



Cross-sectional Study

## 6th year medical students' future specialty preferences: A cross-sectional study

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### ABSTRACT

**Background:** Studying career preferences can help in designing and improving health service systems. Determining the preferred specialty and understanding the compulsion affecting specialty choice will provide clues to influence such choice in the future to shift the balance of specialties among practitioners. The current study aimed to determine medical students' preferable specialty choices and the factors influencing their choices and their attitude towards postgraduate medical education in Jordan and abroad.

**Materials and methods:** The descriptive cross-sectional study design included 6th-year medical students in medical faculties in Jordan. An online questionnaire was created on Google Forms and posted on platforms accessible by medical students at level six. Numbers and percentages were presented for all variables. Frequency distributions were also presented. Chi-square distribution was used to measure the association between categorical data. Alpha level of 0.05 was used.

**Results:** Most students 188 (74.3%) preferred to continue their post-graduate training abroad, while only 65 (25.7%) favored Jordan. 150 (59.3%) of the respondents are interested in the medical – non-surgical - specialties. The most important factor that encouraged the students to choose a specialty was Job opportunity (32.5%) followed by the number of years required to complete the training and the expected income (27.7%) each.

**Conclusion:** Supportive steps should be undertaken to motivate medical graduates toward the needed specialties. Moreover, local Specialty training programs need to be –reevaluated to ensure proper post graduate medical learning.

### 1. Introduction

The medical education system commences with six years of undergraduate medical education followed by specialty training and subspecialty training. Conventionally, the sixth-year covers clinical clerkships, in the major clinical specialties of surgery, medicine, pediatrics and obstetrics and gynecology, in addition to two elective months. Medical education in Jordan is considered as an attractive field of study in the Middle East region [1,2]. Consequently, there are six medical schools in the country of 11 million population. One out of six medical schools is expected to have the first batch of graduates in 2022. Accordingly, it is

expected to have a preference for certain specialties and subspecialties training programs with high competency. In addition, there are national and international needs for specific specialties such as female doctors in certain fields such as surgery. However, there are some challenges to complete postgraduate studies by conducting professional specialty and subspecialty training locally and internationally [3–5]. Therefore, it is very important to revise and improve medical education programs to attract more foreign students and looking forward to making Jordan a recognizable center for medical education.

Moreover, the future and quality of health care in Jordan are partly dependable on the number of available physicians in addition to their

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specialties [6,6,7,7,8,8]. Diversity in the serviceable specialties is essential to provide optimal local health care. Shortage in any of the reachable specialties will create an imbalance, which will cause a major defect in the health care system and will increase the economic burden by increasing the need for referrals. Moreover, this can lead to unevenness in the workload among different specialties either by much more to those deficient ones and less to the easily accessible ones. This will ultimately end with disproportion in the available Job opportunities.

Many postgraduate medical specialties are available in both basic and clinical sciences. Several factors can interfere with specialty choice including personality [9,10], psychological [11], early experience of disease [12] and gender [13]. It is a complex interaction between both students' desire and program needs. According to Reed and colleagues, medical students choose their specialty based on the opportunities they explored during medical school, the effect of role models and mentors, academic performance, personality attributes, and interest in the skills used in a medical specialty [14]. Determining the preferred specialties and understanding the compulsion affecting specialty choice will provide clues to influence such choice in the future to shift the balance of specialties among practitioners.

In this study, we aimed to determine the preferable specialty choices among the 6th-year medical students in the Jordanian faculties of medicine. In addition, we aimed to identify the factors that influence their choices and their attitudes towards postgraduate medical education in Jordan and abroad.

