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A TIME-TREND ANALYSIS OF INTENDED CAREER CHOICE FOR FAMILY MEDICINE AMONG CROATIAN MEDICAL STUDENTS

ANALIZA ČASOVNEGA TRENDA PREDVIDENE IZBIRE POKLICA ZDRAVNIK SPECIALIST DRUŽINSKE MEDICINE MED HRVAŠKIMI ŠTUDENTI MEDICINE

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Abstract

Aim: *To gain insight into the trend of career choice for family medicine in Croatia in recent years.*
Methods: *Six surveys were performed in the academic years 2006/07-2011/12 at the University of Zagreb, School of Medicine. Altogether, 1140 6th year students participated. They anonymously completed a questionnaire containing questions on desired future specialisation as well as other selected characteristics (e.g. gender, desired area and place of work, motivation to study medicine, etc.). Binary logistic regression was used to determine unadjusted and adjusted trends.*
Results: *After adjustment for selected factors, the relationship between observed outcome and the year of observation showed an evident decreasing trend. The odds for intention to specialise in family medicine were in the academic year 2006/2007 1.43-times higher than in the year 2007/2008 (p=0.412), 1.85-times higher than in the year 2008/2009 (p=0.168), 2.38-times higher than in the year 2009/2010 (p=0.051), 2.63-times higher than in the year 2010/2011 (p=0.027) and 3.85-times higher than in the year 2011/2012 (p=0.003).*
Conclusions: *The results of the present study offer evidence that Croatia is experiencing a constantly decreasing trend of career choice for family medicine in recent years. It is obvious that final year medical students are not very much interested in working as family practitioners. At the same time, demand for family practitioners in Croatia is increasing. Both academic and professional societies have a social responsibility to reorient the health care system and medical curricula towards comprehensive primary health care in which family medicine has a key role.*

Key words: medical students, career choice, family medicine, Croatia

Izvirni znanstveni članek
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Izvleček

Izhodišče: *Pridobitev vpogleda v trend izbire poklica zdravnik specialist družinske medicine na Hrvaškem v zadnjih letih.*
Metode: *V študijskih letih 2006/7–2011/12 je bilo na Medicinski fakulteti Univerze v Zagrebu opravljenih šest raziskav, v katerih je skupaj sodelovalo 1.140 študentov 6. letnika. Ti so anonimno izpolnili vprašalnik z vprašanji o želeni prihodnji specializaciji in drugih izbranih karakteristikah (npr. spol, želeno področje in kraj dela, motivi za študij medicine itn.). Za določitev neprilagojenih in prilagojenih trendov je bila uporabljena binarna logistična regresija.*
Rezultati: *Po prilagoditvi izbranih dejavnikov je bil pri povezavi med opazovanim rezultatom in letom opazovanja ugotovljen jasen padajoči trend. Verjetnost izbire specializacije iz družinske medicine je bila v študijskem letu 2006/2007 1,43-krat večja kot v letu 2007/2008 (p = 0,412), 1,85-krat večja kot v letu 2008/2009 (p = 0,168), 2,38-krat večja kot v letu 2009/2010 (p = 0,051), 2,63-krat večja kot v letu 2010/2011 (p = 0,027) in 3,85-krat večja kot v letu 2011/2012 (p = 0,003).*
Zaključki: *Rezultati te raziskave dokazujejo, da je v zadnjih letih na Hrvaškem prisoten stalno padajoči trend pri izbiri poklica zdravnik specialist družinske medicine. Očitno je, da študenti zadnjega letnika medicine niso*

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preveč zainteresirani za delo zdravnika družinske medicine. Hkrati pa se na Hrvaškem povečuje potreba po tovrstnih zdravnikih. Tako akademska kot strokovna združenja so družbeno odgovorna za preoblikovanje sistema zdravstvenega varstva in študijskih programov medicine v celovito primarno zdravstveno varstvo, v katerem ima družinska medicina ključno vlogo.

