Strides Dev Med Educ. 2023 October; 20(1):173-178. doi 10.22062/sdme.2023.198300.1165

Brief Report

Medical Specialty Choice and Effective Factors: A Cross-Sectional Survey of Last-Year Medical Students

Ghazal Mansouri[1], Zeinab Sadat Rooholamini[2], Fatemeh Karami Robati[3*]

[1]Assistant Professor, Department of Obstetrics and Gynecology, School of Medicine, Afzalipour Hospital, Kerman University of Medical Sciences, Kerman, Iran
[2]MD, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran
[3]MSc. in Medical Library and Information Sciences, Clinical Research Development Unit, Afzalipour Hospital, Kerman University of Medical Sciences, Kerman, Iran

Received: 2023 March 11
Revised: 2023 August 23
Accepted: 2023 October 16
Published online: 2023 October 19

***Corresponding author:**
Clinical Research Development Unit, Afzalipour Hospital, Kerman University of Medical Sciences, Kerman, Iran.
Email: f.karami@kmu.ac.ir

Citation:
Mansouri Gh, Rooholamini ZS, Karami Robati F. Medical Specialty Choice and Effective Factors: A Cross-Sectional Survey of Last-Year Medical Students. Strides Dev Med Educ. 2023 October; 20(1):173-178. doi:10.22062/sdme.2023.198300.1165

Abstract

Background: Choosing a medical specialty is an important choice for medical students and the healthcare system.

Objectives: This study aimed to investigate the interest of last-year medical students in choosing a future medical specialty and determine effective factors in it.

Methods: A descriptive cross-sectional study of 201 medical students was performed in Iran in 2019. All medical students who completed the internship period by the end of September 2020 were selected by census method. A questionnaire was applied, the validity and reliability of which had already been registered in the Statistics Center of Afzalipour Hospital, Kerman, Iran. Data analysis was performed using descriptive methods, including frequency, percentage, mean, and standard deviation, and SPSS software (version 20). A significance level of $P < 0.05$ was considered statistically significant.

Results: About 98% of students intended to choose a future medical specialty. The highest number of interested students were female (66%) and single (83.2%), with a mean age of 26.69 ± 12.22 years. The parents' educational level of most students interested in continuing education was a bachelor's degree or lower (52.3%). "Achieving a better economic position" (91.4%) was the most important factor for choosing a specialty. Most participants were interested in ophthalmology (18.2%). The factors "specific working hours" and "easy residency period" were indicated most frequently as effects on the preference for ophthalmology.

Conclusion: The present findings provide significant insight into creating strategies to attract a number of medical students in other specialties based on the needs of the Iranian healthcare system.

Keywords: Education; Medical; Graduate; Medicine; Students; Iran

Background

Medical education is one of the main parts of the educational system of any country, which aims to train physicians who are able to play their special role in professional fields. These physicians must act based on work conscience, good manners, and human behavior, and in addition to respect for their peers, must adhere to the quality of service and avoid discrimination. Therefore, choosing a medical specialty is not only a personal process but is an important choice for both students and the healthcare system (1).

According to international studies, there is a variety of factors that lead students to choose a particular career. These factors have been changing in recent decades (2). Identifying the factors that provide a basis for choosing fields can provide a better understanding of students' priorities for choosing a particular specialty and might develop intervention strategies according to the needs of healthcare systems (1). In a time of shortage of physicians, it is important to be aware of the interests and expectations of the next generation of physicians when choosing their profession (3). Studying career preferences can provide important information for planning educational programs, determining priorities, and offering appropriate healthcare. The evaluation of the choice of specialized fields by medical students is a

controversial topic because it affects several important factors in the provision of health services (4).

In some studies, the motivations for choosing a specialty have been studied at the individual and structural levels. At the individual level, female students consider aspects of work, time, and patient orientation; nevertheless, their male peers consider technical challenges, income, career prospects, and prestige (5). It has also been shown that medical students and young physicians of both genders care about lifestyle factors and consider the balance between work and private life (6). At a more structural level, the lack of social support and the scarcity of role models have been shown to affect the specialty priorities of males and females (7).

