

Routledge
Taylor & Francis Group

Journal of Loss and Trauma

International Perspectives on Stress & Coping

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/upil20

Impact of War on Ukrainian University Students and Personnel: Repeated Cross-Sectional Study

Anton Kurapov, Valentyna Pavlenko, Alexander Drozdov, Nataliia Korchakova & Iuliia Pavlova

To cite this article: Anton Kurapov, Valentyna Pavlenko, Alexander Drozdov, Nataliia Korchakova & Iuliia Pavlova (02 Dec 2024): Impact of War on Ukrainian University Students and Personnel: Repeated Cross-Sectional Study, Journal of Loss and Trauma, DOI: 10.1080/15325024.2024.2433990

To link to this article: https://doi.org/10.1080/15325024.2024.2433990

© 2024 The Author(s). Published with license by Taylor & Francis Group, LLC.

View supplementary material

Published online: 02 Dec 2024.

Submit your article to this journal

Article views: 85

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at https://www.tandfonline.com/action/journalInformation?journalCode=upil20

JOURNAL OF LOSS AND TRAUMA
https://doi.org/10.1080/15325024.2024.2433990

Routledge
Taylor & Francis Group

OPEN ACCESS Check for updates

Impact of War on Ukrainian University Students and Personnel: Repeated Cross-Sectional Study

Anton Kurapov[a,b], Valentyna Pavlenko[c], Alexander Drozdov[d], Nataliia Korchakova[e] and Iuliia Pavlova[f]

[a]Faculty of Psychology, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; [b]Department of Psychology, Faculty of Natural and Life Sciences, Paris Lodron University Salzburg, Salzburg, Austria; [c]Department of Applied Psychology, V.N. Karazin Kharkiv National University, Kharkiv, Ukraine; [d]Department of General, Developmental and Social Psychology, T.H. Shevchenko National University "Chernihiv Colehium", Chernihiv, Ukraine; [e]Department of Developmental & Pedagogical Psychology, Rivne State University of Humanities, Rivne, Ukraine; [f]Department of Theory and Methods of Physical Culture, Lviv State University of Physical Culture, Lviv, Ukraine;

ABSTRACT

This study aims to discern significant shifts in the impact of war on university students and academic personnel, from the war's onset (March–April 2022) to eight months later (November–December 2022). Our research questions focus on the individual experiences affected by warfare, changes in mental health status, and factors accounting for these observed changes. This research is a repeated cross-sectional survey, conducted in two waves, in March and November 2022. Findings revealed a significant increase in the general fear of war ($t(1018.4) = -9.79$, $p < .001$), emotional and physiological reactions to war remained stable overall but escalated among those with relatives in the armed forces and decreased in subsets not experiencing significant shifts in well-being and emotional reactions to war. Burnout levels increased ($t(723.2) = 2.06$, $p = .040$), but decreased among those reporting no change in well-being due to the war. Results also reveal a significant increase in: being in blockade and/or under shelling ($\chi^2(1) = 12.737$, $p < .001$); lost ($\chi^2(1) = 11.644$, $p < .001$) and dead relatives ($\chi^2(1) = 14.248$, $p < .001$); worsening of chronic diseases ($\chi^2(1) = 11.838$, $p < .001$); relatives in armed forces ($\chi^2(1) = 889.360$, $p < .001$). Conversely, resilience did not significantly increase, although a trend toward its improvement over time was observed. Given the unpredictable and prolonged nature of the conflict and changes in the impact of the war, our study shows that more regular follow-up studies are needed.

ARTICLE HISTORY
Received 13 May 2024
Accepted 25 October 2024

KEYWORDS
Russian-Ukrainian War; university students and staff mental health; substance use; well-being; stress

CONTACT Anton Kurapov anton.kurapov@plus.ac.at Faculty of Psychology, Taras Shevchenko National University of Kyiv, Hlushkova Ave. 2a, Kyiv, Ukraine; Department of Psychology, Faculty of Natural and Life Sciences, Paris Lodron University Salzburg, Salzburg, Austria.

Supplemental data for this article can be accessed online at https://doi.org/10.1080/15325024.2024.2433990.

© 2024 The Author(s). Published with license by Taylor & Francis Group, LLC.
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (http://creativecommons.org/licenses/by-nc-nd/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

Introduction

Over 2 years have elapsed since Russia's full-scale invasion of Ukraine commenced. Throughout this period, Ukraine has endured the devastating repercussions of active conflict, impacting its demographic situation, political, economic, and social spheres (International Monetary Fund. European Dept., 2024). Persistent threats significantly influence Ukrainians' well-being, with notable adverse effects on mental health due to the ongoing conflict (Kalaitzaki et al., 2023; Kurapov et al., 2024; Lushchak et al., 2024). Since the beginning of the war, Ukrainian residents report heightened levels of anxiety, stress, and depression (Hyland et al., 2023), while war traumas incite PTSD symptoms (Kurapov, Kalaitzaki et al., 2023; Pavlova & Rogowska, 2023). There is also a noticeable increase in reported feelings of loneliness, fear, and diminished resilience among Ukrainians (Garry & Checchi, 2020). However, given the long duration of the conflict and its unpredictable nature, adequate consideration of long-term effects on mental and emotional well-being is necessary. Thus, in this study we attempt to track the dynamics of mental health and well-being of Ukrainian academic personnel throughout the ongoing conflict since its very beginning in February 2022.

