



## The association between daily life changes and anxiety among Ukrainians following the Russian invasion

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### ABSTRACT

This study sought to explore the association between changes in daily life and war-related anxiety. In this study, we analyzed self-reported data from 2,004 Ukrainian adults, obtained through an opportunistic survey in the Ukraine. Our assessment focused on changes in everyday routines and generalized anxiety symptoms since the Russian invasion of Ukraine on the 24 February 2022. The data were collected between July-September 2022. Results show a significant dose-response connection between everyday routine changes and increased war-related anxiety. Not surprisingly, the ongoing Ukraine-Russia conflict is impacting the lives of Ukrainians. These changes are linked to heightened anxiety levels. Effective population-based crisis management should consider both war-related stressors and changes in daily life routines.

Ukraine has been defending its borders against Russia since 2014, and since the Russian invasion on February 24, 2022, the Ukrainian population has continued to endure trauma in every facet of its life. The devastating mental health costs of exposure to war are well-established, with previous research demonstrating a dose-response relationship between a greater number of direct war-related stressors (e.g., missile attacks, physical injury, displacement) and increased anxiety symptoms (Hyland et al., 2023). However, for a substantial proportion of the population, war exposure can be indirect, leading to significant changes in daily life. Many individuals cannot attend work or school, walk outdoors, buy essentials, visit friends, or engage in leisure/spiritual activities.

As the war in Ukraine persists, more aspects of life deteriorate. With an increase in war-related daily life changes, anxiety symptoms are expected to rise. Moreover, the association between daily life changes and increased anxiety levels might be bidirectional, resulting in a vicious circle of losing routines that provide security, further intensifying anxiety. While war-related exposure typically describes events beyond an individual's control, some changes in daily activities may involve higher personal agency and may be effectively targeted by prevention efforts. The current study aimed to test the dose-response association between war-related changes in everyday lives and war-related anxiety. We hypothesized that a positive dose-response effect will be found between these two variables.

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## 1. Methods

We utilized data from ‘*The Mental Health of Parents and Children in Ukraine Study*’, which sought to understand how the war has impacted mental health and daily lives. Online data collection occurred from July to September 2022 through TGM Research’s representative survey panel in Singapore. Ethical approval was obtained from Ukraine’s Ministry of Health via the SI Institute of Psychiatry, Forensic Psychiatric Examination, and Drug Monitoring

(See Ho et al. (2023) for additional information). We employed opportunistic sampling methods to recruit participants of all ages from every geographic region of Ukraine (n = 2,004). The mean age was 37.72 (SD = 8.19) years; 57.1% (n = 1,144) were women, and 80.5% (n = 1,613) were in committed relationships. In terms of education, 62.7% (n = 1,256) of respondents held academic degrees, 25.8% (n = 518) had completed vocational school, and 11.4% (n = 230) had finished secondary/mandatory school.

Changes in daily life were assessed using a modified version of the 6-item Work and Social Adjustment Scale (WSAS; Mundt et al., 2002). Respondents rated changes in various daily activities on a three-option scale (-1 = less difficult; 0 = no change; 1 = more difficult; possible range -6 to 6 for the sum of the 6 items). Negative sum scores indicated fewer difficulties in performing an activity compared to before the war, while positive sum scores indicated more difficulties. Anxiety changes were evaluated using a modified version of the Generalized Anxiety Disorder 7-item Scale (GAD-7; Spitzer et al., 2006). Since war exposure represents a drastic life change, we expect that pre-post assessments are reliable despite the extended period. Respondents were asked to rate changes in frequency of the seven symptoms of anxiety symptoms since the war began with Likert scale response options (from ‘no change or less’ (0) to ‘a great deal more often’ (4)). Higher scores reflected more symptoms. A cut-off score of  $\geq 10$  indicated a significant war-related change. Internal reliability was acceptable for the WSAS ( $\alpha = .75$ ) and good for the GAD-7 ( $\alpha = .93$ ). Additional information is presented in the supplementary materials section.

We performed a two-step logistic regression using IBM SPSS 27, estimating whether the WSAS categories (with a reference category of “no changes in daily life”) were associated with the GAD-7 cut-off of 10 while controlling for covariates.

