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Original article

## Mapping the factors that influence the career specialty preferences by the undergraduate medical students



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## ABSTRACT

It is often perceived that undergraduate medical students do not select their career specialty until they are graduated. This study aimed to probe the preferences of undergraduate medical students about their career specialty and the factors influencing their choices. A self-administered questionnaire was distributed to 3rd through 5th year undergraduate medical students to record their choices of specialties and to identify the factors that influence their career selection. Out of 220 respondents, 29 (13.2%) students selected General Surgery, 24 (10.9%) Pediatrics, and 18 (8.2%) Internal Medicine as their career specialties; whereas 24 (10.9%) students were not able to select a major specialty. The least popular specialties were Gynecology and Obstetrics, Oncology, Histopathology, Orthopedics, Genetics, Psychology, each selected by one student. One hundred and seventeen (53.1%) thought their selected specialty 'matched their capabilities' and 82 (37.2%) perceived their selection as "innovative field in medicine". Career advice by friends and families and the desire to serve academic institutions could not influence career selection. Career preferences by medical students result from the interplay of a range of factors. General Surgery, Pediatrics and Internal Medicine were the most preferred specialties. The professional grooming programs to target specialties matching the trainees' capabilities and the specialties with state-of-the-art innovative technologies attract medical undergraduate students. The attained knowledge is vitally important for the policy makers in modifying the existing framework that can cater the popular and favored specialties.

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## 1. Introduction

A specialty selection entails a transformation from the undifferentiated undergraduate stage to a completely differentiated professional enterprise where all future efforts would be focused to a single specialized field of medical discipline (Parlak et al., 2015; Youngclaus et al., 2013). The evolving landscape of medical field by innovative and creative developments in technologies has a profound impact on the selection of clinical specialties (Ibrahim et al., 2014). Furthermore, socio-economic and organizational factors also markedly influence the dynamics of medical specialties.

An ageing population will demand a gradually expanding frameworks of primary health-care and geriatrics disciplines in developed countries (Alawad et al., 2015b; Christakis and Fowler, 2008; Sampogna et al., 2015). The mechanics of some surgical specialties like cardiac surgery are rapidly changing due to the state-of-art innovations in non-surgical and non-invasive techniques (Fowler and Christakis, 2009). The admissions of undergraduate medical students is increasingly registering an all times high number of women (Scott et al., 2009). In the United States, during 1970, women constituted less than 10% of medical students and 8% of physicians, while in 2006, women comprised 50% of medical students and 30% of physicians (Ku, 2011). This feminization of the medical workforce, changing quotas of students accepted for medical studies, and varying dynamics of the structural and functional domains of medical specialties necessitate a deeper understanding of the factors that influence the specialty choices by undergraduate medical students. It is only then that medical school curricula can be tailored to fulfill the aspirations of the medical graduates.

Recently, due to huge investment by the Saudi Government in health-care sector, we have witnessed a proliferation of as many as 23 private and governmental medical college across the country.

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Another huge head of revenue is being dedicated to the well-structured postgraduate training programs of the Saudi residents across all specialties where the outcome-based specialty selection plays a pivotal role (Al-Ansari and Khafagy, 2006). A careful career selection by undergraduate medical students becomes vitally important as students may dropout from their selected specialties or, due to incompatible aptitude or psychomotor limitations, students may be urged to change their choice of specialty after spending few years in training (Dorsey et al., 2003). Such mishaps, primarily due to careless career selection, jeopardize the efforts and undermine the entire process of intended delivery of appropriate health-care services to the community.

Very few published reports are available that shed light on the factors that influence specialty selection by the Saudi medical students (Al-Faris et al., 1997; Mehmood et al., 2012). Although several factors have been described that affect medical students' specialty choice, the relative validity and significance of each of these factors remains unclear in Saudi Arabia (Abdulghani et al., 2013). This study attempted to explore the most popular specialties as well as the underlying motivating factors influencing the career selection of undergraduate medical students of the college of medicine Taibah University Saudi Arabia. By gathering this data, an effective policy to attract medical students to the under-represented specialties, hampered by the lack of appropriate taskforce, can be revamped primarily by enriching the educational environment with core principles of medical professionalism (Guraya et al., 2016a) and interprofessional education where students learn with, from and about each other (Al-Qahtani and Guraya, 2016).

