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Brain drain: final year medical students' intentions of training abroad  
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## **SUMMARY**

Background: In Croatia, a new EU member state since July 2013, there already is a dearth of around 3 280 doctors to reach the European average.

Objectives: To investigate the emigration intentions of the current cohort of final year medical students at Zabreb medical school.

Methods: An electronic questionnaire was used in June 2013 to assess 232 final-year medical students' attitudes towards working conditions abroad and expectations for career opportunities in Croatia following accession to the European Union.

Results: With an overall response rate of 87%, more than half of the surveyed students, 106/202 (53%), intended to travel abroad, either for specialty, 52/202 (26%); or subspecialty – 54/202 (27%) training. More female, 58/135 (43%); than male students, 17/62 (27%), indicated they would not emigrate. Most attractive emigration destinations were: Germany, 34/121 (28%); USA, 19/121 (16%); UK, 19/121 (16%); Switzerland, 16/121 (13%) and Canada, 11/121 (9%). The most important goals that respondents aimed to achieve through training abroad were: to excel professionally, 45/120 (38%), to prosper financially, 20/120 (17%), and to acquire new experiences and international exposure, 31/120 (26%).

Conclusions: Students' motivating factors, goals for and positive beliefs about training abroad, as well as negative expectations regarding career opportunities in Croatia may point towards actions that could be taken to help make Croatia a country that facilitates medical education and professional career development of young doctors.

**Key words: medical graduates, young doctors, emigration, brain drain, professional advancement**

## INTRODUCTION

In recent decades there has been a trend of decline in the number of physicians in Europe.<sup>1</sup> In addition, the relatively high average age of physicians, the liberalization of the labor market, the continually aging populations with consequently increased demands for healthcare are all becoming more important public-health and social problems for EU member states.<sup>2,3</sup> The question of health worker migration has been increasingly discussed, especially within the context of European Union enlargement.<sup>3,4,5,6</sup>

Free movement of persons within the EU is one of the fundamental rights that should be guaranteed by Community law.<sup>7</sup> Despite that, during the EU enlargement in 2004, some of the old Member States raised policies to protect their domestic labor markets and in doing so, raised barriers to immigration.<sup>3</sup> Simultaneously, other target countries (e.g. Norway, Germany) conducted a foreign recruitment policy.<sup>4</sup> Reasons for limiting immigration could be concerns in host countries concerning the safety and quality of healthcare provided by foreign physicians who may have poorer medical training since they are arriving from poorer medical healthcare systems compared to the standards in developed countries.<sup>5</sup> In contrast, basic motives for an active recruitment policy include: lack of physicians, aging population, increased healthcare demands and predictions that even European countries adverse to immigration will be forced to import more foreign health professionals.<sup>2,3</sup>

New member states were often afraid of massive healthcare workers' emigration after joining the EU.<sup>4</sup> Before EU enlargement in 2002, surveys in the Czech Republic, Hungary, Lithuania and Poland have shown that 25-50% of those surveyed intended to move to other EU countries, primarily to Scandinavia, UK and Germany.<sup>6</sup> Certain other studies reported that

non-European countries (e.g. the USA, Canada, Australia) are also attractive for professionals from Central and Eastern European EU Member States.<sup>4, 6</sup>

In Croatia, a new EU member state since July 2013, there already is a dearth of around 3 280 doctors to reach the European average.<sup>8,9</sup> Moreover, an earlier study by Polasek et al. demonstrated that medical students, especially those better-ranked and interested in biomedical research, are more likely to consider emigrating from Croatia .<sup>10, 11</sup>

In order to understand Croatian young physicians' attitudes towards emigration, we investigated the emigration intentions of the current cohort of the final year medical students at the Zagreb medical school.