In Levaillant et al.'s study, the main factors influencing the choice of specialty were lifestyle, work-life balance, and discipline interest, with variations across different countries. Gender has a great impact on students' willingness to work in specific specialties (8). Another study showed that the factors influencing medical students' choice of subspecialty training mainly included academic interests, competencies, controllable lifestyles or flexible work schedules, patient service orientation, medical teachers or mentors, career opportunities, workload or working hours, income, length of training, prestige, advice from others, and student debt (9).

All around the world, specialty choices and the distribution of medical specialties are increasing because these choices might not meet the needs of society and lead to a shortage of physicians in some specialties, which might be problematic in some countries (10). This might cause a lack of availability and access to medical care for the community. As such, there should be a particular focus on the next generation of physicians. This knowledge can help improve the recruitment of future physicians. Without the awareness of the effective factors, they cannot be considered when attracting new residents. Therefore, it is essential to understand whether there are changes in specialty preferences over time.

Objectives

This study aimed to investigate the factors affecting the interest of last-year medical students in choosing a future medical specialty at Kerman University of Medical Sciences (KMU), Kerman, Iran.

Methods

A descriptive cross-sectional study was performed in KMU in 2019 to investigate the interest of last-year medical students in choosing a future medical specialty and determine the effective factors in it. All medical students who completed the internship period by the end of September 2020 were selected by census method. Guest students at KMU and students who were unable to complete the questionnaire for any reason, including vacation, were excluded.

The students were asked to complete an informed consent form before starting the study. A questionnaire was applied, the reliability and validity of which had already been registered in the Statistics Center of Afzalipour Hospital in Kerman (Cronbach's alpha = 0.91, content validity index [CVI] = 0.86). The first section included demographic data (i.e., age, gender, average score, marital status, type of university, place of residence, parents' educational level, and year of university entrance). The second section consisted of 8 factors related to the reasons for choosing a future medical specialty, 9 factors about the reasons for students' interest in not continuing education, and 9 factors influencing the preference for a given medical specialty. Scoring of the items was based on the use of a three-point Likert scale, where the important option had three points, and the unimportant option had one point. Questionnaires were given in person to students who were willing to participate in the study. By explaining the objectives and importance of the study, the researcher assured the participants that their responses would remain confidential.

Data analysis was performed using descriptive methods, including frequency, percentage, mean, and standard deviation, and SPSS software (version 20). The significance level was considered $P < 0.05$.

Results

This study comprised 201 last-year medical students of KMU. Most students were female (66.6%) and interested in continuing education (98%). Among students interested in continuing education, 130 subjects (66%) were female. The mean age of these students was 26.69 ± 12.22 years, and their mean score was 16.52 ± 0.86. The parents' educational level of most students intended to continue education was a bachelor's degree or lower (52.3%) (Table 1).

"Achieving a better economic position" (91.4%) and then "increasing information" (89.9%), "obtaining social status" (89.3%), "better service to the community" (74.1%), "better access to connect with individuals" (55.3%), and "family advice" (45.2%) were the most important factors for choosing a specialty. Most participants were interested in "ophthalmology" (18.2%)

and then "radiology" (16.4%) and "cardiology" (10.1%). Factors influencing specialty choice among medical students interested in ophthalmology were "specific working hours" and "easy residency period" (Table 2).

Table 1. Demographic Characteristics of Students Interested in Continuing Education

Variable		No.	%
Gender	Male	67	34
	Female	130	66
Marital status	Single	164	83.2
	Married	33	16.8
Type of university	Governmental	135	68.5
	Non-profit	62	31.5
Place of residence	Private home with friends	44	22.3
	Dormitory	60	30.5
	Private home with parents or spouse	93	47.2
Parents' education level	Doctoral degree and bove	38	19.3
	MSc	56	28.4
	Bachelor and lower	103	52.3
Year of university entrance	2010	6	3
	2011	9	4.6
	2012	10	5.1
	2013	88	44.7
	2014	84	42.6

Discussion

This study investigated the interest of last-year medical students in choosing a future medical specialty and determined effective factors in it. The average age of these students was 26.69 ± 12.22 years. In Grasreiner et al.'s study, the median age of the participants was 24 years (range: 18-44 years), compared to a median age of 24.9 years of the total population of medical students in Jena, Germany (11). It should be noted that, according to the present study, most students interested in continuing education were female, as reported previously by Correia Lima de Souza et al. (1).

