

MIGRATION TENDENCIES AMONG PSYCHIATRIC TRAINEES AND EARLY CAREER PSYCHIATRISTS IN CROATIA: BRAIN DRAIN FOLLOW-UP STUDY

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Dear editor,

Since Croatia has joined the EU in 2013, many young, highly educated people have emigrated, and health professionals are no exception. Between 2013 and 2020, more than 900 medical doctors have left Croatia mostly for high-income European countries (Atlas liječništva 2021). Even more alarming is that the majority of them were younger than 40, with an average age of 36. Among the specialists who emigrated, psychiatrists were the second most represented after anesthesiologists, and were strongly represented in the group who have requested a certificate to emigrate from the Croatian Medical Chamber (Atlas liječništva 2021). In this article we aimed to investigate migration tendencies among two specific groups of junior doctors currently working in Croatia: psychiatric trainees (trainees) and early career psychiatrists (ECPs).

This cross-sectional survey was part of the Brain Drain follow-up study (Pinto da Costa et al. 2017), supported by the European Federation of Psychiatric Trainees (EFPT), the umbrella organization of the national psychiatric trainees' associations in Europe.

Data were collected from December 2018 to April 2019 and analyzed with SPSS software version 20. According to the Croatian Public Health Institute and the Croatian Health Statistics Yearbook 2017, in Psychiatry, there were 522 specialists and 124 trainees registered in Croatia by 15th October 2018 when the yearbook was published (Hrvatski zdravstveno-statistički ljetopis za 2018). All registered psychiatric trainees at the time of our study (n=119) were contacted. As there is no official data for the number of ECPs in Croatia, we contacted members of the Croatian Section of Young Psychiatrists and Psychiatric Trainees and who were within 5 years of completion of specialist training or under the age of 40 at the time of participation in the study (n=129). The questionnaire disseminated was written in English and consisted of 61 items divided in four domains: 1) sociodemographics; 2) previous short-term mobility (three months to one year) and long-term migration experiences (longer than one year); 3) opinions and attitudes towards migration; 4) migratory tendencies and plans for the future.

This questionnaire was developed by the EFTP Research Working Group and was previously used in the original Brain Drain study (Pinto da Costa et al. 2017). Data were collected using an anonymous semi-structured self-administered questionnaire, sent as an online link to the e-mail addresses of the participants. All participants gave informed consent prior to the assessment. The study was conducted according to the principles of good scientific practice, approved by the National ethics committee in Switzerland (Ref. 144/13 from the University Hospital Basel).

Out of the 248 contacted participants, 137 took part in the study (response rate of 55.2%). For 16 participants there was missing data, and therefore these were excluded from statistical analysis. The final sample included 121 participants, out of which 74 (61.2%) were trainees and 47 (38.8%) were ECPs. The majority of the trainees was on their fifth (n=30, 40.5%) and third (n=17, 23.0%) year of training.

The majority of participants (n=87, 71.9%) had 'ever' considered leaving Croatia, and more than a third (n=44, 36.4%) were considering it at the time of this study. When placed in a broader European context, the data from our participants showed a similar tendency observed in other "donor" countries (Pinto da Costa et al. 2017, Matutyte et al. 2020). This is in line with a previous study (Nawka et al. 2015) that reported an East-West and South-North gradient with increasing numbers of ECPs when moving from countries with lower income to more developed countries. The study suggests that higher numbers of ECPs in developed countries might not reflect only their good recruitment strategies and education of new psychiatrists, but also present higher number of "imported" psychiatrists and migration flow in Europe (Nawka et al. 2015).

The main reasons to stay and leave the country were similar in both groups; financial and work conditions were recognized as "push" factors, while personal reasons and cultural environment were the main "pull" factors. The wide majority considered that financial conditions should be improved, both in the trainees' (n=61, 82.4%) and in the ECPs group (n=45, 95.7%). Dissatisfaction with income can be a stronger "push" factor for migration than the income itself (Pinto da Costa et al. 2017). Lower salaries can lead to a higher tendency for searching different ways to improve income (Gureje et al. 2009), which was also seen in our sample, especially in the ECPs group, where nearly half of the participants reported additional income.