#### University of Zagreb Medical School Fact Sheet

- Established in 1917.
- Oldest and biggest of the four medical schools in Croatia
- 1,903 undergraduate students enrolled in a Croatian language programme as of 2015 (First year: 351; Second year: 349; Third year: 385; Fourth year: 289; Fifth year: 285; Sixth year: 244)
- 207 international undergraduate students enrolled in an English language programme as of 2015 (First year: 55; Second year: 39; Third year: 33; Fourth year: 29; Fifth year: 35; Sixth year: 16)
- 223 PhD students enrolled as of 2015 (First year: 68; Second year: 49; Third year: 106)
- 3 postgraduate PhD programmes and 12 specialist postgraduate programmes as part of residency training
- Coordinates all national residency programmes with the Ministry of health

## **MATERIALS AND METHODS**

This was a questionnaire study. We used a modified questionnaire with permission from Akl EA et al.<sup>12</sup>

Participants: The participants were all the final year medical students due to graduate from the Zagreb medical school in summer 2013.

Questionnaire: The questionnaire consisted of 26 questions with four major question groups: demographic characteristics, emigration intentions, perceived barriers to international training and personal factors (see questionnaire in appendix).

*Demographic characteristics* included: age, sex and socio-economic status.

*Emigration intentions:* We asked about intended country of emigration and intention to return to Croatia following training abroad. Furthermore, students were asked to identify desired residency programmes along the lines of family medicine, surgical or clinical medicine residency programmes as well as goals that they aimed to achieve through that training.

*Perceived barriers to training abroad:* We asked about the possible constraints to working abroad: financial hurdles, processes of certification and recertification, need to obtain visas, other potential legal barriers.

*Personal factors:* We asked about residency training quality, professional career opportunities, personal conditions, physician mobility, political conditions and social conditions. These questions consisted of 7-point Likert scales ranging from -3 to +3 with the following anchors: “I strongly disagree” (for -3), “I neither agree or disagree” (for 0) and “I strongly agree” (for +3).

Questionnaire format: All questions had a closed ended format. The questionnaire was presented in Croatian language.

Questionnaire distribution: the questionnaire was anonymously distributed online through the use of the Qualtrics software platform. Two email reminders were sent out to students who failed to respond after 24h and 72hours.

Data analysis: we performed descriptive statistics analysis of the data in Microsoft Excell.

Ethical committee permission: We have followed a guideline that the Ethical Committee permission of the Zagreb Medical School was not required since the data were collected anonymously online and stored in an encrypted format.

## RESULTS

*Demographic characteristics:* A total of 202 responses were collected from 232 Zagreb medical students (response rate 87%). Characteristics of medical students participating in this study are summarized in Table 1. Majority were female 135/202 (68%), with an average age of 24. Relatively few respondents classified themselves as having lower 4/202 (2%) or upper 10/202 (5%) socio-economic status.

*Emigration intentions:* More than half of the surveyed students, 106/202 (53%), intended to travel abroad either for specialty, 52/202 (26%), or subspecialty – 54/202 (27%) training. Among male students, 28/64 (44%) preferred surgical specialties, which was 4 times more than female students, of which only 13/134 (10%) preferred surgical specialties (Figure 1). More female, 58/135 (43%), than male students, 17/62 (27%), indicated that they would not emigrate (Figure 2). The most popular destinations identified by respondents were: Germany, 34/121 (28%), the USA, 19/121 (16%), the UK, 19/121 (16%), Switzerland, 16/121 (13%) and Canada, 11/121 (9%), Figure 3.

The most important goals that respondents aimed to achieve through training abroad were: to excel professionally, 45/120 (38%), to prosper financially, 20/120 (17%), and to acquire new experiences and meet the world, 31/120 (26%), (Table 2). Male respondents indicated earnings, 12/46 (26%), as the second most important factor for leaving the country. Of the 121/202 (59.9%) respondents who intended to train abroad, only 22/121 (20%) planned on returning to Croatia afterwards, 67/113 (59%) intended to return after working abroad for a certain number of years: 26/113 (23%) for less than 5 years, 25/113 (22%) for 5 to 10 years and 16/113 (14%) for more than 10 years (Table 2). 23/113 (20%) students intended to leave Croatia permanently.



*Perceived barriers to training abroad:* Two most common barriers to training abroad were separation from family and/or partner, in 69/198 (35%) respondents and financial expenses in 50/198 (25%) respondents (Figure 4), while 34/198 students (17%) replied that they had no barriers.