In the present study, it was observed that more than 50% of students interested in continuing education had parents with a bachelor's degree or lower. Nevertheless, in the study by Correia Lima de Souza et al., a high percentage of the respondents had parents who were physicians, and their specialty was highly related to their parents' specialties. This consistency might be the result of the effect of the family and the admiration of their parents' specialty (1). In Kataria's study, nearly 16.6% of the students' fathers and 5.9% of the students' mothers had professional education (12).

The current study demonstrated that 98% of students intended to choose a future medical specialty. Most participants were interested in "ophthalmology", "radiology", "cardiology", and "dermatology". In Grasreiner et al.'s study, between 40% and 50% of students preferred "internal medicine". About 25% were interested in "surgery". A high percentage (about 18%) remained undecided (11). In Nayef et al.'s study, the most preferred specialties were "radiology" and ultrasound", "gynecology and obstetrics", "surgery", "internal medicine", "dermatology", and "pediatrics". Interest in clinical specialties was statistically higher than in basic medical sciences (13). In Awadi et al.'s study, 22.4% of medical students were undecided about their future specialty. In the aforementioned study, surgical specialties, internal medicine, and basic science specialties were the most preferred. Being a general practitioner was the least preferred for students. Regarding specific specialty choices, the most commonly chosen field was general surgery, followed by internal medicine and neurosurgery. The least chosen specialty was forensic medicine (14).

In Kataria's study, the majority of participants were willing to pursue their postgraduation (93.4%). In addition, the majority of participants intended to do their postgraduation in medicine and allied specialties in the aforementioned study (47.6%). Only 1.7% of participants intended to do their postgraduation in community medicine/public health (12). In Mohamed's study, 81 students (58.7%) expressed their future preference for a specialty. Internal medicine and then general surgery were the most preferred specialties in the aforementioned study (15).

In the current study, the factors "specific working hours" and "easy residency period" were indicated most frequently as influences on the preference for "ophthalmology". Grasreiner et al. demonstrated that "surgery" has important features, including promising career prospects, a high workload, and a good reputation (11). According to Khader et al., predominantly male students prefer "surgery", a choice that is heavily influenced by factors such as prestige and income (4). According to Harris et al., female physicians often choose fields such as "general medicine" or "internal medicine", because they associate them with family friendship (16). Takeda et al. and Correia Lima de Souza et al. stated that surgical specialties (e.g., surgery and neurosurgery) have the least time to achieve life goals; nevertheless, other specialties, such as "ophthalmology", "radiology", or "dermatology", have more time to pursue personal goals (1, 17).

Table 2. Effective Factors in Specialty Selection in Different Fields (Part I)

Specialty preferred	Nuclear medicine N (%)	Internal medicine N (%)	Neurosurgery N (%)	Infectious diseases N (%)	Traditional medicine N (%)	Urology N (%)	Dermatology N (%)	Social medicine N (%)	Radiology N (%)	Pathology N (%)	Gynecology & obstetrics N (%)
Influencing factors	10 (2)	12 (2.1)	11 (2)	2 (0.4)	2 (0.4)	2 (0.4)	49 (10)	2 (0.4)	66 (16.4)	36 (8.3)	18 (4.2)
Pure interest in the field	8 (80)	10 (83.33)	6 (54.54)	2 (100)	2 (100)	2 (100)	48 (97.9)	2 (100)	66 (100)	30 (83.33)	15 (83.33)
Economic aspect	10 (100)	7 (58.33)	11 (100)	1 (50)	1 (50)	1 (50)	49 (100)	1 (50)	66 (100)	33 (91.66)	18 (1000
Family advice	6 (60)	7 (85.33)	5 (45.45)	0	1 (50)	0	25 (51.02)	0	50 (75.75)	20 (55.55)	7 (38.88)
Better service to the community	9 (90)	9 (75)	7 (73.63)	2 (100)	2 (100)	2 (100)	20 (40.81)	1 (50)	50 (75.75)	20 (55.55)	12 (66.66)
Encounter of professors	0	6 (50)	4 (36.36)	2 (100)	0	2 (100)	49 (100)	2 (100)	55 (83.33)	28 (77.77)	10 (55.55)
Specific working hours	10 (100)	2 (16.66)	6 (54.54)	1 (50)	2 (100)	1 (50)	49 (100)	2 (100)	60 (90.90)	34 (94.44)	0
Easy residency period	10 (100)	0	0	1 (50)	2 (100)	1 (50)	49 (100)	2 (100)	65 (98.48)	30 (83.33)	3 (16.66)
More likely to be accepted	4 (40)	8 (66.66)	8 (73.72)	2 (100)	1 (50)	2 (100)	10 (20.4)	2 (100)	16 (24.24)	25 (69.44)	12 (66.66)
Social status	10 (100)	10 (93.33)	11 (100)	1 (50)	1 (50)	1 (50)	49 (100)	1 (50)	66 (100)	36 (100)	12 (66.66)