The scholarly literature has long recognized war and military conflicts as some of the most destructive forces that detrimentally impact the well-being of individuals and societies (e.g., Carpiniello, 2023). To date, there is a noticeable dearth of research exploring the evolution of mental health in individuals enduring sustained or chronic conflict (Charlson et al., 2019). In particular, inhabitants of war zones or those who have endured its aftermath constitute a vulnerable demographic, susceptible to heightened risks of mental disorders and emotional distress (Al Ibraheem et al., 2017; Hanson & Vogel, 2012; Shoshani & Slone, 2015). Such civilians with exposure to war are more prone to develop symptoms of PTSD, anxiety, and depression (Lim et al., 2022; Morina et al., 2018). Furthermore, they exhibit an increased likelihood of developing conditions like schizophrenia and major depressive disorder, alongside a higher prevalence of emotional instability (Murthy & Lakshminarayana, 2006; Shoshani & Slone, 2015). The psychological and emotional trauma tends to be more pronounced in women than in men (Pavlenko et al., 2023; Rzeszutek et al., 2020), which is also supported for the Ukrainian population (Hyland et al., 2023). Notably, the rates of post-traumatic stress disorder vary significantly among individuals who are compelled to temporarily relocate within their own country (Hanson & Vogel, 2012), even though the psychological stress of survivors who remain within their country tends to diminish over time, while refugees fleeing their homeland experience an escalation of stress symptoms in the long run (Comtesse et al., 2019). Substance abuse is also

prevalent in war-affected individuals, with the rate of alcohol and psychoactive substance use ranging from 2% to 65% and 20% respectively (Hanson & Vogel, 2012).

The war in Ukraine has imposed severe short-term disruptions on education, with widespread consequences on educational communities that have always played a unique role in shaping the country's future. Ukrainian universities continue to work during the war in an educational and scientific context and create a unique environment for the development of human resources, despite the burden and risks that they have to handle. Participants in the educational process are young people, who represent approximately one fourth of the entire Ukrainian population: this group reflects the well-being and health of the entire country in a long-term perspective. Throughout the war, Ukrainian university students have shown high resistance and adaptation to the conditions of war, while their levels of stress, anxiety, and life satisfaction were similar during the war and the COVID pandemic, but the symptoms of depression during the war decreased compared to the pandemic (Pavlova et al., 2024).

Surveillance of changes in educational systems and population groups that form them is crucial for understanding of the resilience, especially under the present threat.

As such, pertaining to the exploration of the psychological and emotional well-being of people enduring protracted warfare – particularly in the context of ongoing conflict – has motivated the central objective of this study: to discern significant shifts in the impact of war on university students and instructors (comprising students and academic personnel) from the war's onset (March–April 2022) to 8 months later (November–December 2022). To this end, we propose the following research questions:

1. How has the initiation of war and its eight-month progression influenced individual experiences such as personal and familial impact, substance abuse, eating behavior, and financial well-being among university students and personnel? We expect to see increase in all aspects except for stabilization in financial well-being.
2. What are the observed changes in the mental health status of Ukrainian university students and instructors, specifically with respect to war-related fear, resilience, burnout, psychological and emotional reactions, loneliness, and well-being from the onset of war to the eight-month milestone? We expect to see the decrease in the above-mentioned aspects.
3. What factors account for the observed changes in the mental health status of Ukrainian students and personnel in universities from the onset of the war to eight months in? We expect to see personal and familial changes as the main factors accounting for changes.

Methods and measures

Methods

Study design & setting

This research was conceived as a repeated cross-sectional study, since initial data collection was anonymous (see Kurapov, Pavlenko, et al., 2023) and we wanted to trace the changes in university students and personnel of the same variables but over time.

Participants

Participants were recruited from the student body and personnel of various institutions, namely the Taras Shevchenko National University of Kyiv, V. N. Karazin Kharkiv National University, T. H. Shevchenko National University "Chernihiv Colehium," the Rivne State University of Humanities, and Lviv State University of Physical Culture. Students were additionally requested to disseminate the questionnaire among their peers and academic staff. This study was conducted in accordance with the principles of the Declaration of Helsinki. Although data collection and reporting procedures were anonymous, all participants provided written informed consent before participating in the study. Thus, no institutional ethics approval was required.

The eligibility criteria for participation included being aged between 18 and 80, holding Ukrainian citizenship, and ability to provide informed consent. The study did not set forth specific exclusion criteria. While the snowball sampling method may limit the representativeness of the sample, efforts were made to recruit participants from diverse universities across different regions of Ukraine, reflecting a broad spectrum of the student and academic population. The analysis considered only those participants who identified themselves as students or academic personnel (teachers, professors, staff, etc.) (N_{total} = 2,791; with $N = 759$ and $N = 2032$ for waves 1 and 2, respectively). A comprehensive sociodemographic overview per wave is provided in Table 1.

Variables

Sociodemographics. Items solicited information on gender (male, female), age, religious affiliation and degree of religiosity, marital status, current occupation (student, teacher/professor, other), and current place of residence (in Ukraine the same place as before; moved within Ukraine; reside on the occupied territory; flee from Ukraine). Due to the ethnic homogeneity of the Ukrainian sample, questions about ethnicity was not included.

Table 1. Overview of sociodemographic data.

