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**THE EFFECTS OF CIVIL UNREST AND NEIGHBOURING ARMED
CONFLICTS ON HIGHER EDUCATION STUDENTS**

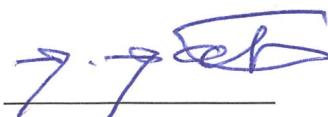
DIPLOMA THESIS

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LIST OF ABBREVIATIONS

SADS: SEPARATION ANXIETY DISORDERS

ICDS: IMPULSE CONTROL DISORDERS

IFMSA: INTERNATIONAL FEDERATION OF MEDICAL STUDENTS ASSOCIATION

DSM-V: DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS 5TH EDITION

PHQ: PATIENT HEALTH QUESTIONNAIRE

GAD: GENERALIZED ANXIETY DISORDER

OECD: ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

WHO: WORLD HEALTH ORGANISATION

PTSD: POST-TRAUMATIC STRESS DISORDER

ABSTRACT

Background: War and atrocious violence accounts for a multitude of dreadful outcomes impacting the broad spectrum of society. Not only does war leave behind it fatalities, injuries, and socioeconomic losses, it moreover results in increasing levels of stress, depression and anxiety all together. It is therefore crucial to analyze and evaluate the consequences of war on the mental health, particularly the mental health and wellbeing of higher education students.

Aim: The aim of the study is to analyze the psychological impact of civil unrest and neighbouring armed conflicts on higher education students in light of the aggressive war that erupted against Ukraine early 2022.

Material and Methods: A cross-sectional study was conducted among higher education students by completing an anonymous study questionnaire between October 1, 2022 and April 1, 2023. The results were collected from the questionnaire that is divided into three parts. The first part contains demographic characteristics alongside a wartime profile. The second part is comprised of the generalized anxiety disorder 7-item (GAD-7) scale, while the third part is consisting of the patient health questionnaire (PHQ-9), which is a validated 9-item questionnaire to assess depression severity in individuals. Data analysis was conducted using IBM SPSS version 28. Results with a p-value < 0,05 were considered as statistically significant.

Results: 132 higher education students have taken part in the survey, of which 116 students (87,9%) were between the age of 18-25, and 77 (58,3%) were female. 46 (34,8%) of the participants had according to the GAD-7 score no signs of anxiety, while 86 (65,2%) students had anxiety, yet in different degrees: mild anxiety in 43 (32,6%) students, moderate anxiety in 20 (15,2%) students, and severe anxiety was found in 23 (17,4%) students. Depression was determined by the PHQ-9 score, demonstrating a total of 48 (34,8%) students that had moderate to severe depression, while 32 (24,2%) students had mild depression, and 52 (39,4%) students had minimal depression. Anxiety and depression tended to be more prevalent among female students, with 18 (23,37%) of the 77 female participants achieving a GAD-score of 15 or more, which is considered indicative of moderate to severe anxiety, compared to only 5 (10%) of the 50 male participants that had a GAD-score of 15 or more. On the other hand, 20 (25,97%) of the 77 female participants acquired a PHQ-score of 15 or more, which is considered indicative of moderate to severe depression, while only 4 (8%) of the 50 male participants had a PHQ-score of 15 or more

Conclusion: Research proved that the mental health of higher education students in Latvia is highly at risk, of which female students are particularly at greater risk, showing statistically valid higher levels as compared to literature data most notably given the acrimonious circumstances of war in Ukraine. Heightened levels of anxiety and depression among higher education students were revealed, a large proportion of whom had already exhibited moderate to severe levels of anxiety and depression.

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Key words: Anxiety, depression, PHQ-9, GAD-7, higher education student, war.

KOPSAVILKUMS

Ievads: Karš un nežēlīga vardarbība rada daudz briesmīgu iznākumu, kas ietekmē plašu sabiedrības slāņu spektru. Karš ne tikai atstāj aiz sevis nāves gadījumus, ievainojumus un sociālekonomiskus zaudējumus, bet arī palielina stresa, depresijas un trauksmes līmeni kopumā. Tāpēc ir ļoti svarīgi analizēt un novērtēt kara sekas uz garīgo veselību, jo īpaši uz augstākās izglītības studentu garīgo veselību un labklājību.

Mērķis: Pētījuma mērķis ir analizēt pilsonisko nemieru un bruņoto konfliktu kaimiņos psiholoģisko ietekmi uz augstskolu studentiem, ņemot vērā agresīvo karu, kas izcēlās pret Ukrainu 2022. gada sākumā.

Materiāli un metodes: Šķērsriezuma pētījums tika veikts augstskolu studentu vidū, aizpildot anonīmu pētījuma anketu laikā no 2022. gada 1. oktobra līdz 2023. gada 1. aprīlim. Rezultāti tika apkopoti no anketas, kas sadalīta trīs daļās. Pirmajā daļā ir iekļauti demogrāfiskie raksturlielumi līdzās kara laika profilam. Otro daļu veido ģeneralizētas trauksmes 7 punktu (GAD-7) skala, savukārt trešo daļu veido pacienta veselības aptauja (PHQ-9), kas ir apstiprināta 9 punktu aptauja, lai novērtētu depresijas smagumu, privātpersonām. Datu analīze tika veikta, izmantojot IBM SPSS versiju 28. Rezultāti ar p-vērtību < 0,05 tika uzskatīti par statistiski nozīmīgiem.

Rezultāti: Aptaujā ir piedalījušies 132 augstākās izglītības studenti, no kuriem 116 studenti (87,9%) bija vecumā no 18 līdz 25 gadiem, bet 77 (58,3%) bija sievietes. 46 (34,8%) no dalībniekiem pēc GAD-7 rādītāja nebija trauksmes pazīmju, savukārt 86 (65,2%) studentiem bija trauksme, tomēr dažādās pakāpēs: viegla trauksme 43 (32,6%), mērena trauksme konstatēta 20 (15,2%) studentiem, bet smaga trauksme konstatēta 23 (17,4%) studentiem. Depresiju noteica pēc PHQ-9 rādītāja, kopumā uzrādot 48 (34,8%) studentiem ar vidēji smagu vai smagu depresiju, savukārt 32 (24,2%) studentiem bija viegla depresija, bet 52 (39,4%) studentiem bija minimāla depresija. Trauksme un depresija bija biežāk sastopamas studenšu vidū, un 18 (23,37%) no 77 dalībniecēm GAD sasniedza 15 vai vairāk, kas tiek uzskatīts par vidēji smagu vai smagu trauksmi, salīdzinot ar tikai 5 (10%) no 50 vīriešu kārtas dalībniekiem, kuriem GAD rādītājs bija 15 vai vairāk. No otras puses, 20 (25,97%) no 77 dalībniecēm ieguva PHQ rezultātu 15 vai vairāk, kas tiek uzskatīts par vidēji smagu vai smagu depresiju, savukārt tikai 4 (8%) no 50 vīriešiem PHQ rezultāts bija 15 vai vairāk.

Secinājumi: Pētījums pierādīja, ka augstskolu studentu, un it īpaši studenšu, garīgā veselība Latvijā ir ļoti apdraudēta, kas statistiski ticami uzrāda augstākus traucējumu līmeņus, salīdzinot ar literatūras datiem, ņemot vērā kara Ukrainā negatīvo ietekmi. Tika atklāts paaugstināts trauksmes un depresijas līmenis augstākās izglītības studentu vidū, no kuriem ievērojama daļa jau bija uzrādījuši pagātnē vidēji smagu vai smagu trauksmes un depresijas līmeni.