Ključne besede: študenti medicine, izbira poklica, družinska medicina, Hrvaška

1 INTRODUCTION

Family medicine, being the base of primary health care, is of special importance for every health care system (1-3), especially where it functions as the "gate keeper" specialty that directs patients to other clinical specialists, if needed. For that reason, for efficient functioning of the whole system, it is vital to have family practitioners who are professional, understand the problems in primary health care and know how to professionally handle them out (1, 2). The approach to the patient and relationship between the patient and his/her family practitioner as well as the methodology of work and patient's demands are fairly different from the hospital/clinical environment; family medicine is expected to have certain personality characteristics of practitioners working in this field (3). Career choice as well as choice of further future specialty training are important professional decisions in the life of a young person (4). Factors influencing their motivation when choosing medical career as a professional commitment are numerous and diverse (5-10), including the educational system that often does not depict the real work of certain specialists, as in clinical hospitals predominantly sophisticated health care is performed (11). The reasons why medical students choose careers in family medicine include medical school characteristics (12, 13), personal interactions (14, 15), personal fit and workforce factors, job opportunities, longitudinal care and societal needs (16, 17). Unfortunately, several countries around the world are experiencing a decreasing trend in career choice for family medicine (18-32), although World Health Organisation increasingly stresses the importance of the primary health care level (33), where family medicine is of the utmost importance.

Croatia is a South Eastern European (SEE) country in transition that has experienced, in the past two decades, many political and economic changes, including changes in the health sector (34, 35). The health care system was, like in other SEE as well as in Central and Eastern Europe countries, originally predominantly oriented towards hospital treatment (36-38). Consequently, it became very expensive, and a reorientation became inevitable. The main changes were directed towards the introduction of market principles and privatisation of the health sector (35, 39). In the new concept of health care system, an important role should be played by a family doctor with a private concession. However, the process is rather slow, and according to the data from the Croatian National Institute for Public health for the year 2011 in Croatia 58.5% of medical doctors still work as clinical specialists in hospitals, while prospectively 15.0% work as family medicine private practitioners (in concession) and 9.2% as family practitioners in health centres (26). The results of a study that examined the specialty preferences among Zagreb University School of Medicine students additionally showed that the three most desirable specialties were internal medicine, paediatrics and surgery, while family medicine was in sixth place (40). However, none of the studies in Croatia (or in the wider SEE region) have yet tried to make a comprehensive assessment of the trends of career choice for family medicine in students of medicine yet.

Aiming at getting insight into the trend of career choice for family medicine in Croatia, the objective was to examine the trend of percent of students who opted for this specialty, adjusted for selected characteristics in recent years.

2 METHODS

2.1 Participants and data collection methods

The series of cross-sectional surveys were performed in the academic years 2006/07 to 2011/12 at the University of Zagreb, School of Medicine. Participants were six consecutive generations of 6th year students. Altogether, 1294 students were invited to participate in the study.

A questionnaire, which was developed about a decade ago by the teaching staff of the Andrija Stampar School of Public Health of University of Zagreb, School of Medicine, was used as a study instrument. It was anonymously completed by participants. The data were collected during the regular course "Organisation and management in health care".

2.2 Observed outcome

The basic information on observed outcome was collected by a question "Which specialisation you would like to choose, if possible". The students could

choose between 16 options: 1=do not know yet, 2=family medicine/general practice, 3=epidemiology, 4=public health, 5=surgery, 6=gynaecology, 7=otorinolaringology, 8=ophthalmology, 9=internal medicine, 10=paediatrics, 11=geriatrics, 12=neurology, 13=psychiatry, 14=dermatology, 15=radiology and 16=something else. For the purpose of analysis, options offered were grouped into following categories: 1=family medicine/general practice (option 2), 2=clinical specialties (options 5 to 15), 3=public health specialties (options 3 and 4) and 4=other options (option 16). For the purpose of multivariate analysis, an additional form of observed outcome was created: intention to specialise in family medicine (0=no; 1=yes).

2.3 Statistical analysis

Firstly, the analysis of distribution of desired specialties and other employment options was done among all participants for the entire observation period, including those who did not express their desire for professional career yet. From the analyses that followed, this group was excluded.

