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EDUCATIONAL INITIATIVE ABOUT THE COVID-19 PANDEMIC-RELATED NEUROPSYCHIATRY FOR EARLY CAREER PROFESSIONALS IN EU: THE IMPACT OF THE NOVEL VIRUS ON BRAIN, MIND, AND SOCIETY

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SUMMARY

Background: *The COVID-19 pandemic brought challenges to governments, healthcare systems (including, mental healthcare services), clinicians and researchers in the EU and worldwide. A range of neurological (e.g., brain fog, encephalitis, myalgia) and psychiatric (e.g., affective disorders, delirium, cognitive disturbances) complications of a novel nature have been observed in patients during the acute phase of illness, which often persist as a Long-COVID state for months after the primary recovery. The pandemic has progressed to a psychodemic and syndemic, affecting communities with social distress, panic, fears, increased home violence, and protest movements that derive from conspiracy theories and hostile attitudes towards vaccination and lockdown measures. In response to this complex scenario of major social changes, universities must face the need to equip the new generation of doctors with novel special skills.*

Subjects and methods: *The study course (50 hours duration; 20 lectures, three webinars, three e-discussion forums, five local seminars, two social events, three intermediate assessments and a final test for certification; bilingual Russian/English hybrid format, information materials, video-content, interactive web-page and social media) was developed by the team of the International Centre for Education and Research in Neuropsychiatry (ICERN), and is unique for the EU. The course integrates the most relevant data on SARS-Cov-2-related neuropsychiatry, and COVID-19' pandemic impact on mental health and society, including assignment of the vulnerable groups of students and healthcare professionals. The major topics covered during the course are (i) Novel virus, (ii) Brain, (iii) Society. The project takes place originally in Samara State Medical University. The ICERN Faculty includes academic staff from France, Hungary, Italy, Russia, Switzerland, invited speakers from the WHO Regional Office for Europe and World Psychiatric Association (EU Zones) members, some of them employed at ICERN by remote work contracts. The format of the educational process for students is hybrid suggesting both remote and face-to-face events. Distant learning participants and EU lecturers are to attend on-line via zoom platform, whereas local participants and staff work face-to-face in the ICERN video-conference room. The course is addressed to a broad audience of doctors, undergraduate and postgraduate students, and researchers from EU wishing to upgrade their knowledge in the pandemic-associated neuropsychiatry.*

Results: *The evaluation process supposes three intermediate assessments and a final test for certification. On-line assessment is to be performed at the project web-page - 10 randomly selected questions with scoring from 1 to 10 each. The Pass Score is 70-100. At the end of the course all the participants receive certificates of Samara State Medical University according to the ERASMUS policy book, as planned in 2021.*

Conclusions: *We formatted this course as essential for the target audience to improve their resources of professional adaptability in the field of neuropsychiatry and mental healthcare management during challenging times. The ICERN course in pandemic-related neuropsychiatry is essential for early career health professionals and targets the principles of "academia without borders" in the context of international medical knowledge exchange. In the conditions of the changing social situation this educational content is necessary for the young doctors to acquire the add-on skills on flexibility to switch toward new professional approaches in the times of need. The long-term outcomes in pandemic-related neuropsychiatry are still to be seen, though the first feedback on the course content is already promising for the academic community.*

Key words: *academia without borders - COVID-19 pandemic - digital mental health - international collaboration - mental disorders - neuropsychiatry - social phenomena - telemedicine - vaccination*

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INTRODUCTION

The SARS-Cov-2 virus brought dramatic changes in daily life, subjecting this generation of Europeans to a new and unforeseen era. The COVID-19 pandemic is not merely a threat to physical health, but brings severe stresses that has broadly impacted mental health and social lifestyles: (i) The SARS-Cov-2 virus is neuro-tropic and affects the brain, leading to a variety of (ia) neurological sequelae (e.g., encephalitis, ischemic strokes,

myelitis), (ib) psychiatric complications (e.g. delirium, panic attacks, sleep disturbances, and rare but ominous clinical manifestations of viral infection such as persistent olfactory disturbances of parosmia, phantosmia, or severe psychomotor disturbances manifesting in catatonia even among adolescents) (Tan et al. 2020, Ismail & Salama 2022, Kopishinskaia et al. 2021, Schou et al. 2021, Smirnova et al. 2021). Apart from its direct impact on central nervous system (CNS) function, (ii) the stresses arising from the pandemic have affected virtually the European community, particularly due to the incumbent social isolation measures and strict lockdown conditions still prevailing in many countries, which are apt to cause mental and behavioral conditions: (iia) reactions of anxiety, panic, and fear, (iib) increased social distress, incidence of depression and increased suicidality, (iic) elevated alcohol and drug consumption, as well as pronounced psychosocial phenomena of (iiia) aggressive behaviours with increased home violence, mostly against women and children, and (iiib) protest movements related to conspiracy theories, unfounded beliefs about the virus origins and dismissive attitudes towards the merits of vaccination (Dragioti et al. 2022, Elek et al. 2022, Forman et al. 2021, Fountoulakis et al. 2021, 2022a,b,c, Iftene et al. 2022, Kulig et al. 2020, Panfil et al. 2022, Thibaut & van Wijngaarden-Cremers 2020, Vrublevska et al. 2021).