Table 2. Effective Factors in Specialty Selection in Different Fields (Part II)

Specialty preferred	General surgery N (%)	Occupational medicine N (%)	Pediatrics N (%)	Ophthalmology N (%)	Orthopedics N (%)	Psychiatry N (%)	Emergency medicine N (%)	Cardiology N (%)	Neurology N (%)	Ear nose and throat N (%)
Influencing factors	10 (2)	9 (1.9)	13 (2.1)	87 (18.2)	33 (6.5)	21 (4)	4 (0.8)	52 (10.1)	21 (4)	19 (3.8)
Pure interest in the field	10 (100)	7 (77.77)	10 (76.92)	70 (80.45)	20 (60.60)	21 (100)	2 (50)	45 (86.53)	18 (85.71)	13 (68.42)
Economic aspect	10 (100)	5 (55.55)	8 (61.53)	78 (89.65)	33 (100)	15 (71.42)	3 (75)	50 (96.15)	18 (85.71)	19 (100)
Family advice	3 (30)	5 (55.55)	6 (46.15)	75 (86.20)	25 (75.75)	10 (47.61)	3 975)	38 (73.07)	10 (47.61)	11 (57.89)
Better service to the community	7 (70)	7 (77.77)	11 (84.61)	75 (86.20)	20 (60.60)	18 (85.71)	4 (100)	50 (96.15)	17 (80.95)	13 (68.42)
Encounter of professors	5 (50)	6 (66.66)	9 (69.23)	80 (91.95)	8 (24.24)	13 (61.90)	3 (75)	48 (92.30)	18 (85.71)	15 (78.94)
Specific working hours	0	9 (100)	13 (100)	87 (100)	0	21 (100)	4 (100)	13 (25)	12 (57.14)	19 (100)
Easy residency period	0	9 (100)	8 (61.53)	87 (100)	0	21 (100)	2 (50)	10 (19.23)	12 (57.14)	16 (84.21)
More likely to be accepted	8 (80)	9 (100)	13 (100)	5 (5.74)	28 (84.84)	15 (71.42)	4 (100)	40 (76.92)	18 (85.71)	12 (63.15)
Social status	8 (80)	5 (55.55)	10 (76.92)	80 (91/95)	33 (100)	9 (42/85)	1 (25)	52 (100)	20 (95.23)	19 (100)

The relative preferences of physicians working in Basra, Iraq, for choosing "dermatology" can be attributed to less training program, low number of tasks (overnight), very good financial rewards, and relatively normal working weeks (18). In Mohamed's study, most students stated that the provision of a good future is a major reason behind specialty selection, followed by the presence of a challenging specialty (15). Probably one of the reasons for the difference in the choice of expertise in the current study from other studies is that most of the subjects in the present study were female.

