RESEARCH ARTICLE

Factors Influencing Selection of Orthopedic Residency Among Medical Students in Saudi Arabia

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Abstract

Objectives: To evaluate the factors influencing medical students' specialty choices for orthopedics at the University of Hail, Saudi Arabia.

Methods: The cross-sectional study used a self-administered questionnaire and collected data from students who satisfied the research criteria.

Results: The study included 108 participants and identified several key factors influencing medical students' choice of orthopedic specialties, such as job opportunities, lifestyle in the specialty, family responsibilities, training hours, and expected income in 94%, 83%, 83%, 80.6%, and 81%, respectively. A statistically significant association was observed between having relatives in the health professions and choosing an orthopedic specialty ($P = 0.003$), indicating that this factor was important in their decision-making. However, no significant association was found regarding gender or academic year concerning the selection of orthopedic specialty ($P > 0.05$). The study also revealed a statistically significant difference between female and male students concerning the influence of specialty reputation on their choice ($P = 0.033$). Despite this, no significant differences were noted between genders regarding the impact of the other factors.

Conclusion: Medical students' choice of orthopedic specialty was primarily driven by job prospects, lifestyle, family responsibilities, training hours, expected income, and having a relative in health professions. In addition, more male students chose orthopedics due to its reputation associated with the specialty.

Level of evidence: V

Keywords: Career choice, Influential, Medical students, Orthodox

Introduction

The decision to select a specific medical specialty after graduation emerges as a crucial juncture in the professional trajectory of medical students.[1,2] Numerous studies have highlighted various factors that play integral roles in shaping this decision-making process. These factors encompass financial outlook,[3,4] perceived prestige associated with a specialty, personality type,[5,6] individual passion,[4] geographical advantages, and the anticipated lifestyle afforded by a particular medical field.[7] Additionally, the imposition of work-hour limitations emerges as a critical determinant influencing specialty preferences among medical students.[8] Of notable significance is the profound impact of lifestyle considerations on selecting medical specialties, particularly among Saudi medical students and interns.[9] Furthermore, certain non-modifiable characteristics, such as gender, are known to influence this decision-making process.[10] Orthopedic surgery represents a competitive specialty characterized by stringent entry requirements and a demand for exemplary skills.[11,12] When examining the factors influencing the choice of orthopedic surgery as a prospective career path, extensive research endeavors have been undertaken to elucidate these determinants comprehensively.[13,14] There is a gap in the existing local literature regarding the factors influencing the decision to select orthopaedic surgery as a future profession.