Thus, the COVID-19 pandemic had introduced unprecedented challenges to the entire range of stakeholders, namely (a) governments, (b) healthcare systems (including mental healthcare), (c) insurance companies and lawyers, (d) medical professionals, (e) researchers in the EU and across the world (Anderson et al. 2021, Holmes et al. 2020). Mental healthcare systems have had to manage new working plans and modified institutional activities in relation to: (a) quarantine measures for psychiatric hospitals, and opening of units for COVID-19 beds, (b) programs of care for vulnerable groups or groups at risk, such as elderly people with dementia, (c) telepsychiatry development and implementation for outpatient units, (d) dedicated phone lines for emergency mental health assistance, (e) appropriate responses to anti-vaccination propaganda and unfounded theories about patient tracking (Anderson et al. 2021, de Albuquerque Veloso Machado et al. 2021, Sheikh et al. 2021, WHO Regional Office for Europe 2022).

Frontline medical staff and researchers had to respond not only to the immediate issue of medical treatment for the primary pulmonary disease, but also to a wide range of medical conditions associated with the broader impact of SARS-Cov-2 on human health. Severe neurological and psychiatric complications have been observed in patients during the acute disease, which in many cases are persisting for months after recovery from the initial disease manifestation. Importantly, these CNS spectrum disorders are characterized by a novel specific nature, raising serious medical concerns, and calling for detailed investigation by the medical community and the implementation of novel treatment approaches. In consideration that mental disorders such as depression are linked to immune suppression and increased risk for comorbidities of the cardiovascular system (e.g., myocardial infarction and stroke), endocrine system (e.g., diabetes) and cancer, the COVID-19 pandemic also drives a vicious circle with unprecedented impact on global health (Tan et al. 2020, Tian et al. 2021, Varikasuvu et al. 2021). Our international multicentre research project "Estimating the effect of COVID-19 on mental health of the general population across 40 countries" (COMET-G) has been supported by the WPA and documented the particular psychiatric burden that the pandemic had imposed on the European community (Fountoulakis et al. 2022b,c).

The pandemic gave rise to a psychodemic and a syndemic, which are portmanteau terms for the constructs of psychological pandemic and synergistic epidemic, respectively. This complex scenario brings obvious needs to upgrade mental health care delivery, and improve systems management, to attain the flexibility necessary to meet rapidly altering challenges as they arise. This direction is actively supported by the WHO Pan-European Mental Health Coalition, and our ICERN team keeps collaboration in a Supporter position for the working package of "Mental health services transformation" (WHO Regional Office for Europe 2022). Therefore, we perceive an urgent need to equip the new generation of mental health professionals and researchers with the skills necessary to face this evolving environment. In order to achieve this goal, we have developed a unique educational initiative the purpose of which is to supply the early career professionals with the knowledge on the problems raised above and the tools and methods to solve them.

SUBJECTS AND METHODS

Our proposed study course (50 hours, bilingual hybrid format, information materials, video-content, web-page, social media) *is* the first of its kind program and it is unique for the EU. The name of the project is "Impact of Novel Virus on Brain and Society: Mind, Learn and Act for better Mental Health in the European Union" or shortly abbreviated as "EU_MiLestone ActCOVID". Our course integrates the most relevant data on COVID-19's impact on mental health and society (in particular, recent research data of the COMET-G international multicentre project estimating the effects of pandemic on general population of 40 countries and across the EU, our clinical experience

and up-to-date global literature reviews on the topic, current leadership opinions of the WHO and EU representatives of the World Psychiatric Association (WPA)), and is managed by the International Centre for Education and Research in Neuropsychiatry (ICERN, established since 2021).

The ICERN Faculty includes academic staff from Russia, France, Greece, Italy, Switzerland, WHO (Regional Office for Europe, Pan-European Mental Health Coalition) and WPA (European Zones) members, some of them employed at ICERN by remote work contracts or signed the memorandum of agreement for professional collaboration. The model of ICERN is unique for Russia and arose far to the south of the twin capitals of Moscow and St. Petersburg, in Samara City on the banks of Volga river. The Volga is the longest river in Europe, and the largest river in the world that drains to an inland sea, namely the Caspian Sea. Metaphorically speaking, the ICERN "dream team" aims to create new bridges with the European community and chart the river of knowledge from its source to the unrevealed depths of its basin.

