Short communication

Factors affecting the satisfaction and choice of specialization in medical students: A case study in Babol university of medical sciences

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Abstract

Background & Objective: The assessment of the interest of medical students in continuing their studies in specialized fields and the factors affecting it can play a strategic role in macro educational planning. Therefore, the present study aimed to assess the level of academic interest and the factors affecting the choice of specialty in medical students of Babol University of Medical Sciences.

Materials & Methods: In this applied cross-sectional study, the study population included incoming medical students from 2009 to 2017 in clinical preparation, stager, and internship. The participants were selected by the convening sampling, and the research tool was a researcher-made questionnaire. Data were collected and entered into SPSS software (version 22) and analyzed by related tests at a significance level of p-value ≤ 0.05.

Results: The mean age of students was 23.02±1.65 years, and124 (61/4%) students were female. Moreover, 96.6% of students wanted to continue their studies in residency. Social status in 142 (70.3%) students and lack of free time in 97 (48%) students, respectively, were the most important positive and negative influential factors in the selection of medicine as the field of study. Three fields of cardiology (n=9; 145.1%), radiology 84 (n=84; 41.6%) and ophthalmology (n=82; 40.6%) were the first three priorities. No statistically significant difference was observed in gender in any of the specialties, except urology (P=0.008).

Conclusion: Interest, social status, income, years of study, and hospital attendance status were the factors affecting the choice of residency among medical students.

Introduction

Interest in the field of study is the key to progress at both personal and societal levels (1). In this regard, the selection of university majors out of interest and inner desire would lead to dramatic progress in society (2-4). The fields of medical sciences are intertwined with science and art, and significant advancements in science achievement, followed by a dramatic increase in scientific materials, have accelerated the movement towards the specialization of sciences (5). These rapid developments have caused diversity and expansion in such fields as medicine (6).

The assessment of the factors influencing medical students' choice of future specialization, along with the needs of patients and educational centers for medical specialists, can play a strategic role in macro-level educational planning (7). In recent years, the demand for popular residency specialities has undergone a drastic change (8). On the other hand, efficiency and mental health decrease during education due to physical and mental pressures (9, 10).

In the conducted studies, the factors affecting the choice of specialization include contributing to healthcare in society, personal interests, students' debts during education, personal standards and their alterations during education, job requirements and characteristics of the field of study, finding a suitable job, interest in the subject of study, family-work balance, career goals, and busy schedules (11-15).

Therefore, according to medical students' interest in continuing their education in medical specialties, the country's need for specialists, and students' demand for pursuing best fitting specialties according to their interests, it seems necessary that the Ministry of Health and Medical Education update its policies based on these results. The assessment of academic satisfaction and factors affecting the selection of area of

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specialization can provide the basis for solving the problems ahead. In light of the aforementioned issues, the present study aimed to assess the academic perspective, the level of interest, and the factors affecting the choice of future speciality in medical students at Babol University of Medical Sciences.

Material & Methods

Research environment

This applied research was conducted based on a descriptive-analytical design from 2019-2021. The research environment included the Faculty of Medicine, as well as all educational and treatment centers affiliated to Babol University of Medical Sciences.

Sample size

The study population included all 501 students in Babol University of Medical Sciences who entered the university between 2009-2017. The subjects were selected via convenience sampling, and 220 students agreed to participate in the study, while the rest were not willing to do so. A pilot study was conducted on 50 students, and the interest rate was determined to be 70%. Following that, based on the formula for calculating the sample size of the population proportion, the sample size was calculated at 170 cases taking into account the confidence level of 95% and the acceptable error of 0.07.

Research instruments

The data collection tool was a researcher-made questionnaire which was designed based on the objectives of the study after reviewing scientific texts, brainstorming, and group discussions with expert professors. To check the face validity of the questionnaire, it was submitted to 10 students (5 females and 5 males) who met the inclusion criteria and a number of related experts. They were asked for feedback on clarity, readability, writing style, easy understanding, difficult items, confusing words, comprehensibility, and ambiguity, and accordingly, necessary corrections were made.

For content validity, the questions were provided to five experts in various fields, including medical education specialists, health care management, social medicine, psychiatrists, and epidemiologists. To determine content validity, both qualitative and quantitative methods were used. In the quality assessment of the content, the experts were asked to give feedback based on the criteria of correct grammar, wording, and placement of items, and minor corrections were made. Moreover, for quantitative content analysis, two coefficients of content validity ratio and content validity index were used.

