

Choosing a Medical Specialty: Factors Considered by Iranian General Practitioners

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Background: Selecting a specialty is one of the most critical decisions for medical practitioners. On a personal level, it determines lifetime career achievements and, for the community, it directly affects the outcome of public health programs. The aim of this study was to investigate factors that were more important among Iranian residents when considering a specialty.

Methods: A total of 354 residents from 19 specialties answered the questionnaire that explored their views on nine factors which could have a possible impact on their decision. These factors were selected based on a preliminary discussion with residents and a review of related articles.

Results: The first three most common specialties were internal medicine (12.2%), surgery (10.2%) and cardiology (9.6%) for men and obstetrics and gynecology (17.9%), internal medicine (12.6%), and pathology (9.3%) for women. The highest score was related to the personal scientific interest, with a mean of 82.62 ± 19.07 and the lowest score to government regulations and aims, with a mean of 14.90 ± 26.11 in both genders. After that, among females, the role of family ($p=0.002$) and controllable lifestyle were considered valuable. The second most important factor among males was financial reward ($p=0.006$).

Conclusion: Personal interest, knowledge of a specialty, controllable lifestyle and financial reward are the most common reported factors among participants. Considering such influential factors is critical for producing motivated specialists and successful health care planning.

Keywords: General practitioners; choosing specialty; Influential factors; Resident

العوامل المؤثرة على اختيار مجال التخصص عند أطباء الصحة العامة في إيران

التمهيد: إن اختيار التخصص من أهم أهداف طلاب الطب. إن هذا الأمر من الرؤية الفردية يضع الحياة العملية للفرد تحت نعمة و من الرؤية الاجتماعية أيضا له أثر كبير في البرمجة الاجتماعية. إن الهدف من هذه الدراسة هو تحليل العوامل المؤثرة في مجال اختيار التخصص عند طلاب الطب.

الطوبى: كان 354 من طلبة التخصص في 19 مجال من خلال استمارة اشتملت على 9 من العوامل المؤثرة في مجال اختيار التخصص. تم اختيار العوامل المؤثرة من خلال دراسات سابقة واستطلاع اولى.

النتائج: التخصص الباطني 12.2%، الجراحة 10.2%، القلب 9.6% اول ثلاث تخصصات عند الرجال و القسم النسائي و التوليد 9.3%، التخصص الباطني 17.9% و الباثولوجيا 12.6% و اول ثلاث تخصصات عند النساء.

اعلى امتياز كان في مجال الحب الشخصي العلمي للمرضى بمعدل 82.62 ± 19.07 و اقل امتياز تعلق بالتمديدات للدولة بمعدل 14.90 ± 26.11 في الجنسين . عند النساء عامل العائلي ($P=0.002$) و الادارة الافضل للحياة الشخصية و عند الرجال المردود المالى الاعلى ($P=0.006$)

الاستنتاج: العلاقة الفردية، المعلومات حول المجال التخصصي، الادارة الافضل للحياة و المردود المالى الاعلى كانوا أكثر العوامل المؤثرة في مجال اختيار مجال التخصص. إن الاخذ بعين الاعتبار هذه العوامل في مجال اختيار متخصصين فعالين تكون حياتيه جدا في البرمجة اوفقه في وزارة الصحة .

الكلمات الرئيسية: طبيب الصحة العامة ، اختيار مجال التخصص ، العوامل المؤثرة المساعدون في مجالات التخصص.

فاكتورهای موثر بر انتخاب رشته تخصصی در بین پزشکان عمومی در ایران

زمینه: انتخاب رشته تخصصی یکی از مهم ترین اهداف برای دانشجویان پزشکی می باشد. از نقطه نظر شخصی این انتخاب زندگی شغلی فرد را تحت تاثیر قرار داده و از دیدگاه اجتماعی در برنامه ریزی های اجتماعی نقش خواهد داشت. هدف از این مطالعه بررسی فاکتورهای موثر در انتخاب رشته در بین دستیاران تخصصی می باشد.