ICERN brings together national and international experts to target excellence in research and education for promoting better clinical practice across mental healthcare systems. We have brought together a team of researchers in diverse clinical and applied neurosciences, including neurobiology, pharmacogenetics, psychiatry, psychology, psycholinguistics, neurology, and others. This was a challenging task during the pandemic, but it represents an important step for bringing into focus higher medical education in the field of psychiatry in Russia. At ICERN we aim to achieve (i) the highest standards in evidence-based neuropsychiatry incorporating key innovations and new technologies (e.g., AI, VR/AR, digital mental health), (ii) a unification of basic and clinical neurosciences for better quality of patient care, and (iii) international collaboration, mentorship, and integration of national psychiatric practice into the global professional community. ICERN hosts a team of collaborators working face-to-face and remotely, all focusing on the search for a common interdisciplinary language.

The course program is addressed to a broad audience of participants and consists of three sections related to: (i) Novel virus: Must Mind (5 lectures, e.g. the history of pandemics, mental healthcare systems, virology in psychiatry), (ii) Brain: Must Learn (10 lectures, e.g. neuroimaging, neuropsychiatric complications of SARS-Cov-2, AI in the outcome prediction), (iii) Society: Must Act (10 lectures, e.g. psychosocial vulnerability, emergent telepsychiatry, vaccination propaganda), three webinars, three e-discussion forums, five local seminars, two social events, three intermediate assessments and a final test for certification.

RESULTS

The concept and methodology of the course is depicted in the program content: (i) integrates the most relevant data on mental health, neuropsychiatric complications of SARS-Cov-2 infection, and social changes across pandemic; (ii) is unique for Russia, EU and is up-to-date; (iii) is presented in modern hybrid (face-to-face and remote learning) "stay-safe" format to adjust to the realities of pandemic; (iv) is in bilingual format, which is important for Russian students seeking to improve their English language skills for utilizing EU directions and approaches in the world renowned higher medical education; (v) is managed by the multidisciplinary team of ICERN experts, which has been established with the aims of integration into the international professional community.

The course program (50 academic hours) consists of three major topics about (i) virus, (ii) SARS-Cov-2-associated neuropsychiatric complications, and, most importantly, (iii) reactions of society and challenges met by healthcare services. The main target audience for whom this course is created is supposed to be (i) wishing not only to upgrade their knowledge in the pandemic-associated neuropsychiatry, but also (ii) desiring to discuss and seek pathways to improve the situation in modern medicine and society. We address the following important topics raised by the pandemic conditions: (i) the need to pay proper attention to the groups at risk (e.g. elderly, females, chronic patients with somatic disorders, patients with the history of mental disorders, dementia patients, students, health professionals) and with psychosocial vulnerability (e.g. reactions of distress, anxiety, depression, suicidal ideation, alcohol and drug consumption, internet addiction) across population who require psychological and psychiatric assistance; (ii) the importance to modify approaches towards higher medical education in the field of neuropsychiatry (e.g. for timely diagnostics of mental disorders in primary care, and appropriate treatment) and to improve healthcare systems facilities and functioning (e.g. educated staff, telemedicine, personalized pharmacotherapy); (iii) burgeoning requests from society to cope better with violence at home and in working environment (e.g. violence against women and against health professionals) and aggressive behavioural actions across community (e.g. antimask protests, anti-vaccination propaganda) (Fornaro et al. 2021, Nadareishvili et al. 2022, Patsali et al. 2020, Thibaut & van Wijngaarden-Cremers 2020).

Monitoring of the course and evaluation of the knowledge acquisition is managed through (i) an interactive training format (such as seminars, meet the expert sessions, e-discussion forums, social events etc.), (ii) the pre-assessment and intermediate test assessments, and (iii) the final evaluation test, along with the participants' discussion on their expectations met by the course.

Work plan

The course program "Impact of Novel Virus on Brain and Society: Mind, Learn and Act for better Mental Health in European Union" (50 academic hours) consists of the three working packages (WP): (i) WP1 Novel Virus: Must Mind (Introduction to the Course, five lectures, one local seminar, one webinar, one e-discussion forum, intermediate assessment test; 12 hours); (ii) WP2 Brain: Must Learn (10 lectures, two local seminars, one webinar, one e-discussion forum, intermediate assessment test; 16 hours); (iii) WP3 Society: Must Act (five lectures, two local seminars, one webinar, one e-discussion forum, two social events, intermediate assessment test, final course test evaluation, closing ceremony; 22 hours).