The mentioned questionnaire consisted of four sections: 1) demographic characteristics, 2) satisfaction with the field of study and its influential factors, 3) various specialized fields, and 4) influential factors that can have positive or negative effects on the choice of specialty. The reliability of the questionnaire was confirmed, rendering a Cronbach's coefficient of 0.87. The inclusion criteria were as follows: willingness to participate in the study, studying in one of the stages of clinical preparation (physiopathology), stagery, and internship. On the other hand, the exclusion criteria entailed unwillingness to participate in the study and failure to complete the questionnaire. Thereafter, 95% of items were identified as necessary (content validity ratio), and 98% of cases believed that the items were relevant or very relevant (content validity index).

Data analysis

Data analysis was reported with the assumption of normality using central tendency indicators of the mean (standard deviation) and frequency (percentage) for qualitative variables. The Chi-square test was used to check the statistically significant relationship between qualitative variables, and Fisher's exact test was used if there was a limit in the expected frequency. In addition, the Kruskal-Wallis test was used to compare the mean of ranked variables with more than two categories of qualitative variables. All analyses were performed in SPSS software 22 at a significance level of $P \geq 0.05$. The charts were made in Excel 2013.

Results

The mean age of the students was 23.02±1.65 years (age range:20-30 years). Regarding gender and marital status, 124 (61.38%) cases were female, and 175 (86.63%) subjects were single. Moreover, 6 (33.66%) cases were accepted into medical school after participating twice or more in the entrance exam (Table 1).

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Table 1. Demographic information of medical students of Babol University of Medical Sciences participating in the study

Variable	Subgroup	Frequency(%)
Gender	Male	78 (38.61)
	Female	124(61.38)
Marital Status	Married	27 (13.36)
	Single	175 (86.63)
Grade	Physiopath	56 (27.72)
	Stager	108 (53.46)
	Intern	38 (18.81)
Father's educational status	Diploma and less	59 (29.20)
	Bachelor	69 (34.15)
	above bachelor's degree	56 (27.72)
	physician	18 (8.91)
Mother's educational status	Diploma and less	94 (46.53)
	Bachelor	73 (36.13)
	above bachelor's degree	28 (13.86)
	physician	7 (3.50)

In addition, 66 (32.67%) and 75(37.12%) participants were satisfied and highly satisfied with the choice of medicine as their field of study, respectively. Furthermore, the factor of social status (n=142; 70.29%) and lack of free time for recreation (n=97; 48.01%) were, respectively, the most important positive and negative influential factors affecting the choice of medicine as a field of study (Table 2).

Table 2. Influential factors with positive and negative impact on the satisfaction of Babol University of Medical Sciences students participating in the study

Positive influencing factor	Importance				
	Effectless Frequency(%)	Low Frequency(%)	Middle Frequency(%)	high Frequency(%)	Very much Frequency(%)
More service to society	17 (8.42)	15(7.43)	45(22.28)	49(24.26)	76 (37.61)
Social status	9(4.45)	12(5.94)	39(19.31)	68(33.66)	74(36.64)
Gain self-awareness and self-confidence	11(5.44)	13(6.44)	42(20.79)	62(30.69)	74(36.64)
Parents' satisfaction and encouragement	15(7.43)	27(13.37)	40(19.80)	46(22.77)	74(36.63)
The possibility of academic career promotion	9(4.45)	17(8.42)	43(21.29)	61(30.20)	72(35.64)
The flourishing of individual talent	9(4.45)	27(13.37)	53(26.24)	51(25.25)	62(30.69)
Gain job security	8(3.96)	17(8.42)	41(20.30)	79(39.11)	57(28.22)
Gain decent income	10(4.95)	12(5.94)	51(25.25)	75(37.13)	54(26.73)
Negative influencing factor	**Importance**				
	Effectless Frequency(%)	Low Frequency(%)	Middle Frequency(%)	high Frequency(%)	Very much Frequency(%)
Lack of free time for fun	27(13.37)	30(14.85)	48(23.76)	38(18.81)	59(29.21)
Tired of long years of study	32(15.84)	27(13.37)	51(25.25)	49(24.26)	43(21.28)
Insufficient income	62(30.69)	42(20.79)	43(21.29)	37(18.32)	18(8.91)
Inability to continue studying abroad	79(39.10)	33(16.34)	39(19.31)	20(9.90)	31(15.35)
Physical fatigue and low physical strength	47(23.27)	40(19.80)	52(25.74)	34(16.83)	29(14.36)
Problems ahead in case of marriage	62(30.69)	43(21.29)	42(20.79)	28(13.86)	27(13.37)
The difficulty of admission to assistantships	65(32/18)	40 (19.80)	58(28.71)	27(13.37)	12(5.94)
More desire to start work	47(23.27)	30(14.85)	65(32.18)	37(18.32)	23(11.39)
Mental fatigue	63(31.19)	35(17.33)	49(24.25)	32(15.84)	23(11.39)
Not enough interest	101(50.00)	40(19.80)	29(14.36)	22(10.89)	10(4.95)