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Atslēgvārdi: Trauksme, depresija, PHQ-9, GAD-7, augstākās izglītības students, karš.

1. INTRODUCTION

One of the horrendous experience's humans are subjected to is the exposure to war. War leaves behind fatalities, injuries, and remarkable losses on the socioeconomic level, and last but not least; consequences on the mental health that might not recover that easily.

Armed conflicts affect an estimated 172 million people worldwide, among them over 59 million people coerced and displaced out of their homes (Centre for Research on the Epidemiology of Disasters, 2013). These people are subject to extreme traumatic experiences, leading to a variety of psychological complications including depression, post-traumatic stress disorder (PTSD), substance abuse, domestic violence, and divorce among couples (Fontana & Rosenheck, 1994; Prigerson et al., 2002).

After decades of relative peace in Europe, a new conflict seemed to have erupted again. Following a steady buildup of military forces along Ukraine's borders since 2021, Russia invaded Ukraine on February 24, 2022, with Russian ground forces attacking from multiple directions, marking the start of Europe's deadliest armed conflict in decades (Congressional Research Service, 2022). Alongside the damage to life and property, this conflict has generated a historic outflow of people, mainly women and children, fleeing the war and it's horrors. By mid-September 2022, close to five million individual refugees from Ukraine had been recorded across the EU and other OECD countries (OECD International Migration Outlook, 2022).

Objective research findings point out to the fact that psychological sequelae is immensely correlated with experiences related to violence and war (such as being close to bombings or witnessing others being killed) (Ferrier-Auerback et al. 2010; Kessler et al., 1995; Maguen et al., 2010; Ramchand et al., 2011; Schnurr & Green, 2004). The mental health of these subjects is a serious matter of concern, according to a systemic review and meta-analysis on prevalence estimates of mental health disorders among populations exposed to conflict; the estimated total prevalence of depression, anxiety, post-traumatic stress disorder (PTSD), bipolar disorder, and schizophrenia was 22,1% (95% UI 18·8–25·7) (Charlson et al., 2019).

All in all, wars and armed conflicts leave behind them negative effects on the wide spectrum of society. Yet a category of contemporary society is remarkably vulnerable and often overseen, this category is none other than higher education students, including medical students. It is of no surprise that medical students are at obviously higher risk of depression and anxiety, including the traumatic experiences of war, medical students are substantially involved in a mentally and emotionally draining study program lasting for six years in average

(Wolf, 1994), consequently leading to utmost high degrees of stress, thus anxiety has been reported in one-third of medical students worldwide (Quek et al., 2019). Additional studies report of a prevalence of up to 65,5% for anxiety and 66,5% for depression outside of North America (Hope and Henderson, 2014). The mental health of these higher education students is of prime importance since they will be the future generation leading the initiative.

1.1 AIM

The aim of the study is to analyze the psychological impact of civil unrest and neighbouring armed conflicts on higher education students in light of the aggressive war that erupted against Ukraine early 2022.

1.2 OBJECTIVES

The objectives of the study were:

1. To determine the psychological status of higher education students during the ongoing war against Ukraine since early 2022.
2. To compare the prevalence, severity and degree of the psychological status of higher education students in light of the ongoing war against Ukraine since early 2022.
3. To assess and measure the severity of depression in higher education students.
4. To assess and measure the severity of generalised anxiety disorder (GAD) in higher education students.

1.3 HYPOTHESES

Civil unrest and neighbouring armed conflicts are associated with a greater risk of a variety of psychological complications on higher education students, including depression and anxiety.

2. LITERATURE REVIEW

2.1 Mental Disorders

2.1.1 Overview

According to the American Psychiatric Association's Diagnostic and statistical manual of mental disorders, 5th ed (DSM-5), a mental disorder is 'a syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or development processes underlying mental functioning. Mental disorders are usually associated with significant distress or disability in social, occupational, or other important activities. An expectable or culturally approved response to a common stressor or loss, such as the death of a loved one, is not a mental disorder. Socially deviant behavior (e.g., political, religious, or sexual) and conflicts that are primarily between the individual and society are not mental disorders unless the deviance or conflict results from a dysfunction in the individual, as described above'.

Table 2.1. DSM-IV definition of mental disorder

Features	
A	A clinically significant behavioral or psychological syndrome or pattern that occurs in an individual.
B	Associated with present distress (e.g. a painful symptom) or disability (i.e. impairment in one or more important areas of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom.
C	Must not be merely an expectable and culturally sanctioned response to a particular event (e.g. the death of a loved one).

D	A manifestation of behavioral, psychological, or biological dysfunction in the individual.
E	Neither deviant behavior (e.g. political, religious, or sexual) nor conflicts that are primarily between the individual and society are mental disorders unless the deviance or conflict is a symptom of a dysfunction in the individual.
Other considerations	
F	No definition adequately specifies precise boundaries for the concept of ‘mental disorder’.
G	The concept of mental disorder (like many other concepts in medicine and science) lacks a consistent operational definition that covers all situations.

Table 2. DSM-V proposal for the definition of mental/psychiatric disorder

Features	
A	A behavioral or psychological syndrome or pattern that occurs in an individual
B	The consequences of which are clinically significant distresses (e.g. a painful symptom), or disability (i.e. impairment in one or more important areas of functioning)
C	Must not be merely an expectable response to common stressors and losses (e.g. the loss of a loved one) or a culturally sanctioned

	response to a particular event (e.g. trance states in religious rituals)
D	That reflects an underlying psychobiological dysfunction.
E	That is not primarily a result of social deviance or conflicts with society
Other considerations	
F	That has diagnostic validity on the basis of various diagnostic validators (e.g. prognostic significance, psychobiological disruption, response to treatment)
G	That has clinical utility (e.g. contributes to better conceptualization of diagnoses, or to better assessment and treatment)
H	No definition perfectly specifies precise boundaries for the concept of either ‘medical disorder’ or ‘mental/psychiatric disorder’
I	Diagnostic validators and clinical utility should help to differentiate a disorder from diagnostic ‘nearest neighbors’
J	When considering whether to add a mental/psychiatric condition to the nomenclature or delete a mental/psychiatric condition from the nomenclature, potential benefits (e.g. provide better patient care, stimulate new research) should outweigh potential harms (e.g. hurt particular individuals, be subject to misuse)

Mental health disorders are very commonly encountered in health care, most notably anxiety, post-traumatic stress disorder (PTSD), and depression. The prevalence of such disorders is

relatively high, figures estimate an approximate number of 450 million people that suffer from mental and behavioral disorders, with approximately one in four persons affected by these disorders in their lifetime (BMC Health Serv Res. 2019). Moreover, in a broad study from 85 surveys undertaken across 39 countries, the accumulative lifetime prevalence of common mental disorder was estimated to be at 29.2%. It indicates also that in a 12-month period one in five persons experienced a common mental disorder. Furthermore, in 2010, The fifth leading cause of disability-adjusted life years (183.9 million) were mental and substance use disorders. (Lancet, 2013). Thus, more efforts have to be directed to extensively research and better diagnose these disorders in order to maximize the efficacy of their management in clinical practice.

2.1.2 Etiologies

There are a variety of aspects that could contribute to the occurrence of a mental disorder and thus determine its severity as well.

