

## How Graduates from Medicine Choose their Residency Program in Iran?

Mehrdad R, MD<sup>1</sup>; Nikzad M, MD<sup>2</sup>; Alavi Sh, MSc<sup>3</sup>; Gorji AH, MD<sup>4</sup>

<sup>1</sup> Occupational medicine specialist, Tehran University Of Medical Sciences and Health Services

<sup>2</sup> General practitioner Tehran University Of Medical Sciences and Health Services

<sup>3</sup> Master degree of obstetrics training expert Tehran University Of Medical Sciences and Health Services

<sup>4</sup> Deputy minister for education and university affairs, Ministry of Health and Medical education Tehran University Of Medical Sciences and Health Services

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### Abstract

**Back ground and purpose:** Continuing education is one of priorities of newly graduates from medicine and selection of a proper residency program is a major problem for most of them.

This study examined various motives and reasons for inclination of graduates from medicine to continue education in a special residency program and become specialized.

**Methods:** This is a cross-sectional study. A questionnaire was developed after holding a focus group. Validity and reliability of results using the questionnaire were assessed.

Then the questionnaires were sent and received by free mail through universities. Chi-Square, One way ANOVA and Post Hoc test, Bonferroni type, was used to study relationships Between different variables.

**Results:** 1052 residents participated in the study. Response rate was 27%. The first and second most important information sources used to choose a residency program were experts and related books (like *ketab-e-sabz*) respectively. 303(28.8%) Of participants agreed that they need information about future of their specialties of choice. The most important factors influencing selection of a program, ordered according to their importance, were tangibility of the impacts of patients treatment, types of diseases, variety in a program, previous academic extensive job opportunities.

**Conclusion:** This study showed there are various reasons to select a residency program. However information and awareness of residents about the program they chose was not sufficient. Therefore informing residents before choosing programs seems to be necessary.

**Keywords:** RESIDENCY PROGRAM SELECTION, MEDICAL RESIDENCY, INFLUENCING FACTORS, INFORMATION SOURCES.

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### Introduction

One of problems with post graduate medical education is inclination of most graduates from medicine to become specialized in different specialties, occasionally of low priority considering needs in our country. The impact of

this fact is that now general medicine degree is perceived only as a permit to start the desired residency program and unconsciously none of graduates think of general practice as a career option. There fore a great imbalance in health system specially in specialties needed for primary care medicine including family medicine, general internal medicine and general pediatrics is anticipated. (1,2). Geographical misdistribution of physicians and specialists is another major problem with our health system.

Various reasons and motives incline graduates

**Corresponding author:** Dr Ramin Mehrdad,  
Occupational Medicine Department, Tehran University Of  
Medical Sciences and Health Services  
Fax: +98-21-66405588  
E.mail: [mehrdadr@sina.tums.ac.ir](mailto:mehrdadr@sina.tums.ac.ir)

from medicine to choose a residency program to become specialized. These factors can be divided into two groups of intrinsic factors like age, gender, ability for academic achievements, interests, self expectations, personal characteristics and life style, and intrinsic factors like influences of family, teachers, role models, friends, colleagues and environment. (3) Recognition of how influencing the factors are on graduates' inclination to choose a special program is necessary to plan for optimal distribution of them among different programs according to their priority. Awareness of factors involved in choosing a place to practice is also helpful to plan more appropriately and accurately for a geographically balanced distribution.

As residency program selection is a "dual" selection, which means that every applicant have to choose both the program, university selection is a factor which influences program selection and chance to be accepted in a special program. Condition and facilities of universities to offer a special program draw most of applicants for that program to those universities.

Therefore awareness of reasons why a university is chosen to continue education will lead to better planning for development of that university and optimal distribution of main forces among different regions as well.

Finally, program selection and deciding about future is a hard and stressful work for applications. Recognition of influencing factors, interests and motives to select programs, development of special programs to introduce different specialties to applicants, and offering proper and accurate guidance to them could be steps to relieve the applicants' stress, proper selection of programs and train qualified physicians in specialties needed for primary health care to solve related problems of society.

## Methods

This study had two stages. First stage was a qualitative study in form of a focus group and the second was a quantitative cross-sectional study. Medical residents and interns were selected for the first stage. In the second the

questionnaire was sent to all residents of all medical universities in Iran in years 1382 and 1383. the questionnaire includes several parts in form of open-ended and closed questions to obtain demographic information and data about factors influencing on program selection.

Content of the main questionnaire was extracted from what had been obtained from the focus group. Then experts and consultants got involved to make the final reforms to the questionnaire. Having validity and reliability been assessed the final questionnaire was formed. The questionnaire was sent and received by free mail in cooperation with educational deputy of universities.

Data were gathered and Analyzed. Descriptive data like frequency, relative frequency, mean, standard deviation and range were calculated.

Chi-square, one way ANOVA, and post Hoc test, Bonferroni type, were used to study the relationships between different variables.