The most important factors affecting the choice of the residency specialty in terms of importance among medical students were interest (n=89; 44.05%) 89, followed by on-duty conditions

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(n=79; 39.10%). The level of interest in different study stages of medical study differed statistically (P=0.010) (Table 3).

Table 3. The most important factors influencing the choice of residency program according to importance in medical students of Babol University of Medical Sciences

Effective factors Frequency(%)	Unimportant	Low Important	Middle	Important	Very Important
Interest	13(6.44)	6(2.97)	30(14.85)	64(31.68)	89(44.06)
Standby condition	25(12.38)	34(16.83)	32(15.84)	37(18.32)	74(36.63)
Scientific ability for acceptance	15(7.42)	24(11.88)	35(17.33)	63(31.19)	65(32.18)
clinical importance	20(9.90)	11(5.44)	38(18.81)	69(34.16)	64(31.68)
Income	10(4.95)	20(9.90)	48(23.76)	73(36.14)	51(25.25)
Gender of the volunteer	39(19.31)	35(17.33)	36(17.82)	48(23.76)	44(21.78)
Service to society	28(13.86)	21(10.40)	53(26.24)	59(29.21)	41(20.30)
Existence of fellowship course	37(18.32)	21(10.40)	47(23.26)	56(27.72)	41(20.30)
Years of education	27(13.37)	38(18.81)	47(23.26)	51(25.25)	39(19.31)
Requirement for the field in question at the place of residence	47(23.26)	38(18.81)	38(18.81)	40(19.81)	39(19.31)
Social status	23(11.39)	21(10.40)	53(26.24)	68(33.66)	37(18.32)
Marriage and having children	41(20.30)	33(16.33)	39(19.31)	52(25.74)	37(18.32)
The possibility of studying in the city where you live or nearby	50(24.75)	39(19.31)	34(16.83)	42(20.79)	37(18.32)
Progress in Iran	34(16.83)	33(16.34)	45(22.30)	54(26.73)	36(17.82)
The possibility of continuing education abroad	59(29.21)	35(17.33)	35(17.33)	41(20.30)	32(15.83)
Possibility of research and development	33(16.34)	30(14.85)	60(29.70)	52(25.74)	27(13.37)
Superiority	36(17.82)	44(21.78)	48(23.76)	49(24.26)	25(12.38)
The age of the candidate	48(23.76)	51(25.25)	38(18.81)	42(20.79)	23(11.39)
Physical health	59(29.21)	42(20.79)	38(18.81)	40(19.80)	23(11.39)
Imitating others	52(25.74)	45(22.28)	58(28.71)	26(12.87)	21(10.40)
Work and research experiences	54(26.73)	41(20.30)	53(26.24)	36(17.82)	18(8.91)
Social restriction	42(20.79)	41(20.30)	65(32.18)	37(18.32)	17(8.42)
Recommendations of other people	40(19.81)	34(16.83)	61(30.20)	51(25.25)	16(7.91)

The fields of cardiology, radiology, and ophthalmology were the first three priorities. Radiology was the first priority (n=40; 19.80%), followed by cardiology (n=37; 18.31%), and ophthalmology (n=30; 14.95%). On the other hand, such specialties as anesthesiology and emergency medicine were selected by none of the subjects (Chart 1).

