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Psychohygienic evaluation of depression level among Ukrainian youth forced to emigrate to Canada due to the war in Ukraine

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Abstract: the ongoing war in Ukraine since 2014 has led to the forced migration of thousands of people, resulting in a range of social and psychological problems, including depression. In light of this, the purpose of the research was to investigate the level of depression among youth who were forced to emigrate abroad due to the war. The study was conducted in Canada in 2023 using the Patient Health Questionnaire-9 of young people aged 16 to 30 years old who emigrated from Ukraine due to the war escalation on the 24th of February 2022. The PHQ-9 is a questionnaire used to assess the level of depression symptoms in the last two weeks based on 9 questions which show the level of the depression disorder or indicate the risks of its development. The research aims to raise awareness of the psychological well-being issue among war-displaced people between Russia and Ukraine to determine the level of depression, which allows providing practical recommendations for managing depression in the context of migration and developing psychological support and rehabilitation programs for this population. The study's findings suggest that a moderate level of depression, with increased levels of the moderate option, was observed among Ukrainian refugees aged 16 to 30 years old who migrated to Canada. The results also showed that the number of respondents who did not have signs of depression decreased due to the war. The average value of the sample slightly increased from 9.4 in 2022 to 10.9 in the current study. However, values of 9 and 10 are borderline for distinguishing «mild» and «moderate» levels of depression, so it can be assumed that this year was transitional between these conditions. The results of studying the most popular answers to some survey questions show that problems with falling asleep, poor sleep quality or too much concern more than half of the respondents almost every day. It can be argued that the stress associated with migration and war significantly affected the quality of sleep among young people. One-third of respondents reported poor appetite or overeating, which can be resolved with simple recommendations and advice. These findings highlight the potential need for mental health support for this population. The data obtained can be useful for government agencies in Canada and Ukraine, social services, psychological counsellors, and all those working with military and civilian refugees in the territories of North America and Europe.

Keywords: [Armed Conflicts](#), [Data Analysis](#), [Depression](#), [Emigrants](#), [Mental Health](#), [PHQ-9](#).

Introduction

The ongoing war in Ukraine since 2014 has resulted in the forced migration of thousands of people, leading to a range of social and psychological problems. Therefore, this research aims to investigate the level of depression among young people who were forced to emigrate to Canada due to the war in Ukraine. The research will be conducted using the Patient's Health Questionnaire (PHQ-9) among young people aged between 16 and 30. PHQ-9 is a survey used to assess the level of depression symptoms in the past two weeks.

In the case of young people who have moved abroad due to the war, depression may be caused by stress associated with the loss of their home social contacts, as well as the cultural and economic transition to a new country. These factors may lead to feelings of alienation, uncertainty, and loss of control over their lives. Among the symptoms observed in young people living abroad are a constant feeling of doubt, hopelessness, loss of interest in life, loss or increase in appetite, insomnia or oversleeping, feelings of guilt or despair, helplessness, and alienation from others, decreased self-esteem and feelings of inadequacy in their lifestyle, problems with concentration and decision-making, thoughts of death or suicide (George U et al., 2015).

Depression among young people who have moved abroad due to the war can significantly worsen their quality of life, affect their social interaction, and reduce their success in education and work. Therefore, research on the level of depression among young people in emigration will help us to understand the problems and address them both at the level of assistance provided by the state and through self-help among the population.

Aim

The research aims to determine the level of depression using the PHQ-9 questionnaire, which will allow for the assessment of mental disorders among the 16-30-year-old population group of Ukrainian emigrants in Canada and provide practical recommendations for managing depression in the context of immigration. The study aims to raise awareness about the problem of psychological well-being among immigrants affected by the war between Russia and Ukraine. It may aid in developing psychological support and

rehabilitation programs for this population group. The research has significant practical implications for understanding the psychological state of young people who have moved due to the war in Ukraine since February 24, 2022. The study's results provide insight into the level of depression among this group of people and identify possible psychological issues that arise from such stressful situations.