		Wave	Counts	% of Total (%)
Gender	Male	1	89	12.97
		2	424	21.53
	Female	1	597	87.03
		2	1546	78.47
Marital Status	Single	1	326	53.84
		2	1195	59.95
	Have a partner	1	189	31.20
		2	601	30.15
	Married	1	147	24.29
		2	189	9.48
	Divorced	1	30	4.95
		2	31	1.56
	Widowed	1	8	1.32
		2	4	0.20
Location	Inside Ukraine	1	463	77.82
		2	1348	88.85
	Outside Ukraine	1	132	22.18
		2	169	11.15

Note. Table demonstrates overview of the sociodemographic data indicating the main category (column 1), its levels (column 2), research wave (column 3), counts (column 4), percentages (column 5), and cumulative percentage (column 6).

War impact. Respondents were asked to self-report how the war had personally affected them by selecting from a list of relevant experiences. These experiences included the termination of university studies, forced migration within Ukraine, becoming a refugee in another country, experiencing blockades or shelling, personal injury, loss of housing or property, bereavement, worsening of chronic diseases, and other war-related impacts. Participants could choose multiple options that applied to their situation.

Financial well-being. Financial well-being was evaluated using the CFPB Financial Well-Being Scale (Consumer Financial Protection Bureau, 2022).

Psychological, emotional, and behavioral responses to war were assessed through a series of items that asked participants how they had felt during the last month as a result of the war. Specifically, respondents were queried about whether they had felt more depressed, exhausted, lonely, nervous, or angry. The questions included items such as, "In the last month, due to the war, have you felt more depressed?" and similarly for exhaustion, loneliness, nervousness, and anger.

Eating behavior was assessed by asking participants whether their consumption of certain food types had increased during the war. Specifically, two questions addressed the frequency of eating salty and sugary foods. Participants were asked if, during the war, they had started to consume more salty products (e.g., chips, pickles, sausages, smoked foods, cheese) or more sugar-containing products (e.g., sweets, granola, muesli, cereal bars, chocolate).

Substance abuse was assessed by asking participants about their usage of certain substances before the war and how that usage may have changed due to the war. Participants were asked if they had used cigarettes (or other tobacco products), alcohol, pain relievers (e.g., Oxidone, Codeine), or sedatives (e.g., tranquilizers, sleep medicine) more frequently than usual in recent months as a result of the war. Specific questions inquired about the consumption of these substances both prior to the war and whether any increase in usage occurred due to the war's impact on their lives. For example, participants were asked if they had consumed five or more servings of alcohol at once in the past month due to the war or whether they had used cigarettes, alcohol, painkillers, or sedatives more often than usual because of the war.

Psychological variables. Burnout was assessed using the Short Burnout Measure (SBM; Malach-Pines, 2005), resilience was measured via the Brief Resilience Scale (BRS; Smith et al., 2008), loneliness was measured with De Jong Gierveld Loneliness Scale (De Jong Gierveld & Van Tilburg, 2010), which has two subscales (emotional and social loneliness), however, in our research we have used single loneliness scale. The fear of war was quantified using the Fear of War Scale (Kalcza-Janosi et al., 2023).

Translation and validation of tools. To ensure accuracy and cultural relevance, a four-step translation procedure was employed. First, the original English version of the survey was translated into Ukrainian. This Ukrainian version was then independently back-translated into English. The original and back-translated English versions were compared by the manuscript authors to ensure semantic, idiomatic, experiential, and conceptual equivalence. To further enhance cultural appropriateness, all item formulations were thoroughly discussed and reviewed by the coauthors.

After data collection, the scales used in both waves obtained medium to high reliability scores (Cronbach's alpha (α), N = number of items per scale). The Fear of War Scale ($N = 13$) had $\alpha = .86$ in *wave 1* and $\alpha = .85$ in *wave 2*. The BRS ($N = 6$) showed $\alpha = .83$ in *wave 1* and $\alpha = .71$ in *wave 2*. The SBM ($N = 10$) demonstrated high reliability, scoring $\alpha = .86$ in *wave 1* and $\alpha = .89$ ($N = 10$) in *wave 2*. Finally, the De Jong Gierveld Loneliness Scale ($N = 6$) had $\alpha = .73$ in *wave 1* and $\alpha = .77$ in *wave 2*.

Data sources and data collection

Data collection was executed in two waves: the first launched in March 2022 (*wave 1*), and the second in November 2022 (*wave 2*), each lasting approximately one month. The data of the *first wave* were collected in the initial period of the war that was characterized by active contact

combat operations on the territory of Ukraine, the entry of troops and the occupation of territories, the active movement of the population inside and outside the country, and the restructuring of the educational process. The data of the *second wave* were collected at the beginning of the next academic year, during the transition of the conflict into a new phase that was accompanied by missile strikes not only on the frontline regions, damaging energy structures, and as result large-scale power cuts and blackouts. The study utilized a snowball online questionnaire via Qualtrics. Data was screened for the presence of outliers (3 standard deviations from the group mean for the computed variable "General Fear of War") and missing values, leading to the exclusion of one participant. Consequently, the analyzable sample was brought to $N = 2790$.

Statistical methods and analysis

Statistical analysis was undertaken using R, version 4.2.2 (R Core Team, 2014). A Chi-squared test of independence with Yates' continuity correction and an Welch's t-test was utilized to answer research questions 1 and 2. To answer research question 3, we have used generalized linear modeling.