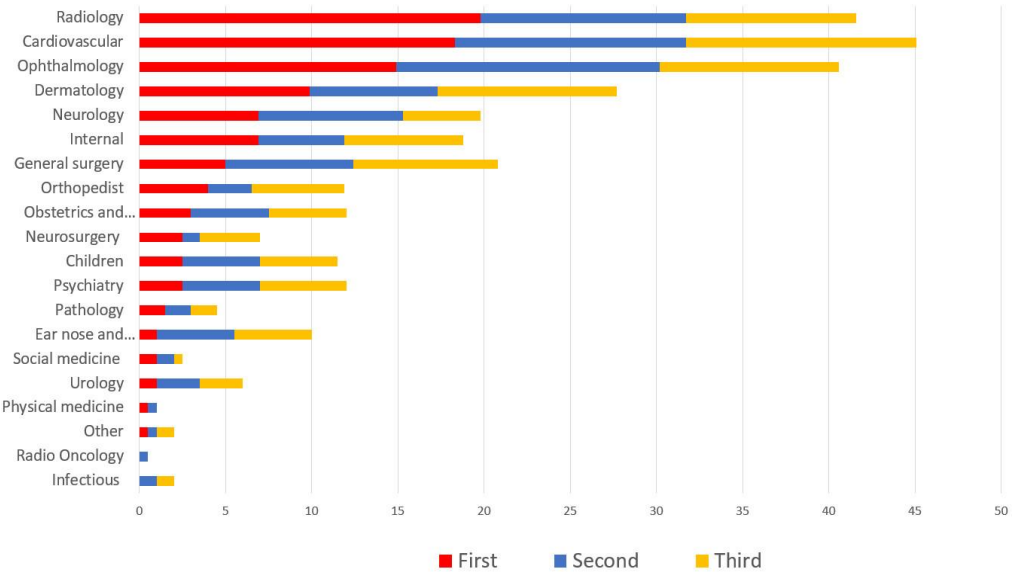

Chart 1. Priority percentage of medical students to continue studying in specialized fields based on priority one to three

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The male students preferred surgical fields, such as orthopedics, neurosurgery, general surgery, and ophthalmology, while the female ones were interested in internal specialties, such as neurology, cardiology, psychiatry, and pediatrics. However, in none of the specialties, except urology (P=0.008), there was a statistically significant difference between the two genders. (Table 4).

Table 4. Selection of residency program by gender according to the preference of medical students of Babol University of Medical Sciences

Assistant field (%) frequency	Gender	First Priority	Second Priority	Third Priority	It is not among the priorities	Test statistics	P-Value
Radiology	Male	11(14.10)	8(10.26)	6(7.69)	53(67.95)	4.96	0.174
	Female	29(23.39)	16(12.90)	14(11.29)	65(52.42)		
Cardiovascular	Male	15(19.23)	8(10.26)	9(11.54)	46(58.97)	1.66	0.644
	Female	22(17.74)	19(15.32)	18(14.52)	65(52.42)		
Ophthalmology	Male	12(15.38)	10(12.82)	6(7.69)	50(64.11)	1.91	0.590
	Female	18(14.52)	21(16.94)	15(12.10)	70(56.45)		
Dermatology	Male	5(6.41)	4(5.13)	6(7.69)	63(80.77)	4.62	0.201
	Female	15(12.10)	11(8.87)	15(12.10)	83(66.93)		
Neurology	Male	3(3.85)	9(11.54)	1(1.28)	65(83.33)	6.24	0.100
	Female	11(8.87)	8(6.45)	8(6.45)	97(78.23)		
Internist	Male	3(3.85)	4(5.13)	5(6.41)	66(84.61)	1.98	0.575
	Female	11(8.87)	6(4.84)	9(7.26)	98(79.03)		
General Surgery	Male	6(7.69)	3(3.85)	10(12.82)	59(75.64)	7.25	0.064
	Female	4(3.23)	12(9.68)	7(5.65)	101(81.45)		
Orthopedics	Male	5(6.41)	3(3.85)	7(8.97)	63(80.77)	6.54	0.070
	Female	3(2.42)	2(1.61)	4(3.23)	115(92.74)		
Psychiatry	Male	2(2. 56)	3(3.85)	3(3.85)	70(89.74)	0.54	0.954
	Female	3(2.42)	6(4.84)	7(5.65)	108(87.09)		
Pediatric	Male	1(1.28)	4(5.13)	3(3.85)	70(89.74)	0.94	0.889
	Female	4(3.23)	5(4.03)	6(4.84)	109(87.90)		
Neurosurgery	Male	3(3.85)	2(2.56)	4(5.13)	69(88.5)	5.0	0.122
	Female	2(1.61)	0(00)	3(2.42)	119(95.97)		
ENT	Male	0(00)	1(1.28)	2(2.56)	75(96.15)	4.99	0.123
	Female	2(1.61)	8(6.45)	7(5.65)	107(86.29)		
Pathology	Male	1(1.28)	0(00)	0(00)	77(98.72)	3.16	0.355
	Female	2(1.61)	3(2.42)	3(2.42)	116(93.55)		
Urology	Male	1(1.28)	5(6.41)	30(38.46)	69(88.45)	9.36	0.008
	Female	1(0.81)	0(00)	2(1.61)	121(97.58)		

