

### The Incentives Affecting the Selection of Future Specialty of Medical Interns

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**Background:** The dramatic increase in the number of general practitioners and their limited job situations has increased the desire to continue studies in specialized fields. However, different fields are not desired in the same way. Therefore, to plan for the guidance of general practitioners towards fields needed for the society, understanding the motives for choosing a field is necessary. The present study is aimed to investigate the incentives affecting the selection of specialty field in the students of medicine of Mashhad University of Medical Sciences.

**Methods:** This cross-sectional study was conducted on 243 interns. In this study, the medical school graduation questionnaire was used. After collecting the data, they were first coded into fields and then in four groups of surgery, internal medicine, diagnostics medicine, and psychiatry and analyzed using SPSS software version 19 and Chi-square and Mann-Whitney tests.

**Results:** In this study, the five most popular fields were radiology, cardiovascular, ophthalmology, pathology, and dermatology, respectively. Fields with the least interest were infectious diseases, oncology and internal medicine. There was a significant difference between the desired field and sex ( $p = 0.003$ ). Among factors affecting the choice of specialty, good income had the highest mean, which was significantly different between men and women ( $p = 0.011$ ).

**Conclusion:** Currently, it seems that students are more concerned with issues such as income and the ease of study than they are concerned with their interests and academic qualities and competencies.

**Keywords:** Field selection, Incentive, Students

### بررسی انگیزه های مؤثر بر انتخاب رشته تخصصی آینده دانشجویان مقطع انترنی پزشکی دانشگاه

**زمینه و هدف:** رشد چشمگیر پزشکان عمومی و محدودیت های اشتغال برای آنها، تمایل به ادامه تحصیل درمقاطع تخصصی را افزایش داده است، اما تمایل برای انتخاب رشته های مختلف یکسان نمی باشد لذا برای برنامه ریزی جهت هدایت پزشکان عمومی در رشته های مورد نیاز جامعه شناخت انگیزه های انتخاب رشته لازم می باشد، مطالعه حاضر با هدف بررسی انگیزه های مؤثر بر انتخاب رشته تخصصی دانشجویان رشته پزشکی دانشگاه علوم پزشکی مشهد انجام گرفت.

**روش:** این مطالعه مقطعی بر روی ۲۴۳ دانشجوی رشته پزشکی مقطع انترنی انجام شد. در این مطالعه از فرم تعدیل شده پرسشنامه (Medical School Graduation Questionnaire) استفاده شد. داده ها پس از جمع آوری، ابتدا به تفکیک رشته ها و سپس در چهار دسته رشته های جراحی، داخلی، تشخیصی و روان پزشکی کدگذاری شده و با استفاده از نرم افزار spss نسخه ۱۹ و آزمون های کای اسکور و من ویتنی مورد تجزیه و تحلیل قرار گرفتند.

**یافته ها:** در این مطالعه پنج رشته پرطرفدار برای ادامه تحصیل به ترتیب رادیولوژی، قلب و عروق، چشم، پاتولوژی و پوست بودند و کمترین علاقه به رشته های عفونی، انکولوژی و داخلی بود. بین رشته موردعلاقه و جنسیت تفاوت آماری معنی داری وجود داشت ( $p=0.003$ ). از بین عوامل مؤثر بر انتخاب رشته درآمد مناسب از بالاترین میانگین برخوردار بود که در بین مردان و زنان نیز دارای تفاوت معنی دار بود ( $p=0.011$ ).

**نتیجه گیری:** در شرایط فعلی به نظر می رسد که دانشجویان بیش از آنکه به علائق و تناسب رشته با شخصیت و توانمندی های علمی خود توجه داشته باشند، به مواردی مثل درآمد کافی و آسان بودن مدت تحصیل دستگیری اهمیت بیشتری می دهند.