The audience which this course is targeted for is very wide, including but not limited to (i) secondary school pupils and medical professionals, (ii) undergraduate and postgraduate students, (iii) educators and researchers from EU wishing to upgrade their knowledge in the pandemic-associated neuropsychiatry. The Course Faculty includes national ICERN team staff (Daria Smirnova, Tatiana Kozina and others, Samara State Medical University, Samara, Professor Peter Morozov, Moscow, Russia) and foreign experts from EU employed on remote work contracts since 2021. 20 lectures are to be recorded by the Course Faculty, designed by the IT-team of the Samara State Medical University and will be available via video channel of the project, according to the ERASMUS policies as preplanned in 2021. Evaluation will include pre- and post-assessments, three topics 1,2,3 intermediate assessments and the final test for certification to measure the course efficiency. Accreditation will be managed via certificates on behalf of Samara State Medical University and according to the ERASMUS policy book, as for 2021.

Brochures and leaflets with the information about ICERN of the Samara State Medical University, and the course program materials will be disseminated among the target groups of the audience. Two peer review papers will be published to promote the excellence of European higher education and its impact on clinical practice across mental healthcare services, its high-class western quality and equal availability for early career professionals in the field of neuropsychiatry and mental healthcare services.

DISCUSSION

Impact and ambition

The course is addressed to the target groups of (i) undergraduate and postgraduate students, (ii) medical professionals, educators and researchers from EU, Russia and post-soviet countries, (iii) all those wishing to upgrade their knowledge in the pandemic-associated neuropsychiatry. The way of analyzing the learning outcomes and impact will include pre-, post-assessment, on the spot, and long-term evaluation with the use of testing and open questionnaires.

From (i) the short-term perspective, this course (ia) manages important opportunities to receive unique knowledge from the European Faculty not only by EU students, but also and primarily by the higher education students and medical professionals from Russia and countries of post-Soviet areas, who still lack this direct access due to formal limitations in Russian and European medical diploma compatibility; (ib) bilingual format also aims to improve their level of English language proficiency and promote openness to the Western-style approaches to research and teaching methods among local students and professionals. (ii) Moderate-term outcomes: (iia) certified university training course for medical students and professionals from EU, Russia, and post-soviet countries; (iib) the course promotion via social media, TV and mass media; (iic) the project web-page with open information materials; (iid) playlist with lectures video-recordings; (iie) two academic peer-review papers (SCOPUS, Web-of-Science) about the course and its intermediate evaluation. (iii) Long-term outcomes suggest: (iiia) the updated course content modification and upgrade of the course over time, (iiib) the course implementation in e-learning platforms, (iiic) the course presentation via European Digital Education Hub.

Communication, dissemination and visibility of the project

To promote excellence in higher medical education and to improve the future functioning of mental health care services by training young clinicians and scientists in new skills and increasing the level of preparedness to work in situations of disasters such as pandemics, natural and man-made disasters, we address our course to the most important target groups in EU, Russia and post-soviet countries: (i) secondary school graduates, medical students and early career professionals; (ii) medical staff at healthcare services, (iii) educators and researchers in the field of neuropsychiatry. Materials will include a web-page with the news, events' announcements, information thematic materials, testing system, video-content, social media groups.

Sustainability, long-term impact and continuation

The course is supposed to be continuously updated as the need arises to address novel challenges of the post-COVID era for society and healthcare systems. The

course will be presented via web-page materials, social media groups and peer-review publications, but also aims to reach e-learning platforms. Follow-up evaluation of the course alumni will take place one year after course completion. Early career professionals who successfully graduate from the course program will be invited to join international multicentre research projects at ICERN on the topics on neuropsychiatric complications and mental health of general population, students and medical staff to develop their research skills and to lead novel educational initiatives in the field of neuropsychiatry.

CONCLUSIONS

Preplanned as the initiative of the ERASMUS Jean Monnet Module, this course provides an important start-up for the ICERN as a model of international collaboration, which is the novel one for Russian realities. The COVID-19 pandemic has limited the opportunities for early career professionals and closed the borders between countries, but our international union of experts aims to cope with the barriers encountered along the way towards the common language and interdisciplinary knowledge in neuropsychiatry, thus addressing urgent current needs of society. We suggest that this course in pandemic-related neuropsychiatry is essential for early career professionals and targets the principles of "academia without borders" in the context of international medical knowledge exchange during these challenging times.

Limitations

Due to recent circumstances the work on the project has been officially postponed, whereas its implementation is discussed to be continued with the use of local and national support.

Conflict of interest: *None to declare.*

Contribution of individual authors:

Daria Smirnova elaborated the course content and program with advice from Tatiana Kozina, Xenia Gonda, Florence Thibaut & Giuseppe Tavormina in June 2021.

Tatiana Kozina formatted the Erasmus+ Jean Monnet grant application under the supervision of Dmitriy Gorbatchev, Andrey Protasov & Aleksandr Kolsanov and managed the budget details in collaboration with Natalia Borisova in 2021.

Tatiana Kozina & Daria Smirnova wrote the first draft of the manuscript, which has been revised upon input from all co-authors in early 2022.

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