Improvement was needed in work conditions to both trainees (n=60, 81.1%) and ECPs (n=39, 83.0%) and academic conditions for most trainees (n=54, 73.0%) and ECPs (n=31, 66.0%). Improvements in their professional network (e.g., teamwork, cooperation) were felt more necessary to ECPs (n=33, 70.2%) than for trainees (n=44, 59.5%).

When asked about the features of an attractive job, both groups pointed out good work-life balance, good welfare and social security and pleasant work environment. Of note, "being acknowledged for your efforts" was an important feature for the vast majority of trainees (n=70, 94.6%) participants, and in the ECPs group the vast majority (n=45, 95.7%) prioritized high salary as a feature of an attractive job. According to this study, most trainees were only partially satisfied with their training, reporting problems such as the lack of practical psychotherapy, funding resources and adequate mentorship system. Although

some of these problems were tackled with changes in the new training program starting from 2014, it seems that there is still a high level of dissatisfaction with academic opportunities.

Migration tendencies of junior psychiatrists in Croatia present a worrying trend that could negatively impact the performance of the healthcare system in Croatia. Taking into account the overall decline of recruitment of psychiatry trainees and positive migration trend towards high income countries, it seems necessary to implement strategies to prevent brain drain, such as improvement of educational and professional opportunities followed with adequate financial income (Andlauer et al. 2012, Nawka et al. 2015). As seen in the recent COVID-19 pandemic, stable and functioning medical system is of utmost importance. Our study provides important data which could be used by medical stakeholders to retain junior doctors in order to sustain quality of medical service in Croatia. Existing shortage of healthcare personnel, accompanied by increasing emigration tendencies of the junior doctors who were to be the system's backbone in the future, might lead to insufficient service capabilities. Psychiatric patients are already considered as a group with unmet service needs whose unfavorable position could further decline with the rise of the new global mental health challenges associated with the COVID-19 pandemics (Moreno et al. 2020).

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DULOXETINE DOES NOT AFFECT VASCULAR ENDOTHELIAL GROWTH FACTOR PLASMA LEVELS IN PATIENTS WITH FIRST-EPIISODE, DRUG-NAÏVE MAJOR DEPRESSION

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Dear editor,

According to the neurotrophic hypothesis of major depression (MD), impairment in growth factor signaling may be associated with the pathology of this disorder. Current evidence demonstrates that impaired neuroplasticity induced by alterations in neurotrophic growth factors and related signaling pathways may be underlying to the pathophysiology of MD (Boku et al. 2018). Stress induces alterations in the neuroplastic pathways in the emotional and cognitive processing areas of the brain, leading to reduced neurogenesis and hippocampal volume, and predisposing an individual to depression.

A key factor in the neuroplastic pathways is the vascular endothelial growth factor (VEGF), which is known to possess strong neurogenic effects. VEGF was first presented as an inducer of vascular permeability, but the understanding of its actions has broadened to include stimulation of angiogenesis and acetogenesis, and promotion of neurogenesis and neuroprotective mechanisms (Storkebaum et al. 2004). Novel VEGF-related associations identified by MD genome-wide association studies (GWAS) suggest a role for this molecule in MD development. This could help to promote personalized medicine (Xie et al. 2017). We previously reported a genotype-diagnosis interaction for GWAS single nucleotide polymorphism (SNP) rs6921438 (G/G versus GA/AA genotype) in the subiculum of the left hippocampus, but not for rs4416670, rs6993770, or rs10738760 (Nguyen et al. 2019).

Recent reports show that VEGF plays a crucial role in the pathogenesis of MD by increasing blood-brain barrier (BBB) permeability, indicating that VEGF inhibition is a potential therapeutic strategy for the MD subtype associated with BBB dysfunction (Matsumoto et al. 2022). Our previous research demonstrated that neither paroxetine, a selective serotonin reuptake inhibitor (SSRI), nor milnacipran, a serotonin and noradrenaline reuptake inhibitor (SNRI), changed plasma VEGF levels in patients with MD (Yoshimura et al. 2022). The present study aimed to investigate the effect of duloxetine on plasma VEGF levels in patients with first-episode, drug-naïve MD.

Twenty-eight patients who met MD criteria according to the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5) (American Psychiatric Association, 2013) were enrolled in this study (age 47.5±13.1 years; male/female 14/14). Additionally, 20 age-, and sex-matched healthy control (HC) patients