**واژه های کلیدی:** انتخاب رشته، انگیزه، دانشجویان

### تقییم الحوافز المؤثرة على اختيار الفرع التخصصي المستقبلي لطلاب الفترة التدريبية في كلية الطب

**الأرضية والهدف:** إن زيادة العدد الواضح للأطباء العموميين وقلة فرص عملهم أدى إلى زيادة ميل الأطباء الخريجين للدراسة في الفروع التخصصية ولكن لا يوجد تساوي في الميول نحو الفروع التخصصية المتعددة. لذلك من أجل توجيه هؤلاء الأطباء إلى الفروع التي يحتاجها المجتمع يجب القيام بتخطيط واضح ومعرفة ميول هؤلاء الطلاب نحو الفروع التخصصية. إن هذه الدراسة تهدف إلى تقييم الميول المؤثرة على اختيار الفرع التخصصي لطلاب الطب في جامعة مشهد للعلوم الطبية.

**الطريقة:** لقد تم إجراء هذه الدراسة على ۲۴۳ طالب طب بشري وتم الاستفادة في هذه الدراسة من الشكل المعدل لورقة الأسئلة الإستفسارية medical questionnaire (school graduation). وبعد جمع المعلومات تم تقسيم الفروع التخصصية وبعدها تقسيمها إلى أربع مجموعات هي: الفروع الجراحية، الفروع الداخلية، الفروع التشخيصية، الطب النفسي وبما تم تجزئة وتحليل البيانات بالاعتماد على برنامج spss النسخة ۱۹ وتم أيضاً الاعتماد على اختبار كاي سكور ومن ويتني.

**النتائج:** في هذه الدراسة كانت الفروع الخمس التالية الأكثر رغبة بين الطلاب وهي بالترتيب التالي: الأتمة، القلبية، العينية، باثولوجيا، الجلدية. وكانت الفروع الأقل رغبة هي: الأمراض الضمجية و علم الأورام السرطانية والداخلية. كان بين الفروع الأكثر رغبة و جنس الطلبة تفاوت إحصائي ذو معنى  $p=0.003$ . وكان بين العوامل المؤثرة على انتخاب الفرع التخصصي الدخل الفردي المناسب حيث حاز على أعلى متوسط وكان هناك تفاوت ذو معنى بين الذكور والإناث وكان  $p=0.011$ .

**النتيجة:** في الظروف الحالية يبدو أن الطلاب مهتمين بالفروع ذات الدخل الكافي والسهلة الدراسة أكثر من ميولهم الشخصية وقراراتهم العلمية.

**الكلمات الدلالية:** اختيار الفرع، الحافز، الطلاب

### میڈیکل انٹرنز کی طرف سے مہارتی موضوع کے انتخاب کی وجوہات

**بیک گراؤنڈ:** عام ڈاکٹروں کی تعداد میں اضافے اور ان کی بے روزگاری کی بنا پر میڈیکل انٹرنز نے اسپیشیالائزیشن کی طرف کافی رغبت دکھائی ہے، البتہ یہ رغبت بھی یکساں نہیں ہے بلکہ لہذا طلباء کو سرگردانی سے بچانے کے لئے مختلف اسپیشیالائزیشنز کے بارے میں ایک جامع پروگرام بنایا گیا ہے تا کہ میڈیکل انٹرنز آسانی وہ موضوع اختیار کرسکیں جس میں انہیں مہارت حاصل کرنی ہے۔ یہ کام مشہد یونیورسٹی آف میڈیکل سائنسز میں انجام پایا ہے۔

**روش:** اس تحقیق میں دوستوینتالیس انٹرنز نے شرکت کی اور اس میں میڈیکل اسکول گریجویٹس سوالنامے سے استفادہ کیا گیا۔ ڈیٹا کا پہلے تو الگ الگ موضوعات کے اعتبار سے تجزیہ کیا گیا پھر اس موضوعات کو چار بنیادی موضوع میں جمع کیا گیا، ان موضوعات میں سرجری، انٹرنل میڈیسن، تشخیصی مہارت اور علم نفسیات میں تقسیم کیا گیا، اس اعتبار سے بھی ان کا تجزیہ ایس پی ایس ایس انیس سافٹ ویئر سے کیا گیا۔ **نتیجے:** اس تحقیق میں پتہ چلتا ہے کہ ریڈیالوجی، امراض قلب و عروق، ہیپتالوجی اور امراض جلد نیز امراض چشم کے موضوعات ایسے موضوعات تھے جن میں زیادہ سے زیادہ انٹرنز داخلہ لینا چاہتے تھے، دوسری طرف امیونولوجی، آنکولوجی، میں کم میڈیکل انٹرنز نے شرکت کرنے کا عتدیبہ دیا البتہ اس میں جنسیت کے اعتبار سے بھی کافی فرق تھا۔ میڈیکل سبجیکٹس میں ایسے موضوعات زیادہ چنے جارہے تھے جن کی پریکٹیس میں پیسہ زیادہ ملتاہو۔