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Therefore, the primary objective of this study was to address this gap by conducting comprehensive research on the subject matter. Previous research has highlighted the multifaceted nature of orthopedic surgery, encompassing the diagnosis and treatment of various musculoskeletal conditions through surgical and nonsurgical interventions. Orthopedic surgeons play a vital role in addressing musculoskeletal trauma, spine disorders, sports injuries, degenerative ailments, infections, tumors, and congenital anomalies.[15] Factors contributing to successful matching into orthopedic surgery include gender, familial background in orthopedics, engagement in research activities during medical school (especially within orthopedic surgery), and mentorship within the field.[1,3,5,14] A study conducted in December 2023 revealed that high salaries significantly impacted interest in orthopedic surgery ($P < .001$) with 66% of participants who expressed interest in orthopedic surgery agreed that the field pays well.[16] Additionally, another survey indicated that self-satisfaction was the most frequently cited factor influencing interns' preference for a specialty. Subsequently, the most common factors were involvement in urgent life-saving care, specialty social lifestyle, and direct interaction with the patient or family.[17] In the context of orthopedic residency programs, the annual ranking and recruitment process requires careful consideration of numerous factors to identify the most suitable candidates. Evaluation criteria encompass financial prospects, the perceived prestige associated with the specialty, personal preferences, individual traits, geographic advantages, and the anticipated lifestyle afforded by the chosen medical field. These factors collectively shape the selection process and influence the allocation of resources and efforts toward recruitment endeavors.[1,3,5] Demographic analysis of surveyed cohorts has indicated a predominantly male representation within the orthopedic specialty, with the majority falling within the 25-34 age bracket. Key considerations driving career choices in orthopedic surgery include patient care, future income prospects, work-life balance, and lifestyle preferences. Such insights provide valuable context for understanding the motivations and priorities of individuals pursuing careers in orthopedics.[18] Chronic musculoskeletal ailments, such as shoulder stiffness and lumbar pain, have persisted as prevalent health concerns in Saudi Arabia for several decades. Despite the prevalence of such conditions, previous studies have noted a relatively low inclination among individuals in Saudi Arabia, particularly females, toward specializing in orthopedics. The same study involving 103 medical interns in Saudi Arabia provided insights into factors impacting specialty preference, particularly in orthopedic surgery. Only 7.1% preferred orthopedics as their first choice, with 9.7% ranking it third. Clinical rotations were influential, with 71% becoming more interested after such exposure. Key factors included self-satisfaction (78%) and direct patient interaction (60.%). While low competition and shorter residency programs had less impact (21.4% and 23.3%, respectively), they still influenced some interns. Characteristics of orthopedic preferences included mostly males (83%) over 25 years old. However, it's important to note that the small sample size in this study limits its reliability.[17] Another study conducted in Riyadh and Jeddah, with a sample size of 510, revealed significant variation in interest in orthopedic surgery among medical students and interns in Saudi Arabia. While demographic analysis revealed that 75% of the participants were women, interest levels varied across different academic years, with 3.7% of interns, 14% of third-year participants, and 7.09% of second-year participants expressing interest. Factors influencing interest included knowledge level, future academic opportunities, bedside specialty, direct patient care, and clerkship experience.[16] Exposure to orthopedic surgery electives also played a significant role. These findings highlight the importance of further research to explore the underlying factors shaping career preferences within the orthopedic specialty, especially within the Saudi Arabian healthcare landscape, using larger sample sizes across many regions.

Materials and Methods

In this cross-sectional, unicentral study, an electronic survey, hosted through a Google survey webpage, included the medical students and interns at the University of Hail, Saudi Arabia. The inclusion criteria were students with more than three years of medical education, including those in their third year up to their internship. Exclusion criteria were non-medical students, those in their first year of study, and students who expressed a lack of interest in the survey's focus area.

The self-administered questionnaire was developed with input from field experts, covering demographics and factors influencing career choices. Data collection commenced on the 25th of April and concluded on the 15th of August. Participation in this study was entirely voluntary, with the study's purpose and goals clearly stated at the beginning of the survey. Participants were informed that they would face no consequences whether they chose to complete the survey or not, and that all data would be securely stored, inaccessible to any third party. Approval for this study was obtained from the University of Hail's institutional review board. Data were cleaned and transformed from Excel format (Microsoft, Redmond, Wash.) to Statistical Package for Social Sciences (SPSS, 23rd edition for Microsoft; IBM, Armonk, N.Y.) for analysis. Simple descriptive statistics were employed to present categorical variables as frequencies and percentages, while continuous data were reported as mean ± SD. The chi-square test was utilized to determine a relationship between categorical variables. An independent t-test was applied to compare the means of two groups, whereas one-way Analysis of Variance (ANOVA) was used for more than two groups. These analyses were based on the assumption of normal distribution; in cases where this assumption was violated, Welch's t-test was used for two-group comparisons, while the Games-Howell test was applied for comparison among more than two groups. Pearson correlation analysis was conducted to evaluate the relationship between variables. The threshold for rejecting the null hypothesis was set at a conventional significance level of $P < 0.05$.

Results

A total of 108 medical students took part in the study. More than half, 57 (53%) of the medical students were males, while 51 (47%) were females. The participants' mean age was 23 years, with a notable proportion of 35

(33%) participants in the sixth academic year. About three-quarters (n= 74, 69%) of the participants had a relative in the health profession [Table 1].