## 2. Methods

### 2.1. Sample and data collection

A descriptive cross-sectional study design was used for the current cohort. The study population included the 6th year medical students in the five medical faculties who had 6th-year level at the time of the study: The University of Jordan, Jordan University of Science and Technology, Mu'tah University, Hashemite University and Yarmouk University. The study utilized an online questionnaire delivered to participants in the period between February 2018 and May 2018. The questionnaire was written by the author (SB) and it was sent for review by three specialists in academia, to assure its validity and accuracy, the final version was released online. The online questionnaire was created on Google Forms and posted on several online platforms at each medical school accessible by medical students at level six. These platforms are official channels of communication between schools and students. In addition, Six-year representatives in every university were involved in distributing the questionnaire link to students directly. The link to the questionnaire is: <https://docs.google.com/forms/d/1fAM3yZLh7lxGzngFdY6T4hJ9kUw2lHR7lGOepSTfZwI/>

The questionnaire consisted of two sections. The first section of the questionnaire was about personal information, age, gender, university, and place of residency. In the second section, the participants were asked about their plans regarding medical education. They were inquired about which field they are interested in, in which country they plan to train or learn if they started preparation by doing an external medical exam or learning a new foreign language and about the reasons behind preferring or choosing a certain specialty.

The survey was pilot tested (n = 5 students) and proper modifications were completed before posting to participants. Participation in the study was voluntary and personal identifiers were not collected. The study was approved by the Institutional Review Board (IRB) at Yarmouk University, RD/119/12/1156. The questionnaire was anonymous and all data were treated with confidentiality. This work has been reported in line with the STROCSS criteria [15].

The study is registered in the research registry with UIN 6745, and the link: <https://www.researchregistry.com/browse-the-registry#home/registrationdetails/607815691021d1001eada8a3>.

### 2.2. Statistical analysis

Data was imported into Excel for management and then analyzed using the IBM Statistical package for Social Sciences Software (SPSS Inc., Chicago, IL, USA) for Windows, version 25.0. Numbers and percentages were presented for all variables. Frequency distributions were also presented. Chi-square distribution was used to measure the association between categorical data. Alpha level of 0.05 was used. Only statistically significant relationships were detected.

## 3. Results

The total population of the 6th-year level in the selected universities was estimated to be around 1770 medical students among the five universities (400: University of Jordan, 634 Jordan University of Science & Technology, 270: Mu'tah University, 259: Hashemite University, and 207 Yarmouk University). The total number of participants in this study was 253 medical students. The percentages of participants by medical school provided in Table 1 reflect the size of medical students from within each medical school in Jordan. This represents a sample of medical students that is proportionate to the size of 6th-year medical students within each medical school in Jordan. The sample socio-demographic characteristics were presented in Table 1. The highest response rate was from Yarmouk University 69 (27.3%). The mean age of the students was 23.5 years and 142 (56.1%) were females (Table 1).

More than half of the respondents 150 (59.3%) are interested in the medical – non-surgical - specialties rather than the surgical fields. Medical specialties included (internal medicine, pediatrics, dermatology, family medicine & community medicine, neurology, emergency medicine, and psychiatry). Surgical specialties included (general surgery, obstetrics and gynecology, ophthalmology, E.N.T., neurosurgery, and orthopedics). Among the medical branches, the most preferred specialty was internal medicine while emergency medicine and family medicine were the least. On the other hand, 103 students (40.7%) chose the surgical field. General surgery ranked first on the list, while neurosurgery came last. Table 2.

Most students 188 (74.3%) preferred to continue their postgraduate training outside Jordan, while only 65 (25.7%) chose Jordan for their future postgraduate training (Table 2).

The most important factor that influences the student's choices of future postgraduate specialty was Job opportunity 83 (32.8%) followed by the number of years required to complete the training and the expected income 70 (27.7%) each. The least important factor was direct contact with patients 12 (4.7%), while the number of working hours accounted for 18 (7.1%) (Table 3).

The relationship between clinical specialization and gender was explored using the Chi-square of independence (Table 4). The results showed that there is a statistically significant association between the two variables ( $\chi^2(1) = 48.287, p = 0.001$ ). This suggests that males tend to choose surgery for their future specialization more than females do.