In general, this study showed that "achieving a better economic position" followed by "increasing information" were the most important factors for choosing a specialty. Several studies have reported that experiences in medical school, career aspects (e.g., prestige and income), and personal aspects (e.g., personal ability, aspirations, work-life balance, and interests) are the main factors influencing the choice of specialty (4, 19-21). In Correia Lima, de Souza et al.'s study, "perceived ability" and "way of work" were the important factors in choosing a specialty among Brazilian students that were non-interfering factors. "Internship", "role models", and "financial reason" also played a role as intervening factors in choosing a specialty to continue education (1). In Grasreiner et al.'s study, students often considered the consistency between work and family life, career goals, and the amount of work anticipated for choosing a specialty (11). In Kataria's study, interest in the subject was the major reason for choosing a particular medical specialty/subject for postgraduation (12). According to Nayef et al., anticipating more abilities and ensuring the development of skills in the future are the most important factors in choosing a specialty. Gender differences, social contexts, patterns, and focus on emergency care are significantly related to specialty priorities (13).

Among the limitations of the present study was the non-cooperation of some students. The cross-sectional design might have limited the scope of this study. A small sample size and single-center study might limit external generalizability. This study was conducted at one university; the results will be of more importance if conducted among several universities in a country.

Conclusion

According to the present study's results, there are differences between students' interests in choosing medical specialties. These differences are mostly related to the individual aspects of the students. Several factors appear to increase the choice of medical specialty in the future. A good understanding of this process can help planners of graduate courses. Future studies can examine the impact of career planning interventions in medical schools by tracking the status of physicians (those who have received such interventions and those who have not). In addition, these studies can show whether the decision to continue education and choose a specialty, both psychologically and functionally, is related to success in the basic science course or not. Further studies and expanded factors are suggested on this topic on a large sample to obtain findings with more precision and external validation.

Acknowledgements: The authors thank the staff and participants of this study for their important contributions.

Conflict of interests: The authors report no conflicts of interest.

Ethical approval: This study was approved by the ethics committee of Kerman University of Medical Sciences in Iran (ethical code: IR.KMU.AH.REC.1398.179).

Funding/Support: None.

References

1. Correia Lima de Souza L, Mendonça VR, Garcia GB, Brandão EC, Barral-Netto M. Medical specialty choice and related factors of Brazilian medical students and recent doctors. PLoS One. 2015 Jul 24;10(7):e0133585. doi: 10.1371/journal.pone.0133585. [PMID: 26208007] [PMCID: PMC4514603]
2. Nguyen VAT, Könings KD, Wright EP, Kim GB, Luu HN, Scherpbier AJ, et al. Why do graduates choose to work in a less attractive specialty? A cross-sectional study on the role of personal values and expectations. Hum Resour Health. 2020 May 4;18(1):32. doi: 10.1186/s12960-020-00474-y. [PMID: 32366327] [PMCID: PMC7197171]
3. Hertling SF, Back DA, Wildemann B, Schleußner E, Kaiser M, Graul I. Is student mentoring career-defining in surgical disciplines? A comparative survey among medical schools and medical students for mentoring programs. Front Med (Lausanne). 2022 Nov 23:9:1008509. doi: 10.3389/fmed.2022.1008509. [PMID: 36507512] [PMCID: PMC9726918]
4. Khader Y, Al-Zoubi D, Amarin Z, Alkafagei A, Khasawneh M, Burgan S, et al. Factors affecting medical students in formulating their specialty preferences in Jordan. BMC Med Educ. 2008 May 23:8:32. doi: 10.1186/1472-6920-8-32. [PMID: 18501004] [PMCID: PMC2423351]
5. Drinkwater J, Tully MP, Dornan T. The effect of gender on medical students' aspirations: a qualitative study. Med Educ. 2008 Apr;42(4):420-6. doi: 10.1111/j.1365-2923.2008.03031.x. [PMID: 18338995]
6. Diderichsen S, Andersson J, Johansson EE, Verdonk P, Lagro-Janssen A, Hamberg K. Swedish medical students' expectations of