Materials and Methods

The present study presents the results of a statistical survey on the prevalence and severity of depression among Ukrainian youth who have emigrated to Canada due to the war in Ukraine. Online and face-to-face surveys were used to collect data from Ukrainian immigrants in Canada aged 16-30 based on the PHQ-9 questionnaire. According to the study conducted by Laura P. Richardson, MD, MPH, in her work «Evaluation of the Patient Health Questionnaire (PHQ-9) for Detecting Major Depression among Adolescents», the PHQ-9 questionnaire among adolescents has an optimal cut point. Its sensitivity and specificity are similar to those of adults, making it suitable for use among different age groups. This tool's brief nature and ease of use make the PHQ-9 an adequate choice for service providers and researchers who seek to introduce depression screening in primary care settings (Richardson, L. P. et al., 2010).

The PHQ-9 stands out as an ideal choice for online surveys focusing on assessing depressive symptoms and understanding respondents' mental health. Its scalability allows for broad outreach, enabling data collection from diverse populations. This feature is instrumental in acquiring larger sample sizes, facilitating comprehensive insights into depressive symptoms among various groups. Moreover, the PHQ-9 prioritizes respondent privacy and anonymity, crucial aspects of online surveys. It gathers sensitive mental health information while ensuring confidentiality. With its established validity, user-friendly interface, and standardized structure, the PHQ-9 emerges as a reliable tool, simplifying data analysis and enabling comparisons across different demographics or timeframes in online research initiatives.

The questionnaire consists of 9 questions and four answer options coded by number corresponding to the duration of the patient's symptom. The minimum score is 0, and the maximum score is 27.

The sum of the scores can be used to assess the severity of depression and interpret it on a scale:

- 0 – 4 None-minimal
- 5 – 9 Mild
- 10 – 14 Moderate
- 15 – 19 Moderately severe
- 20 – 27 Severe

The questionnaire also includes a functional health assessment that indicates how emotional difficulties or problems affect work, home life, or relationships with others. The residents of Ukraine, aged 16 to 30, who left the territory of Ukraine after the escalation of the war on February 24th, 2022, and who are currently in the territory of Canada at the time of the study became the research subject. To assess the results, 55 questionnaires corresponding to the specified sample were selected, of which 10 were offline and 45 were online. The sample size of 55 respondents was chosen due to limited resources for data collection and analysis. Also, the study focused on a narrowly defined phenomenon within a relatively homogeneous population, making a smaller sample size appropriate for effective analysis and insights. The survey was conducted in three languages, English, Ukrainian, and Russian, to cover the maximum audience. The screening primarily utilized the English version of PHQ-9 as the original language for its highest accuracy in question understanding. Nevertheless, respondents were offered the choice to opt for translated versions if they felt more comfortable expressing themselves in a language other than English. Validation, cleaning, and evaluation of data occurred after. Statistical characteristics such as mean, mode, median, and standard deviation were used to analyze the data. Diagrams were constructed based on the obtained data for visual representation of the study. Evaluation of results, comparison with existing data, and development of clinical recommendations became the final step of the investigation.

The data analysis was executed using Microsoft Excel software to conduct a comprehensive examination of the dataset. Initially, raw data was imported into Excel to ensure data accuracy. Subsequently, a series of data cleaning and organization procedures were implemented to enhance data quality. Descriptive statistical analyses were then performed, encompassing computations of key statistical parameters such as means, standard deviations, and

frequencies, employing Excel's inherent functions. Furthermore, graphical representations were generated, employing various visualization tools within Excel, to effectively illustrate the distributional patterns and interrelationships within the dataset.

Results

Based on the results of the anonymous online and offline survey of 55 Ukrainians who moved to Canada due to the war in Ukraine on February 24th 2022, the analysis of the obtained data indicates that:

- No signs of depression were reported in 3.63%
- A mild level of depression was reported in 34.5%
- A moderate level of depression was reported in 29.1% of respondents
- A moderate-severe level of depression was reported in 25.5%
- And a severe level was reported by 7.27%

The diagram showing the distribution of depression levels in the sample is shown in Figure 1.