روش کار: 354 دستیار در 19 رشته تخصصی از طریق پرسشنامه به 9 فاکتور مطرح شده که ممکن بود در تصمیم گیری آنان نقش داشته باشد پاسخ دادند. این فاکتورها بر اساس مقالات و نظرخواهی اولیه از دستیاران انتخاب گردید.

نتایج: رشته داخلی (12.2%)، جراحی (10.2%) و قلب (9.6%) سه رشته انتخابی اول در آقایان و زنان و زایمان (17.9%)، داخلی (12.6%) و پاتولوژی (9.3%) سه انتخاب اول در خانم ها بود. بالاترین امتیاز در انتخاب مربوط به علاقه علمی فرد با متوسط 82.62 ± 19.07 و پایین ترین امتیاز مربوط به تعهدات دولتی با متوسط 14.90 ± 26.11 در هر دو جنس بود پس از آن در بین خانم ها فاکتور نقش خانواده ($P=0.002$) و کنترل بهتر زندگی خصوصی و در بین آقایان درآمد ($P=0.006$) حائز اهمیت بود.

جمع بندی: علاقه شخصی، اطلاعات در رابطه با رشته تخصصی، زندگی قابل کنترل و درآمد حاصله بیشترین فاکتورهای در انتخاب رشته بودند. در نظر گرفتن فاکتورهای موثری از این دسته در تربیت متخصصین فعال و برنامه ریزی موفق در سیستم بهداشتی حیاتی می باشد.

لغات کلیدی: پزشک عمومی، انتخاب رشته، فاکتورهای موثر، دستیار تخصصی

میڈیکل مہارت کا انتخاب، جنرل فیزیسیئنز کے مد نظر نکات

بیگ گراؤنڈ: میڈیکل اسپیشیالیٹی کا انتخاب میڈیکل طلباء کے لئے نہایت اہمیت کا حامل امر ہے۔ انفرادی لحاظ سے یہ امر ہر میڈیکل طالب علم کے کیریئر کے بارے میں فیصلہ قرار پاتا ہے۔ اس کے علاوہ سماجی لحاظ سے بھی معاشرے کے لئے نہایت اہمیت کا حامل ہے۔ اس تحقیق کا هدف اسپیشیالیٹی کے انتخابات میں اہم عوامل کا جائزہ لینا تھا۔

روش: تین سو چون اسسٹنٹس کو اس تحقیق میں شامل کیا گیا جنہیں انیس موضوعات میں مہارت کا انتخاب کرنا تھا اور سوالنامے کے ذریعے ان نو عوامل کا جائزہ لیا گیا جو ان کے اس انتخاب میں ممکنہ طور پر معاون ثابت ہوسکتے ہیں۔ اسسٹنٹ ڈاکٹروں کے مضامین اور ان سے پوچھے گئے سوالات کے سہارے ان نو عوامل کو مد نظر رکھا گیا ہے۔

نتیجے: انٹرنل میڈیسن کو بارہ اعشاریہ دو، سرجری کو دس اعشاریہ دو اور کارڈیالوجی کو نو اعشاریہ چھے مرد ڈاکٹروں نے انتخاب کیا تھا۔ خواتین نے سب سے پہلے امراض النساء، اور انٹرنل میڈیسن اور پیتھولوجی کا انتخاب کیا۔ سب سے زیادہ نمبر علمی دلچسپی کے عامل کو ملے جبکہ سب سے کم نمبر حکومتی ذمہ داریوں کو ملے ہیں جسکی وجہ سے بعض ڈاکٹر اسپیشیالیٹی کا انتخاب کرنے پر مجبور ہوئے ہیں۔ گھبرانے کے اثرات اور نجی زندگی کو بہتر بنانا اور آمدنی بھی اہم عوامل میں شامل ہے۔