Some research of anecdotic nature suggests a link between stressful emotions and sudden death (Lown et al., 1982), it raises the attention as well to whether biobehavioral stresses could augment cardiac susceptibility to ventricular fibrillation. These studies clearly indicate established associations between psychosocial variables and coronary heart disease morbidity and mortality (Jenkins, 1976). A recent review have cited 88 studies that raised attention on the psychosocial precursors of coronary morbidity and mortality (Jenkins, 1976).

Moreover, gender links have been proposed (Rapaport MH, 1995). Women were more susceptible to mental disorders compared to men (Cameron & Hill, 1989). Women had more anxiety, mood and somatoform disorders. This was linked to Biological and sociological causes (Blazer D, 1991). Furthermore, women were more likely to experience depression when confronted by vulnerable periods during their lifetime such as menopause and divorce (Steiner M, 1995). Another study confirmed the same conclusion substantiated by a review of 174 surveys across 26 high income countries and 37 low and middle income countries, it concluded that across high, middle and low income countries; females have been found to be more prone to experience a mood or anxiety disorder, while males were more likely to experience an alcohol or substance disorder (Steel Z, 2014). Substantially, community studies have established a link between age and education amount with the prevalence of mental disorders.

It concluded that the lower the education and age the greater the risk for a variety of mental disorders (Costello E, 1991).

Pandemic settings have also shown a toll on the mental health of individuals, a recent study drew a correlation between the COVID-19 outbreak together with the increased risk on the mental health of medical students attributed to the psychological stressors induced by restrictions like social distancing and/or having to live with family members or friends with COVID-19 (Elhadi et al., 2020).

On the other hand, and last but not least, war and violence accounted all along for a heavy toll on mental health and it still does. Not merely PTSD is the outcome of war exposure, research findings have shed light on a variety of mental health conditions associated with war trauma, namely major depression, SADs (Separation Anxiety Disorders) and ICDs (Impulse Control Disorders) (Karam et al., 2014).

Existing evidence from community studies suggested that higher rates of mental disorders were found in refugees, particularly PTSD, depression, and other anxiety disorders, compared to those rates found in populations not affected by war (Fazel et al., 2005. Tempany M, 2009).

Severe war exposure was also linked to depressive symptoms affecting mothers, which led to a reduction in the mothers emotional disposability, and thus consequently resulted in children negligence by the mother, which in turn negatively afflicted the mental health of the child, resulting in long lasting PTSD symptoms for the child. (Nermina Kravić, 2020).

2.1.3 Comorbidities

Considerable consequences exist for individuals having a mental health disorder. It is of no doubt that patients suffering from mental disorders are prone to a high comorbidity of a variety of physical conditions (Kate Scott et al., 2007). According to recent data provided by World Mental Health surveys, anxiety and depressive disorders are both associated with a variety of chronic physical conditions (Scott et al., 2007).

According to a study from Massachusetts, higher risk for 14 of the 15 studied chronic conditions was found to be in senior adults with mental illness compared to those devoid of such diseases (Lin et al., 2011, Scott et al., 2007).

Furthermore, individuals with a serious mental illness were more prone to have an exceeded disease prevalence rate by at least two times compared to that of general population, specifically here obesity, diabetes mellitus, metabolic syndrome, respiratory and cardiovascular diseases. On the other hand, prevalence of HIV turned out to be up to a staggering eight times in likelihood. All in all, an increased fatality risk of up to five times due to the increased prevalence of chronic diseases associated with serious mental illness was recorded (Scott et al., 2011).

2.2 Armed conflicts and the burden on mental health

2.2.1 Overview

An armed conflict can be defined as any organized dispute that involves the use of weapons, violence, or force, whether within national borders or beyond them, and whether involving state actors or nongovernment entities (Shenoda et al., 2018). On the other hand, it is also important to define extensions related to armed conflicts, such as war crimes, crimes against humanity and genocide. These terms were thoroughly defined by Amnesty international. According to Amnesty international and enhanced by the international humanitarian law of the 1949 Geneva Conventions, war crimes were defined as serious violations of international humanitarian law that include wilful killings, direct attacks on civilians, torture, use of prohibited weapons, the murder or ill-treatment of prisoners of war or others who have been captured, surrendered or injured and crimes of sexual violence. While crimes against humanity denoted crimes committed as part of a widespread or systematic attack by or on behalf of a state or an organization against a civilian population during peace or wartime. This included murder, extermination, enslavement, deportation or forcible transfer of a population, torture, rape and other serious forms of sexual violence, enforced disappearance and apartheid. And finally, genocide, which the latter source defined as certain acts committed with the intent to destroy, completely or partially, a national, ethnic, racial or religious group. Genocide may be committed in armed conflict or in peacetime. All these terms are relevant to the research in a way or another.

Armed conflicts either cause direct effects, or long-lasting indirect effects that can be mediated by complex factors tracing back to sociopolitical, economic and environmental alterations (Heidelberg Institute for International Conflict Research, 2015). Not only did the nature of war

drastically change in the modern era (Levy & Sidel, 2008), the rules dictating war conduct have changed as well. Places known traditionally for being safe, such as educational institutions, have not been spared anymore from being targeted during an armed conflict (Guha-Sapir & D'Aoust, 2011). This consequently led to high dropout rates and reduced rates of enrolment all together (Guha-Sapir & D'Aoust, 2011). The mental health problems that have resulted from traumatic events of armed conflicts are also not to be underestimated. According to the WHO an estimated "10% of the people who experience traumatic events will have serious mental health problems and another 10% will develop behavior that will hinder their ability to function effectively. The most common conditions are depression, anxiety and psychosomatic problems such as insomnia, or back and stomach aches" (WHO, 2001).

Even though world wars have not taken place since more than 70 years, major and minor armed conflicts continued to emerge in many regions of the world till this day. This is further asserted by the fact that in the 22 countries located in the eastern Mediterranean region of the World human organization, over 80% of the population has been either in a conflict situation or has experienced a situation alike in the previous quarter of century (Ghosh et al., 2004). In the upcoming chapter several examples of some of the most infamous armed conflicts that recently emerged on European soil will be presented.

2.2.2 Recent European armed conflicts and their Impact on mental health

The 20th century was with no doubt by far one of the bloodiest centuries in human history, marked by two world wars, and complemented by a cold war between the existing world powers at the time. The European continent had an important share in all of this. The armed conflicts fought in Europe alone are numerous, with a complicated background hardly perceivable. Nethertheless, the profound impact on mental health that have resulted from recently fought armed conflicts on European soil was evident.

The conflict in the Balkans following the breakup of Yugoslavia has had a tremendous impact of the civilian population, it was considered one of the most studied conflicts in the recent years (Di Giovanni J, 2004). An association between psychiatric disorders (namely PTSD and depression) and disability was demonstrated among Bosnian refugees in an initial study (Mollica et al., 1999). Furthermore, follow-up assessments concluded that former Bosnian refugees that remained living in the region have continued to exhibit psychiatric disorders and disability (Mollica et al., 2001). In a cross-sectional survey, PTSD symptoms were reported

among Kosovar Albanians beyond the age of 15 with a rate of 17,1%. (Lopes Cardozo et al., 2000). Moreover, and based on the General Health Questionnaire (GHQ)-28 score, a study of mental health among the Serbian ethnic minority in Kosovo marked a high rate in the GHQ-28 score subcategories of social dysfunction and severe depression, with women and lonely people being at greater risk to psychiatric morbidity (Salama et al., 2000). Similar findings were noted among Chechen asylum seekers due to the horrendous human rights abuses inflicted on the Chechen population during the Chechen wars (Human Rights Watch, 2003). In a survey exploring psychosocial issues in the settlements housing displaced people, two thirds of the respondents have affirmed that mental disturbance or upset feelings have indeed been triggered by the conflict, while the vast majority suggested that their family members had difficulty in coping with their disturbance or feeling of being upset (De Jong et al., 2007).