*Personal factors:* The majority of students, 124/202 (63%), felt that teachers at the University were not encouraging them to work or train abroad. Most respondents, 134/202 (67%), were neither expecting nor interested in seeking help or assistance from their teachers at the university in that regard (Table 3).

Sources of information used by Croatian students concerning working abroad were identified in this order: reports by medical students who completed observerships or electives abroad, 110/202 (56%); media, 65/202 (33%); reports by family members or friends living abroad 57/202 (29%); reports by doctors who trained or are training abroad, 47/202 (24%); information available through students' associations and organizations, 45/202 (23%); by comparing doctors trained locally to those trained abroad, 21/202 (11%) and other, 4/202 (2%), Table 3.

Respondents generally had positive beliefs about working and social conditions abroad (Figure 5). The vast majority, 186/109 (94.9%), of the responding students, agreed that there are greater opportunities for financial success in foreign countries. Approximately 80% agreed that there are greater opportunities for research and career, better quality of clinical training and education during residency training. On the other hand, 95/199 (47.9%) indicated that they were unsure whether it was easier to get residency training in a foreign country.

Students who did not want to work abroad, 77/202 (38%), in comparison to those who did, were more often unsure regarding better quality of clinical training, career opportunities and social welfare conditions abroad.

Students' expectations regarding changes in Croatia following accession to EU are depicted in Figure 6. Great majority, 160/200 (81%) of respondents believed that mobility of physicians and opportunities for additional education will increase. However, ambivalence was expressed regarding the improvement of the financial situation of doctors with 29% students agreeing with the statement, 34% disagreeing and 36% indicating that they were unsure. Furthermore, divided opinions were expressed in view of working conditions for doctors improving and quality of clinical training in Croatia following accession to the EU. Finally, 84/200 (42%) of respondents considered that it will not be easier to get the desired clinical training.

## DISCUSSION

The choice of specialization is one of the most important professional decisions of every physician. With an overall response rate of 87%, more than half of our surveyed students, 106/202 (53%), intended to travel abroad, either for specialty, 52/202 (26%); or subspecialty, 54/202 (27%) training. Inability to obtain the desired residency is one of the major problems that affects thinking about emigration and should be seen as an indicator of overall professional dissatisfaction and not only as an indicator of actual loss of workforce.<sup>7, 10, 13, 14</sup>

The most desired reported specialties were medical (57%), surgical (20%) and general practice (14%). In 2013 the Croatian Medical Chamber reported that the largest proportion of migrant physicians were those who were forced to wait for desired specialization and employment over an extended period.<sup>14</sup> It is interesting to note that 33.8% of our respondents expect to get the desired residency abroad and almost half of them indicated that they are not sure if they will get their preferred residency in Croatia. In comparison to previous studies conducted among Croatian students in 2004 and 2005, our study demonstrated an increase in the percentage of students considering emigration - from 31 % and 41 % respectively to 53% or even 62% (see Figure 2).<sup>10, 13</sup>

As the most popular destinations, our respondents identified: Germany, the USA, the UK and Switzerland. Approximately the same interest was seen in Kolcic's study for Scandinavian countries and the USA and the greatest difference is the changing interest in Slovenia, which has been replaced by Germany in our study.<sup>13</sup> We could not identify the reasons for the drastic decline in interest for Slovenia because the precise motives for choosing foreign countries have not been investigated.<sup>13</sup> Results of the analysis provided by Croatian Medical

Chamber investigators in 2012 show that of the total number of physicians who leave the country, the largest proportion move to Germany (29%), Canada (15%) and the UK (11%), which is supported by our findings. It is assumed that this occurs due to the intense activity of German and Scandinavian recruitment agencies in Croatia.<sup>14</sup>

A study that investigated transnational migration of health workers in the European Union suggested that knowledge of the appropriate foreign language and geographic proximity to the target country also play an important role in the decision to emigrate.<sup>4</sup> Language barriers are especially important for health professionals as misunderstandings can cause serious consequences. The widespread knowledge of English language among Croatian students could be the reason why English-speaking countries are at the top of the list.