Results

Changes in well-being and war-related responses

The results revealed significant differences in the number of reported cases of the impact of war on individual respondents and their relatives. In particular: being in blockade and/or under shelling ($\chi^2(1) = 12.737$, $p < .001$); lost ($\chi^2(1) = 11.644$, $p < .001$) and dead relatives ($\chi^2(1) = 14.248$, $p < .001$); worsening of chronic diseases ($\chi^2(1) = 11.838$, $p < .001$); relatives in armed forces ($\chi^2(1) = 889.360$, $p < .001$). Results show a significant decrease in: losing jobs ($\chi^2(1) = 27.296$, $p < .001$); forced migration due to war impact ($\chi^2(1) = 149.060$, $p < .001$); fleeing from Ukraine ($\chi^2(1) = 12.044$, $p < .001$); relatives forced to migrate ($\chi^2(1) = 63.780$, $p < .001$); relatives under occupation ($\chi^2(1) = 5.781$ $p < .001$) (see Table 2).

Psychological and emotional response to the war substantially changed. Results of a series of Chi-squared tests of independence with Yates' continuity correction show a significant decrease in all psychological and emotional reactions: nervousness ($\chi^2(1) = 15.483$, $p < .001$), self-reported loneliness ($\chi^2(1) = 11.322$, $p < .001$), exhaustion ($\chi^2(1) = 18.894$, $p < .001$), depression ($\chi^2(1) = 64.003$, $p < .001$), and anger ($\chi^2(1) = 4.177$, $p = .041$). At the same time, self-reported feeling of loneliness, as psycho emotional state, in both waves is related to current location of participants ($\chi^2(3) = 52.3$, $p < .001$) where respondents indicated feeling more lonely when they

Table 2. Differences between waves in the reported cases of the impact of war, psychoemotional state, war-related substance abuse and food behavior.

Category	Measure	Wave 1	Wave 2
Impact of war on self	Interrupted education	37.5%	46%
	Chronic disease	12.5%	24%
	Forced migration	39.5%	23%
	Left Ukraine	17%	19%
	Lost job	19%	18%
	Being in blockade	17%	18%
	Lost relatives	5%	3%
	Lost property	4%	3%
	No impact	10%	10%
Impact of war on relatives	Relatives in armed forces	60%	100%
	Relatives victims of forced migration	50%	39%
	Relatives victims of fleeing Ukraine	33%	37.5%
	Relatives being in blockade	27%	29%
	Relatives victims of occupation	15%	16%
	Relatives died	5%	6.25%
	Relatives captured	1%	2%
Psychological and emotional reactions because of the war	Nervous	74%	79%
	Exhausted	75%	79%
	Angry	66%	70%
	Lonely	46%	52%
	Depressed	72%	71%
War-related substance abuse and food behavior	Food sweet	46%	54%
	Food salt	28%	36%
	Weight gain	26%	36%
	Alcohol consumption	17%	24%
	Cigarettes consumption	15%	22%
	Took alcohol within the last month more than 5 portions		
9%			
14%			
	Sedatives consumption	15%	14%
	Painkillers consumption	9%	8%

Note: This table shows the difference in the reported cases of the war impact, psychoemotional state, reported cases of the recent and war-related substance abuse. The cases are arranged in ascending order based on the percentages from *wave 2*. To ensure proper comparative ratio, weighted proportions have been computed. This table does not fully represent the results of the Chi-squared tests of independence and mainly serves for the visualization of factual differences in reported cases with respect to the sample size per wave.

had to become internally displaced or flee from Ukraine. The same concerns depression ($\chi^2(3) = 12.5$, $p = .006$) (see Table 2).

Behavioral response has also changed: results of Chi-squared tests of independence with Yates' continuity correction show significant increase in consumption of painkillers ($\chi^2(1) = 4.563$, $p = .0327$) and sedatives ($\chi^2(1) = 22.932$, $p < .001$). Abuse of other substances showed no significant change (see Table 2).

A significant downturn was observed in self-reported financial well-being from pre-war ($M = 19.0$; $SD = 8.11$) to postwar ($M = 12.1$; $SD = 6.79$) in *wave 1*. This pattern was not mirrored in *wave 2*, where the means remained relatively consistent, with a pre-war score of 33.3 ($SD = 5.31$) and a postwar mean of 34.2 ($SD = 8.25$). Statistically significant differences emerged when

comparing financial well-being before the war between *wave 1* ($M = 19.0$, $SD = 8.11$) and *wave 2* ($M = 33.3$, $SD = 5.31$), $t(1047.1) = -35.6$, $p < .001$, Cohen's $d = -1.96$. Similarly, when assessing financial well-being after the war, there was a notable divergence ($t(631.54) = -45.0$, $p < .001$, Cohen's $d = -3.03$) between *wave 1* ($M = 12.1$, $SD = 6.79$) and wave 2 ($M = 34.2$, $SD = 8.25$).

Changes in the psychological variables

We observed statistically-significant changes in burnout, ($t(723.2) = 2.06$, $p = .041$, Cohen's $d = .153$), between *wave 1* ($M = 29.4$, $SD = 7.27$) and *wave 2* ($M = 27.7$, $SD = 8.07$). For resilience, an independent samples *t*-test showed a borderline significant difference between these scores ($t(728.9) = 1.78$, $p = .076$, Cohen's $d = .118$), while actual mean difference between waves was 0.3. Wilcoxon rank-sum test showed that loneliness remained similar in both waves ($W = 106038$, $p = .131$).

Finally, an independent samples t-test revealed a significant difference in levels of general fear of war ($t(1018.4) = -9.79$, $p < .001$, Cohen's $d = -.437$) between *wave 1* ($M = 31.3$, $SD = 13.6$) and *wave 2* ($M = 34.5$, $SD = 9.02$); in existential fear of war ($t(743.77) = 1.20$, $p = .231$) between *wave 1* ($M = 16.0$, $SD = 3.8$) and *wave 2* ($M = 15.5$, $SD = 3.5$), and in psychoemotional physiological war reactions ($t(741.49) = 2.09$, $p = .037$, Cohen's $d = .113$) between *wave 1* ($M = 19.4$, $SD = 5.22$) and *wave 2* ($M = 18.0$, $SD = 5.34$).