2.2.3. Current European armed conflicts and their impact on mental health - Ukraine war

Even though Europe experienced decades of relative peace, a newly erupted war against Ukraine in February 2022 marked the beginning of one of Europe's deadliest armed conflicts in decades (Congressional Research Service, 2022). Beforehand, in March 2014 Russia annexed Crimea. However, the conflict entered a critically new stage with the steady buildup of military forces along Ukraine's borders back in 2021, followed by a massive Russian invasion of Ukrainian territories from multiple directions altogether on February 24, 2022.

A heavy toll on both physical and mental health of Ukrainian people has been inflicted due to the ongoing Russian invasion. According to a relevant study on the matter and based on face-to-face interviews using a multi-stage random sample on general Ukrainian population, an elevated prevalence of PTSD symptoms was found, an even higher level of PTSD was found in those who have been internally displaced by the ongoing conflict compared to the urban-dwelling people (Johnson et al., 2022).

The effects of the reality of war are not to be underestimated when it comes to higher education student. Medical students were among the vulnerable categories that suffered tremendously from the consequences of this conflict. It is a great loss if not even a tragedy that this emerging young generation of students that devoted their career to help others and indeed rescue lives yet might be confronted by the fact that their study process would be halted and consequently they won't be able to accomplish what they started with. This comes to no surprise, since key infrastructure of medical institutions have been bombarded, which resulted in catastrophic

long-term effects on medical education in Ukraine due to the lack of infrastructure and resources that used to provide adequate support (Tsagkaris et al., 2022). As for the safety of these students, alarming reports affirmed that some even lost their lives in the ongoing shelling of the cities in Ukraine (Tribune News Service, 2022).

In this context, it is likely that numerous of these medical students will end up having to divert away from their studies in order to be deployed on the front lines, thus their medical education will be indefinitely frozen until a further notice. Consequently, and in response to these outcomes, the International Federation of Medical Students' Associations (IFMSA) and medical students worldwide appealed for the termination of violence and armed conflict in Ukraine (International Federation of Medical Students Association, Medical Students Appeal for Peace in Ukraine, 2022).

An increased demand has emerged to investigate further the effects of the Ukrainian armed conflict on mental health, more specifically to analyze the psychological impact of civil unrest and neighbouring armed conflicts on higher education students in light of the war that erupted against Ukraine early 2022, which in turn underlines one of the prime objectives of this research.

3. MATERIALS AND METHODS

3.1 Design

This is a cross-sectional retrospective study performed in Latvia with data collected in the period between October 1, 2022 and April 1, 2023. Data were collected in paper and electronic forms using anonymous surveys that were distributed to higher education students through the social media groups and forums. The study questionnaire was anonymous to guarantee the authenticity of the data.

3.2 Participants

The selected participants were active higher education students who were enrolled in higher education studies in various study programs. Students regardless of age and gender were included, the minimum age to participate was 18 years of age.

3.3 Questionnaire

The cross-sectional study was conducted through written surveys handed over to students and online surveys accessible on Google Form platform. The questionnaire was structured on 42 questions divided into three parts. The first part included a wartime profile and a demographic characteristics inquiry, including age group, gender, study program and year, living status, financial status and residence.

Secondly, the generalized anxiety disorder 7-item (GAD-7) scale to was deployed to detect anxiety symptoms. This scale included questions regarding seven anxiety symptoms and their frequencies within the last 2 weeks. Every single one of the 7-item questions rated anxiety using a 4-item Likert scale of 0 (not at all), 1 (several days), 2 (more than half of the days), and 3 (nearly every day), with a total score of 0–21 (Ruiz et al, 2011; Johnson et al, 2019). A score of 0–4 was considered as normal, 5–9 was regarded as mild, 10–14 was regarded as moderate, and 15–21 was regarded as severe (Kroenke et al, 2007). A GAD-7 score of ≥ 15 was considered as the cutoff score to detect anxiety symptoms (Spitzer et al, 2006).

Lastly, the third part, which consisted of the patient health questionnaire (PHQ-9), a reliable 9-item questionnaire to assess depression severity in individuals. Every single one of the 9-item questions rated depression using a 4-item Likert scale of 0 (not at all), 1 (several days), 2 (more than half the days), and 3 (nearly every day), with a total score of 0–27 (Kroenke et al, 2001). A score of 0–4 was regarded as minimal, 5–9 was regarded as mild, 10–14 was regarded as moderate, 15–19 was regarded as moderately severe, and 20–27 was regarded as severe (Urtasun et al, 2019). A PHQ-9 score of ≥ 15 was considered as the cutoff score to detect depressive symptoms (Kroenke et al, 2001; Levis et al, 2019).

3.4 Statistics

Statistical analysis was conducted using IBM SPSS Statistics version 28. Results with a p-value $< 0,05$ were considered statistically significant. Descriptive statistics and Chi-square test were used to determine the statistical significance of categorical nominal variables and differences among groups.

3.5 Ethical approval and consents

The research proposal was evaluated and approved by the Research Ethics Committee of FM of the University of Latvia (Nr. 19-25/157) on 31.08.2022. Information and data were collected anonymously, with all information about data processing and its objectives being provided before the questionnaire. All participants provided their consent before participating in the anonymous study questionnaire.

4. RESULTS

4.1 Demographic characteristics

A total of 132 higher education students have taken part in the survey (N=132). The vast majority of participants, numbering 116 students (87,9%) were between the age of 18-25. The number of female participants rose to 77 (58,3%), while male participants were 55 (41,7%) (Figure 1.).

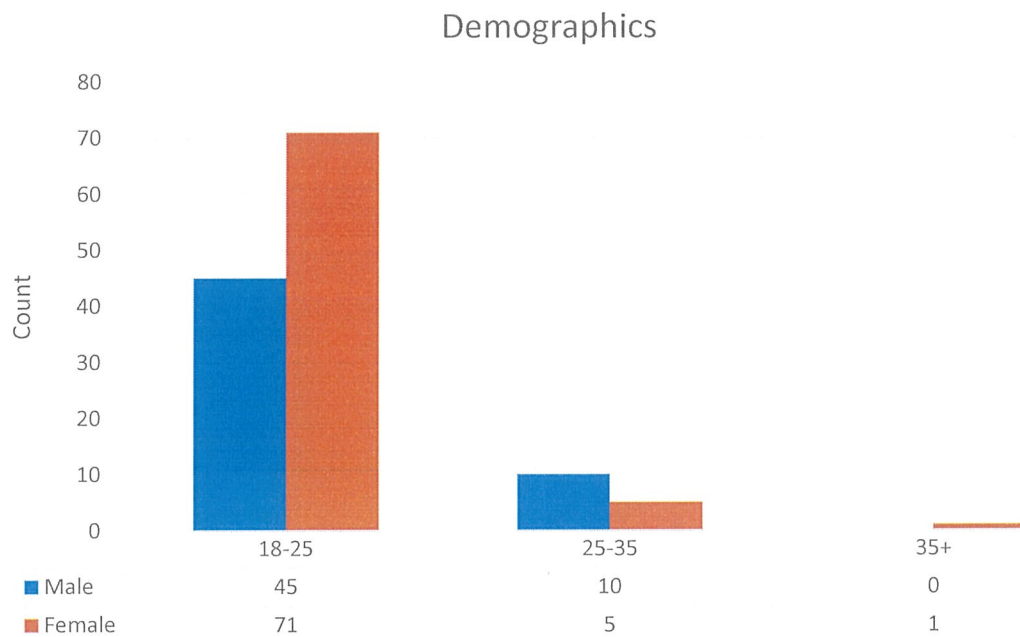


Figure 1. Bar chart of crosstabs between sample gender and age groups

The participating students were from a variety of study programs, with 59 (44,8%) of the participants belonging to the faculty of medicine (Figure 2.).