Secondly, the observed outcome was univariately related to the year of observation, gender (1=male, 2=female), place of birth (1=large city, 2=middle sized town, 3=village), desired area of work (1=physician in the countryside, 2=medical practitioner in town, 3=hospital doctor, 4=other: researcher, doctor in the laboratory, public health worker, health politician) and desired place of work (1=Zagreb, 2=area where they grew up, 3=other parts of Croatia, 4=abroad (developed western countries or elsewhere abroad)) as well as motivation to enter the School of Medicine, relevance of selected medical school curriculum subjects for future work in the healthcare sector and their opinion on the reputation of family practitioner. Two dimensions of motivation to enter the School of Medicine, being internal and external, were assessed. Three elements of internal (to help those who suffer, to help our nation become healthier, to learn successfully to cure) and three elements of external motivation (to achieve a respectful and secure profession, to have enough time for other life interests, to earn a lot of money and to live well) were assessed on a 5-level scale (5=highest motivation, 1=lowest motivation). The sum of answers to both sets of questions on motivation as well as the total sum and the percentage of the total sum that could be attributed to internal motivation were calculated. Finally, a binary variable as to whether the internal motivation contributed 50% or more to total motivation (0=less than 50% 1=50% or more) was designed. The opinion on the reputation of family practitioner was assessed on a 6-level scale (6=the most respectful and prestigious, 1=the least respectful and prestigious). For the purpose of analysis, the levels were grouped into 3 categories of reputation: 1=very low or low (levels 1 and 2), 2=medium (levels 3 and 4) and 3=high or very high (levels 5 and 6). The relevance of selected medical school curriculum subjects (biochemistry, anatomy, clinical subjects, public health subjects, medical ethics) was also assessed on a 5-level scale (5=the most important, 1=the least important). The complex information encompassed in 5 separate variables was compressed into a new binary variable as to whether the student assigned high or very high relevance to all subjects or at least to clinical and public health subjects and medical ethics or not (0=no, 1=yes). The strength of the association between observed outcome and just described characteristics of participants was estimated by using a chi-square test.

Finally, in the group of those participants who opted for family medicine/general practice or one of clinical specialties, logistic regression (direct method) was used to estimate the strength of the association between observed outcome and academic year of observation adjusted to other selected characteristics of participants using a multivariate method. The dummy variables were created for all independent variables considered in the multivariate analysis. The simple method was applied (the group with the lowest frequency of observed outcome was assigned as the reference group except in academic year of observation where the first year of observation was the reference category). Before defining the full multivariate model, the basic models with only one independent variable were defined.

In all statistical tests, a p-value of 0.05 or less was considered significant.

Statistical analyses were carried out using the SPSS 17.0 (SPSS Inc., Chicago, IL, USA) statistical software package.

2.4 Ethical aspects

The study was entirely conducted according to the ethical principles and participants' confidentiality.

3 RESULTS

3.1 Description of the study group

1140 students (2006: 116 or 10.2%; 2007: 164 or 14.4%; 2008: 185 or 16.2%; 2009: 219 or 19.2%; 2010: 200 or 17.5%; 2011: 256 or 22.5%) participated in the study (response rate 88.1%).

Among participants, there were 421 (37.2%) males and 712 (62.8%) females. 559 (49.5%) came from a large city, 512 (45.3%) from a middle sized town and 59 (5.2%) from a village.

Out of 1140 respondents, 899 (78.9%) had indicated their specialty of choice, while 241 still haven't made up their mind on future specialisation. The most popular specialties in the entire observation period were internal medicine and surgery, while family medicine was in third place (Table 1).

Table 1. *The distribution of frequency of desired future career choices, reported by 6th year students of the School of Medicine, University of Zagreb, in the academic years 2006/07-2011/12.*

Tabela 1. *Porazdelitev pogostosti izbire želenega poklica v prihodnosti, ki so jo navedli študenti 6. letnika Medicinske fakultete Univerze v Zagrebu, v študijskih letih 2006/07–2011/12.*

Medical specialty/ Medicinska specializacija	N	%
Internal medicine/ Interna medicina	164	14.4
Surgery/Kirurgija	150	13.2
Family medicine/General practice/ Družinska/ splošna medicina	123	10.8
Gynaecology/Ginekologija	92	8.1
Paediatrics/ Pediatrija	87	7.6
Neurology/ Neurologija	40	3.5
Psychiatry/ Psihiatrija	36	3.2
Otorinolaringology/ Otorinolaringologija	32	2.8
Ophthalmology/Oftalmologija	32	2.8
Dermatology/Dermatologija	19	1.7
Radiology/ Radiologija	19	1.7
Public health/ Javno zdravje	10	0.9
Epidemiology/Epidemiologija	8	0.7
Geriatrics/ Geriatrija	1	0.1
Something else*/ Drugo*	86	7.5
Don't know/ Ne vem	241	21.1

