, free time for family and avocational interests, and control of total weekly hours spent on fulfilling professional responsibilities—has also been cited as an important factor that explained specialty choices among US medical students.^[18]

In this study, the factors that influenced students' specialty preferences varied by gender and academic level. Interns were more likely than sixth year medical students to select a specialty choice because of their Inclinations and influences developed prior to joining the medical school. The fact that male students in this study were more likely to select a specialty for income potential as well as promotion and career prospects is not surprising in a Saudi society where traditional gender roles place men in the position of provider. Nevertheless, other confounding factors that we did not control for may have influenced our findings, as one recent report states that students' preferences for person-oriented specialties are slightly more likely to be influenced by medical school and less likely to be influenced by income prospects than students' inclinations for technique-oriented specialties.^[19] Consequently, during the early years of their studies, male and female students may have different motives that influence career considerations.^[20]

Career counselling is regarded as a vital tool that guides students in choosing their career.^[2, 3] It can be provided in the form of a mentorship programme, workshop or through a website. In our study, approximately one third of the participants received career counselling, which is lower than the 42.4% reported by other authors.^[3] Previous researchers have shown that career preferences at the time of medical school entrance may be a significant predictor of students' eventual specialty choices.^[21] Furthermore, the authors reported that many students end up in careers that are closely related to their specialty during their early years in medical school, thus underscoring the need to define the factors that affect students' specialty choices during the first years of medical school. By counselling students, this would help to identify their inclination early in the course of their studies and guide them towards most suitable careers. Consequently, medical students will be able to choose an appropriate career path by the time they graduate from medical school.^[22]

The main strength of this study is the inclusion of final year students and interns, as most students at this level will have sampled the wide range of specialties during their training. Consequently, it is assumed that most students are more certain about their career path towards the end of their training or after they have completed medical school. In addition, the survey results indicate current specialty choices and illustrate the importance of career counselling, which should be done early to orient students based on their interests and the local demand for specialty types. Nevertheless, our study has some limitations. First, the cross-sectional nature of our study mandates that our findings be interpreted with care. Secondly, further changes in career prospect as

well as specialties in demand need in Saudi Arabia could not be tracked in this study. We therefore recommend that future studies should span several years to track change in specialty choice in order to meet current and future needs.

Conclusions

Overall, the results of this survey indicate that medical students and interns expressed interest in internal medicine, family medicine and paediatrics. Students' career choices regarding these specialties also result from the interplay of financial expectations, promotion and career prospects, as well as inclinations prior to medical school entry medical school. The medical specialties selected by medical students and interns are crucial determinants of the future supply of doctors in various specialties, and their career choices will consequently affect the planning of the workforce in the healthcare sector. Thus, administrators at our university should address the factors that affect students' career choice and include interventions to improve the attractiveness of specialties that are deficient in the medical workforce. Regular, time to time survey in the career choices and a comprehensive working partnership between the student support units and the Ministry of Health which is able to provide recommendations based on the needs and requirements is highly warranted to make the Kingdom self sufficient with its native work force in the future.

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