The most common level of depression among respondents was «Mild» (34.5%), which may indicate that resettled individuals are experiencing stress and adapting to new living conditions.

29.1% of respondents described their emotional state as «Moderate», indicating emotional imbalance among resettled individuals.

25.5% of respondents reported their emotional state as «Moderate-severe», which may indicate serious problems adapting to new living conditions and needing additional support.

It is worth noting that 7% describe their symptoms as «Severe» (7.27%), which requires

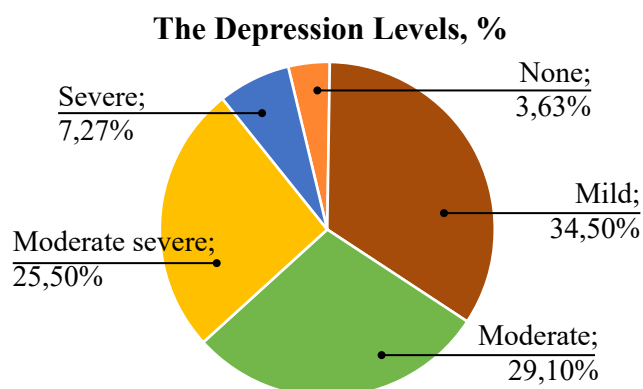


Figure 1: The diagram of the distribution of depression levels in the sample, %

urgent action, as some resettled individuals may be experiencing severe emotional problems and require professional help.

«None» level of emotional state was reported by 3.63% of respondents, which may indicate that some resettled individuals have successfully adapted to new living conditions in Canada.

Therefore, the study results indicate that Ukrainian resettled individuals who moved to Canada due to the war in Ukraine as of February 24, 2022, may experience emotional imbalance and require additional support and assistance for successful adaptation to new living conditions.

The definition of some statistical indicators shows:

- Mean=10.91 corresponding to a Moderate level
- Mode=8 corresponding to Mild level
- Median=10.5 corresponding to Moderate level
- Standard Error=5.19
- Confidence Interval=1.40

According to the data, among the migrants aged 16 to 30 who moved to Canada due to the war in Ukraine on February 24, 2022, the average level of depression is 10.91, which corresponds to a moderate level of depression. The mode is 8, indicating that most responses in the sample show moderate depression. The median is 10.5, which also corresponds to a moderate level of depression. The standard error is 5.19. The confidence interval is 1.40, indicating that the average depression value for the entire population can lie between 9.51 and 12.31 with a probability of 95%.

It is interesting to study the most popular responses to some survey questions. Thus, the mode of the sample on the question «Trouble falling asleep, staying asleep, or sleeping too much» is option 3, which corresponds to the answer «nearly every day». It can be argued that stress associated with migration and war significantly affects the sleep quality of young people. The most popular answer to the questions «Feeling tired or having little energy» and «Little interest or pleasure in doing things» was 2, corresponding to «more than half the days». One-third of respondents, 32.7%, reported poor appetite or overeating, which has the potential to be corrected through simple recommendations and advice.

Thus, the study results indicate that among migrants aged 16 to 30 who moved to Canada due to the war in Ukraine since February 24, 2022, there is a moderate level of depression with the presence of elevated levels of the mean value.

The research has some possible limitations, such as sample selection: the study surveyed 55 participants who had moved to Canada due to the war in Ukraine since February 24, 2022; age limitation: only participants aged 16 to 30 were included in the study; geographical limitation: the study was conducted only among Ukrainians who had moved to Canada. This may limit the applicability of the study's results to this group of people and make it impossible to generalize the results to other geographical areas. Possible response errors might be presented: in anonymous surveys, there may be issues with the accuracy of responses, as they may be insufficiently precise or reflect distorted perceptions of the respondents about their condition.