As the questionnaires were sent by mail, one of the major restrictions was receiving the sent questionnaires. Contacts were made with educational deputies of universities, and the study was explained to them in order to follow the sent questionnaires cooperatively.

Moreover the free mail with written the postal address on questionnaires was used to make works easier. An additional page of primary explanations was attached to the main questionnaire to attract attention of respondents to contribute better.

Names of respondents were not written on any of the questionnaires.

Information gathered were kept confidential. Educational deputies which had contributed cooperatively will be appreciated and the final report of the study will be sent to them.

## Results

10 medical residents and interns were selected for the first stage of the study. In the second stage response rate was 27%. 1052 medical residents from all over Iran participated in this stage including 344 (32.7%) females and 703 (66.8%) males. Mean age ( $\pm 5D$ ) was  $31.9 \pm 3.6$

years. 267 (25.4%) were single, 754 (70.8%) were married, 5 were divorced and marital status of others were unknown.

631 (60.1%) were from universities type I, 400 (37.9%) were from universities type II. 294 (27.9%) were in the first year of residency program, 275 (26.1%) were in the second year of residency program, 283 (26.9%) were in the third year of residency programs, 177 (16.8%) were in the fourth year of residency programs, 7 (0.7%) were in the fifth year of residency program, and 1 (0.1%) was in the sixth year of a residency program.

Table 1 shows frequency distribution of the time applicants decided which program to choose 355 (33.7%) of participants used related books, 418 (39.7%) consulted experts, 81 (7.7%) used other means and 24 (2.3%) used all means to select their residency programs.

**Table 1.** Frequency distribution of time of decision making about program of choice by participant residents

Time of decision making about program selection \ Statistical indicators	Numbers	Percent
At the time of entering the medical faculty	63	6
Basic medical science stage	9	0.9
Clerkship stage	43	4.1
Internship	182	17.3
After finishing obligatory service	301	28.6
After being informed about their results on residency exam	437	41.5
Unknown	17	1.6
Sum	1052	100

303 (28.8%) of participants needed more information about future of practice in specialties and 481 (45.7%) stated that their information and attitude about the program they had selected at the time of selection was in low to moderate accordance with the real program.

To determine the influencing rate of each factor, residents were asked to score the influence of them from I (no influence) to 5 (very high). Then mean was calculated. To the Table 2 shows, tangibility of impacts of patients treatment (3.41%), type of discusses (3.31%) and variety in the program (3.26%) are the important influencing factors. Suffering residents themselves or their family members from a special disease (1.49%), previous research experiments in field of the program (1.92%) and parents' recommendations (2.14%) were the least important factors in program selection.

Table 3 shows relationships between residents perception of programs and their information and attitude at the time they selected programs.

## Discussion

Results show that the most influencing factors on selection of residency programs by residents under study, which are ranked according to the strength of influence, are tangibility of impacts of patients treatment in the selected specialty, types of diseases which will be encountered in future career of selected specialty, previous experiences of acute and emergency problems related to selected specialty during undergraduate education, previous experiences about influential educators from the selected specialty during undergraduate medical education, dominance of skills done by hands in the selected, previous experiences about patients and mastery in problems related to the selected specialty during clerkship and internship.

Richard et al showed that factors influencing residency program selection are demographic characteristics of applicants, generally their experiences during undergraduate education and their personal characteristics. They also stated that observation of specialists' lives and their work style by medical students influences their program of choice. Job dissatisfaction may distort physicians' images of specialties. (12)

Several studies categorized influencing factors on selection of specialties needed for primary health care and other specialties according to lifetime experiences of students: experiences of

students before entering the faculty, experiences of their undergraduate medical education and their hesitations during their under graduate medical education, and finally visions and lifestyles students acquired during their undergraduate medical education (4,5,11).

Henry (1992) in this study introduced the following factors as reasons to select a special residency program by medical students (2).

1- Background factors like gender, parents' jobs, social and family context, nationality, and marital status.

2- Personal and motivational factors like physicians' expectations about patients, team working, decision making and self-sufficiency.

3-Educational system factors like recommendations of guides, selection system, method of exams, students' images of other specialties.

4- Life factors like expenses, opportunity to have a personal office and ability to immigrate.

5- work conditions like place of residency programs, types of hospitals, setting work hours it's impact on life and accessible resources and facilities.

6- Intrinsic differences among specialties: rate of patients to be visited, techniques and art which are required (2).

Study by Tracy, et al (1989) showed that the quality of selected programs and students experiences of income and lifestyle were more important factors in selection of residency program. Factors like age, gender, low-social class were also influencing on selecting residency programs (13). Study by lee, et al (1995) about influencing factors on choosing psychiatry residency program showed that the most stimulating factors were logical reasons, life style, impact of psychology on treatment of diseases and the opportunity to use hidden aspects of humanity.

On the Contrary, residents of programs except psychiatry stated that willingness to apply what they had learnt in medicine and their believe that psychiatry won't heal the body are reasons they hadn't chosen that program. (14).