## 2. Methodology

During the academic year 2014–2015, a single-stage cross-sectional study was conducted on the currently enrolled 3rd year through 5th year undergraduate medical students of Taibah University, Almadinah Almunawwarah, Saudi Arabia. Taibah University practices a problem-based learning model that is student-directed, community-centered, integrated curriculum where the basic and clinical educational strands are delivered right from the start of medical course as early clinical exposure, personal excellence pathways, professional development pathways and clinical reasoning. The data collection was done by distributing a paper based self-administrative validated English language questionnaire. The questionnaire was validated by conducting literature review, focus group discussions with content experts, synthesis of outcomes of previous research, and finally by the item development. Main theme of the research was conveyed to students in their class rooms and a verbal consent was obtained. An ethical approval was obtained from the institutional review board. The instrument asked the participants to select one specialty as their career specialty and to select from the following factors (a construct of lifestyle, personal, social, and gender-based) that could influence the students selection of career specialty. 1. Innovative field in medicine. 2. Influenced by the teachers. 3. My father asked me to take this specialty. 4. Not requiring much physically exertion. 5. This matches with my capabilities. 6. Can dedicate more time to myself and my family. 7. My friends and family members opted this specialty. 8. Great opportunity for scientific research in this specialty. 9. Community needs more experts in this specialty. 10. Impact of the environment and the teachings of Islam have a role in choosing this specialization. 11. Suggested by an expert in this field. 12. High chances of getting foreign scholarships in this field. 13. High chances of getting jobs in this field abroad. 14. I prefer to work during daytime only. 15. I prefer to work in hospitals only. 16. I prefer to work in teaching and academic institutions only. 17. Any other reason.

Other four items of instrument explored the participants' demographics. Due to exploratory nature of this research, the data analysis was done by descriptive statistics where frequencies (percentages) of items were graphically illustrated by bar charts. The data was entered and analyzed by Statistical Package for Social Sciences (SPSS) version 20.

## 3. Results

Of 300 students, 220 completed the questionnaire (response rate of 73.33%). There were 165 female and 55 male students with average age of 23 years. The results showed that 29 (13.2%) students selected general surgery as major, 24 (10.9%) pediatrics, and 18 (8.2%) selected internal medicine (Fig. 1). This study also showed that 24 (10.9%) students were not sure about the selection of a major specialty. Two students each selected Medical Genetics, Medical Oncology, Emergency Medicine, Forensic Medicine, Pathology, Pediatric Surgery, and Neurology. One student each selected Neuropsychiatry, Gynecology and Obstetrics, Oncology, Histopathology, Orthopedic Surgery, Genetics, Molecular Biology, and Psychology.

The selection of all 17 factors influencing students in their specialty selection is illustrated in Fig. 2. One hundred and seventeen (53.1%) students chose their major because the specialty “match with the capabilities of students”. As many as 82 (37.2%) students proposed “innovative field in medicine” as a confounding factor influencing their specialty selection. The lowest preference by two students was given to the option “my friends and family opted this specialty”.

Fig. 3 shows that female students were inclined to select major subject according to their capabilities; 91 female vs. 26 male students (total of 117 students who selected this factor). Again, for “in innovative field in medicine” 50 female students selected this factor as compared to 32 male students (total of 82 students who selected this factor). Only two female students chose their major because their friends and family had opted for the same field.

An analysis of the respondents' preferences across years is shown in Fig. 4. Fifty students of 4th year, 35 students of 5th year, and 32 students of 3rd year selected “matches with their capabilities”. Likewise, other factors influencing the specialty selection across years are detailed in Fig. 4.

## 4. Discussion

In this study, a maximum number of 29 (13.2%) respondents selected General Surgery, followed by 24 (10.9%) students who preferred Pediatrics. This popularity of General Surgery recorded in the present study is in concordance with published reports from the USA (Glavin et al., 2009) as well as other studies from Saudi Arabia (Khader et al., 2008; Abdulghani et al., 2013) and (Mehmood et al., 2012). This popularity of General Surgery among medical students might have profound impact on health-care policy makers while planning for future strategic frameworks. Another study showed that General Surgery was the single most popular career specialty among the studied cohort of students (Mehmood et al., 2013). The investigators deduced that various personality types had distinct preferences in medical students' choice of careers. The respondents preferring a surgery specialty ranked the highest score on ‘neuroticism-anxiety’, ‘impulsive sensation seeking’, ‘aggression-hostility’ and ‘sociability’ scales. Further research on the link between personality types and specialty selection can enhance the impact of career counselling of medical students about choosing a specialty that may be best suited to their personality. Contrasting our research finding, a study on the Turkish undergraduate medical students showed that their preferred