their future life. Int J Med Educ. 2011; 2: 140–6. doi: 10.5116/ijme.4ec5.92b8. [PMCID: PMC4205516]
7. Boulis AK, Jacobs JA. The changing face of medicine: women doctors and the evolution of health care in America. New York, US: Cornell University Press; 2011.
8. Levaillant M, Levaillant L, Lerolle N, Vallet B, Hamel-Broza J-F. Factors influencing medical students' choice of specialization: A gender based systematic review. EClinicalMedicine. 2020 Oct 24:28:100589. doi: 10.1016/j.eclinm.2020.100589. [PMID: 33134904] [PMCID: PMC7588859]
9. Yang Y, Li J, Wu X, Wang J, Li W, Zhu Y, et al. Factors influencing subspecialty choice among medical students: a systematic review and meta-analysis. BMJ Open. 2019 Mar 7;9(3):e022097. doi: 10.1136/bmjopen-2018-022097. [PMID: 30850399] [PMCID: PMC6429728]
10. Brotherton SE, Etzel SI. Graduate medical education, 2020-2021. JAMA. 2021 Sep 21;326(11):1088-1110. doi: 10.1001/jama.2021.13501. [PMID: 34546319]
11. Grasreiner D, Dahmen U, Settmacher U. Specialty preferences and influencing factors: a repeated cross-sectional survey of first- to sixth-year medical students in Jena, Germany. BMC Med Educ. 2018 May 9;18(1):103. doi: 10.1186/s12909-018-1200-8. [PMID: 29743057] [PMCID: PMC5944057]
12. Kataria GM. Future career aspiration and specialty choices among undergraduate medical students of a medical college in Jammu and Kashmir, India – A cross-sectional study. Journal of Health Sciences. 2023 Apr 1;11(2):160-3.doi: 10.4103/mjhs.mjhs_175_22.
13. Nayef HJ, Al-Mosawie HAH. Which medical specialty do I choose? The answer of Iraqi graduated doctors working in Basra. Iraqi new medical Journal. 2016;2:37-46.
14. Awadi S, Al Sharie S, Faiyoumi BA, Alzu'bi E, Hailat L, Al-Keder B. Factors affecting medical student's decision in choosing a future career specialty: A cross-sectional study. Ann Med Surg (Lond). 2022 Jan 27:74:103305. doi: 10.1016/j.amsu.2022.103305. [PMID: 35145673] [PMCID: PMC8818518]
15. Mohamed EY. Specialty preferences and factors affecting the choices of postgraduate specialty among undergraduate medical students. Pak J Med Sci. 2022 Jul-Aug;38(6):1431-1435. doi: 10.12669/pjms.38.6.5571. [PMID: 35991256] [PMCID: PMC9378383]
16. Harries RL, Gokani VJ, Smitham P, Fitzgerald JEF. Less than full-time training in surgery: a cross-sectional study evaluating the accessibility and experiences of flexible training in the surgical trainee workforce. BMJ Open. 2016 Apr 18;6(4):e010136. doi: 10.1136/bmjopen-2015-010136. [PMID: 27091819] [PMCID: PMC4838701]
17. Takeda Y, Morio K, Snell L, Otaki J, Takahashi M, Kai I. Characteristic profiles among students and junior doctors with specific career preferences. BMC Med Educ. 2013 Sep 12:13:125. doi: 10.1186/1472-6920-13-125. [PMID: 24028298] [PMCID: PMC3847686]
18. Huda N, Yousuf S. Career preference of final year medical students of Ziauddin Medical University. Educ Health (Abingdon). 2006 Nov;19(3):345-53. doi: 10.1080/13576280600984087. [PMID: 17178516]
19. Chang P-Y, Hung C-Y, Wang K-l, Huang Y-H, Chang K-J. Factors influencing medical students' choice of specialty. J Formos Med Assoc. 2006 Jun;105(6):489-96. doi: 10.1016/s0929-6646(09)60189-3. [PMID: 16801037]
20. Van der Horst K, Siegrist M, Orlow P, Giger M. Residents' reasons for specialty choice: influence of gender, time, patient and career. Med Educ. 2010; 44(6): 595-602. doi:10.1111/j.1365-2923.2010.03631.x. [PMID: 20604856]
21. Cruz JAS, Sandy NS, Vannucchi TR, Gouveia EM, Passerotti CC, Bruschini H, et al. Defining factors for choosing medical specialty in Brazil. Rev Med (São Paulo). 2010 Mar 19;89(1):32-42. doi: 10.11606/issn.1679-9836.v89i1p32-42.