Factors accounting for the observed changes in the mental health status

Based on the variables that showed statistically significant differences in both waves we have created generalized linear models to assess the factors that may account for the observed changes in the mental health status over time. Thus, our *independent variables* included well-being after the war, exhaustion because of the war, nervousness because of the war, depressiveness because of the war, forced migration as a result of the war, worsening of chronic diseases as a result of the war, relatives forced to migrate as a result of the war, relatives drafted/joined the armed forces, abuse of painkillers and sedatives because of the war, gender, and well-being. Correspondingly, our *dependent variables* were psychoemotional and physiological reactions to war, burnout, resilience, loneliness, and fear of war. As such, we have obtained five linear models (see Supplement A, Table A1).

Model 1: The model for psychological and emotional physiological war reactions (Deviance = 61909, Residual Deviance = 43927; AIC = 12768) reveals that 'Psychoemotional and Physiological Reactions to War' slightly

decreased over time (β = −.48, p = .051). These reactions were lessened for individuals who perceived no change in their postwar well-being (β = −2.24, p < .001), those who reported using sedatives because of the war (β = −1.66, p < .001), and for those who did not report exhaustion (β = −1.50, p < .001), nervousness (β = −2.26, p < .001), and depression (β = −2.1, p < .001) due to war. At the same time, psychoemotional and physiological reactions to war over time slightly increased for women (β = 2.42, p < .001) in comparison to men.

Model 2: The model for burnout (Deviance = 133880, Residual Deviance = 82297; AIC = 14094) suggests a slight increase in burnout over time (β = .92, p = .034), however, it increased for women (β = 2.97, p < .001) in comparison to men, and for those who were forced to migrate (β = 2.29, p < .001). Burnout decreased for those, who reported no change in well-being after the beginning of the war (β = −2.42, p < .001), who did not report exhaustion (β = −3.03, p < .001), nervousness (β = −2.72, p < .001), depression (β = −3.94, p < .001) because of the war and for those, who did not consume painkillers (β = −1.66, p = .018) and sedatives (β = −3.30, p < .001) because of the war.

Model 3: The model for resilience (Deviance = 9704.8, Residual Deviance = 9598.7; AIC = 9474.5) confirms only a slight reduction in resilience over time for those who reported having relatives in the armed forces (β = −.28, p = .074).

Model 4: The model for loneliness (Deviance = 9667.4, Residual Deviance = 9026.1; AIC = 9084.7) suggests no change in loneliness over time. However, it slightly increased for those who reported no change in postwar well-being (β = .54, p = .007) and for those, who were forced to migrate (β = −.79, p < .001) because of the war.

Model 5: The model for general fear of war (Deviance = 165924, Residual Deviance = 128798; AIC = 15357) indicates an increasing trend in 'Fear of War' over time (β = 3.84, p < .001), especially for those who reported taking sedatives because of the war (β = −1.37, p < .001) and for women (β = 3.56, p < .001) in comparison to men. However, this fear subsided for individuals experiencing no change in well-being following the war's onset (β = −2.89, p < .001), and for those who did not report feelings of exhaustion (β = −1.72, p < .001), nervousness (β = −3.44, p < .001), and depression (β = −2.51, p < .001) because of the war.

Discussion

Increasing burden of the war

We observed remarkable changes in the psychological and emotional well-being of students and instructors between the initial phase of the conflict and eight months later, which is consistent with previous research that

suggests war impacts evolve with the progression of conflict (Palmer et al., 2019). Over time, we have observed a significant increase in direct war--related hardships such as being in blockade or under shelling, losing relatives, exacerbation of chronic diseases, as well as an increase in the number of relatives joining armed forces. Such results reflect the findings from past studies that reported an escalation in direct adversities as a conflict prolongs (Masten & Narayan, 2012). On the contrary, the observed decrease in job loss, forced migration, and relatives living under occupation aligns with studies such as those by Ruiz and Vargas-Silva (2013), which have suggested a stabilization or reduction in displacement and economic hardship in longer-term conflict settings, possibly due to adaptation, or because those most vulnerable have already been affected. Nevertheless, in both waves participants reported worsening of financial well-being after the beginning of the war and eight months after in comparison to the pre-war times meaning that the war indeed disrupted financial stability of many Ukrainians.

Aggravated psychoemotional state and fear

A consistent pattern of decrease of emotional distress, in particular, nervousness, loneliness, exhaustion, depression, and anger, was revealed. These findings suggests that individuals can adapt and cultivate resilience over time, even under stressful conditions such as war (Bonanno et al., 2015), especially considering that Ukrainians have shown high levels of resilience at the beginning of the war and eight months after with no significant change. However, the persistent relationship between participants' current location and feelings of loneliness and depression underscores the profound psychological impact displacement might have had. However, we cannot confidently answer the question whether Ukrainians indeed habituate to the ongoing and omnipresent stressors.

