

Final Year Medical Students' Opinions on Internship in Croatia: All Roads Lead to Zagreb

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ABSTRACT

BACKGROUND: Medical education plays very important role in the health human resources management. The aim of this study was to investigate final year medical students' internship workplace preference, and investigate the reasons associated with their choice.

METHOD: A total of 204 out of 240 final year medical students from the Zagreb University Medical School have been surveyed. Logistic regression was used in analysis of the factors underlying workplace preference.

RESULTS

As little as 39 (19.1%) respondents wish to obtain internship outside Zagreb, Croatian capital. Logistic regression yielded a single predictor variable significantly associated with the workplace preference – student's belief that he/she would get the desired specialty (OR=0.32, 95% CI 0.12-0.86). Students who believed they would not get the desired specialty more often chose Zagreb as a preferred workplace. Several other predictor variables of academic performance and gender were not significantly associated with workplace preference.

CONCLUSION

Strong preference for Zagreb as a desired internship workplace with slightly more than two thirds of the final year medical students was established. Higher uncertainty in getting the desired specialty could be associated with student's belief in increasing their chances of finding alternative careers in Zagreb.

Key words: Intern, preference, workplace, Croatia, health system, medical student

Competing interests: none declared

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Introduction

Human resources are one of the central issues in the health system planning [1], and a major concern for both developed and developing countries [2]. Smaller, mid-level income countries that do not rely on the immigrant health workers depend on their own resources in producing qualified health workforce. Such scenarios require careful balancing of the demand and supply of health care professionals. Initial issue in this is decision is the balance between education of health professionals and their loss, due to timely loss (e.g. retirement) and incident causes (e.g. deaths, disablements, emigration, leaving medicine). Special attention has to be put into various other elements, such as demographic change and other secular trends, requiring often evaluation and re-balancing of the planning system. In its essence, a good human resource management requires a lot of evidence based information to be collected in a reliable fashion [2]. Secondly, such systems require that all human resources are carefully distributed among the desired and less desired areas of the country. However, such scenarios are difficult to obtain.

Health systems in developing countries are often used as the examples of various geographical distribution problems [3], generally indicating that graduated physicians and other health professionals mostly value highly urban, or capital areas as preferred workplaces. As a consequence, the lack of the rural and remote health workforce occurs, presenting a challenging problem in planning and delivery of the quality health care in those areas.

Despite various experiences and more or less positive examples of numerous techniques attracting physicians to less desirable areas, there is no “magic bullet” in human resources management [4]. One of the most effective ways to deal with the physician lack in the rural and remote areas indicated strong importance of targeted undergraduate medical education programmes [5]. Evaluation of this programme two decades after setting up exhibited positive effect of the tailored approach in attracting physicians to the rural areas.

Problems in maldistribution of doctors in Croatia were established a long time ago [6], and re-evaluated later [7]. The recent study on the final year medical students’ attitudes exhibited substantial degree of confusion and resignation, fuelled with serious disparities in the specialty preferences [8], which are largely incompatible with the health planning policy. To our knowledge this is the first study that investigates workplace preference of the final year medical students in Croatia.

Subjects and Methods

Design

We analyzed final year Zagreb University Medical School students’ opinions on the internship workplace preference, and factors associated with their decision. Students were surveyed during spring 2005, several months before their graduation.

Setting

Medical education system in Croatia is based on the six-year undergraduate curriculum. Internship comes after the graduation, and students freely choose the time (when they will start the internship) and internship workplace. The availability and location of the each

internship post are publicly announced in the daily press, and graduated physicians can apply for any post they find attractive. After application, physicians are interviewed and scored on the basis of undergraduate academic record (grade point average, length of study, etc.), scientific involvement and other extracurricular activities. Best-ranked applicants are accepted and start working as interns.

During a one-year internship, interns have to complete 18 rotations with major medical subjects (both clinical and public health subjects). The interns freely choose the sequence of rotations, while the Ministry of Health and Welfare defines the duration and programme of each rotation. After completed internship, physicians are required to take registration exam, after which they can register at the Croatian Medical Chamber and practice medicine in Croatia.

After obtaining the Licence, physicians can compete for a specialty. Similar scoring system is applied (favouring undergraduate academic performance), attempting to attract the best-ranked physicians to highly competitive specialties and positions.

Subjects

Final (sixth) year medical students were recruited for this study during the Epidemiology classes, with option not to enter the study. Respondents were then divided in two groups, resident (born and lived in Zagreb), and non-resident (from other parts of Croatia and other countries). Exclusion criteria were few: surveys that did not contain sufficient information or contained intentionally misleading answers were excluded from the study.

Measurements

The study was based on the survey consisting of 18 questions. Questions were grouped in five sections; (i) general data, with gender, grade point average, place of birth and age, (ii) specialization preferences, with questions on reasons and time-frame for the specialty choice, (iii) scientific involvement questions, (iv) emigration preferences, and (v) internship workplace preferences.

Analysis

Data were analyzed in both bi-variable and multivariable methods. Chi-square test was used in analysis of the categorical data. Logistic regression was used to predict factors underlying choices of the non-resident interns. Several academic parameters were used as predictor variables: grade point average (grouped into 3 categories of grade point average rounded up to a full number), failure to pass any year during the studies, student's belief he or she would get the desired specialty, their readiness to emigrate permanently and student's scientific involvement, measured through active involvement in the scientific projects. Respondents with missing values for any attribute were excluded from the analysis where that attribute was analyzed. Statistical analyses were performed with SAS software (SAS Institute Inc., Version 8.02, Cary, NC), with significance set at $p < 0.05$.