**نتیجے:** موجودہ حالات میں ایسا لگتا ہے کہ میڈیکل طلباء اپنی پیشہ ورانہ صلاحیتوں پر زیادہ توجہ کرنے کے بجائے آمدنی اور آسان موضوعات جیسے عوامل کو مد نظر رکھے ہوئے ہیں۔

**کلیدی الفاظ:** موضوع، میڈیکل پیسہ، آسانی۔

## INTRODUCTION

Selecting field at the academic level is one of the most important decisions of a person during his lifetime. By choosing a field of study, one needs to spend a lot of time being educated. Therefore, the choice of the field of study at all levels should be done with greater care and consideration (1). Selection of fields related to medical sciences, including the medicine itself, which is related to human health, needs to be done more carefully; because the interest in the field is one of the preconditions for providing high quality services to patients (2).

The increasing number of general practitioners and the lack of adequate capacity and facilities have made career choices one of the main concerns of medical students during their post-graduate years. The tendency toward admission to specialized medicine is one of the most important concerns of most medical students and graduates in this field (3). On the other hand, the disparity between the needs of the country to medical specialists and the interest of the graduates of general medicine to the specific specialized fields, causes problems.

The incentives for choosing a specialty is a complex process influenced by various factors. Teaching students during externship courses is one of the most important factors influencing the choice of specialty in developing countries; however, factors such as willingness to be employed at the university, family education, parent's education, better communication with people, better economic situation, accessing better work and more income, better social status and access to more information can not be ignored, although this pattern of incentives varies in developing and developed countries (4-9).

In the United States, type of patient's problems, suitability with personality, having the skills and abilities for the field, the opportunity to make changes in people's lives, content of the field, the challenge with diagnostic problems and the variety in the diagnosis of treatment, are the factors that have great influence on selecting the specialty, respectively (10).

In South Korea, female students tended to specialties with less working hours and risk, while male students were more willing to continue their studies in surgery and in specialties with higher income (11). In Scotland, the balance of living and work, and the number of patients were the factors affecting selection of specialty (1).

In a study conducted at Mazandaran University of Medical Sciences in Iran, the two most influential factors in choosing a specialty were the interest in helping people and the scientific content of the field. Factors such as the cost of medical malpractice and patient contact had the least effect on the choice of specialty. Most men emphasized the lack of affiliation of the specialty, while women emphasized the predictability of work hours (12).

Considering that educating a medical student, as one of the most important people who directly affects people's health and is connected with the health of society having a significant role in the development of health system of the country and given the fact that having interest is essential to be successful in the field and to have healthier communication with patients, leading to general health and promoting health status of the country, this study aimed to

investigate the effective incentives on choosing the specialty in medical students of Mashhad University of Medical Sciences.