Our results also revealed significant differences between the waves in several mental health variables, including general fear of war, existential fear of war, psychoemotional and physiological war reactions, and burnout. General fear of war, which refers to a broad sense of fear associated with the ongoing conflict (Kalcza-Janosi et al., 2023), increased over time. This rise was particularly notable among individuals who did not report a significant change in their overall well-being following the war or who did not experience war-related symptoms such as exhaustion, nervousness, and depression. Existential fear of war, on the other hand, specifically captures deeper fears related to the fundamental threats posed by the war, such as concerns about the survival of oneself or loved ones, the future of the country, and the prolongation of the conflict (Kalcza-Janosi et al., 2023). This form of fear remained more stable but was still evident across

participants. Additionally, psychoemotional and physiological reactions to war – which encompass both emotional responses (e.g., fear, sadness) and physical manifestations (e.g., sleep disturbances, somatic symptoms) – fluctuated between the waves, showing a slight overall decrease. Lastly, burnout, which includes emotional exhaustion and a sense of overwhelming fatigue due to prolonged stress, showed an increasing trend, particularly for those experiencing forced migration or those whose relatives were directly affected by the war. These findings alight with other studies showing the long-term impact of the armed conflict on domestic population (e.g., Matanov et al., 2013), as well as on refugees (e.g., Bogic et al., 2015).

Can we explain the change?

Our findings allowed to account for factors that may define the changes in the fear of war, psychological and emotional and physiological reactions to war, resilience, burnout, and loneliness. Not always the duration accounted for the change: as evidenced in our analysis of the fear of war, it appeared to escalate over time, with women and those using sedatives due to war stress reporting higher levels of fear. These findings align with past research which has demonstrated heightened fear responses in women and those resorting to self-medication to manage war-induced stress (Charuvastra & Cloitre, 2008). However, fear response diminished for individuals who reported no change in overall well-being following the war's onset. In contrast, psychological and emotional physiological war reactions slightly decreased over time, especially for individuals reporting no change in well-being and those using sedatives. Women reported higher levels of fear, psychological and emotional and physiological reactions to war, and burnout. Our resilience analysis reveals a slight decline over time, specifically for individuals consuming sedatives due to the war. Meanwhile, our burnout analysis provides no evidence of change over time, except for specific groups: those who were forced to migrate and among individuals who did not report worsening of chronic diseases. Burnout decrease was observed for those who reported no change in well-being following the war's onset and among those who did not report feelings of exhaustion, nervousness, and depression due to the war. Lastly, loneliness analysis suggests that it was not significantly altered over time. However, its slight increase in individuals reporting exhaustion or depression due to the war and those forced to migrate highlights the social fragmentation often associated with war and displacement.

Clinical implications

Our findings underscore the importance of targeted mental health interventions, particularly for individuals experiencing heightened fear and

burnout due to the ongoing conflict. While interventions should focus on addressing war-related fear, especially in those whose well-being remained stable but continue to experience anxiety, it is essential that scalable solutions are developed to reach a broader population, beyond university students and personnel. However, the focus on young people and educators remains critical, as they play key roles in society and their mental and emotional well-being is vital for maintaining the resilience and functionality of educational institutions during times of crisis.

Given the dynamic nature of the ongoing conflict, regular, representative mental health assessments are necessary to adapt interventions to evolving needs and ensure that support remains responsive to the changing psychological landscape. These continuous evaluations would allow for the timely identification of new vulnerabilities and ensure that interventions remain relevant and effective as the situation develops.

Limitations

This study faces several limitations, particularly related to its sample and study design. First, our sample is restricted to participants residing in Ukraine, which may limit the generalizability of the findings to those who have migrated abroad or live in territories under occupation. Additionally, the emphasis on broad categories such as fear, burnout, and psychoemotional reactions may overlook the more nuanced, individualized experiences of war-affected individuals. Another limitation is the relatively short duration of the longitudinal analysis and the study design (repeated cross--sectional study), which constrain our ability to assess the long-term changes and evolving psychological effects of the war. Given the unpredictable and prolonged nature of conflict, future studies should incorporate extended follow-up periods, particularly following the same participants over time. Furthermore, the study does not fully account for varying levels of war exposure, such as differences between front-line regions and safer areas, which likely have a differential impact on mental health outcomes (as suggested in Kurapov et al., 2024). Finally, while the study focuses on university students and personnel, its findings highlight the need for scalable interventions that extend beyond the academic community.

Interpretation and summary

This study reveals significant shifts in fear, burnout, and psychoemotional responses among Ukrainian university students and educators over eight months of war. While there is some habituation to war, evidenced by decreases in nervousness, exhaustion, depression, and anger, the psychological toll remains severe. This fragmented adjustment mirrors earlier findings

where individuals acclimated to air raid alarms and blackouts, but not to the trauma of explosions, which still trigger sharp spikes in anxiety and somatic symptoms (Stieger et al., 2023). The lack of clear conflict resolution, combined with internal societal tensions, likely contributes to the rising general fear of war. Women, in particular, exhibit higher levels of fear, psychological distress, and burnout, underscoring the gendered impact of prolonged conflict. Substance abuse, especially sedatives, remains alarmingly high, indicating that individuals continue to struggle with the mental strain of the war. Despite attempts to maintain a sense of normalcy – by working, studying, and engaging in daily activities – the overwhelming reality is that life cannot be sustained as usual under such circumstances. The mental health impact of this prolonged war is profound and calls for urgent development and implementation of mental health interventions, especially as many may not fully realize the long-term toll the conflict is taking on their physical and emotional well-being.

Acknowledgment

We acknowledge the contribution made to this study by Richard Isralowitz, PhD and Alexander Reznik, PhD from the Ben Gurion University of the Negev – Regional Alcohol and Drug Abuse Research (RADAR) Center.