Study program

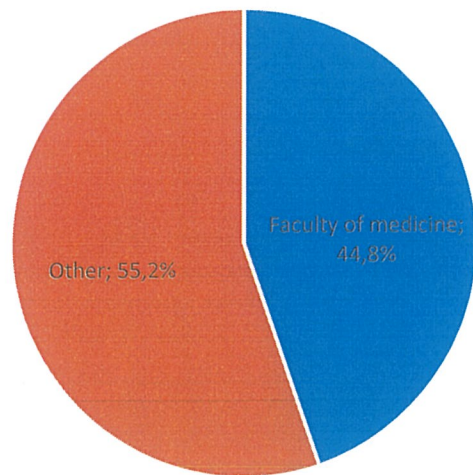


Figure 2. Pie chart presenting study programs of participants.

As for the year of study the participants were in, roughly half of the participants were in the first or second year of their study program (Figure 3.).

Year of study

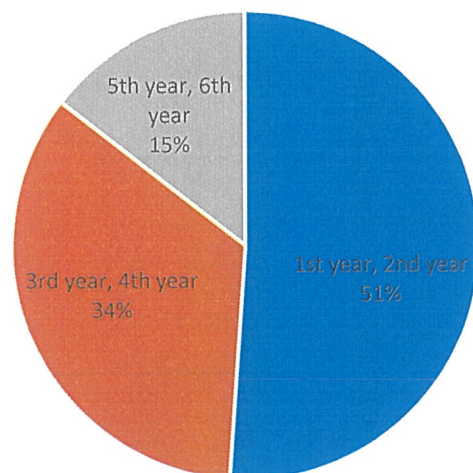


Figure 3. Pie chart presenting year of study of participants.

From the participants, 70 (53,0%) were local citizens, while 62 (47,0%) were foreigners (Figure 4.).

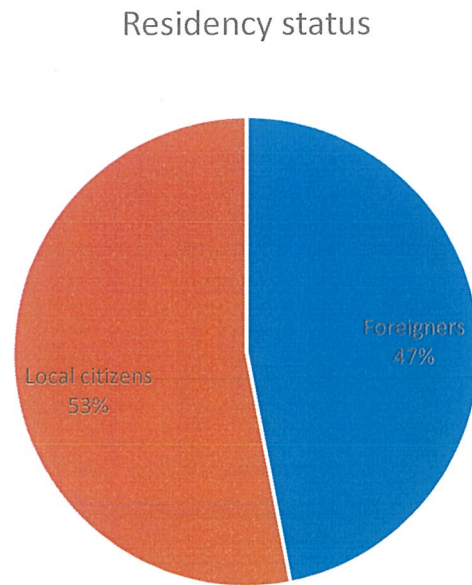


Figure 4. Pie chart presenting residency status of participants.

Most of the participants, a total of 101 (76,5%) were living in Riga (Figure 5.).

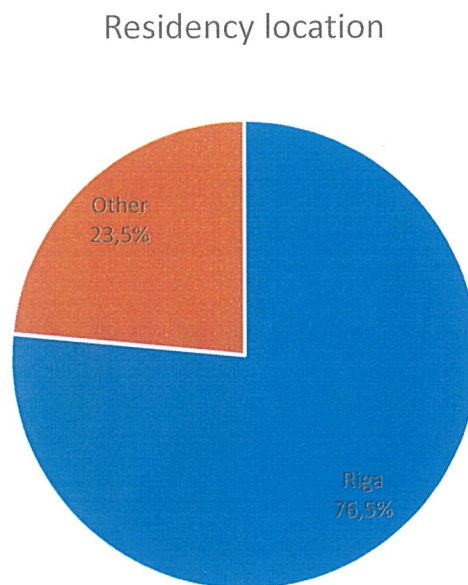


Figure 5. Pie chart presenting residency location of participants.

4.2 Wartime profile

Among the objectives of the study was to analyze if and to what extent the war on Ukraine concerned higher education students. Considering the war that erupted against Ukraine early 2022, an overwhelming majority of 96 (72,7%) students asserted that the outbreak of war worried them very much, while 36 (27,3%) students on the other hand were not worried by the outbreak of war (Figure 6.).

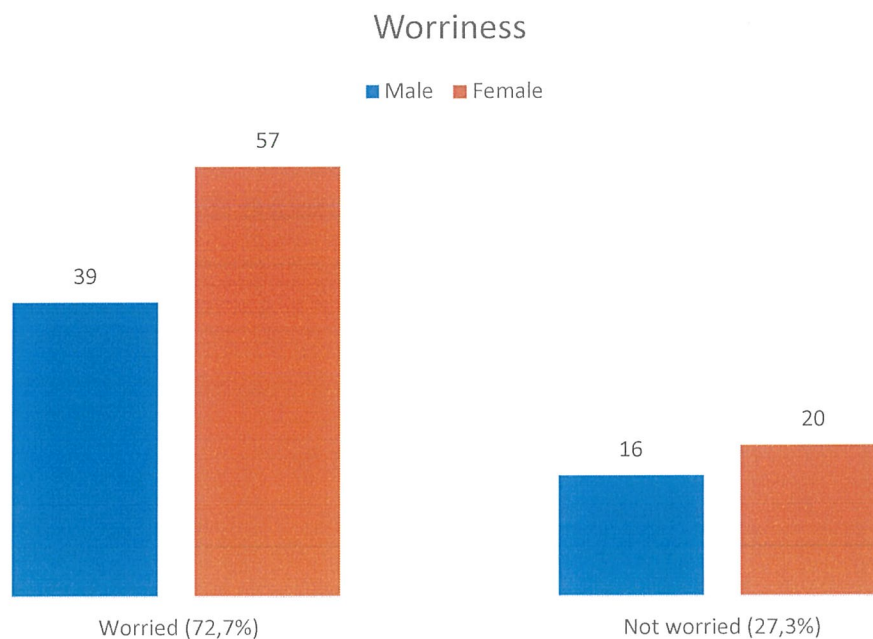


Figure 6. Bar chart of crosstabs between sample gender and extent of feeling worried.

Furthermore, from our representative sample, a total of 94 (71,2%) students felt being safer in their home country (Figure 7.), while 77 (58,3%) students have been suffering from existential fears or uncertainties about the future (Figure 8.).

Feeling safer in home country

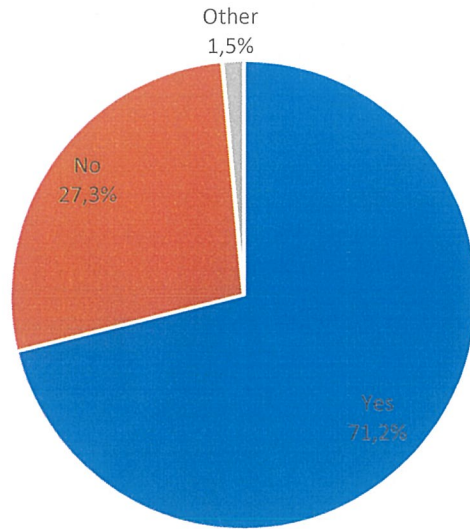


Figure 7. Pie chart presenting extent of participants feel safer in their home country.