Sources of information from which our respondents informed themselves about working conditions abroad varied. Most common were reports by medical students who completed observerships or electives abroad. Student organizations, such as CroMSIC (Croatian Medical Students' International Committee), EMSA (European Medical Students' Association), ERASMUS, etc. enable international cooperation for Croatian students and offer possibilities to participate in exchange programs with other medical schools worldwide.<sup>8, 15, 16, 17</sup> Several studies described significant correlation between student academic mobility and potential migration. There are also reports that students participate in exchange programs with an aim to acquire post-graduate employment in host countries.<sup>17, 18</sup>

Moreover, having family members abroad increases the likelihood of emigration since living conditions and job opportunities are better known and assistance with settling in is more readily available.<sup>19, 20, 21, 22, 23</sup>

Separation from family, friends or partner, financial expenses and knowledge of foreign language were all identified as important barriers to leaving the country. In the group of students who did not want to work abroad, almost half of them stated family reasons as a dominant factor for remaining at home.

Regarding attitudes towards expected changes in Croatia following its accession to the European Union, the majority of respondents (81%) believed that mobility of physicians and opportunities for additional education will increase. Students who were reluctant to work abroad, were in general, expecting changes in Croatia with optimism. Also, they had fewer negative and more equivocal attitudes regarding improvement of the financial situation, research opportunities, quality of clinical training and working conditions.

Croatia is a country which does not have enough doctors: it needs another 3,280 – an increase of 18 % of the current number to reach the European average. It is of concern that so many of our recent graduates are intending to leave the country to train abroad.<sup>6,9,24,25</sup> Fears concerning significant outflows of qualified healthcare workers are emphasized by Croatian Medical Chamber's data reporting that in the first three months after Croatia's accession to the EU, more than 100 doctors were issued certificates confirming their training in order to work abroad.<sup>14</sup> The Chamber points out that the sample is still too small and the period of observation is too short for this to be considered a trend, but if this continues, in the next year we can expect that about 300 to 400 doctors will request permission to work abroad annually. In this case, the country will be left without the total number of doctors graduating from all national medical schools in a single year. Additionally, more than 450 doctors retire each

year and with the already existing shortage of doctors, Croatia potentially faces substantial problems in healthcare provision and organization in the near future.<sup>14</sup>

A potential problem with any study looking at *intentions* to emigrate is that intentions do not necessarily result in *actions*, making prediction difficult. Although the actual behaviours of the current cohort cannot be known, it is possible to look at actual emigration in the previous study of 2004/5.<sup>10,13</sup> In 2004, there would have been fewer graduates from Zagreb, of about 180 per year, and of those about 35% were considering emigrating, making about 60 students per year. In the current study about 16% of students are considering emigrating to the UK, and that figure is likely to have been lower in 2004, with 8% perhaps being a reasonable guess, so that about 5 students in 2004 would have intended to emigrate to the UK. Actual data were available for the 'Download' version of the UK medical register (List of Registered Medical Practitioners; LRMP; <http://www.gmc-uk.org/doctors/register/LRMP.asp>). In August 2014 the LRMP had 125 doctors who had qualified from Croatia (119 from Zagreb, 2 from Split, 5 from Osijek and none from Rijeka). These doctors had qualified in the 1960s (2), 1970s (7), 1980s (24), 1990s (46), 2000s (35), 2010 (3) and 2011 (6). There were therefore 35 Croatian doctors, mostly from Zagreb, who had graduated from 2000-2009, making about 3.5 doctors per year registering with the General Medical Council in the UK. That figure is reasonably close to the 5 per year estimated earlier, although inevitably there are many uncertainties in the calculations. The numbers do however lend reasonable support to the intentions to emigrate being fairly closely related to actual emigration.