## METHODS

In this cross-sectional study, all medical students who were interns in 2015 were included in the study using census. Inclusion criteria included students who were admitted to Mashhad University of Medical Sciences, and guest students were not included in this study, and the only exclusion criteria was forms with very incomplete information. Accordingly, 6 questionnaires were excluded from the study and 243 subjects were analyzed. All information was collected by a questionnaire that was designed in two sections. In the first part, questions about the demographic status and the six selected subjects of interest were in priority order and the second part included 20 questions regarding the future job motives. Questions in the second part were designed as multiple choice questions including fully agree, agree, abstained, disagree, and completely disagree about future job plans. In this study, the modified form of the Medical School Graduation Questionnaire was used. Validity and reliability of this questionnaire have been studied in foreign studies and have been applied in Iranian studies according to the country's education system and its validity and reliability have been confirmed (2, 13). Volunteers were asked to identify the influence of the factors raised in the questionnaire on their first selection of their field of specialty. For each factor, the Likert Scoring System was used. Thus, zero indicates lack of influence, one indicates low impact, two indicates moderate influence, and three indicates strong influence, and a score of four indicates a factor that had a significant impact on the choice of specialty. After collecting data, they were first coded into each specialty and then in four groups of surgery, internal medicine, diagnostic medicine, and psychiatry and were entered into the computer. First, using SPSS software version 19 and EXCELL, the data were described (frequency and charts) and Chi-square and Mann-Whitney tests were used to analyze the data. In this study, the level of significance for statistical tests was considered as 0.05.

## RESULTS

Of 243 medical intern students of Mashhad University of Medical Sciences in 2015, the mean age of 243 participants in this study was  $24.76 \pm 0.66$ . Of the total number of participants in this study, 134 (55.1%) were women and 109 (44.9%) were men; 103 (42.4%) of the participants were married and 140 (57.6%) were single.

**Table 1. Demographic information**

Variable		No. (Percent)
Age (mean $\pm$ standard deviation)		24 $\pm$ 6.66
Sex	Male	109 (44.9)
	Female	134 (55.1)
Marital status	Single	140 (57.6)
	Married	103 (42.4)

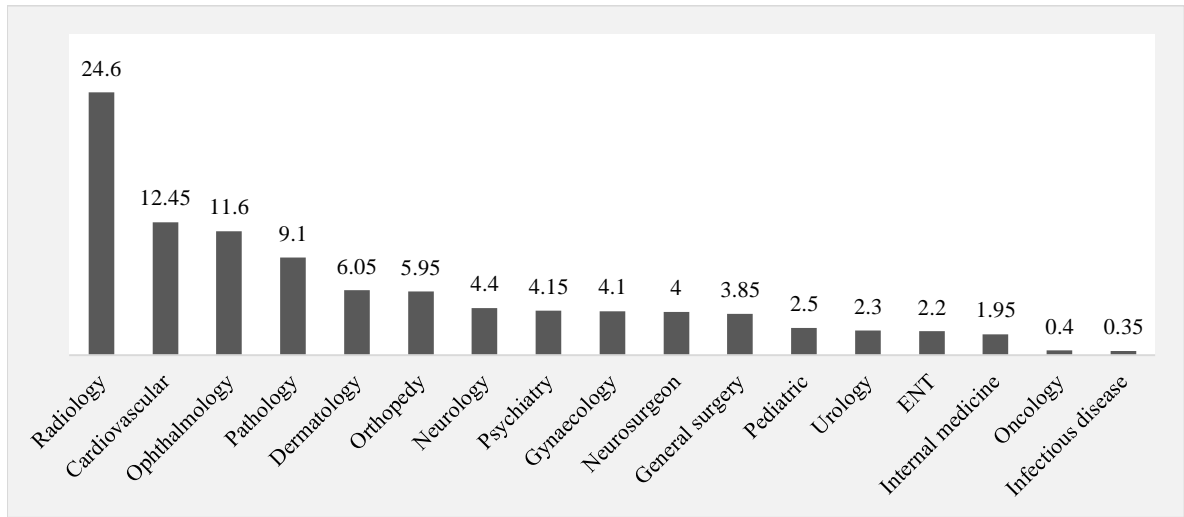


Figure 1. Frequency of interns' preferred fields of specialty

Table 2 shows the interest of students by gender, which indicates that after radiology, men are more interested in cardiovascular diseases, ophthalmology and orthopedics, and women are more interested in pathology, cardiovascular diseases and ophthalmology, and a remarkable point in this study is that none of the men chose infectious diseases and oncology and none of the women chose orthopedics and urology fields.