Existential fears or uncertainties

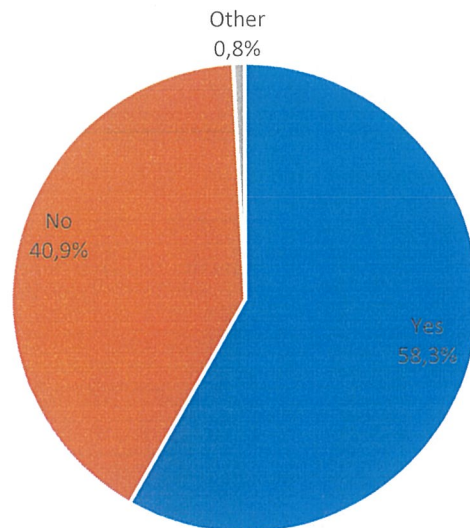


Figure 8. Pie chart presenting extent of participants suffering from existential fears or uncertainties about the future.

4.3 Mental health measures

4.3.1 Prevalence of anxiety

Measuring and estimating the prevalence of anxiety in higher education students was a primary aim of this cross-sectional study. This was assessed by the GAD-7 scale, with a range from 0 to 21 points, in which the students were divided into four grades. 46 (34,8%) of the participants had no signs of anxiety. On the other hand 86 (65,2%) had anxiety, yet in different degrees: mild anxiety in 43 (32,6%) students, moderate anxiety in 20 (15,2%) students, and severe anxiety was found in 23 (17,4%) students (Figure 9.). Anxiety among female participants tended to be more prevalent compared to their male counterparts, with 18 (23,37%) of the 77 female participants achieving a GAD-score of 15 or more, which is considered indicative of moderate to severe anxiety. On the other hand, only 5 (10%) of the 50 male participants had a GAD-score of 15 or more (Figure 10.). In addition, anxiety tended to be a little more common in the foreign participants than in the local participants, as 8 (4,96%) of the 62 foreign participants scored a GAD-score of 15 or more, whereas 15 (3.5%) of the 70 local participants had a GAD-score of 15 or more.

Prevalence of anxiety

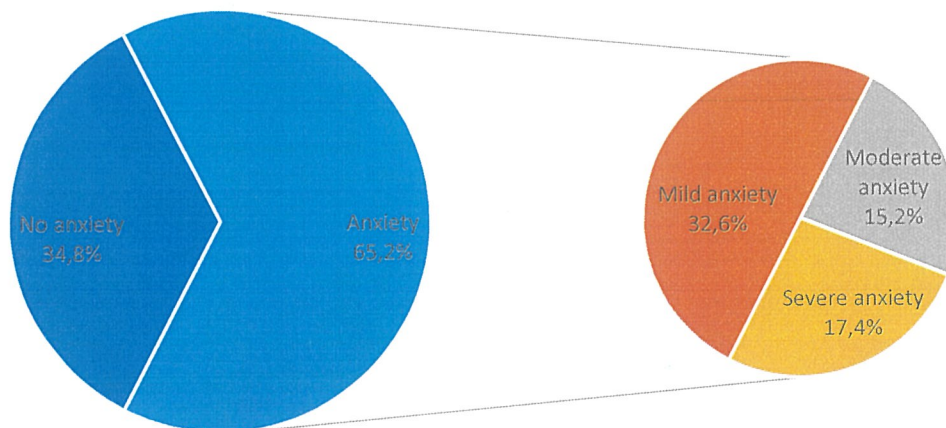


Figure 9. Pie chart presenting prevalence of anxiety among students, which is estimated to be 65,2%.

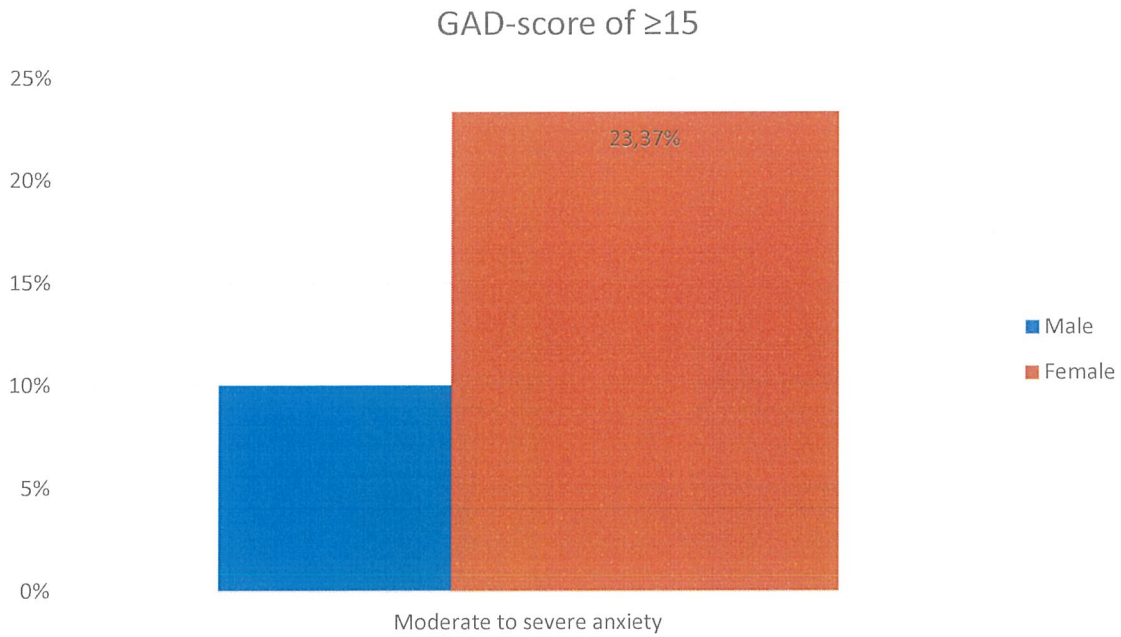


Figure 10. Bar chart of crosstabs between sample gender and prevalence of moderate to severe anxiety, demonstrating a greater tendency of anxiety among female participants compared to their male counterparts.

4.3.2 Prevalence of depression

Another prime aim of this study was to measure and estimate the prevalence of depression in higher education students. This was assessed by the PQH-9 scale, ranging from 0 to 27 points, in which the students were divided into five grades. A total of 48 (34,8%) students had moderate to severe depression, while 32 (24,2%) had mild depression. Minimal depression was found in 52 (39,4%) students (Figure 11.). In our sample, depression among female participants tended also to be more prevalent compared to their male counterparts, with 20 (25,97%) of the 77 female participants achieving a PHQ-score of 15 or more, which is considered indicative of moderate to severe depression. While only 4 (8%) of the 50 male participants had a PHQ-score of 15 or more (Figure 12.). In addition, depression tended to be slightly more common in the foreign participants than in the local participants, as 9 (5.58%) of the 62 foreign participants scored a PHQ-score of 15 or more, whereas 15 (3.5%) of the 70 local participants had a PHQ-score of 15 or more.