Certainly, there are benefits of cross-border mobility of physicians. The possible positive impact on the quality of the healthcare system can be seen regarding the return of more highly-qualified professionals, improvement of knowledge, skills and increasing

implementation of new medical procedures upon the return of physicians to the home country or by newly arrived medical professionals from other countries.<sup>26,27,28,29</sup>

Although our results support fears concerning significant outflow of physicians from Croatia, we should take into account the limitations of our study. More questions in the questionnaire would help to better understand respondents' attitudes and desires. The intention to train abroad may not translate into actual migration and/or students can change migration decisions. The respondents in our study were final-year students from Zagreb, which does not allow for generalization of our findings that would include medical students in earlier years and other Croatian medical schools. Additionally, Croats as new citizens of the European Union will gradually become familiar with the advantages and disadvantages of EU membership, which will most probably affect changes in their attitudes. Through the continuing monitoring of the same student cohort group, it could be possible to assess the extent to which they have realized their emigration plans and changed their attitudes.

This survey and the obtained results may be an early warning for potential adverse trend(s) in the migration of health professionals with the possible serious consequences on the functioning of the Croatian healthcare system at all levels. A significant percentage of final-year medical students from Zagreb (62%) expressed intentions to migrate abroad after graduation. Factors identified behind their migration intentions may serve as an indicator of areas in the Croatian healthcare and social system where additional interventions could be introduced so as to help make Croatia a country that facilitates education and professional career development, not only for its own professionals, but also for foreign healthcare professionals, who could be attracted to come and pass their experiences and skills on in Croatia. In this way everyone would lend their knowledge and experiences and be able to

participate and help in the improvement and strengthening of the healthcare system, not only in Croatia, but also in other countries for the benefit of all people.

Main messages:

- Majority (62 %) of Zagreb Medical School's graduates want to move out of Croatia with postgraduate training cited as the main reason for emigration.
- Most popular emigration destinations identified by respondents were: Germany (28%), the USA (16%), the UK (16%), Switzerland (13%) and Canada (9%).
- Two most commonly reported barriers to training abroad were separation from family and/or partner and financial expenses.

Current research questions:

- What factors contribute significantly to the perception of postgraduate training programme as attractive?
- How to effectively deal with brain-drain of health care professionals?
- How to encourage physicians trained abroad to return to their country of origin?



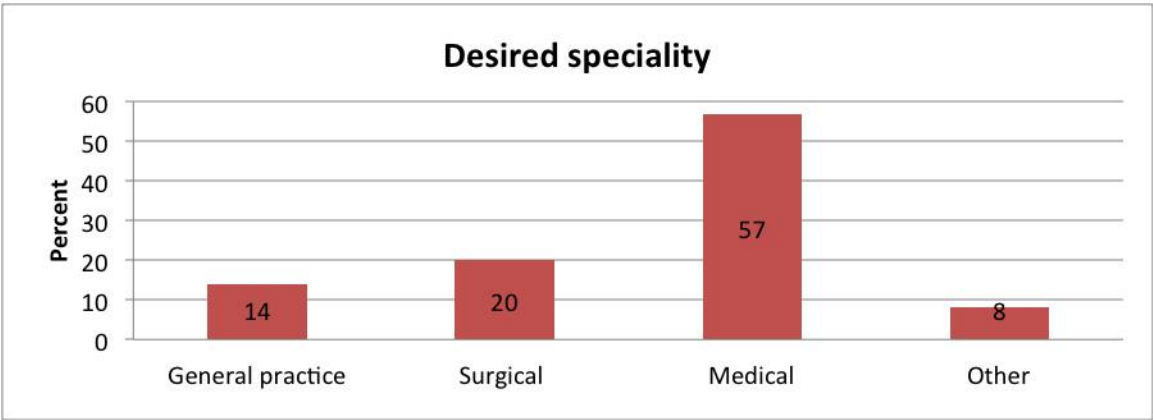
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**Figure 1: The most desired specialties among final-year medical students graduating in 2013 (n=201) from Zagreb Medical School (Croatia),**