After dividing the specialties into four general categories of psychiatry, diagnostic medicine, internal medicine and surgery, there was a significant difference between the genders and field of specialty based on the chi-square test ( $p=0.003$ ,  $\chi^2=14.22$ ); this difference was divided into four general categories and is shown in figure 2, which indicates that women tended to be more interested in diagnostic medicine and internal medicine, and men were more interested in surgery, and the interest was the same in psychiatry fields.

Table 3 shows the factors influencing the choice specialty field by gender. According to the results of the Mann-Whitney test, in some cases such as the interesting field of specialty, having certain working hours, the desire and encouragement of the family, the impact of the specialty on improving interpersonal and family relationships, having enough time

for family, the experience of externship and internship periods, city of residence, the possibility of working in the operating room, the suitability with personality, and favorable income in relation to working time, there were significant differences between the mean scores of the two genders, which, accordingly, after good income for both genders, which had the greatest effect on their choice, in men, the interesting and challenging specialty and in women, prestige of the specialty and encouragement of the family are the most influential factors.

### DISCUSSION

The results of our study showed that the most favorite medical specialty among medical intern students were radiology, cardiology, ophthalmology, pathology, dermatology, orthopedics, internal medicine, obstetrics and gynecology, psychiatry, neurosurgery, general surgery, pediatrics, urology, ENT, internal medicine and infectious diseases and oncology. In a study conducted in Switzerland, students were mostly interested in primary care, internal medicine, surgery specialties, obstetrics and gynecology, anesthesiology and special care, pediatrics, and psychiatry (14) In another study, the most favorite fields were internal medicine, surgery, family medicine, pediatrics, psychiatry,

Table 2. Percentage of intern's preferred fields of specialty by gender

Specialty	Men	Women
Urology	4.6	0.00
Orthopedics	1.9	0.00
Oncology	0.00	0.7
Infectious Diseases	0.00	0.7
ENT	3.7	0.7
Neurosurgery	7.3	0.7
Pediatrics	2.8	2.2
General Surgery	5.5	2.2
Internal Medicine	0.9	3.0
Psychiatry	4.6	3.7
Neurology	2.8	6.0
Dermatology	4.6	7.5
Gynecology	0.00	8.2
Ophthalmology	11.9	11.2
Cardiovascular	13.8	11.2
pathology	5.5	12.7
Radiology	20.2	29.1

obstetrics and gynecology, and hospital-related specialties (15). However, given that these are foreign studies, the differences can be attributed mainly to cultural and regional differences. The most interest in continuing education at the specialized level for both genders was radiology. In the study of MEHMOOD et al., surgery was the most popular specialty among students (16); which can be due to the proper

position of radiology (in terms of income and difficulty of studying) in our country.

Other results of our study were the incentives that influenced the selection of specialty fields. In this study, the most influential incentives were the following: adequacy of income over working time, the desire and encouragement of the family, having enough time for family, professional security and health and prestige of specialty in the perspective of other colleagues and society, while in a study in Pakistan, factors such as lifestyle, clinical practice, social factors and occupational prestige were influential (17). In the study of Zarghami et al., the two most influential factors in choosing the fields of specialty were interest in helping people and the scientific content of the specialty field (12). In the U.S., the most influential factors were the type of problem, the suitability with the personality, skills and abilities for the relevant field, the opportunity to make a difference in people's lives (13). In Denmark, issues relating to a controllable lifestyle such as the availability of leisure time or spending enough time with the family, the amount of stress, workload, and employment commitments had the greatest impact on choosing the specialty field (18). Regarding the influential incentives by gender in this study, such as interesting specialty, having certain working hours, desire and encouragement of family, the impact of specialty on improving interpersonal and family relationships, having enough time for family, experiences of externship and