The relationship between the preferred country for continuing

**Table 1**  
Socio-demographic characteristics of the students.

Variable		N (%)
Gender	Male	111 (43.9)
	Female	142 (56.1)
Place of residence	City	211 (83.4)
	Village	42 (16.6)
University	University of Jordan	41 (16.1)
	JUST	49 (19.4)
	Mu'tah	47 (18.6)
	Hashemite	47 (18.6)
	Yarmouk	69 (27.3)
Age in years	23.50 ± 0.639	Total 253
Mean ± SD		

**Table 2**  
Students' preference regarding postgraduate medical education.

	Preference	Frequency (%)
The preferred country for continuing postgraduate medical education	Jordan	65 (25.7)
	Overseas	188 (74.3)
The preferred subject for postgraduate education	Medical	150 (59.3)
	Surgical	103 (40.7)

**Table 3**  
Distribution of factors that encourage the students to choose their preferred specialty.

Factors	N (%)
Number of years required to complete the training	70 (27.7)
Job opportunity	83 (32.8)
Direct contact with patients	12 (4.7)
Number of working hours	18 (7.1)
Expected income	70 (27.7)
<b>Total</b>	<b>253</b>

**Table 4**  
The association between clinical specialization and gender.

		Clinical specialization		Chi	p-value
		Surgery	Medicine		
<b>Gender</b>	Male	71	40	48.287	<b>0.001*</b>
	Female	30	112		

postgraduate medical education and the residency place (city or village) was explored using the Chi-square of independence (Table 5). The results showed that there is a statistically significant association between the two variables ( $\chi^2(1) = 18.752, p = 0.000$ ). So, we can conclude that the students who live in the village prefer to continue their postgraduate education in Jordan 4.3 times more than students who live in the city.

Table 5 shows the relationship between preferred country to continue their postgraduate medical education and gender, the Chi-Square of independence was used to explore it. The result showed that there is a statistically significant association between the two variables ( $\chi^2(1) = 67.434, p = 0.001$ ). So, we can conclude that female students are more likely to continue their medical education in Jordan than males do.

Table (5) shows that the Chi-square of independence was used to explore the relationship between the preferred country for continuing postgraduate medical education and starting applying or preparing for external medical licensing examinations like USMLE, the results showed that there is a statistically significant association between the two variables ( $\chi^2(1) = 4.199, p = 0.001$ ). So, we can conclude that the students are more likely to start preparing for external medical licensing exams if they are planning to study outside Jordan.

**Table 5**  
The association between preferred countries for specialty and factors (residency place, gender and starting applying or preparing for external licensing exams).

		Country		X <sup>2</sup>	p-value
		Jordan	Overseas		
<b>Residency place</b>	Village	22	20	18.752	< <b>0.001*</b>
	City	44	168		
<b>Gender</b>	Male	22	89	67.434	<b>0.001*</b>
	Female	102	40		
<b>Starting applying or preparing for external licensing exams</b>	No	60	69	4.199	<b>0.001*</b>
	Yes	42	82		

#### 4. Discussion

Medical students choose their preferred specialty according to several factors [9–13]. For instance, mentors in medical school, academic achievement, personality, interests in certain skills in addition to the opportunities they explored during their undergraduate education [9,15,16]. In our study, surgical work, expected income, job opportunity and direct contact with the patients were the main 4 reasons behind choosing the preferred specialty. This reflects that candidates can tolerate long working hours and the risk of contact with patients to get a high income. Within the clinical specialties, medicine and surgery ranked first. On the other hand, family medicine and emergency medicine were at the bottom of the list which is consistent with previous studies [16–19]. This could be explained due to less expected income in comparison to surgical specialties in addition to fewer job opportunities, especially for emergency medicine. In addition, gender variations were noted in the preference of specialties and abroad medical training. Male students preferred surgical specialties while female students favor medical specialties. This finding in agreement with Yuosef Khader et al. where they found that male students were more likely to choose surgery as a future specialty [16].