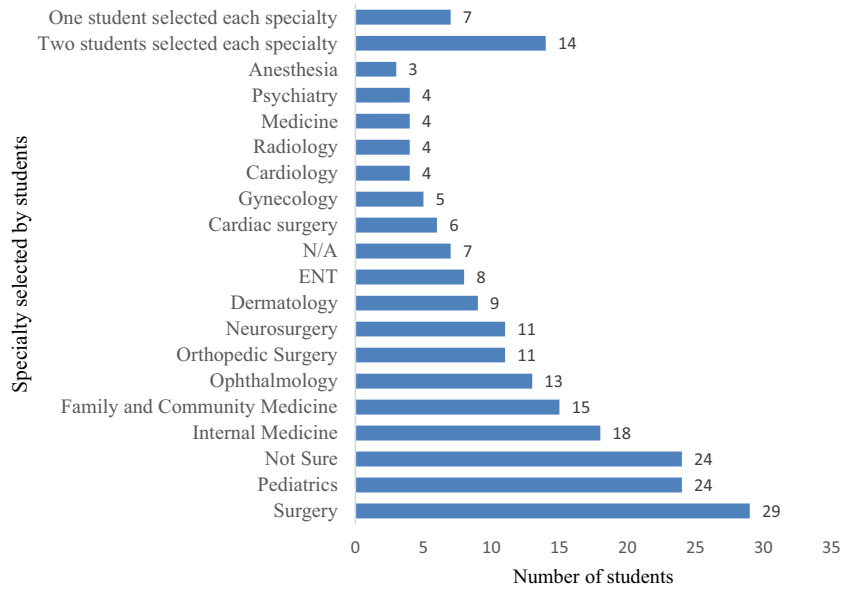


Fig. 1. Selected specialties by the undergraduate medical students (n = 220).

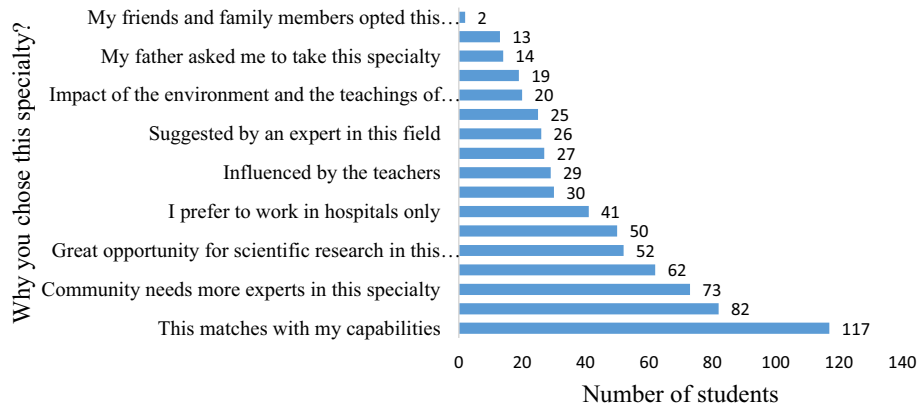


Fig. 2. Factors that influence the specialty selection by the medical students (n = 220).

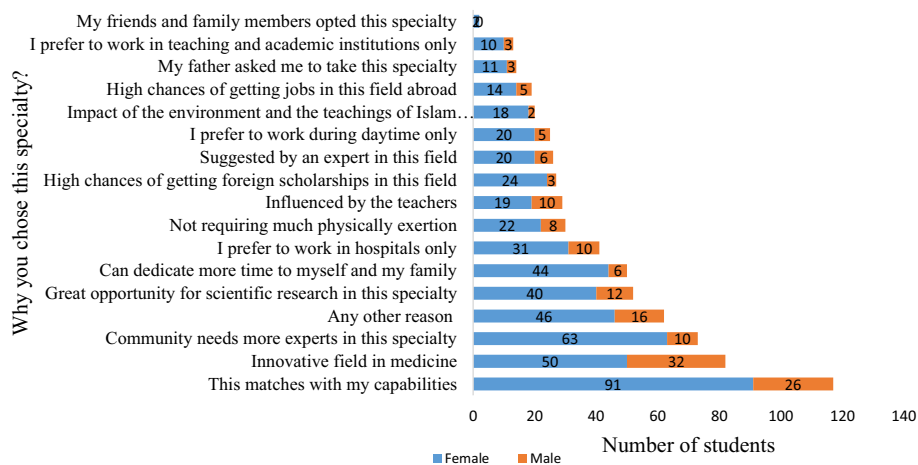


Fig. 3. Factors that influence the specialty selection by gender (n = 220).