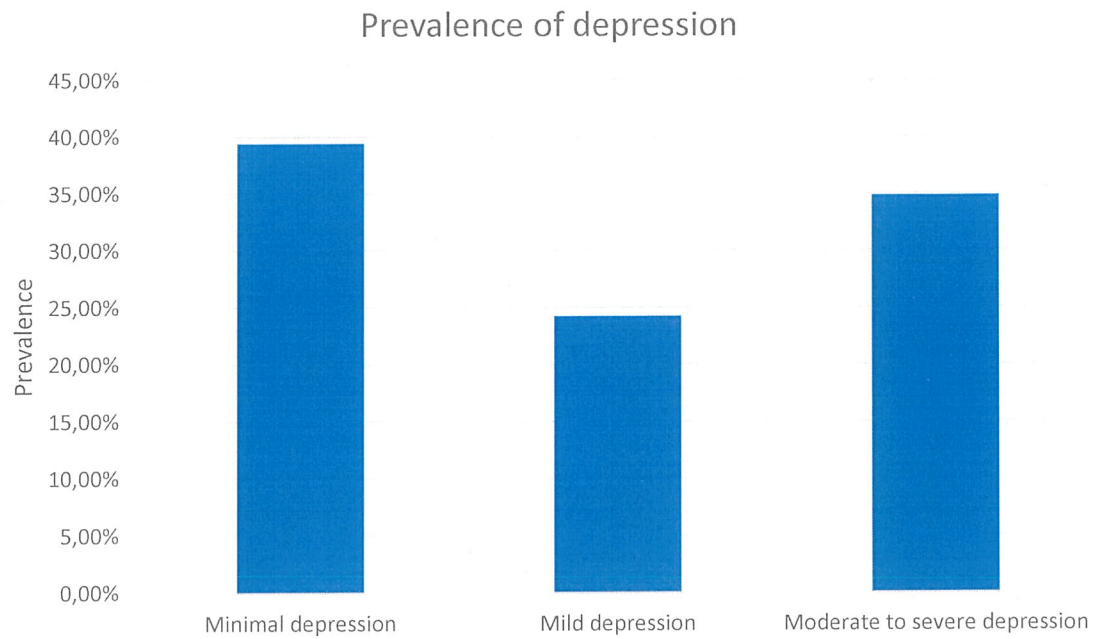


Figure 11. Pie chart presenting prevalence of depression among students.

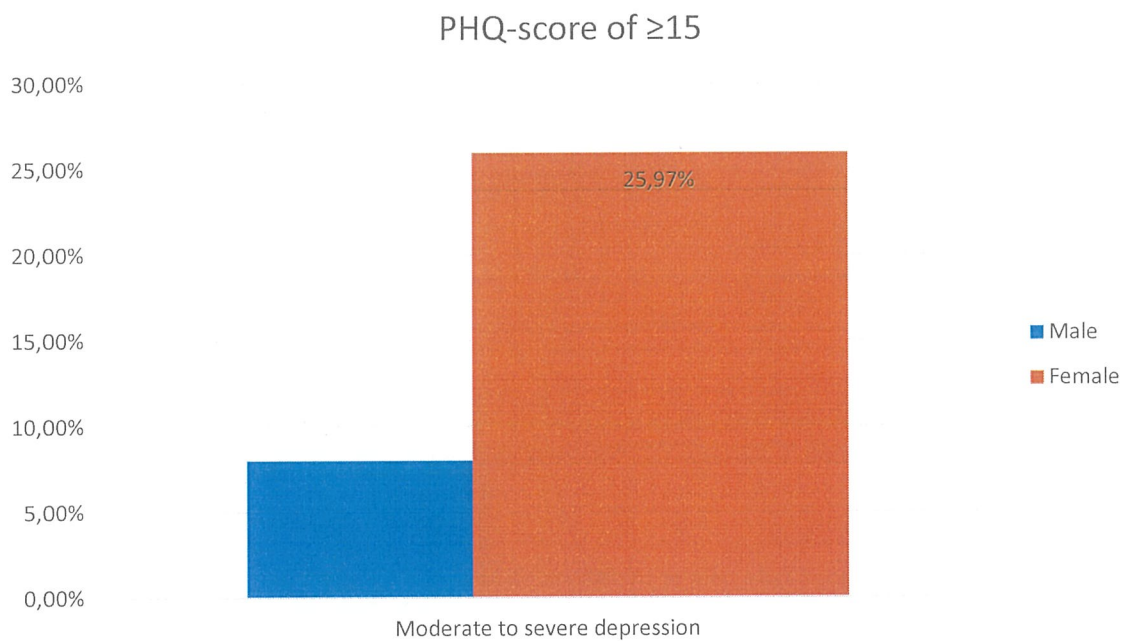


Figure 12. Bar chart of crosstabs between sample gender and prevalence of moderate to severe depression. demonstrating a greater tendency of depression among female participants compared to their male counterparts.

5. DISCUSSION

The students of higher education residing in the vicinity to areas with ongoing armed conflicts, were clearly at a higher risk and thus more prone to mental disorders, especially female subjects. This was illustrated by the results of our study showing increased levels of anxiety and depression among students. Subsequently, the higher levels of anxiety and depression among higher education students compared to the general population could have a multitude of reasons, since students have been subject to a high toll of stress due to the various challenges their study program poses, including challenges of discipline and social conduct (Arnett J. J., 2000; Masten et al., 2004), added to this a flood of uncertainties and worries brought on by the newly erupted war in Ukraine, which have raised thereafter the burden of stress, anxiety and depression students were facing. Consequently, when the general population was compared to higher education students of the same age, students demonstrated a higher prevalence of mental health struggles (Saleh et al., 2017). The previously noted aspects explain the variance in the prevalence of anxiety and depression between average general population and higher education students.

A recent cross-sectional study that investigated the psychological impact of the ongoing civil war and COVID-19 on Libyan medical students, concluded results that are rhyming with our study results, with results demonstrating that 64,5% of higher education students had anxiety, yet in different degrees: mild anxiety in 37,5% of students, moderate anxiety in 16% of students, and severe anxiety was found in 11% of students. Furthermore, moderate to severe depression was found in 21,1% of students, while 22,7% of the students had suicidal ideation (Elhadi et al., 2020).

Similar results were reported by a meta-analysis from 69 studies investigating anxiety among medical students. The study estimated an accumulative prevalence in anxiety presence of 33,8%, which corresponded to our study results. However, the study also concluded that medical students from an Asian or Middle Eastern background had a higher prevalence of anxiety compared to students from other backgrounds (Quek et al., 2019). This aspect was not investigated in our study since many participants were from a European background and rather homogeneous in terms of origin. A Vietnamese study demonstrated a depression prevalence of 15,2% among Vietnamese students (Pham et al., 2019). Similarly, 15,9% of Saudi Arabian medicine students reported having depression, and 11,6% were with severe depression (Alharbi et al., 2018). These results came in a similar range to our study results.

A highly representative study that examined the prevalence of depression in the years before the onset of the COVID-19 pandemic and the eruption of war in Ukraine by analyzing data from 37 studies involving a total of 76608 higher education students in 20 countries found an overall prevalence of depression of 24.4% (Akhtar et al., 2020). This is a remarkably lower prevalence level than the prevalence of depression revealed in our study conducted after the onset of COVID-19 and the outbreak of war in Ukraine, which demonstrated a higher prevalence of depression among higher education students, where mild, moderate, and severe depression has been found in a total of 59% of students, while the rest of the students suffered only from mild depression. Another recent study published during the COVID-19 pandemic yet before the outbreak of war in Ukraine to determine the prevalence of stress, anxiety, and depression in a cohort of college students found a prevalence of 51.4% of college students with depression (Fauzi et al., 2021). Although the latter study showed a high prevalence of depression, it remained somewhat lower than the prevalence of depression found in our study conducted after the outbreak of war in Ukraine

Numerous studies demonstrated a correlation between the prevalence of depression and the year of study and demonstrated that students in higher study years had an even higher prevalence of depression (Saipanish, 2003; Shaikh et al., 2004; Sreeramareddy, et al., 2007; Elhadi et al., 2020). Our study findings showed merely any mentionable difference in the prevalence of depression based on the academic year, this might be traced back to the predominance of students from early study years, which in turn may have influenced the results pattern.