Results

A total of 211 students, out of 240 enrolled were surveyed; 6 students refused to enter the study, while 7 surveys were excluded from the analyses. The final sample consisted of 204 surveys (response rate 85.0%).

A total of 81 students were resident - born and lived in Zagreb (39.7%). Remaining 106 students were non-resident (52.0%), while 17 (8.3%) students were not born in Croatia, but most commonly (15 of them) in Bosnia and Herzegovina.

A total of 140 (68.6%) students preferred to work in Zagreb, while 25 (12.3%) students expressed uncertainty with their workplace preference (Table 1). Among the latter group, a total of 7 (3.4%) students responded with high level of resignation, saying that they would go work “wherever they got paid for it”, or saying they will leave medicine. There was no significant gender difference in choosing a workplace ($\chi^2=1.42$, d.f.=1, $p=0.234$).

Logistic regression model with workplace preference as the outcome variable was built. The model provided a good fit for the data, with Nagelkerke R Square 0.48, and the result of Hosmer and Lemeshow test supporting the data fit ($P=0.746$). The only variable significantly associated with the workplace preference was student’s belief that he/she will get the desired specialty in Croatia (Table 2). A total of 96 students preferring Zagreb (68.6%) believed they would get the desired specialty, compared to 32 (82.1%) students preferring to work outside Zagreb.

Discussion

This study shows a strong preference for Zagreb as the potential internship workplace. A little less than 20% of students would like to work outside Zagreb, where as much as three fourths of the Croatian population lives. This is a very low percent of students that are interested in working outside Zagreb, considering that all students are obliged to complete a subject “Community Practice” during fourth study year. During this one-week course students are accommodated in the remote setting, and introduced to the elements of working within primary health care. Studies of similar programmes with rural attachments from other countries have been positively associated with preference of working in the rural areas [9].

This centralised distribution pattern poses a threat for under-staffing of the majority of the Croatian territory. At the same time, the current situation induces wastage of the highly educated human resources in Zagreb. With a final number of the intern positions in Zagreb, the physicians who do not manage to get an internship often choose either temporary or permanent alternative careers. One of the very popular in several last years is a career in the pharmaceutical industry, with as much as 9% of final year medical students considering it with another specialty, and 3% of students interested only in pharmaceutical industry as a permanent career [8]. Compared to the official number of only 2.8% of graduated physicians that emigrate [10], involvement of physicians in pharmaceutical industry in Croatia has to be treated as factor that affects the health workforce balance in the same extent or even more severe than physician emigration.

Question of the Croatian health workforce balance has recently become a subject of substantial public interest. Croatian Medical Chamber and Ministry of Health and Social Welfare independently released information to the press that Croatia faces a serious physician shortage. Both institutions failed to present full results, but raised an issue that needs to be resolved. In case we are actually facing a physician shortage, final year medical student’s preferences of Zagreb and low interest for other parts of the country could very negatively

affect the health care provision in underserved areas (especially remote areas affected by the recent war destruction and isolated and remote islands).

The single factor in this study that was significantly associated with internship workplace preference indicates rather negative situation in Croatian health system and health education. The finding of only 63% of students believing they would get the desired specialty must cause a substantial level of dissatisfaction among students. This has already been pointed out in the previous study exhibiting a large percent of confusion and resignation among final year medical students [8]. As the final outcome, students who remain uncertain in getting the desired specialty more often choose Zagreb as a preferred workplace. Compared to other parts of Croatia, Zagreb offers much broader career possibilities, with a number of clinical and basic research assistants offered every year, possibility to get employed in the peri-medical field, such as various posts of sales representatives for medical equipment, or provision of various services related to medicine (e.g. as a part of the health Internet portal team). Those students who don't believe they would get the desired specialty probably perceive these possibilities more prosperous to failure in getting the desired specialty, and more often choose Zagreb hoping to increase their chances of finding alternative career paths.

Shortcomings of this study include self-reported, and possibly recall biased data. Nevertheless, this study established a strong centralistic pattern of choosing Zagreb, associated with often-encountered student's disbelief of getting the desired specialty. With the potential physician shortage fuelled by the possibility of substantial emigration after entering the European Union, health system and medical education in Croatia require a thorough evaluation and a careful projection of the health workforce demands.

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Table 1. Place of residence and workplace preference among the final year medical students from Zagreb University Medical School

Workplace preference	Place of residence		Total
	Zagreb N (%)	Other N (%)	
Zagreb	59 (72.8)	81 (65.9)	140 (68.6)
Other	13 (16.1)	26 (21.1)	39 (19.1)
Not sure/Don't know	9 (11.1)	16 (13.0)	25 (12.3)
Total	81 (100.0)	123 (100.0)	204 (100.0)

Table 2. Logistic regression model predicting workplace preference among final year Zagreb University Medical School students

	B	S.E.	Wald	P	OR (95% CI)
Gender	-0.417	0.447	0.870	0.351	0.66 (0.27-1.58)
Age	-0.023	0.071	0.105	0.746	0.98 (0.85-1.10)
Grade point average	0.706	0.451	2.453	0.117	2.03 (0.84-4.90)
Ever failed a study year	0.577	0.445	1.678	0.195	1.78 (0.74-4.26)
Believed they would get the desired specialty	-1.153	0.513	5.053	0.025	0.32 (0.12-0.86)
Readiness to emigrate	0.167	0.449	0.138	0.710	1.18 (0.49-2.85)
Involved in scientific work as a student	0.939	0.611	2.362	0.124	2.56 (0.77-8.48)
Interest in scientific work in the future	0.536	0.482	1.237	0.266	1.71 (0.67-4.39)