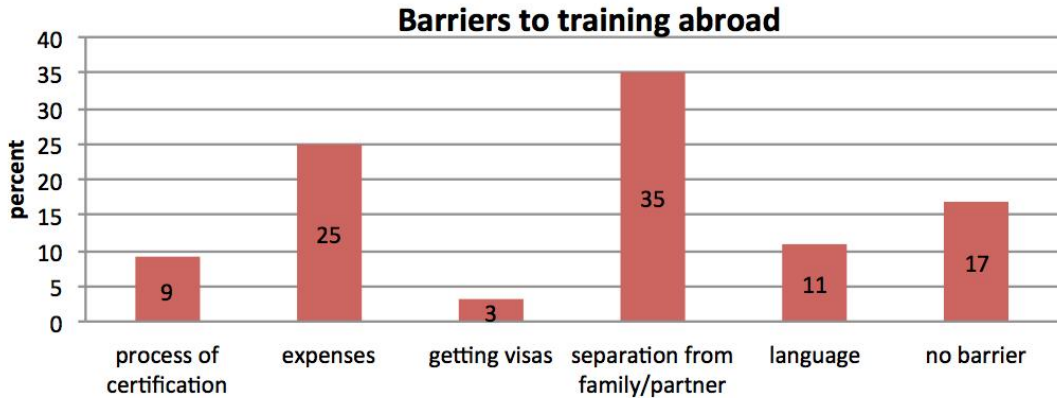
**Figure 2: Intention to train abroad among final-year medical students from Zagreb (Croatia) in 2013 (n=200)**