Discussion

Compared with the previous study among young people, the respective data received for the recent study in 2022 at the time of the Covid-19 Pandemic showed that the minimal degree of depression was 24%, mild was 26%, moderate – 30%, severe – 10%, and highly severe was 4%. The mean was 9.4, the standard deviation was 5.59, the error of the mean was 2.50, and the left confidence interval (95%) was 2.45, while the right confidence interval (95%) was 16.35 (Jerish L.R., 2023).

According to the results of the previous study, the minimal degree of depression was 24%, which is higher than in the current study (3.63%). Therefore, due to the war, the number of respondents without any signs of depression decreased. The average level of depression was approximately the same in both studies (10.91 compared to 9.4). However, the average number of people with moderate and moderately severe depression was higher in the current study (54.6%) than in the previous one (40%). In the previous study, there were fewer people with severe depression (4%) than in the current one (7%). The chart shows the dispersion of levels of depression in 2022 and 2023 in Figure 2.

Therefore, it can be stated that the degree of depression among young Ukrainians in 2023 who moved to Canada due to the war in Ukraine since

The Dispersion of levels of the depression in 2022 and 2023, %

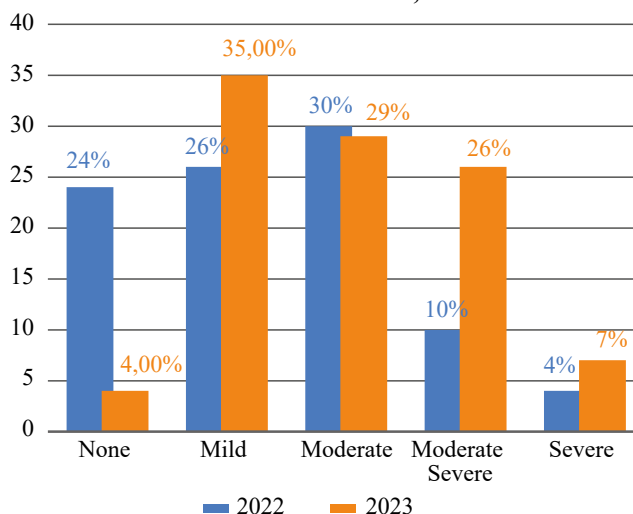


Figure 2. The Dispersion of levels of the depression in 2022 and 2023, %

February 24, 2022, increased compared to the previous study in 2022. Still, the average level of depression remained the same. The sample mean value slightly increased from 9.4 in 2022 to 10.9 in the current study. However, values of 9 and 10 are borderline for distinguishing «mild» and «moderate» levels of depression, so it can be assumed that this year was transitional between these conditions.

After comparing past and current research, the results showed a better mental health status than expected. However, the slight difference between 2022 and 2023 could be attributed to the significant spike in depressive disorders caused by Covid-19. As such, the effects of lockdown and pandemic are comparable to those of full-scale war and active hostilities in terms of mental hygiene. Chaaya's study on the mental health status of Ukrainian youth in recent years argues that the combined effect of the Covid-19 pandemic and the Russian invasion of Ukraine resulted in a surge of mental health disorders, including anxiety, post-traumatic stress disorder, depression, reduced behaviour aimed at seeking psychiatric help, substance use disorders, and destructive behavioural disorders.

Damiano Rizzi, in the article «Running Away from the War in Ukraine: The Impact on Mental Health of Internally Displaced Persons (IDPs) and Refugees in Transit in Poland», provides indicators of the mental health of Ukrainian refugees in Poland during the war. An adapted scale showed

strong (21.4%) or very strong (19.1%) anger in 40.5% of the sample; serious (23.3%) or very serious (30.5%) anxiety, as well as severe (31.3%) or very severe (26%) depression. Finally, 15.2% of refugees reported serious sleep disturbances (10.8% serious and 4.4% very serious). He concludes that the condition of refugees and displaced persons is a new problem in the field of trauma-related mental illness. The results of his study on anxiety, anger, and depression are comparable to those obtained in this research and show a similar trend.