Discussion

As evidenced by the results of this study, about 70% of the students expressed high satisfaction with the choice of medicine as their field of study. Moreover, some factors, such as social status, were found to be very effective. Job security and gaining self-awareness were recognized by more than two-thirds of students as factors with high and very high impact. On the other hand, the most important negative factors were related to the lack of enough free time and long years of study, respectively.

According to the results of the present study, cardiology, radiology, and ophthalmology were the most preferred specialties. Nonetheless, in the study by Levaillan et al., the highest proportion of students were willing to pursue surgery and internal medicine (16). In a related study in Saudi Arabia, internal medicine, dermatology, and pediatrics were the most popular specialties (17). A wide array of factors is involved in the selection of residency specialty, one of which is interest.

Interest assumes more critical importance in developed countries compared to less developed countries. Nonetheless, such factors as income, controllable lifestyle, and future job positions are more influential in less developed countries (18-19). In addition to interest, clinical importance and

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scientific ability have been important factors influencing the choice of specialty. The most important factors affecting the choice of students were clinical experiences and the effects they had on students during their studies, followed by financial issues, the scientific and academic ability for the desired specialization, and professors' impact (21,20).

In the current study, comprehensive positive clinical experiences in the hospital, the opinion of professors, and consultation with experts played a significant role in the choice of residency specialty. In the study by McNaughton et al., the most important determining factor among medical students was exposure and positive experiences in the selected specialty before graduation (22). In their study, Tamara k.Oser et al. pointed to a strong relationship between the bad behaviors, especially among the residents, and the choice of residency specialty (23).

In the present study, such specialties as anesthesia and emergency medicine were selected by none of the participants. Moreover, some other specialties, such as infectious disease specialist and radiation oncology, were selected by a few subjects. In a study conducted on the final year students in Southeastern Nigeria, surgery, pediatrics, obstetrics, gynecology, and internal medicine were the most preferred specialties among students.

The most important factors affecting the choice of specialty were found to be interest, the potential of the desired specialty to exercise creativity, family-related factors, and fewer on-call hours (17,19). Along the same lines, in their study, Sarikhani et al. referred to the role of personality and personal factors, controllable lifestyle, quality of life, and future job conditions as other influential factors (24).

In the study by Jarecky et al., it was revealed that students changed their decision about their future specialty with the passage of time. And the most important reason for this change was the desire to spend more time with family and have a suitable lifestyle (25). Therefore, a suitable lifestyle is one of the critical factors affecting this priority (26-28).

Conclusion

In this study, the majority of students were highly satisfied with their field of study. Interest, social status, and characteristics of the desired specialty in terms of income, years of education, and on-duty status were among the factors affecting the choice of residency specialty among medical students. Therefore, it is suggested to avoid the imbalance that may arise in the future in less popular specialties by considering special advantages, such as removing the project after completing the internship, increasing the salary of residency in less popular specialties, and raising students' knowledge of these specialties to generate their interest.

Limitations

Among the notable limitations of this study, we can refer to difficult access to students in the working conditions of the hospital and the small number of interns participating in the study. In this regard, it is suggested that other studies be conducted at the level of several universities or regions to access a larger number of students, assess the role of geography, and remove the effects of the university.

Ethical considerations

The students in the physiopathology, stagery, or internship programs who were willing to complete the questionnaire and participate in the study were included in the study. The subjects who partially completed the questionnaire were excluded from the study. After the approval of the proposal and obtaining the code of ethics (IR.MUBABOL.HRI.REC.1398.045) from Babol University of Medical Sciences, the questionnaire was distributed among the target group to carry out the study.

Conflict of Interests

The authors declared that they had no conflict of interest.

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