*pharmaceutical company (4.4%), science (2.1%), others (1.0%) / *farmacevtska družba (4,4 %), znanost (2,1 %), drugo (1,0 %)

3.2 Results of univariate analysis

Among 899 participants who had already expressed their desire for professional career, there were 123 (13.7%) who opted for family medicine/general practice, 672 (74.7%) who opted for one of the clinical specialties, 18 (2.0%) who opted for one of the public health specialties and 86 (9.6%) who opted for other options. The differences in distribution between different groups of students according to selected characteristics are presented in Table 2. Statistically highly significant differences were found within the categories of gender (females had a higher preference for family medicine than males), desired area of work (those who expressed desire for working as physicians in the countryside had by far the highest preference for family medicine) and desired place of work (those who expressed preparedness to work in the area where they grew up or in other parts of Croatia had much higher preference for family medicine than those who expressed preparedness to work in Zagreb, capital of Croatia) (Table 2). Statistically significant differences were also found in rating of relevance of selected medical school curriculum subjects (those who assigned high or very high relevance to all subjects or at least to clinical and public health subjects and medical ethics had higher preference for family medicine than those who assigned high or very high relevance only to clinical subjects or even to none of the subjects) (Table 2). Close to statistical significance was also accounted for by the difference between years of observation (the overall decreasing trend in frequency of those students who opted for family medicine/general practice was observed, with the exception of the academic year 2010/2011) and in motivation (those students in which internal motivation contributed 50% or more to total motivation for study selection had a higher preference for family medicine than those in which external motivation prevailed) (Table 2). Differences in place of birth and in rating of reputation of family practitioners were not statistically significant.

Table 2. *The distribution of frequency of desired specialties and other employment options in different groups of 899 medical students who have already expressed their desire for professional career participating in the survey performed at the University of Zagreb School of Medicine, in the academic years 2006/07-2011/12.*

Tabela 2. *Porazdelitev pogostosti želenih specializacij in drugih možnosti zaposlitve v različnih skupinah 899 študentov medicine, ki so že izrazili svojo željo glede poklicne kariere in so sodelovali v raziskavi, ki je bila v študijskih letih 2006/2007–2011/12 opravljena na Medicinski fakulteti Univerze v Zagrebu.*

			Medical specialty/group of specialties/ Medinska specializacija/skupina specializacij				
			Family medicine/ general practice/ Družinska/ splošna medicina	Clinical specialties/ Klinične specializacije	Public health specialties/ Specializacije iz javnega zdravja	Other options/ Druge možnosti	
Characteristic/ Karakteristika		N	%	%	%	%	p
Year of observation/ Leto opazovanja	2006/2007	101	21.8	65.3	3.0	9.9	0.081
	2007/2008	134	19.4	73.9	1.5	5.2	
	2008/2009	141	12.1	74.5	2.1	11.3	
	2009/2010	153	11.8	77.1	0.7	10.5	
	2010/2011	158	14.6	74.7	1.3	9.5	
	2011/2012	212	8.0	78.3	3.3	10.4	
Gender/ Spol	Male/ Moški	332	8.4	75.0	3.3	13.3	<0.001
	Female/ Ženski	562	16.7	74.6	1.2	7.5	
Place of birth/ Kraj rojstva	Large city/ Večje mesto	441	12.0	76.6	1.8	9.5	0.688
	Middle sized town/ Srednje veliko mesto	406	15.0	72.9	2.0	10.1	
	Village/ Vas	43	16.3	72.1	4.7	7.0	
Desired area of work/ Želeno področje dela	Physician in the country side/ Zdravnik na podeželju	46	60.9	34.8	2.2	2.2	<0.001
	Medical practitioner in town/ Zdravnik v mestu	183	34.4	60.1	0.0	5.5	
	Hospital doctor/ Bolnišnični zdravnik	609	4.9	84.7	0.8	9.5	
	Other* / Drugo*	54	3.7	48.1	20.4	27.8	
Desired place of work/ Želeni kraj dela	Zagreb	515	8.7	80.6	1.4	9.3	<0.001
	Area where they grew up/ Področje, kjer so odraščali	220	22.3	69.1	1.4	7.3	
	Other parts of Croatia/ Drugi deli Hrvaške	63	33.3	58.7	4.8	3.2	
	Abroad/ Tujina	89	7.9	66.3	4.5	21.3	
% of internal motivation within the total motivation/ % notranje motivacije od celotne motivacije	Less than 50%/ Manj kot 50 %	346	13.0	74.3	0.9	11.8	0.067
	50% or more/ 50 % ali več	546	14.3	74.9	2.7	8.1	