سفارشات: اس تحقیق سے معلوم ہوتا ہے کہ ذاتی دلچسپی، اسپیشیالیٹی کے بارے میں معلومات اور آمدنی وہ عوامل تھے جن کی بنیاد مہارت کا انتخاب کیا جاتا ہے۔ ان عوامل پر توجہ رکھنا اور ماہرین کی عمدہ طریقے سے ٹریننگ ملک کے سلامتی کے نظام میں اہم کردار ادا کرسکتی ہے۔

کلیدی الفاظ: انتخاب، مہارت، موثر عوامل۔

INTRODUCTION

Choosing medicine as a profession and a specialty preference is affected by many factors. These factors could span a wide range, such as personal interest, specialty characteristics, university curricula, and even cultural and social values (1).

Individual medical students have a tendency toward specific specialties (1, 2). During preclinical and clinical stages, medical students construct their views about career choice through interaction with patients and mentors while developing their knowledge about specialties (3).

New residents are the future specialist workforce of the health care system. Regardless of personal interest, in order to work successfully, one must have knowledge about the specialty and recognize the probable restrictions of his or her professional life. Previous studies, which were conducted in other countries, have pointed to factors like personal traits, personality types, job opportunities, personal interest, personal skills, and the ability to take on the responsibilities of providing appropriate health care to society (1, 4). Nevertheless, the role of cultural and social issues cannot be ignored (5, 6, and 7).

Understanding students' views about career choice could help in planning educational programs, correcting unfair systems, and producing an efficient health-care system.

Several studies have been done to address these influential factors but it should be noted that personal and social differences produce a different scenario. There is little data about such influential factors in Iran. This study evaluates the nine most important factors in selecting a specialty among residents at Mashhad University of Medical Sciences (MUMS) during 2009-2010.

METHODS

This qualitative cross-sectional study was conducted in the Educational Development Center (EDC) of Mashhad University of Medical Sciences (MUMS) during September 2009 to September 2010, with clinical residents as participants. Approval for this study was given by the Investigation

Review Board and Medical Ethics Committee of MUMS. The first part of the questionnaire consists of demographic characteristics, including age, gender, marital status, and number of children. After reviewing the literature and holding a preliminary discussion with residents, the second part of the questionnaire posed questions about nine influential factors including scientific interest, perception of the specialty, exam ranking, financial reward, spousal and family opinion, residency conditions, mentors' role, available academic positions at medical universities, and government regulations and aims. Participants assigned a number to each item, zero to one hundred, based on their personal views.

The validity of the questionnaire was assessed by content validity and its reliability controlled by test to test. Questionnaires were randomly given to ten residents twice, one week apart, and the correlation between the two sessions was calculated. The least correlation was 0.72%.

After a face-to-face explanation about the objectives of the study with each resident, the questionnaire was given to those who agreed to participate in the study.

SPSS software (version 11.5, Chicago, IL, USA) was used to analyze the data. Values were expressed as mean±SD. T-test was used to analyze the statistical differences between groups. P-value of less than 0.05 was considered statistically significant.

RESULTS

A. Demographic characteristics:

Three hundred-sixty residents from 19 specialties participated in this study. Due to incomplete data, six questionnaires were extracted. Out of the participants, 3 (0.8%) were in the fifth year of their residency course (only neurosurgery residency takes 5 years).

Two hundred (57%) residents were male and 154 (43%) were female. Two hundred-seventeen of the participants (61%) were married and 95 (27%) of them had at least one child. The distribution of the residents by specialty and gender is shown in Fig.1.