Ethical approval

This study was conducted in accordance with the principles of the Declaration of Helsinki. Although data collection and reporting procedures were anonymous, all participants provided written informed consent before participating in the study. Further details regarding the ethical considerations are available from the corresponding author.

Author contributions

AK, IP: conceptualization and methodology of the study. AK, VP, VB, AD, IP: data collection and data proofing. AK: data analysis. AK, IP: manuscript writing. VP, VB, AD: manuscript review, editing, and rewriting. All authors contributed to the article and approved the submitted version.

Disclosure statement

Authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

ORCID

Anton Kurapov http://orcid.org/0000-0002-1286-9788
Valentyna Pavlenko http://orcid.org/0000-0003-4947-3995

Alexander Drozdov http://orcid.org/0000-0002-6682-9108
Nataliia Korchakova http://orcid.org/0000-0003-1164-3370
Iuliia Pavlova http://orcid.org/0000-0002-8111-4469

Data availability statement

The datasets generated during and/or analyzed during the current are available from the corresponding author on reasonable request.

References

Al Ibraheem, B., Kira, I. A., Aljakoub, J., & Al Ibraheem, A. (2017). The health effect of the Syrian conflict on IDPs and refugees. *Peace and Conflict: Journal of Peace Psychology*, *23*(2), 140–152. https://doi.org/10.1037/pac0000247

Bogic, M., Njoku, A., & Priebe, S. (2015). Long-term mental health of war-refugees: A systematic literature review. *BMC International Health and Human Rights*, *15*(1), 29. https://doi.org/10.1186/s12914-015-0064-9

Bonanno, G. A., Romero, S. A., & Klein, S. I. (2015). The temporal elements of psychological resilience: An integrative framework for the study of individuals, families, and communities. *Psychological Inquiry*, *26*(2), 139–169. https://doi.org/10.1080/1047840X.2015.992677

Carpiniello, B. (2023). The mental health costs of armed conflicts—a review of systematic reviews conducted on refugees, asylum-seekers and people living in war zones. *International Journal of Environmental Research and Public Health*, *20*(4), 2840. https://doi.org/10.3390/ijerph20042840

Charlson, F., van Ommeren, M., Flaxman, A., Cornett, J., Whiteford, H., & Saxena, S. (2019). New WHO prevalence estimates of mental disorders in conflict settings: A systematic review and meta-analysis. *Lancet (London, England)*, *394*(10194), 240–248. https://doi.org/10.1016/S0140-6736(19)30934-1

Charuvastra, A., & Cloitre, M. (2008). Social bonds and posttraumatic stress disorder. *Annual Review of Psychology*, *59*(1), 301–328. https://doi.org/10.1146/annurev.psych.58.110405.085650

Comtesse, H., Powell, S., Soldo, A., Hagl, M., & Rosner, R. (2019). Long-term psychological distress of Bosnian war survivors: an 11-year follow-up of former displaced persons, returnees, and stayers. *BMC Psychiatry*, *19*(1), 1. https://doi.org/10.1186/s12888-018-1996-0

Consumer Financial Protection Bureau. (2022). *Measuring financial well-being: A guide to using the CFPB financial well-being scale*. https://www.consumerfinance.gov/data-research/research-reports/financial-well-being-scale/

De Jong Gierveld, J., & Van Tilburg, T. (2010). The De Jong Gierveld short scales for emotional and social loneliness: tested on data from 7 countries in the UN generations and gender surveys. *European Journal of Ageing*, *7*(2), 121–130. https://doi.org/10.1007/s10433-010-0144-6

Garry, S., & Checchi, F. (2020). Armed conflict and public health: Into the 21st century. *Journal of Public Health (Oxford, England)*, *42*(3), e287–e298. https://doi.org/10.1093/pubmed/fdz095

Hanson, E., & Vogel, G. (2012). The impact of war on civilians. In *Trauma counseling*. Springer Publishing Company. https://doi.org/10.1891/9780826106841.0024

Hyland, P., Vallières, F., Shevlin, M., Karatzias, T., Ben-Ezra, M., McElroy, E., Vang, M. L., Lorberg, B., & Martsenkovskyi, D. (2023). Psychological consequences of war in Ukraine: Assessing changes in mental health among Ukrainian parents. *Psychological Medicine*, *53*(15), 7466–7468. https://doi.org/10.1017/S0033291723000818

International Monetary Fund. European Dept. (2024). Ukraine: Fourth Review of the Extended Arrangement under the Extended Fund Facility, Request for Modifications of a Performance Criterion, and Financing Assurances Review-Press Release; Staff Report; and Statement by the Executive Director for Ukraine. *IMF Staff Country Reports, 2024*(199). Retrieved Nov 26, 2024, from https://doi.org/10.5089/9798400282386.002

Kalaitzaki, A. E., Tamiolaki, A., & Vintila, M. (2023). The compounding effect of COVID-19 and war in Ukraine on mental health: *A* global time bomb soon to explode? *Journal of Loss and Trauma*, *28*(3), 270–272. https://doi.org/10.1080/15325024.2022.2114654

Kalcza-Janosi, K., Kotta, I., Marschalko, E. E., & Szabo, K. (2023). The Fear of War Scale (FOWARS): Development and initial validation. *Social Sciences*, *12*(5), 283. https://doi.org/10.3390/socsci12050283

Kurapov, A., Kalaitzaki, A., Keller, V., Danyliuk, I., & Kowatsch, T. (2023). The mental health impact of the ongoing Russian-Ukrainian war 6 months after the Russian invasion of Ukraine. *Frontiers in Psychiatry*, *14*, 1134780. https://doi.org/10.3389/fpsyt.2023.1134780