Burack, et al (1997) stated variety in activities and patients' disease, educators, roles, patients encounter, culture of medical faculty as factors

influence on selection of primary care program. On the opposite side, factors influence non primary care programs were life style, free time, adventurous life, sprigtail matters, emergency treatments and their impacts and their impacts and the opportunity to try different methods (15). Results of our study showed that the most important information source used by residents to choose a program were consultation with experts. The most information needs were information about future of career in specialty practice.

Henry (1992) in a national study of medical students from year to 3 in Glasgow showed that residents didn't have 80% of information needed to select their specialty programs and 52% of students stated that they didn't information in their faculties. 96% of the students mentioned residents and physicians as the most important information sources (2).

In this study most of residents were male. Redman, et al (1995) showed that females were less willing to continue their education in residency programs and they prefer general practice as their career (13).

In this study, information and attitudes of most of residents at the time of program selection were in moderate accordance with the real program.

Richard (2001) showed that some of students were intrinsically willing to be trained in a special program. Others put side their primary inclinations and reached new images of specialties or found what hadn't noticed before. Others might have new self perceptions in accordance with their interests. Residents' abilities and needs are doubtfully revealed at the time of selection. News filter of universities may probably distort the image of a specialty as well (12).

This study showed that residency program selection is under influence of various factors and awareness and perception of applicants about their selected program isn't sufficient.

Information sources are restricted and informing applicants before selection of programs is necessary.

**Table 2.** Frequency distribution of time of decision making about program of choice by participant residents

Statistical indicators	Numbers	Mean	Standard deviation
<b>Time of decision making about program selection</b>			
Marital status	1004	2.62	1.48
Parents recommendation	1007	2.14	1.22
Spouse recommendation	935	2.47	1.44
Friend (physician) recommendation	1004	2.50	1.25
Experiences of acute and emergency problems during under graduate medical education	1009	3.22	1.17
Experiences about influential educators from the considered specialty during under graduate medical education	1008	2.91	1.25
Experiences about residents of the considered specialty during under graduate medical education	1004	2.91	1.25
Suffering from a special disease (the applicant or his/her family members)	1007	1.49	0.9
Experiences about patients during under graduate medical education	1009	2.76	1.24
Mastery in problems related to the considered specialty in clerkship or internship	1009	2.76	1.24
Considering a special town or city to continue education	1005	2.76	1.52
Considering a special university to continue education	1002	2.55	1.43
Lack of possibility of hesitating in diagnosis and treatment of diseases related to the considered specialty	991	2.53	1.20
Previous research experiences in the filed of considered specialty	1008	1.92	1.06
Having enough free time to allow dealing with personal matter in the considered specialty	1008	2.45	1.34
Extensive job opportunities in the considered specialty	1016	3.06	1.21
Income of practicing in the considered specialty	1009	2.90	1.18
Mental challenges in the considered specialty	1002	2.74	1.16
Dominancy of skills done by hands in the considered specialty	1012	2.87	1.35
Job satisfaction of residents in the considered specialty	1009	2.60	1.17
Treatment of patients as a whole person in the considered specialty	983	2.85	0.17
Development of the considered specialty in Iran	1013	2.85	1.14
Diversity in the considered specialty	1010	3.26	1.19
Team working in the considered specialty	1007	2.41	1.08
High stressful situations in the selected specialty	1008	2.92	1.40
Tangible impacts of patients treatment in the considered specialty	1005	3.41	1.25
Types of diseases will be encountered in future career in the considered specialty	1006	3.31	1.13
Years of considered residency program	1010	2.63	1.20
Prestige of the considered specialty	1009	2.92	1.25



**Table 3.** Relationship between the residents current perception of specialty programs and their information and attitude at the time of program selection

Time of decision making about program selection	Statistical Indicators	Numbers	Mean	Standard Deviation
Radiotherapy		14	3.14	1.23
Dermatology		37	3.81	0.88
Radiology		40	3.45	0.81
Anesthetics		82	3.00	1.09
Pathology		33	3.30	0.85
Internal medicine		120	3.67	0.82
Pediatrics		104	3.62	0.95
Gynecology		161	3.53	0.95
Surgery		43	3.72	0.77
Orthopedics		65	3.46	0.92
ENT		40	3.28	0.85
Infectious diseases		35	3.43	0.85
Neurosurgery		22	3.77	1.07
Psychiatry		61	3.61	0.74
Neurology		22	3.82	0.50
Urology		41	3.73	0.74
Ophthalmology		46	3.41	0.88
Others		35	3.37	0.69

One ANOVA test was used to compare ( $P < 0.001$ ,  $F = 3.19$ ) post Hoc test, Bonferroni type, was used to compare different groups. According to this, anesthetics residents group significantly different from residents of dermatology, internal medicine, pediatrics, gynecology, surgery, psychiatry, neurology and urology.

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