Possible directions for future work include further studies on the levels of depression and other mental disorders among refugees and military personnel from different countries, which would help understand the factors affecting their mental health and identify the most effective support methods. Development of programs and interventions aimed at improving the mental health of refugees and military personnel, including support programs for veterans and their families, would help them adapt to new living conditions, reduce stress and improve their quality of life. Researching to understand how different psychotherapy methods can be effective for different cultures and groups of refugees would help develop national and cultural variants of support programs. Finally, the development of additional diagnostic and monitoring methods for the mental health of refugees, including diagnostic tests and mobile applications, would help quickly identify and track mental disorders and provide quick access to support.

Conclusion

The presented scientific work provides the results of a study of the level of depression in March 2023 among newly arrived Ukrainians aged 16 to 30 who are currently residing in Canada and were forced to leave Ukraine due to the full-scale war that began on February 24, 2022. Based on the results of an anonymous online and offline survey of 55 Ukrainians show that no signs of depression were reported by 3.63% of respondents; a mild level – 34.5% of respondents, a moderate level – 29.1% of respondents, a moderately severe level – 25.5% of respondents, and a severe level of depression was reported by 7.27% of respondents. Overall, the results suggest that a significant proportion of Ukrainians who moved to Canada due to the war in Ukraine are experiencing symp-

toms of depression, with over 66% reporting either moderate or severe levels. These findings highlight the potential need for mental health support for this population. After calculating some statistical indicators, it was found that the average level of depression among respondents is 10.91, which means a moderate level of depression. The mode is 8, and the median is 10.5, indicating that most of the sample's responses show a moderate level of depression as well. The results of studying the most popular answers to some survey questions are worth paying attention to. For the question about the problems with falling asleep, poor sleep quality or too much sleep, the sample mode is 3, corresponding to the answer almost daily. It can be argued that the stress associated with migration and war significantly affected the quality of sleep among young people. The most popular answer to the questions about feeling tired or experiencing a lack of energy and complaints about having little interest or pleasure in doing things was 2, which means that half of the time, the respondents are not satisfied with their emotional and mental status as well as a lack of the motivation and the feeling of the achievement. One-third of respondents, 32.7%, reported poor appetite or overeating, which can be resolved with simple recommendations and advice.

Thus, the results of the study indicate that among refugees aged 16 to 30 who moved to Canada due to the war in Ukraine since February 24, 2022, a moderate level of depression with increased levels of the middle option is observed. According to the results of a previous study, the minimum degree of depression was 24%, which is higher than in the current study (3.63%). Therefore, the number of

respondents who do not have signs of depression has decreased due to the war.

The average value of the sample slightly increased to 9.4 in 2022, and 10.9 in the current study, although values of 9 and 10 are borderline for distinguishing «mild» and «moderate» levels of depression, so it can be assumed that this year was transitional from mild to moderate depression.

The results of the study help to assess the mental state of a new population group in Canada, which has experienced significant psychological stress both from war in their own country and from the challenges of adapting to a new country. The data obtained can be useful for government agencies in Canada and Ukraine, social services, psychological counsellors, and all those working with military and civilian refugees in the territories of North America and Europe.

Financing

The current study was performed without financing.

Conflict of interests

The authors have no conflict of interest to declare.

Consent to publication

The authors have read and approved the final version of the manuscript. The authors agreed to publish this manuscript.

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A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of the article

REFERENCES

Chaaya, C., Devi Thambi, V., Sabuncu, Ö., Abedi, R., Osman Ahmed Osman, A., Uwishema, O., & Onyeaka, H. (2022). Ukraine – Russia crisis and its impacts on the mental health of Ukrainian young people during the COVID-19 pandemic. *Annals of medicine and surgery* (2012), 79, 104033. <https://doi.org/10.1016/j.amsu.2022.104033>.

George U, Thomson MS, Chaze F, Guruge S. Immigrant Mental Health, A Public Health Issue: Looking Back and Moving Forward. *International Journal of Environmental Research and Public Health*. 2015; 12(10):13624-13648. <https://doi.org/10.3390/ijerph121013624>.