**Figure 3: Targeted emigration countries of final-year medical students from Zagreb (Croatia) in 2013 (n=121).**

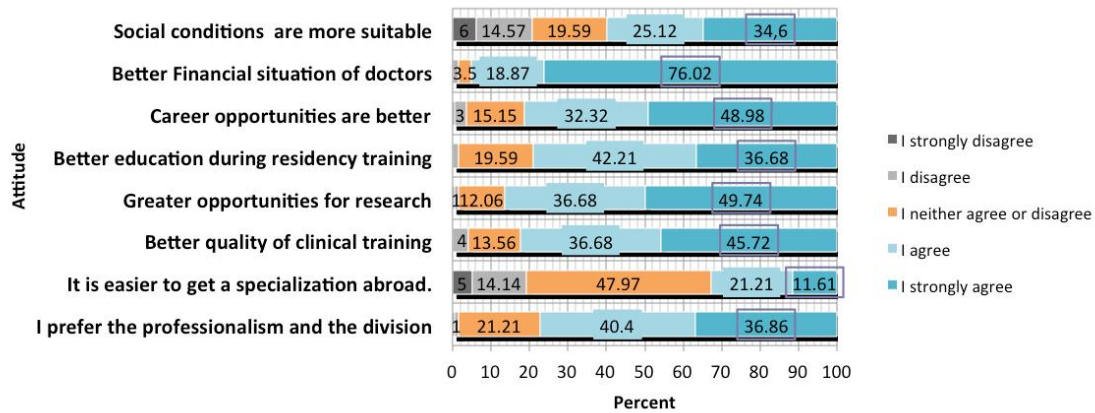


**Figure 4: Barriers to training abroad among final-year medical students from Zagreb (Croatia) in 2013 (n=198)**



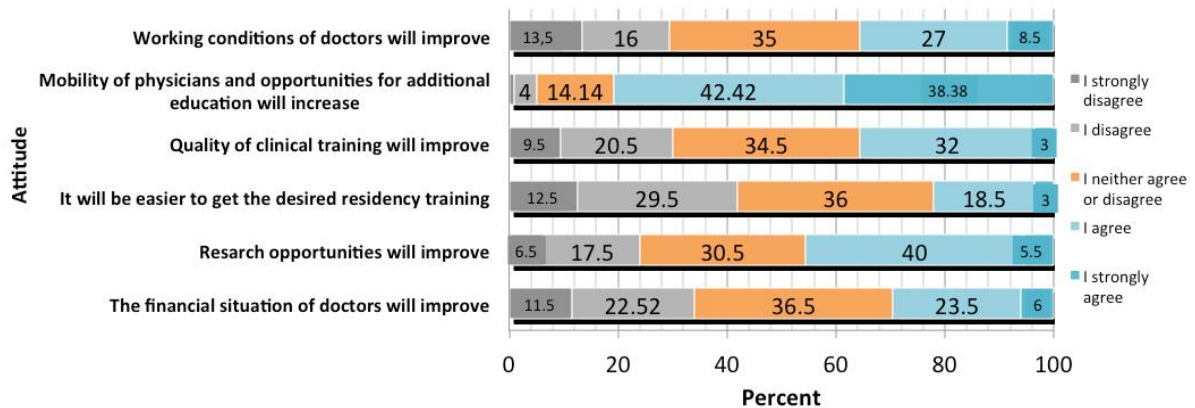
**Figure 5: Attitudes of final-year medical students from Zagreb (Croatia) towards working conditions abroad in 2013 (n=199)**

\* % is not always equal to 100% because of lack of response to certain questions by all respondents



**Figure 6: Expected changes in Croatia following accession to the European Union (EU) among final-year medical students from Zagreb (Croatia) in 2013 (n=200)**

\* % is not always equal to 100% because of lack of response to certain questions by all respondents



**Table 1: Baseline characteristics of respondents to a 2013 Survey of final year medical students (N=202)**

|  |                     | N (%)    |
|--|---------------------|----------|
| <b>Sex*</b>                              | Female              | 135 (68) |
|  | Male                | 64 (32)  |
| <b>Socio-economic status<sup>o</sup></b> | Lower               | 4 (2)    |
|  | Lower middle        | 58 (29)  |
|  | Upper middle        | 125 (63) |
|  | Upper               | 10 (5)   |
| <b>Age (years)</b>                       | Mean 24.47; SD 1.07 |          |

\* missing n = 3;

<sup>o</sup> missing n = 5

**Table 2: Post-abroad training plans and the most important goal to be achieved through training abroad of final-year medical students from Zagreb in 2013**

|   |  | N (%)   |
|---|--|---------|
| <b>Post-abroad training plan (N=113)</b>                                      | Return directly to   | 23 (20) |
|   | Work abroad < 5 years, then return                           | 26 (23) |
|   | Work abroad 5–10 years, then return                          | 25 (22) |
|   | Work abroad > 10 years, then return                          | 16 (14) |
|   | Never return   | 23 (20) |
| <b>The most important goal to be achieved through training abroad (N=120)</b> | Excel professionally   | 45 (38) |
|   | Establish myself quickly                                     | 9 (8)   |
|   | Facilitate employment after returning from foreign countries | 4 (3)   |
|   | Prosper financially  | 20 (17) |
|   | Acquire new acquaintances / experiences, meet the world      | 31 (26) |
|   | Obtain citizenship of the country of training                | 6 (5)   |
|   | Other  | 5 (4)   |

**Table 3: Influencing factors and sources of information concerning training abroad among final-year medical students from Zagreb (Croatia) in 2013 (n=202)**

|  |   | N (%)    |
|--|---|----------|
| <b>Are there teachers at your university who encourage you to train abroad? *</b>              | Yes   | 11 (6)   |
|  | Yes, but not enough   | 63 (32)  |
|  | No  | 124 (63) |
| <b>Are there doctors at your university who would assist you to travel and train abroad? °</b> | Yes   | 22 (11)  |
|  | No  | 43 (27)  |
|  | I was not interested  | 134 (67) |
| <b>Where did you get your information about training abroad? ‡</b>                             | Media (internet, TV, press...)  | 65 (33)  |
|  | Reports by family members or friends living abroad                        | 57 (29)  |
|  | Reports by medical students who completed observership or elective abroad | 110 (56) |
|  | Reports by doctors who trained or are training abroad                     | 47 (24)  |
|  | By comparing doctors trained locally to those trained abroad              | 21 (11)  |
|  | Through students' associations and organizations                          | 45 (23)  |
|  | Others  | 4 (2)    |

\* missing n = 4;

° missing n = 3;

‡ missing n = 6