Most (n=101, 94%) of the medical students identified job opportunities as an important factor in selecting their specialty. Most identified lifestyle in the specialty 90 (83%) and family responsibilities 90 (83%) as important factors in their choice. Most participants (n= 87, 81%) identified training hours and expected income 87 (81%) as an important factor in their selection. Many (n= 85, 79%) identified the opportunity to obtain a post-specialization fellowship program as an important factor in their choice of specialty. Shift schedule was identified by 84 (78%) of the medical students, while sufficient time for hobbies and personal interests was identified by 79 (73.%) of them. Furthermore, 76 (70.%) identified immediate satisfaction with orthopedic medical procedures, while 65 (60.%) identified long-term patient care as an important factor for selecting an orthopedic specialization [Table 2].

Table 1. Demographic characteristics of the Participants (N=108)

Demographic information	Category	Frequency and Proportion n (%)
Age (Years)	Mean ± SD	23.12±1.604
Sex	Male	57 (52.8%)
	Female	51 (47.2%)
Academic year (out of 7 years)	Second year	1 (0.9%)
	Third year	23 (21.3%)
	Fourth year	16 (14.8%)
	Fifth year	13 (12.0%)
	Sixth year	35 (32.5%)
	Intern	20 (18.5%)
Relatives in the health professions	Yes	74 (68.5%)
	No	34 (31.5%)

Table 2. Factors Influencing Specialty Selection

Question	Categories	Frequency and Proportion n (%)
Training hours	Important	87 (80.6%)
	Neutral	15 (13.9%)
	Unimportant	6 (5.5%)
Shift schedule	Important	84 (77.8%)
	Neutral	20 (18.5%)
	Unimportant	4 (3.7%)
Expected income	Important	87 (80.6%)
	Neutral	19 (17.6%)
	Unimportant	2 (1.8%)
Specialty reputation	Important	56 (51.8%)
	Neutral	33 (30.6%)
	Unimportant	19 (17.6%)
Lifestyle in the specialty	Important	90 (83.3%)
	Neutral	16 (14.8%)
	Unimportant	2 (1.9%)
Sufficient time to practice hobbies and personal interests	Important	79 (73.1%)
	Neutral	26 (24.1%)
	Unimportant	3 (2.8%)
Family responsibilities	Important	90 (83.3%)
	Neutral	15 (13.9%)
	Unimportant	3 (2.8%)
Opportunity to conduct research	Important	45 (41.7%)
	Neutral	42 (38.9%)
	Unimportant	21 (19.4%)

Table 2. Continued		
Teaching opportunities	Important	32 (29.6%)
	Neutral	42 (38.9%)
	Unimportant	34 (31.5%)
Duration of the residency program	Important	52 (48.1%)
	Neutral	34 (31.5%)
	Unimportant	22 (20.4%)
The opportunity to obtain a post-specialization fellowship program	Important	85 (78.7%)
	Neutral	17 (15.7%)
	Unimportant	6 (5.6%)
Job opportunities	Important	101 (93.5%)
	Neutral	6 (5.6%)
	Unimportant	1 (0.9%)
Immediate satisfaction with orthopedic medical procedures	Important	76 (70.4%)
	Neutral	27 (25.0%)
	Unimportant	5 (4.6%)
Long-term patient care	Important	65 (60.2%)
	Neutral	25 (23.1%)
	Unimportant	18 (16.7%)

Factors influencing specialty selection presented in frequencies (n) and proportion (%)