Furthermore, a significant finding is that anxiety and depression among female participants turned out to be remarkably more prevalent compared to their male counterparts. In our study, 23,37% of the female students were moderately to severely anxious, compared to only 10% of their male counterparts. As for depression, 25,97% of the female students had moderate to severe depression, compared to a humble 8% for their male counterparts. These outcomes based on gender differ in other study results, such as the previously mentioned Libyan study. The latter recorded remarkably fewer female students for being anxious, only 11,52% of the female students were moderately to severely anxious. However, and according to the same study, a total of 22,25% of females had moderate to severe depression (Elhadi et al., 2020), which is also slightly lower than our finding with regards to the prevalence of depression in female students. In my opinion, the contrast between the results when it came to gender prevalence may have had a multitude of underlying factors, including the difference in the manner each gender, male and female, cope with stress, were males tended to handle stress

by problem-oriented approaches, while on the other hand females were more inclined on modifying their emotional state of reacting to the encountered problem (Kelly et al., 2008). Finally, the fact that more than half of the participants were females (58,3%) may further explain the contrast in our results when it came to the difference in prevalence of mental disorders between males and females.

With no doubt, more extensive research and investigation should be commenced on higher education students in Latvia, since this segment of society is one of the most vulnerable segments subjected to mental disorders. The increasing study load with each study year should raise even more attention and awareness to the students psychological challenges and needs, since students in higher study years have been more prone to additional stress and anxiety with increasingly burdensome study pressure (Chandavarkar et al., 2007). Moreover, the eruption of war in Ukraine, and the serious concerns about an expansion in the boundaries of this armed conflict into neighbouring countries, brought forth the mental disorder problem to even greater and more complex dimensions, contributing to even higher levels of prevalence of anxiety and depression among higher education students as our study demonstrated. Students exposed to violence, civil war and other stressors were at even greater risk of anxiety and depression. A Previous study in Iraq reported a prevalence of anxiety of 62,5% and a prevalence of depression of up to 52,1% among the investigated sample of students (Rasheed & Hussein, 2019). Since the eruption of war in Ukraine, stressors with common parallels have been observed on the students living in or near that conflict zone, resembling the stressors and thus the high prevalence of mental disorders in the numerous regions suffering from an armed conflict worldwide. Deteriorating mental health and psychological complications may have a lasting impact on higher education students throughout their entire lives, even after graduation, requiring concerted efforts and resources to address this problem and tackle its offsites.

With that said, and with the adequate research and disclosure of the prevalence of mental disorders in higher education students, resources should be dedicated as well to appropriately manage and limit the further amplification of mental disorders prevalent among students. Only then, rather than being a burthen on society, higher education students would become an active positive part of society and contribute into its prosperity.

The strengths of the study lie in the fact that this study directed the attention to higher education students during the critical period of a newly erupted war in Eastern Europe, alongside the ongoing COVID19 pandemic, taking into account the peculiarities associated with such unprecedented and extraordinary times. These multimodal study parameters in such a scarce field of research were a notably key distinctive feature.

The Limitation of this study was in the modest sample size together with the restrictions of the COVID-19 pandemic, leading to a limited cumulative precision and relevancy in the gathered data and its outcomes. The other limitations which may have impacted the allocation of the results lie in the slight predominance of female participants, alongside the variety in ways through which data was collected from participants and finally the exclusion of incorporating the participants family history of mental disorders.

More research with a larger sample size and representativeness is encouraged to provide more precise and in-depth results that will pave the way for a broad holistic understanding of mental disorders among higher education students and thus enabling appropriate management modalities.

6. CONCLUSIONS

1. Research proved that the mental health of higher education students in Latvia is highly at risk, of which female students are particularly at greater risk, showing statistically valid higher levels as compared to literature data most notably given the acrimonious circumstances of war in Ukraine.

2. The outbreak of war worried most students, the majority had existential fears and uncertainties about the future as they felt instead more secure back in their home countries.

3. Heightened levels of anxiety and depression among higher education students were revealed, a large proportion of whom had already exhibited moderate to severe levels of anxiety and depression. The prevalence of depression was not found to be significantly related to the year of study, rather more impacted by the eruption of war.

4. The outbreak of war in Ukraine accounted for an additional steeper increase in depression among higher education students. An important key finding was further that anxiety and depression were significantly higher among female participants compared to their male counterparts. Foreigners were slightly more anxious and depressed than the local participants.

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9. APPENDIX

9.1 Informed consent form

I kindly invite you to participate in a study conducted by Osayd Sakr on “THE EFFECTS OF CIVIL UNREST AND NEIGHBOURING ARMED CONFLICTS ON HIGHER EDUCATION STUDENTS” by completing an anonymous study questionnaire. It will take you about 10 minutes to complete the questionnaire.

The aim of the study is to understand if there is any psychological impact of civil unrest and neighbouring armed conflicts on higher education students in light of the conflict that erupted over Ukraine early 2022.

Participation in the study is voluntary. You have the right to refuse to complete the questionnaire, and your refusal will not have any undesirable consequences.

The questionnaire is anonymous, you will not be able to be identified by the information provided in the questionnaire, and the data will only be used in a compiled way to achieve the purpose of the study.

This questionnaire is divided into three parts. The first part contains demographic characteristics alongside a wartime profile. The second part is comprised of the generalized anxiety disorder 7-item (GAD-7) scale, while the third part is consisting of the patient health questionnaire (PHQ-9), which is a validated 9-item questionnaire to assess depression severity in individuals.

The study has been approved by the Research Ethics Committee of FM of the University of Latvia. If you have any questions about this study, you can contact me at mrosayd@live.com.

Thank you for participating in the survey!

Consent *

I have read the survey information and agree to participate under the conditions indicated.

DOCUMENTATION PAGE

This Diploma Thesis „**THE EFFECTS OF CIVIL UNREST AND NEIGHBOURING ARMED CONFLICTS ON HIGHER EDUCATION STUDENTS**”

was developed at the Faculty of Medicine of the University of Latvia.

With my signature, I attest, that this research has been carried out without aid or assistance. Used information was obtained only from indicated sources and the electronically submitted copy of this diploma work complies with printout.

Author: Osayd Sakr

(name, surname)

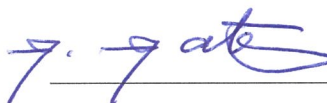


(signature)

I recommend the work for presentation.

Supervisor: Dr. med. Romualds Ražuks

(position, name, surname, degree)



(signature)

10.05.2023

(date)

Reviewer: _____

(position, name, surname, degree)

(signature)

(date)

The diploma thesis was submitted to the Faculty of Medicine on: _____

11.05.2023
(date)

International students' coordinator, Laura Putnina _____

(signature)

The diploma thesis is presented at the meeting of the State Examination Commission of Higher Professional Study Program „Medicine” _____ 2023. Protocol No. _____

Secretary of Commission: _____

(position, name, surname, degree)

(signature)