The majority of the respondents prefer to continue their medical education abroad and therefore started preparing for the external exams. Females preferred more in comparison to males to have their specialty training in Jordan rather than abroad. This could be explained due to the cultural issue as in our society it is not easy for a female to travel solely abroad for a long period. Moreover, students living in villages were less likely to choose abroad for further medical education. This could be elucidated by the level of the current level of income as it is well known that preparation for external exams costs a lot of money. In addition to cultural issues were village residents may not prefer to leave their families away for a long period. On the other hand, some of the students who choose to continue their medical education in Jordan still apply for external licensing exams. This may have several indications, they may think later to travel abroad for further subspecialty training or they are not sure they can find an available specialty training program in Jordan so they are keen to be ready for the external training opportunity. Fay Smith et al. published a survey done in the UK among junior doctors, and in contrast to our survey, domestic circumstances played a standing role [20]. Accordingly, we believe that surrounding circumstances play a major role in influencing factors and that role becomes bigger when the general atmosphere is more stable from the professional point of view. That was addressed by the study conducted by Al-Fouzan et al. Their study differs from ours that they took the earlier study years of study and their findings ended up that students might change their decisions during their medical school attendance progression in Kuwait [21]. In contrast, Al-Ansari concluded that personal preferences and particular individualization of the background play a big part in the scene of medical schools' student's choices [22]. And Eze et al. found personal preferences represent the big playing factor in students' determination in their way to the specialty in Nigeria [23]. In another different aspect of evaluation, a tendency towards specialty choice and compliance with individual characteristics were found as key factors of residents' choice of specialty and job satisfaction during a residency program [24]. Chang et al. investigated the influence factors on 5th and 6th-year medical students. They tried to understand and find solutions for the shortage in certain specialties and attract students toward them as well. Finally, in their study, knowing students' attitude is the way that would compensate for the shortage and makes a balance between medical specialty needs and students desire [25]. Medical school orientation program or introductory course about the medical demand, environmental requisite, financial income, job satisfaction and finally the balance between them all might be beneficial for medical students [26]. Well-structured training programs and better income could be the reason behind our study group participant's attitude. In addition to having better Job opportunity in the future after getting a foreign board

certificate rather than the Jordanian one. For example, medical schools in Jordan would not accept employing a teaching staff as an assistant professor – or higher level-unless the person had a foreign medical board or at least did clinical training in a well-known international center within certain criteria. Moreover, it is well known that having an external medical board or certificate provides Job opportunities with a much better income. Affiliation with international medical schools might help in improving medical training programs as well as increasing the reputation of the local programs. If training programs in Jordan didn't rise up to the desired high level of organization and education it will not be able to compete with external programs and medical graduates will still prefer to travel abroad searching for a better future. Furthermore, there should be a complete statistical program about the need of the society of different specialty and to collaborate within medical schools to encourage medical students during their undergraduate study to change their preference toward the needed specialties. Finally, medical employing policies in Jordan especially in Jordanian Medical Schools need to be revised, in a way to accept medical personnel who had their training in Jordan – with specific applicable criteria- and improve the income to encourage doctors to stay in Jordan rather than travelling abroad. Specialty training programs in Jordan need to be –reevaluated and re-constructed in a well-organized and well-structured way to ensure proper medical learning and advanced medical skills acquisition in the related field. Additionally, supportive steps should be undertaken to motivate medical graduates toward the needed specialties.

#### Ethical approval

The study was approved by the IRB Committee at Yarmouk University (1157/12/119).

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This work did not receive any funds.

#### Author contribution

Soha Nafez Al-beitawi: conceptualization, data collection and writing. Tariq N. Al-Shatanawi: data management and analysis and manuscript editing. Suhair Adel Qudsieh: manuscript writing and editing. Ehab Ibrahim Abu Marar: manuscript writing and editing. Mazhar Salim Al Zoubi: manuscript writing and editing. Mohammad Al-zubi: conceptualization and manuscript editing.

#### Registration of research studies

1. Name of the registry: ResearchRegistry
2. Unique Identifying number or registration ID: researchregistry6745
3. <https://www.researchregistry.com/browse-the-registry#home/registrationdetails/607815691021d1001eada8a3/>

#### Guarantor

Soha Al Beitawi.

#### Consent

Accepting to answer the questionnaire online.

#### Provenance and peer review

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#### Declaration of competing interest

Conflict of Interest: The authors have no declaration of interest to report.

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#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2021.102373>.

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