Fourteen statements were used to measure the importance of the factors. Each statement was measured on a 3-point Likert scale, where items are graded from 1, 2, and 3; and give "Not important" 1 point, "Neutral" 2 points, and "Important" 3 points. The highest score could be 42, and the lowest could be 14. Data was converted to composite scores. The perceived importance was categorized based on scores as follows: High importance (scores >2.5) and Low importance (scores <2.5). Total score: 35-42= High importance while < 35= Low importance. Any factor that had high importance was considered for selecting a specialty, while those with low importance were not considered for selection. A statistically significant association was found between having relatives in the health professions and choosing the orthopedic specialty ($P = 0.003$*) based on the level of importance of the factors. Conversely, no significant association was found between sex, academic year, and the selection of orthopedic specialty (P>0.05) [Table 3]. The study established a statistically significant difference between females and males (P = 0.033*) across the influences of specialty reputation on their selection of orthopedic specialty. However, no significant differences were found between male and female students regarding the impact of the other factors [Table 4].

Table 3. The association between demographic information and selection of orthopedic specialty

Variables	Selection of orthopedic specialty (based on the level of importance of the factors)			
	Category	Low level	High level	P value
Sex	Male	16 (28.1%)	41 (71.9%)	0.553
	Female	17 (33.3%)	34 (66.7%)	
Academic year (out of 7 years)	Second year	0 (0.0%)	1 (100.0%)	0.809
	Third year	5 (21.7%)	18 (78.3%)	
	Fourth year	6 (37.5%)	10 (62.5%)	
	Fifth year	5 (38.5%)	8 (61.5%)	
	Sixth year	10 (28.6%)	25 (71.4%)	
	Intern	7 (35.0%)	13 (65.0%)	
Having relatives in the health professions	Yes	16 (21.6%)	58 (78.4%)	0.003*
	No	17 (50.0%)	17 (50.0%)	

* Significant at P<0.05 level

Table 4. Gender-based comparison of the assessment of factors affecting the medical student's selection of the specialty

Variables		Gender		
	Category	Female	Male	P value
Training hours	Important	40 (46.0%)	47 (54.0%)	0.862
	Neutral	8 (53.3%)	7 (46.7%)	
	Unimportant	3 (50.0%)	3 (50.0%)	
Shift schedule	Important	37 (44.0%)	47 (56.0%)	0.088
	Neutral	10 (50.0%)	10 (50.0%)	
	Unimportant	4 (100.0%)	0	
Expected income	Important	39 (44.8%)	48 (55.2%)	0.256
	Neutral	10 (52.6%)	9 (47.4%)	
	Unimportant	2 (100.0%)	0	
Specialty reputation	Important	22 (39.3%)	34 (60.7%)	0.033*
	Neutral	15 (45.5%)	18 (54.5%)	
	Unimportant	14 (73.7%)	5 (26.3%)	
Lifestyle in the specialty	Important	43 (47.8%)	47 (52.2%)	0.954
	Neutral	7 (43.7%)	9 (56.3%)	
	Unimportant	1 (50.0%)	1 (50.0%)	
Sufficient time to practice hobbies and personal interests	Important	36 (45.6%)	43 (54.4%)	0.678
	Neutral	14 (53.8%)	12 (46.2%)	
	Unimportant	1 (33.3%)	2 (66.7%)	
Family responsibilities	Important	42 (46.7%)	48 (53.3%)	0.791
	Neutral	7 (46.7%)	8 (533.3%)	
	Unimportant	2 (66.7%)	1 (33.3%)	
Opportunity to conduct research	Important	23 (51.1%)	22 (48.9%)	0.613
	Neutral	20 (47.6%)	22 (52.4%)	
	Unimportant	8 (38.1%)	13 (61.9%)	
Teaching opportunities	Important	20 (62.5%)	12 (37.5%)	0.104
	Neutral	16 (38.1%)	26 (61.9%)	
	Unimportant	15 (44.1%)	19 (55.9%)	
Duration of the residency program	Important	24 (46.2%)	28 (53.8%)	0.730
	Neutral	15 (44.1%)	19 (55.9%)	
	Unimportant	12 (54.5%)	10 (45.5%)	
The opportunity to obtain a post-specialization fellowship program	Important	35 (41.2%)	50 (58.8%)	0.053
	Neutral	12 (70.6%)	5 (29.4%)	
	Unimportant	4 (66.7%)	2 (33.3%)	
Job opportunities	Important	46 (45.5%)	55 (54.5%)	0.126
	Neutral	5 (83.3%)	1 (16.7%)	
	Unimportant	0	1 (100.0%)	
Immediate satisfaction with orthopedic medical procedures	Important	36 (47.4%)	40 (52.6%)	0.423
	Neutral	14 (51.9%)	13 (48.1%)	
	Unimportant	1 (20.0%)	4 (80.0%)	
Long-term patient care	Important	34 (52.3%)	31 (47.7%)	0.428
	Neutral	10 (40.0%)	15 (60.0%)	
	Unimportant	7 (38.9%)	11 (61.1%)	