Reputation of family practitioners/ Ugled družinskih zdravnikov	Very low or low/ Zelo nizek ali nizek	458	10.9	77.1	2.0	10.0	0.310
	Medium/ Srednji	352	16.2	73.0	2.3	8.5	
	High or very high/ Visok ali zelo visok	81	18.5	70.4	1.2	9.9	
High relevance assigned to all subjects#/ Velik pomen pripisan vsem predmetom#	No/ Ne	772	13.2	75.3	1.7	9.8	0.038
	Yes/ Da	76	18.4	72.4	5.3	3.9	

Legend/ Legenda: * - researcher, doctor in the laboratory, public health worker, health politician; # - high relevance assigned to all subjects or at least to clinical and public health subjects, and medical ethics/ * - raziskovalec, zdravnik v laboratoriju, delavec v javnem zdravstvu, politik na področju zdravja; # - velik pomen pripisan vsem predmetom ali vsaj predmetom s področja kliničnega in javnega zdravja ter zdravniški etiki.

3.3 Results of multivariate analysis

Summary results of basic logistic regression models of association between intention to specialise in family medicine and each of selected explanatory factors in the group of those participants who opted for family medicine or one of the clinical specialties are presented in Table 3. The results were similar to the results of univariate analysis in gender, place of birth, desired area of work and desired place of work. On the other side, rating of relevance of selected medical school curriculum subjects and motivation to study medicine were no longer significantly associated with observed outcome, while in the year of observation and rating of reputation of family practitioners the situation was the other way around (Table 3).

Table 3. *Summary results of basic logistic regression models of association between intention to specialise in family medicine and each of selected explanatory factors in medical students who have already expressed their desire for professional career participating in the survey performed at the University of Zagreb School of Medicine, in the academic years 2006/07-2011/12.*

Tabela 3. *Povzetek rezultatov osnovnih modelov logistične regresije za ugotavljanje povezave med namero po specializaciji iz družinske medicine in vsakim od izbranih pojasnjevalnih dejavnikov pri študentih medicine, ki so že izrazili svojo željo glede poklicne kariere in so sodelovali v raziskavi, ki je bila v študijskih letih 2006/07–2011/12 opravljena na Medicinski fakulteti Univerze v Zagrebu.*

				95% C.I. limits for OR Meje 95 % IZ za RV			
Explanatory factor/ Pojasnjevalni dejavnik	N		OR/RO	Lower/ Spodnja	Upper/ Zgornja	p	p_{model}
Year of observation/ Leto opazovanja	795	2006/2007	1.00				0.011
		2007/2008	0.79	0.41	1.51	0.471	
		2008/2009	0.49	0.24	0.98	0.044	
		2009/2010	0.46	0.23	0.91	0.027	
		2010/2011	0.58	0.30	1.13	0.110	
		2011/2012	0.31	0.15	0.61	0.001	
Gender/ Spol	790	Male/ Moški	1.00				0.003
		Female/ Ženske	2.00	1.27	3.13	0.003	
Place of birth/ Kraj rojstva	786	Large city/ Večje mesto	1.00				0.356
		Middle sized town/ Srednje veliko mesto	1.31	0.88	1.96	0.180	
		Village/ Vas	1.44	0.60	3.44	0.411	