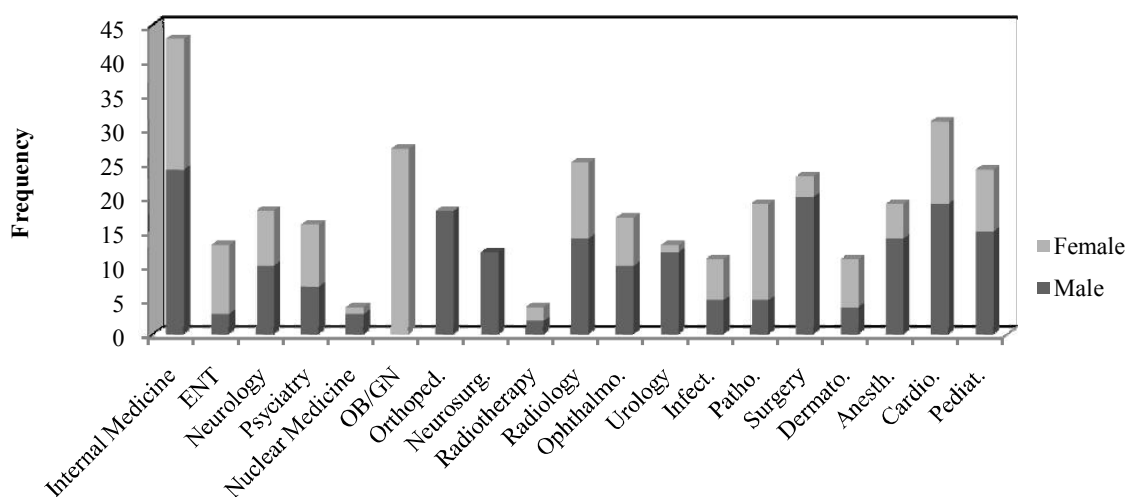


Fig.1 Ratio of male and female in different specialties

The first three most common specialties were internal medicine (12.2%), surgery (10.2%) and cardiology (9.6%) for men and obstetrics and gynecology (17.9%), internal medicine (12.6%), and pathology (9.3%) for women. It should be noted that these specialties have more available positions, which could affect the data. Eighty-one percent of participants were studying for their second choice in specialty. The female-to-male ratio in surgical fields was 53-to-89 and in non-surgical fields 98-to-108. In the study, ninety-three (27%) subjects had participated more than twice in the residency entrance exam. The socio-demographic variables of residents are shown in Table 1.

B. Influential factors in specialty preference
The highest score was related to personal scientific interest, with a mean of 82.62 ± 19.07 . It was stronger in surgical specialties (87.46 ± 1.3) as opposed to non-surgical specialties (78.85 ± 1.44). The lowest score was related to government regulations and aims, with a mean of 14.90 ± 26.11 (Table 2).

SEM denotes standard error of the mean
Scientific interest was the most important factor for both

genders, with no statistical difference between them. After that, among females, the role of family and controllable lifestyle were considered more valuable than among males ($p=0.002$). Specialty difficulties ($p=0.004$) were also more important for women compared to men. The second most important factor for males was financial reward ($p=0.006$). In comparison between the married and single residents, there was a meaningful difference in the role of family ($p>0.001$).

Having enough information about a specialty was the second most influential factor. In other words, only 19% of the subjects expressed they would have chosen another specialty if they had had a chance to do so. Compared to single participants, the perception of a specialty had a significantly higher importance for married residents ($p=0.009$) and for those who had a child ($p=0.012$).

DISCUSSION

How attractive a specialty is as a career for a medical student depends on several complex factors. On one hand, psychomotor skills and scientific interest are prominent and, on the other hand, financial gain and social prestige can play a great role. When noting trends in the specialties elected by medical students, one may ask why some specialties lose their luster while others become an attractive career choice.

If there were enough opportunities for medical students to enter the specialty that truly interests them, some programs would, in fact, have difficulties in filling all of their positions(8). However, in reality, there are limited opportunities due to the low number of available positions versus the high number of applicants. This forces some to choose a specialty at the bottom of their list and so can produce specialists who are professionally unmotivated and dissatisfied.