* Significant at P<0.05 level

Discussion

Orthopedic specialty focuses on the body's musculoskeletal system, which is essential for maintaining health, support, and strength required for human survival.[19] Selecting orthopedics as a specialty offers medical students the chance to advance their careers as surgeons and body part specialists while offering patients excellent care.[20] This study aimed to identify the factors influencing Saudi medical students to choose orthopedics as their specialty. The findings revealed that both genders were adequately represented in the study, with 57 (53%) males and 51 (47%) females, with a mean age of 23.12±1.604. The gender distribution of the respondents suggests that both males and females were interested in the orthopedic specialty. Comparably, a study conducted in Saudi Arabia by Ashour et al.,[21] among medical students and interns at King Abdulaziz University, reported that 126 (54%) participants were female. In comparison, 106(45.7%) were male, with a mean

age of 25±0.008. The distribution of gender and age in the two studies suggests nearly similar interest across the genders by medical students of the same age groups.

The current study noted that the majority (n=74, 69%) of the medical students selecting orthopedic specialty had a relative in the health profession; this highlights the significance of mentorship in guiding decisions to pursue orthopedic specialization.[22] This was also reinforced by the statistically significant association between having relatives in the health professions and the selection of orthopedic specialty (P = 0.003*). Furthermore, Mohammed et al. observed that having a relative in the medical field exposes a person to medical specialty insights, which aid in familiarization and the development of interest in a particular specialization.[23]

According to the findings, most medical students considered job opportunities 101 (94%); lifestyle in the specialty 90 (83%); family responsibilities 90 (83%); training hours 87 (81%) and expected income 87 (81%) as the most crucial factors when choosing an orthopedic specialty. These findings are consistent with a study by Akhund et al., which highlighted high-income potential, job opportunities, and the influence of role models in the specialty.[24] The study established the statistically significant difference between females and males (P = 0.033*) across the influences of specialty reputation on their selection of orthopedic specialty, with notably more male than female medical students considering specialty reputation in selecting orthopedic specialization. This gender difference in selection could result from the perception of orthopedics as a prominent and prestigious specialty; male students may be more likely to pursue it as part of their professional identity.[25] Moreover, orthopedic specialization has traditionally been male-dominated; male students are likely to pursue it because they feel more aligned with the established culture than female medical students.[26]

This study's main limitation and drawback was the use of a cross-sectional study design, which can only detect relationships between attributes but not causality. Given that the study involved the administration of questionnaires, it was dependent on participants accurately recording their responses without the means to verify this, which could have led to bias. Furthermore, because the study solely focused on orthopedic specialization, its conclusions cannot be applied to other specialties.

Conclusion

The study revealed that job prospects, lifestyle in the specialty, family responsibilities, training hours, and expected income mainly influenced the medical students' decision to select orthopedics. Having a relative in the health profession significantly influenced medical students' decisions to pursue orthopedic specialization. More male than female students chose orthopedics due to the specialty's reputation. There is a need for enhanced career advice, guidance, and mentorship for medical students to understand the factors to be considered when choosing a specialization.

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