Desired area of work/ Želeno področje dela	791	Hospital doctor/ Bolnišnični zdravnik	1.00			<0.001
		Physician in the country side/ Zdravnik na podeželju	30.10	14.71	61.58	<0.001
		Medical practitioner in town/ Zdravnik v mestu	9.85	6.09	15.94	<0.001
		Other*/ Drugo*	1.32	0.30	5.84	0.712
Desired place of work/ Želeni kraj dela	785	Zagreb	1.00			<0.001
		Area where they grew up/ Področje, kjer so odraščali	2.97	1.91	4.64	<0.001
		Other parts of Croatia/ Drugi deli Hrvaške	5.23	2.82	9.71	<0.001
		Abroad/ Tujina	1.09	0.47	2.54	0.834
% of internal motivation within the total motivation/ % notranje motivacije od celotne motivacije	789	Less than 50%/ Manj kot 50 %	1.00			0.675
		50% or more/ 50 % ali več	1.09	0.73	1.62	0.675
Reputation of family practitioners/ Ugled družinskih zdravnikov	789	Very low or low/ Zelo nizek ali nizek	1.00			0.046
		Medium/ Srednji	1.57	1.04	2.36	0.033
		High or very high/ Zelo visok ali visok	1.86	0.98	3.53	0.058
High relevance assigned to all subjects#/ Velik pomen pripisan vsem predmetom#	752	No/ Ne	1.00			0.243
		Yes/ Da	1.45	0.78	2.70	0.243

Legend/ Legenda: OR – odds ratio; C.I. – confidence interval; * - researcher, doctor in the laboratory, public health worker, health politician; # - high relevance assigned to all subjects or at least to clinical and public health subjects, and medical ethics/ RO – razmerje obetov; IZ – interval zaupanja; * - raziskovalec, zdravnik v laboratoriju, delavec v javnem zdravstvu, politik na področju zdravja; # - velik pomen pripisan vsem predmetom ali vsaj predmetom s področja kliničnega in javnega zdravja ter zdravniški etiki

Results of full logistic regression model are presented in Table 4. After adjustment for all selected explanatory variables, the relationship between intention to specialise in family medicine and the year of observation remained statistically significant. Even more, it was constantly decreasing (the odds for intention to specialise in family medicine were in the academic year 2006/2007 1.43-times higher than in the year 2007/2008, 1.85-times higher than in the year 2008/2009, 2.38-times higher than in the year 2009/2010, 2.63-times higher than in the year 2010/2011 and 3.85-times higher than in the year 2011/2012). The relationship remained also statistically significant in gender, desired area of work and desired place of work (Table 4).

Table 4. *Results of full logistic regression model of association between intention to specialise in family medicine and all selected explanatory factors in 728 medical students who have already expressed their desire for professional career participating in the survey performed at the University of Zagreb, School of Medicine, in the academic years 2006/07-2011/12.*

Tabela 4. *Rezultati popolnega modela logistične regresije za ugotavljanje povezave med namero po specializaciji iz družinske medicine in vsemi izbranimi pojasnjevalnimi dejavniki pri 728 študentih medicine, ki so že izrazili svojo željo glede poklicne kariere in so sodelovali v raziskavi, ki je bila v študijskih letih 2006/07–2001/12 opravljena na Medicinski fakulteti Univerze v Zagrebu.*

Explanatory factor/ Pojasnjevalni dejavnik		OR/RO	95% C.I. limits for OR Meje 95 % IZ za RV Lower/ Spodnja	Upper/ Zgornja	p
Year of observation/ Leto opazovanja	2006/2007	1.00			
	2007/2008	0.70	0.31	1.63	0.412
	2008/2009	0.54	0.23	1.29	0.168
	2009/2010	0.42	0.18	1.00	0.051
	2010/2011	0.38	0.16	0.90	0.027
	2011/2012	0.26	0.10	0.62	0.003
Gender/ Spol	Male/ Moški	1.00			
	Female/ Ženski	2.30	1.28	4.12	0.005
Place of birth/ Kraj rojstva	Large city/ Večje mesto	1.00			
	Middle sized town/ Srednje veliko mesto	1.05	0.63	1.75	0.854
	Village/ Vas	1.05	0.34	3.24	0.938
Desired area of work/ Želeno področje dela	Hospital doctor/ Bolnišnični zdravnik	1.00			
	Physician in the country side/ Zdravnik na podeželju	29.55	12.33	70.80	<0.001
	Medical practitioner in town/ Zdravnik v mestu	10.14	5.93	17.33	<0.001
	Other*/ Drugo*	1.47	0.31	7.01	0.626
Desired place of work/ Želeni kraj dela	Zagreb	1.00			
	Area where they grew up/ Področje, kjer so odraščali	1.83	1.04	3.23	0.037
	Other parts of Croatia/ Drugi deli Hrvaške	5.51	2.48	12.28	<0.001
	Abroad/ Tujina	1.91	0.72	5.08	0.193
% of internal motivation within the total motivation/ % notranje motivacije od celotne motivacije	Less than 50%/ Manj kot 50 %	1.00			
	50% or more/ 50 % ali več	1.12	0.68	1.86	0.654
Reputation of family practitioners/ Ugled družinskih zdravnikov	Very low or low/ Zelo nizek ali nizek	1.00			
	Medium/ Srednji	1.53	0.92	2.55	0.103
	High or very high/ Visok ali zelo visok	1.18	0.50	2.78	0.705