Kurapov, A., Pavlenko, V., Drozdov, A., Bezliudna, V., Reznik, A., & Isralowitz, R. (2023). Toward an understanding of the Russian-Ukrainian war impact on university students and personnel. *Journal of Loss and Trauma*, *28*(2), 167–174. https://doi.org/10.1080/15325024.2022.2084838

Kurapov, A., Schabus, M., Kahveci, S., Wilhelm, F. H., & Blechert, J. (2024). Explaining post-traumatic stress symptoms and sleep disturbance in civilians in Ukraine: Perceived threat versus objective war exposure. *European Journal of Psychotraumatology*, *15*(1), 2381371. https://doi.org/10.1080/20008066.2024.2381371

Lim, I. C. Z. Y., Tam, W. W. S., Chudzicka-Czupała, A., McIntyre, R. S., Teopiz, K. M., Ho, R. C., & Ho, C. S. H. (2022). Prevalence of depression, anxiety and post-traumatic stress in war- and conflict-afflicted areas: A meta-analysis. *Frontiers in Psychiatry*, *13*, 978703. https://doi.org/10.3389/fpsyt.2022.978703

Lushchak, O., Velykodna, M., Bolman, S., Strilbytska, O., Berezovskyi, V., & Storey, K. B. (2024). Prevalence of stress, anxiety, and symptoms of post-traumatic stress disorder among Ukrainians after the first year of Russian invasion: a nationwide cross-sectional study. *The Lancet Regional Health. Europe*, *36*, 100773. https://doi.org/10.1016/j.lanepe.2023.100773

Malach-Pines, A. (2005). The burnout measure, short version. *International Journal of Stress Management*, *12*(1), 78–88. https://doi.org/10.1037/1072-5245.12.1.78

Masten, A. S., & Narayan, A. J. (2012). Child development in the context of disaster, war, and terrorism: Pathways of risk and resilience. *Annual Review of Psychology*, *63*(1), 227–257. https://doi.org/10.1146/annurev-psych-120710-100356

Matanov, A., Giacco, D., Bogic, M., Ajdukovic, D., Franciskovic, T., Galeazzi, G. M., Kucukalic, A., Lecic-Tosevski, D., Morina, N., Popovski, M., Schützwohl, M., & Priebe, S. (2013). Subjective quality of life in war-affected populations. *BMC Public Health*, *13*(1), 624. https://doi.org/10.1186/1471-2458-13-624

Morina, N., Stam, K., Pollet, T. V., & Priebe, S. (2018). Prevalence of depression and posttraumatic stress disorder in adult civilian survivors of war who stay in war-afflicted regions. A systematic review and meta-analysis of epidemiological studies. *Journal of Affective Disorders*, *239*, 328–338. https://doi.org/10.1016/j.jad.2018.07.027

Murthy, R. S., & Lakshminarayana, R. (2006). Mental health consequences of war: a brief review of research findings. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, *5*(1), 25–30.

Palmer, M., Nguyen, C. V., Mitra, S., Mont, D., & Groce, N. E. (2019). Long-lasting consequences of war on disability. *Journal of Peace Research*, *56*(6), 860–875. https://doi.org/10.1177/0022343319846545

Pavlenko, V., Kurapov, A., Drozdov, A., Korchakova, N., Reznik, A., & Isralowitz, R. (2023). Ukrainian "help" profession women: War and location status impact on well--being. *Journal of Loss and Trauma*, *28*(1), 92–95. https://doi.org/10.1080/15325024.2022.2105482

Pavlova, I., & Rogowska, A. M. (2023). Exposure to war, war nightmares, insomnia, and war-related posttraumatic stress disorder: A network analysis among university students during the war in Ukraine. *Journal of Affective Disorders*, *342*, 148–156. https://doi.org/10.1016/j.jad.2023.09.003

Pavlova, I., Rogowska, A. M., & Zhang, S. X. (2024). Mental health and well-being during the COVID-19 pandemic and after the Russian invasion of Ukraine. *Journal of Community Health*, *49*(1), 173–182. https://doi.org/10.1007/s10900-023-01273-x

R Core Team. (2014). *The R project for statistical computing*. R Core Team.

Ruiz, I., & Vargas-Silva, C. (2013). The economics of forced migration. *Journal of Development Studies*, *49*(6), 772–784. https://doi.org/10.1080/00220388.2013.777707

Rzeszutek, M., Lis-Turlejska, M., Krajewska, A., Zawadzka, A., Lewandowski, M., & Szumiał, S. (2020). Long-term psychological consequences of World War II trauma among Polish survivors: A mixed-methods study on the role of social acknowledgment. *Frontiers in Psychology*, *11*, 210. https://doi.org/10.3389/fpsyg.2020.00210

Shoshani, A., & Slone, M. (2015). The resilience function of character strengths in the face of war and protracted conflict. *Frontiers in Psychology*, *6*, 2006. https://doi.org/10.3389/fpsyg.2015.02006

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, *15*(3), 194–200. https://doi.org/10.1080/10705500802222972

Stieger, S., Lewetz, D., Paschenko, S., & Kurapov, A. (2023). Examining terror management theory in Ukraine: impact of air-raid alarms and explosions on mental health, somatic symptoms, and well-being. *Frontiers in Psychiatry*, *14*, 1244335. https://doi.org/10.3389/fpsyt.2023.1244335