Institute of Health Metrics and Evaluation. Global Health Data Exchange GHDx. <http://ghdx.healthdata.org/gbd-results-tool?params=gbd-api-2019-permalink/d780dffbe8a381b25e1416884959e88b>.

Jerish L.R. (2023). Hygienic assessment of depression spread dynamics in NMU foreign students. Annual Young Medical Scientists' Conference 2022, AYMSConf 2022. Український науково-медичний молодіжний журнал, 133(3), 74. <https://doi.org/10.32345/USMJ.SUPPLEMENT.3.2022.5-147>.

Richardson, L. P., McCauley, E., Grossman, D. C., McCarty, C. A., Richards, J., Russo, J. E., Rockhill, C., & Katon, W. (2010). Evaluation of the Patient Health Questionnaire-9 Item for detecting major depression among adolescents. *Pediatrics*, 126(6), 1117–1123. <https://doi.org/10.1542/peds.2010-0852>.

Rizzi, D., Ciuffo, G., Sandoli, G., Mangiagalli, M., de Angelis, P., Scavuzzo, G., Nych, M., Landoni, M., & Ionio, C. (2022). Running Away from the War in Ukraine: The Impact on Mental Health of Internally Displaced Persons (IDPs) and Refugees in Transit in Poland. International journal of environmental research and public health, 19(24), 16439. <https://doi.org/10.3390/ijerph192416439>.

Психогігієнічна оцінка рівня депресії серед української молоді, яка внаслідок війни в Україні була змушена емігрувати до Канади

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Анотація: війна, яка триває в Україні з 2014 року, призвела до вимушеної міграції тисяч людей, що, у свою чергу, стало причиною низки соціальних і психологічних проблем, включаючи депресію. З огляду на це метою нашої роботи було дослідити рівень депресії серед молоді, яка внаслідок війни була змушена емігрувати за кордон. Дослідження проводилося в Канаді в 2023 році за допомогою опитувальника Patient Health Questionnaire-9 серед молодих людей віком від 16 до 30 років, які емігрували з України через ескалацію війни 24 лютого 2022 року. PHQ-9 – це опитувальник, який використовується для оцінки рівнів симптомів депресії за останні два тижні на основі 9 питань, які показують рівень депресивного розладу або вказують на ризики його розвитку. Дослідження спрямоване на підвищення обізнаності про психологічне благополуччя серед переселенців з України для визначення рівня депресії, що дозволяє надати практичні рекомендації щодо управління депресією в контексті міграції та розробити програми психологічної підтримки та реабілітації для цього населення. Результати дослідження свідчать про те, що серед українських біженців віком від 16 до 30 років, які емігрували до Канади, спостерігався помірний рівень депресії з підвищеним рівнем помірного варіанту. Результати також показали, що через війну зменшилася кількість респондентів, які не мали ознак депресії. Середнє значення вибірки децю зросло з 9,4 у 2022 році до 10,9 у поточному дослідженні. Проте значення 9 і 10 є граничними для розрізнення «легкого» і «помірного» рівнів депресії, тому можна припустити, що цей рік був перехідним між цими станами. Результати вивчення найпопулярніших відповідей на деякі запитання опитування показують, що проблеми із засинанням, поганою якістю сну або надмірним сном хвилюють більше половини респондентів чи не щодня. Можна стверджувати, що стрес, пов'язаний з міграцією та війною, значно вплинув на якість сну молоді. Третина респондентів повідомили про поганий апетит або переїдання, які можна вирішити простими рекомендаціями та порадами. Ці результати підкреслюють потенційну потребу в підтримці психічного здоров'я для цієї групи населення. Отримані дані можуть бути корисними державним установам Канади та України, соціальним службам, психологічним консультантам та всім, хто працює з військовими та цивільними біженцями на території Північної Америки та Європи.

Ключові слова: збройні конфлікти, аналіз даних, депресія, емігранти, психічне здоров'я, PHQ-9.



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