High relevance assigned to all subjects#/ Velik pomen pripisan vsem predmetom#	No/ Ne	1.00			
	Yes/ Da	1.45	0.67	3.15	0.349

Legend/ Legenda: OR – odds ratio; C.I. – confidence interval; * - researcher, doctor in the laboratory, public health worker, health politician; # - high relevance assigned to all subjects or at least to clinical and public health subjects, and medical ethics/ RO – razmerje obetov; IZ – interval zaupanja; * - raziskovalec, zdravnik v laboratoriju, delavec v javnem zdravstvu, politik na področju zdravja # - velik pomen pripisan vsem predmetom ali vsaj predmetom s področja kliničnega in javnega zdravja ter zdravniške etike

4 DISCUSSION

The most important result of our study is that Croatia is experiencing a drastically decreasing trend of career choice for family medicine in recent years. This finding is to a certain extent similar to the findings of other similar studies around the world (21-32). Where the reasons for this constant decrease lie is hard to say and in-depth research of this problem is necessary. It is obvious that medical students in Croatia as well as in general are not very interested in working as family practitioners in their future career. The reasons are various. First, in Croatia there is a still present traditional public opinion about the family doctor as the administrator. Second, one cannot neglect the fact that the work of a family practitioner is very difficult, since he/she must often make responsible independent decisions in a short time. In fact, a family medicine practitioner needs to acquire, during the 4-year professional training (in Croatia professional training or specialisation in one of accredited specialties is obligatory for getting the licence to work as a medical doctor), deep knowledge, skills and professional attitudes in a number of areas. As a result, it might be that young people do not feel competent enough to take on such responsible work immediately after finishing their study (41, 42). This could explain the findings of some studies that after students experienced family medicine practice the interest in this specialty declined (4, 17). Third, the medical curriculum in Croatia is still hospital- and not community-oriented. Consequently, students of medicine in Croatia seem to find work in clinical settings more attractive. Along these traditional factors, new factors are arising from the economic and social transition. These factors are not specific only for Croatia but for many countries facing the process of economic and social transition. First, there exists uncertainty about survival on the open labour market for family practitioners (i.e. whether there will be enough people to choose him/her as his/her personal family doctor). Second, there exists uncertainty for family practitioners in their competencies to plan, conduct and manage the clinic in concession such as managing finances, ensuring holiday replacement, replacement during absence from the workplace due to sick-leave, etc. Finally, Croatian society is focused nowadays on the individual rather than the community.

Other important results of our study indicate that career choice in family medicine in Croatia is associated with gender, which is consistent with findings of other similar studies (21, 31), and desired area and desired place of work. Regarding the greater interest in family medicine among young women, it is worth mentioning that the results of several studies indicate an increased interest in specialisations with a controllable life style (less working hours per week spent at work, more free time available for personal activities and family, fewer night shifts, decreased stress and easier admissibility to work for private institutions) (9, 10). Into this cluster of specialisations, dermatology, ophthalmology, radiology, neurology, pathology and psychiatry are usually entered. Family medicine, at least in the way that it is organised in the majority of Croatia, can also be considered as a specialisation with a controllable life style since it largely appreciates the above mentioned characteristics. This could at least partially explain why female students opted for family medicine. Research on gender preference and personality attributes on specialty choice are very interesting (18-20). In fact, for female students, factors such as helping others, empathy, responsibility towards their family and employment certainty are the most important. They choose specialties where there is more contact with people and they make this specialty choice earlier. For their male colleagues, independence, resolution, presumption, income and prestige, academic career and scientific research are more important and they more often choose specialties with technology usage (20, 41). Those who choose surgery or internal medicine are more challenge motivated and they count on career promotion, while those who go for psychiatry and family medicine are more motivated by job diversity and time for their family. On the other side, the multivariate analysis showed that there were no associations with place of birth and motivation to enter the study of medicine that