specialties were Internal Medicine, Pediatrics and Ophthalmology. The respondents ranked General Surgery as the 6th preferred specialty (Mustafa et al., 2008). In our study, none of the respondents

selected General Practice as career specialty. This trend has been reported by other studies as well (Zinn et al., 2001; Kiker and Zeh, 1998). “Given the ever-increasing demand of medical services

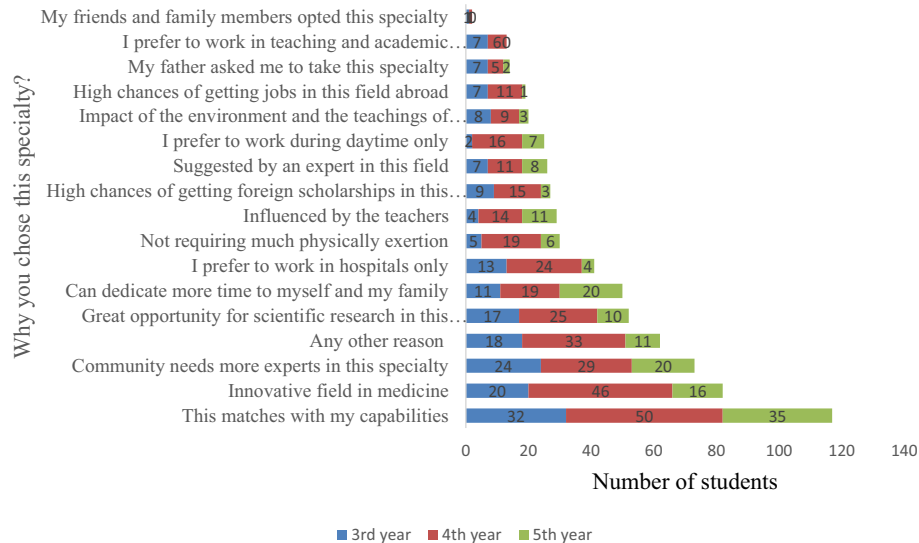


Fig. 4. Factors that influence specialty selection across years of the undergraduate medical students (n = 220).

for ageing population, and the low preferences of medical students for general practice, a unified political and national effort must be made to identify factors that negatively affect ‘unfavorable’ specialties like general practice, and to focus on possible remedies” (Howe and Ives, 2001).

Unfortunately, very few students in this study preferred family and community medicine as career specialty. The significance Community-based medical education (CBE), “medical education programme that may employ any variety of teaching methods to promote an understanding of health concerns at a community level”, has been endorsed by several evidence-based conventions (Goldberg et al., 2000; Association, 2006). The CBE articulates well with the educational domains of family and community medicine, “is set within the community, and involves individuals within the community” (Lee et al., 2014). Realization of needs analysis and inspiration to serve the community and rural areas can be aroused during their earlier phase of professional development as a medical student (Koju, 2015). Embedding CBE courses in medical curricula can motivate medical students to develop insights in the delivery of rural health-care services. This can enhance the knowledge, skills, clinical approach and leadership quality of medical students for the motivation to serve their own communities. The community-based learning environment is very conducive and fertile, however, there is a strong urge for an early discourse between the national level stakeholders and health care services in terms of applying CBE in medical education (Dreyer et al., 2015). Embedding the CBE model within the medical curriculum, along with offering some incentives and fringe benefits, can motivate medical students in selecting primary care and community medicine specialties.

Several studies have shown a continuing dominance of hospital-based specialties over primary care services (Aslam et al., 2015; Alawad et al., 2015a). At the same time, there is a persistent decline of percentage of students choosing general practice over the past years (Margolius and Bodenheimer, 2010; Chew et al., 2011). Unfortunately, the image of general practice as seen by medical students is not attractive. Students consider the role of primary care physicians to be very hectic, lonely and uncertain, as they deal with several non-medical issues while working under uncontrolled circumstances (Lambert and Holmboe, 2005; Newton and Grayson, 2003). This disappointing trend needs to be carefully studied by the national health-care authorities. As the size of the ageing population is rapidly expanding, there is a dire need of more

general practitioners across the globe. If unharvested, this glaring ignorance to primary care specialty will adversely affect the delivery of medical services to a geriatrics population.