This article reviews and analyzes issues that are considered influential factors in specialty career choices, such as scientific interest, perception of the specialty, exam ranking, financial reward, spousal and family opinion, controllable life style, mentors' role, available academic positions at medical universities, and government regulations and aims.

Scientific interest

The most influential factor in this study was scientific interest. It was stronger in the surgical specialties than in the non-surgical specialties. Khader and Saigal showed the same results in their studies in Jordan and Japan, respectively (1, 6). As medical students pass clinical rotations, a preference for a particular specialty gradually emerges. This may not be comprised of pure scientific interest alone, but may also be influenced by mentors, instructors, and the attractiveness of a particular university's program.

Perception and cognitive knowledge of the specialty

Although medical students may have a career preference before entering medical school, often their perspectives on a specialty are shaped by preclinical and clinical experiences. Medical school rotations produce an opportunity to be exposed to the real world of specialties and this plays a major role in career decision making after

Table1. Socio-demographic characteristics of participants

		N (%)
Sex	Male	200(55.6)
	Female	154(42.7)
Marital status	Single	137(38.7)
	Married	217(61.3)
Educational level	First year	70(19.7)
	Second year	103(29)
	Third year	98(27.6)
	Forth year	80(22.6)
	Fifth year	3(0.8)
Having child	NO	295(83.3)
	YES	58(16.3)
	No Answer	1(0.3)

Table 2. Factors influencing specialty preferences

Factor	SEM (SD)
Scientific interest	82.62 (19.07)
cognitive Knowledge	65.20 (23.20)
Exam ranking	63.60 (33.30)
Financial reward	46.5 (31.14)
Family opinion	40.9 (36)
Controllable lifestyle	40.30 (33.4)
Mentor's role	33.51 (33.31)
Available academic position	14.90 (26.11)
Government regulation	14.7 (30)

graduation (1, 6, and 8). Clinical rotations can leave either a positive or negative impression on medical students who, as a result, may be encouraged to pursue a particular specialty or not (9). It should be emphasized that, since not all rotations are obligatory in some medical schools' curricula, medical students may have insufficient experience upon which their career decision is made. The perception of a specialty can change as students become older and so their initial preference may be modified as time passes. A career decision is much firmer when made during the final year of medical school as opposed to the fourth year (9, 10).

In this study, knowledge about the specialty was the second most influential factor and only 19% of the subjects would have chosen another specialty if they had had another chance to do so. In other words, their previous view of a specialty does not fully match the actual residency experience. It should be noted that perceptions on a specialty are more important for medical students who are married or parents when making a career choice.

Exam ranking

Ranking was the third most influential factor in our study. Ranking may strongly influence decision-making. Participants with high scores have a wider range of specialties to choose from which may cause a decision to be based on financial reward, controllable lifestyle, and prestige rather than genuine interest (8). In contrast, participants with low scores are forced to take the entrance exam several times and may finally choose a specialty simply based on approaching exam limitations and an inability to compete with the updated knowledge of younger graduates. Both high and low rankings can unfortunately produce mediocre specialists or residents who wish they could change their specialty.

Gender issue

Gender is one of the most challenging issues in making career choices. Although the number of female medical students is nearly equal to that of males, women tend to show an interest in specialties that do not demand a full-time schedule, which could interfere with parental or spousal responsibilities, such as the surgical fields. Harris et al. reported life style, long hours, and lack of time with family as inhibiting factors when considering a surgical specialty (11). Other influential personal factors may be empathy, financial reward, and religious values (12). Women are less likely to think about prestige and financial reward which are of higher priority among men (1, 8, and 12). In our study, 200 (57%) residents were male and 154 (43%) female. Among males and females, personal scientific interest was the most important factor. However, the next factors were financial reward for men and controllable lifestyle, along with family consideration, for women. In the present study, the first three specialties chosen by men were internal medicine, general surgery, and heart while obstetrics and gynecology, internal medicine, and pathology were chosen by women, findings which agree with Pawelczyk's results (12).