were found in some other similar studies (17, 24, 25). However, it should be mentioned that this result could be biased by the fact that a large group of students who opted for other employment options (mostly in pharmaceutical companies) was excluded from the multivariate analysis. In the univariate analysis, it was shown that in this very group the external motivation is significantly more expressed than in other groups of students. There was also no association with rating of reputation of family practitioners in those participants who opted for family medicine or one of the clinical specialties. Unfortunately, it appears that influence of the appreciation of family medicine among medical doctors and in the society on choosing the specialisation among medical students has not yet been in the focus of research. Consequently, the results of the present study could not be compared with results of other studies.

The study has one major limitation, being that about 10% of those respondents who have already expressed their desire for professional career (the group which opted for public health specialties and the group which opted for other employment possibilities) were excluded. The decision of exclusion was based on the fact that both groups were rather small, especially the group of students who opted for public health specialties. Consequently, we were not able to use the politomous logistic regression as a method of in-depth analyses. Also, due to their characteristics, neither of these two groups could be combined with the other two groups. Consequently, both groups were excluded from the multivariate analyses

On the other side, this study has several very important strengths. First, it was a population study, covering a majority of a total population of students studying medicine at the biggest medical faculty in Croatia. Since students of the Zagreb School of Medicine represent 60% of all students studying medicine each year in Croatia (Rijeka School of Medicine: 100 students, Split School of Medicine: 50 students, Osijek School of Medicine: 50 students), and since they are coming to study in the capital city from all parts of the country, the results of the present study could be generalised to the whole of Croatia. This is a very important strength because the Zagreb School of Medicine is the only school of medicine that has performed such a study so far in Croatia. Second, as such it provides strong evidence for evidence based public health in the country. Finally, this study is the first one in the region that explores the trend of career choice for family medicine adjusted to several characteristics of the students. As such, it can provide very useful information for countries with similar economic and political arrangements in the region. This is even more important due to the fact that in the region only a few similar studies have been carried out (43).

The present study has important implications for public health in Croatia. Since Croatian health policy is oriented towards the development of the primary health care, demand for specialists of family medicine will certainly grow in the future. It would be very important to increase awareness among students of medicine that family medicine is an extremely important specialty. However, this will be very hard work to do, since broad reforms of the whole health sector in Croatia are needed to empower family medicine as a discipline and encourage the best students/physicians to choose this specialty. For example, a family medicine specialist should get an important role as the main coordinator in the treatment of an individual patient, while specialists in clinical specialties only the role of family medicine practitioner assistants. This would be a huge step towards reorientation from the selective to comprehensive concept of primary health care (44). Reaching this goal is still a long way off, but small steps can be made today. As a beginning, curricula should for example gradually include more content on professionalism and make students increasingly aware of the concept of social contract (45) and introduce courses like a course on family practice management. But this would be only a drop in the ocean. If Croatia truly wants to make the move to comprehensive primary health care, it will need students who would be dedicated to family medicine early in their medical educational process as well as understand the concept of comprehensive primary health care early. To achieve this, it would be necessary to make some important improvements at the very beginning of the educational process. The most important could be the introduction of assessment of the degree of empathy of candidates for entering medical studies and their communication ability. On the other hand, the authorities could make a kind of “motivation” for career choice for family medicine by supporting and promoting employment in (community oriented) family medicine. An example of practice in this regard is Cuba (46).

Although a lot of research has been already done in the field, there is still a lot of work to do. Especially quantitative data should be combined with qualitative analysis for a more complete understanding of graduating students’ career decisions, particularly why they choose (or not) family medicine as future professional work. Since the countries in the region are expressing an interest for cooperation in the field of public health education and research (47), this topic would be very important to be explored in more detail.

5 CONCLUSIONS

We can conclude that the results of the present study offer evidence that Croatia is experiencing a constantly decreasing trend of career choice for family medicine in recent years. It is obvious that final year medical students are not very much interested in working as family practitioners. At the same time, demand for family practitioners in Croatia is increasing. Both academic and professional societies have a social responsibility to reorient the health care systems and medical curricula towards comprehensive primary health care in which family medicine has a key role.

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