Around 90% respondents in this study were able to select a career specialty and only 10% could not select a specialty. Similar findings have been reported by Mehmood et al. (2012) and Avgerinos et al. (2006), which showed that 80% and 97% students had decided their specialty choices during their undergraduate studies, respectively. A higher rate in our study could be due to the fact that clinical rotations at the college of medicine Taibah University starts from 3rd year and some studies have shown that clinical rotation influences the student’s choice of specialty (Griffith III et al., 2000; Hauer et al., 2008). A study by Irbahim et al. attempted to identify the factors that influence specialty choice of medical students of seven UK institutions (Ibrahim et al., 2014). The study showed a strong correlation between completing a clinical posting and an inclination to pursuing the given specialty. The respondents considered role models ( $p = 0.014$ ), financial rewards after training ( $p = 0.0196$ ), prestige ( $p = 0.0003$ ), and technical challenge ( $p = 0.0011$ ) as important confounding factors. Furthermore, this study showed that 117 (53.1%) students chose their major because the specialty “match with the capabilities of students”. These results illustrate that students were aware of their capabilities and recognized the significance of selecting their career specialty according to their potential and strengths. In a study conducted by Lefevre et al., the respondents preferred certain motivating factors such as interesting diseases, opportunities for private practice and patient contact (Lefevre et al., 2010). Poor quality of life, a predominantly hospital-based career and loss of patient contact were the reasons proposed for not choosing some career specialties.

As many as 82 (37.2%) students proposed “innovative field in medicine” as an important factor in determining their specialty selection. This finding reflects that the majority of the respondents were willing to adopt a specialty with innovation and creativity. There was minimum influence of friends and families or the desire to serve a teaching and academic institution. Comparing the influence of gender differences on specialty selection, this study showed that 91 male and 26 female students selected their careers as this “match with the capabilities of students”. In the present study, the majority of both male and female students equally preferred General Surgery, Pediatrics, and Internal Medicine. An interesting finding of this study showed that male students were not

very keen to address the community needs. Sixty-three female vs. 10 male students selected specialty in concordance with the community needs. Our study also shows that female students were more inclined towards attaining foreign scholarships. In this perspective, 24 female and only one male student selected their specialty because of high chances of getting foreign scholarships in that field. A study by Baxter et al. showed that men were more likely to accept specialties with technical challenges, greater earning potential and prestige (Baxter et al., 1996). In contrast, women were more likely to choose specialties demanding close patient contact and human factors. A study by Chew et al. showed that female students preferred internal medicine and allied subjects over surgical specialties (Chew et al., 2011). Female students were more likely to choose internal medicine and allied subjects as these disciplines demand less physical work than surgical specialties. In contrast, several studies from Japan, Jordan, Turkey, and Switzerland have reported that female students preferred Gynecology and Obstetrics much more than male students (Saigal et al., 2007; Khader et al., 2008; Fevzi Dikici et al., 2008; Buddeberg-Fischer et al., 2006).

This study showed that 50 students of 4th year, 35 students of 5th year, and 32 students of 3rd year selected “matches with their capabilities”. A highest number of respondents ranked maximum grades to this domain of matching with students’ capabilities. Such finding reflect behavioral and personality characteristics of the studied cohort that may be due to their awareness about inherent and indigenous abilities. By enriching the professional competencies of medical students in the strands of professionalism (Guraya et al., 2016b,c), ethics (Guraya et al., 2014), assessment at workplace (Guraya, 2015), and the students’ usage of social networking for educational purposes (Guraya, 2016) can potentially groom the learners to discover their inherent but hidden capabilities. Intensifying the instructional strategies and inspiring the students with incentives and career security in less popular specialties can potentially motivate them to adopt such neglected but important specialties.

## 5. Study limitations

This study has a limitation of representing the data from the undergraduate medical students studying in a Saudi medical school. A holistic view from all students studying 1st through 5th year, as well as gender comparison, could have given a deeper understanding of the students’ perceptions of career selection. In addition, reliability testing for the questionnaire was not performed and this would be an impetus for future studies to get reliability testing of questionnaire before administering to the participants.

## 6. Conclusion

This study showed that medical students preferred General Surgery, Pediatrics and Internal Medicine as the most favored specialties. The majority of respondents preferred General Surgery as their career specialty. The pressing factors influencing the medical students’ choice were driven by specialties that matched their expectations and capabilities and the medical fields with innovative technologies. There was no significant influence of family or friends on specialty selection. In this study, medical students rated different weightage to factors as being important in determining career choice. Such understanding could be employed to design strategies and policy frameworks in modifying the medical school curricula than can resonate with the population needs and student desires. The findings of this study can also provide an effective platform for the development of strategies to enhance the attractiveness of

under-preferred specialties with inadequate manpower. This would be of great interest to conduct future follow-up studies on the same cohort of medical students that could identify whether their desire to pursue their selected specialties was materialized through the initial years of their postgraduate training.

## Conflict of interests

Authors declare no conflict of interests.

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