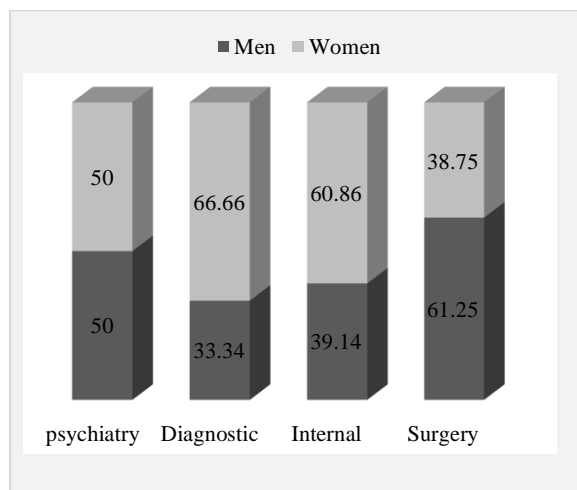


Figure 2. The frequency of students' favorite fields of specialty by gender

Table 3. The mean and standard deviation of factors influencing the choice of specialty by gender

	Men (Mean±SD)	Women (Mean±SD)	Test Result
Being interesting and challenging	4.25±0.47	3.95±0.71	Z=-3.38, p=0.001
The cost of medical malpractice	3.01±0.45	3.07±0.51	Z=-1.05, p=0.291
Duration of study	4.09±0.76	3.97±0.69	Z=-1.38, p=0.166
Having fellowship periods	3.68±0.76	3.61±0.84	Z=-0.78, p=0.433
Having certain working hours	3.89±0.79	4.17±0.63	Z=-2.72, p=0.006
Having models of specialists in this field	2.81±0.69	2.76±0.67	Z=-1.25, p=0.210
Influence of a trusted person	3.02±0.93	3.21±0.78	Z=-1.70, p=0.084
The desire and encouragement of the family	4.14±0.70	4.50±0.68	Z=-4.10, p=0.001
Prestige of specialty from the perspective of other colleagues and society	3.97±0.16	3.97±0.16	Z=-0.11, p=0.915
The Effect of specialty on Improving Interpersonal and Family Relationships	3.97±1.01	4.45±0.74	Z=-3.93, p=0.001
Professional security and health	4.11±0.76	4.17±0.78	Z=-0.72, p=0.472
Having enough time for family	3.95±0.76	4.48±0.79	Z=-5.52, p=0.001
Experience of externship and internship periods	3.01±0.66	3.32±1.09	Z=-2.51, p=0.012
City of residence	2.85±0.65	2.54±0.72	Z=-3.95, p=0.001
Having long-term patients	4.10±0.74	4.19±0.77	Z=-0.99, p=0.322
Possibility to work in the operating room	3.56±1.10	2.92±1.03	Z=-4.65, p=0.001
Presence of knowledge of this field in this area	3.19±1.05	2.94±0.71	Z=-1.94, p=0.052
Having the skills and abilities	3.51±0.75	3.53±0.86	Z=-0.05, p=0.996
Suitability with the personality	4.00±0.66	4.21±0.75	Z=-2.43, p=0.015
Adequacy of income over working time	4.48±0.57	4.67±0.54	Z=-2.83, p=0.005

internship periods, city of residence, possibility of working in the operating room, suitability with the personality and acceptable income in relation to working time, there were significant differences between the two genders. In men, interesting specialty and in women, the prestige of the specialty and encouragement of the family had the greatest impact. In the study of Zarghami et al., men mostly emphasized on the lack of dependency of the specialty and women emphasized mostly on the predictable working hours (12). In Denmark, women were more concerned with the relationship with the patient and men were more concerned with self-discipline (19).

Based on the present study, currently, it seems that students are more concerned with issues such as income and the ease of study than they are concerned with their interests and academic qualities and competencies. One of the limitations of this study is its cross-sectional nature, and the study was conducted in one year; while having information of consecutive years, the motivational changes can be reviewed and planned upon. One of the other limitations of this study is the fact that it only addresses effective motives, while this is a multifactorial issue, and other factors, such as the personality trait of individuals and the education of the

family, and ... can influence the selection of the field; therefore, it is suggested that future studies should consider other aspects of this issue.

Given the increasing number of physicians in the country, especially in recent years, the medical profession will undergo a transformation. The factors discussed are those that can influence the decision making of general practitioners in choosing specialized fields. Although during the specialty period, different events and experiences can bring about changes in students' opinions. Nevertheless, knowing the incentives that affect the choice of specialty can help in planning educational programs. Further research can help clarify this issue.

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