To better appreciate these findings, in our country, internal medicine has a higher rate of acceptance; general surgery is

lucrative, while heart is prestigious and generates a high income. In addition, only women are permitted to select obstetrics and gynecology as a specialty and this may create some bias in the interpretation of data. Of course, pathology has no on-call program.

Another notable factor related to gender is the absence of a female mentor in some specialties, like surgery. The lack of a female role model in faculty positions may be the cause of career inhibitions among women students. Although, it may seem unbelievable, if significant efforts are not made to decrease this resistance, there is little hope of seeing a greater participation of women in traditionally male specialties.

Financial reward

Although financial reward was the fourth most common reason for career preference in this study, parallel to other studies, it is much stronger in males¹. This is not surprising because, in many countries, males are mainly responsible for supporting a family. Due to the prolonged time required for a medical education, when a physician enters the workforce, he or she is older compared to those in other professions and, therefore, has less time to become established. In an effort to recover lost time in earning living, medical students are attracted to well-paying specialties. A good example is the choosing of surgery by male students (8).

Spousal and family opinion

Controllable lifestyle is an important factor especially for women. When choosing a career path, they consider the long hours, being on-call, and other challenges related to particular fields. In the Valente et al. study, 98% of married medical students consulted with their family and the duration of the residency program was the most decisive factor for them (8). In this study, 44 out of 79 (56%) residents who chose specialties without an on-call program or emergency services were women, 27 (61.4%) of whom were married and 12 (27.3%) had a child.

Medical lifestyle

The importance of a controllable lifestyle sheds light on career choices. The Schwartz et al. study showed that over a period of ten years, there was an increase in the number of students who entered specialties with a controllable lifestyle and these students were among the top 15% of their class (8).

Aufses et al. reported that the major reason why surgical residents had dropped out was related to lifestyle (13). This was seen in both genders, although a greater proportion belonged to women (32% vs. 17%).

Over the past decades, it is obvious that, when making a surgical career choice, the important points are lifestyle and gender.

Mentors' role

Although the mentors' role is not a strong factor among our subjects (7th in rank), with a mean of 33.51 ± 33.31 , several studies emphasize it as an encouraging or discouraging influential factor (1, 5, and 6). This may be due to a problem in the ward or a negative role model. Positive role models stated that their passionate interest in work exerts a great effect on medical students (14). Zarkovic found

physician role models to be an important influential factor in specialty decision making among New Zealand medical students. This was similar to the results of the Khader study in Jordan in which 41.8% of students reported a powerful role model influence, especially among the male students who preferred surgery¹. The Burack study reported the positive effect of role models in the decision-making process of medical students who chose the primary care specialty (15).

Female role models may be a good example of how negative impressions can be made. Fewer women as faculty members, especially in surgical fields, the slower academic progress of females in comparison to their male counterparts, and attendant concentration in lower academic ranks may explain why there is not a strong preference for surgery among female medical students. Women make up 6% of the practicing surgeons in Canada (8).

Available academic positions at medical universities

For those medical students who are interested in academic and research professions, available academic positions may be an important influential factor, which creates some limitations when making career choice decisions. We did not find any reports about this factor in the literature and it does not exert a strong influence on our subjects.

Government regulations and aims

Based on its health care policies, every government may

have transient or permanent laws, which can cause direct or indirect effect on career choices (8). Governmental priorities, especially in times of over or undersupply of doctors, may provide incentives to attract medical students to certain fields. This factor pushes students to comply with government policies even to the extent of choosing a less attractive specialty. Government regulations and aims have the least effect in our study.

Awareness about all aspects of a specialty is the corner stone of a specialty career choice among medical students. Decision-making can be affected by different influential factors. Personal and social values can vary among countries. However, personal interest, knowledge on a specialty, controllable lifestyle and financial reward are the most common reported factors in different studies.

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