## 2. Results

The mean change in daily life activities was 2.41 (SD = 1.99), indicating more daily-life difficulties. The mean change in anxiety symptoms was 11.36 (SD = 6.88), with 54.9% (n = 1101) reporting anxiety symptom changes above the threshold of 10, indicating significant war-related change. The logistic regression (table 1) revealed a dose-response association between the degree of daily life changes and a significant war-related increase in anxiety symptoms. A change in a single daily activity was not significantly associated with a war-related increase in anxiety symptoms. However, for individuals experiencing changes in two to six daily activities, the association with a war-related increase in anxiety symptoms was significant and escalated in a dose-response manner (HR ranging from 1.640 to 5.047; p-value ranging from .002 to  $<.001$ ). Being younger and male was linked to a lower risk for a war-related increase in anxiety. Similar results were obtained with the continuous anxiety score (see supplementary materials), supporting the dose-response hypothesis.

## 3. Discussion

The increase in difficulty of performing two to six activities of daily life was linked to increased anxiety symptoms in a dose-response manner. Overall, 54.9% reported significant increase in anxiety symptoms. This estimate is complementary to the previously reported 54.1% prevalence of anxiety disorder in a quota-based representative sample in

**Table 1**

Cumulative negative changes and elevated risk for anxiety during the first six months of the Russian invasion of Ukraine (n = 2004).

Variables	Statistics				
	Elevated risk for Anxiety (GAD 7 $\geq 10$ )				
	B	S.E.	Wald	Odds Ratio	95% CI
Age (years)	-.021	.006	10.981	.979	[.967; .991]
Sex, females (reference group, males)	-1.019	.102	99.097	.361	[.295; .441]
Currently married or in co-habitation, (reference group, single)	.072	.125	.333	1.075	[.841; 1.374]
Education level	-.068	.065	1.089	.935	[.823; 1.061]
Cumulative negative changes in daily life vs. no negative changes in daily life. (Rates of the specific changes are in notes)					
1	.101	.154	.432	1.107	[.818; 1.497]
2	.495	.161	9.478	1.640**	[1.197; 2.247]
3	.871	.165	27.975	2.388***	[1.730; 3.297]
4	1.050	.163	41.664	2.859***	[2.078; 3.933]
5	1.484	.181	67.368	4.411***	[3.095; 6.287]
6	1.619	.219	54.718	5.047***	[3.287; 7.750]

Notes. \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ . Wald’s test (the ratio of the logistic regression coefficient and its standard error) related to the Z-distribution was used to test the significance of the terms in the model. Education was coded as Mandatory schooling (1), General\secondary (2), Vocational school (3), and Undergraduate degree (4).

(1) Going to work/education: reported less difficult (5.7%), no change (39.3%), and more difficult (55%)

(2) Going outside for a walk: reported less difficult (7.7%), no change (47.5%), and more difficult (44.8%)

(3) Going to buy food/essentials: reported less difficult (6.8%), no change (59.3%), and more difficult (33.9%)

(4) Visiting friends and relatives: reported less difficult (5.8%), no change (41.9%), and more difficult (52.3%)

(5) Leisure activities: reported less difficult (7.4%), no change (38.7%), and more difficult (53.9%)

(6) Spiritual/religious activities: reported less difficult (6.9%), no change (73.4%), and more difficult (19.7%)

Ukraine after the invasion (Xu et al., 2023).

In catastrophes, even trivial routines may be disrupted, while people strive to retain whatever elements of their lives they can. Recent literature on the impact of the COVID-19 pandemic has suggested that changes in everyday routines (e.g., home confinement, inability to meet friends) have the potential to affect mental health (Levin et al., 2022). The identified war-related dose-response relationship provides an opportunity to mitigate the anxiety increase by supporting people in managing changes to daily life routines. Sustaining daily life experiences could be a critical and concrete approach to empowering individuals to alleviate anxiety symptoms, access social support, and enhance well-being (Ho et al., 2018). Prevention and intervention efforts could provide psychoeducation on the importance of daily life routines and suggest developing new practices tailored to the war context.

Screening for war-related cumulative subjective changes to daily life activities could also serve as a strategy to identify those in greatest need of mental health support, particularly among subgroups with higher mental health stigma. Implementing cumulative stress screening and establishing appropriate referral pathways are crucial to managing anxiety symptoms in war times (Hyland et al., 2023). Overall, our results

suggest that crisis management should not solely concentrate on direct exposure to traumatic stressors but should also consider less apparent war-related consequences, such as changes in daily life activities. These findings align with Lock et al.'s, (2012) identification of secondary stressors (e.g., economic, health, education, and social stressors) as equally important factors to consider (i.e., alongside primary stressors, such as witnessing death/injuries and destruction) when assessing population-level psychological distress during humanitarian crises.

Several limitations should be acknowledged. First, our sample does not fully represent the general adult population of Ukraine, limiting the generalisability of results to potentially underrepresented groups. Second, we modified the GAD-7 measure of anxiety to assess changes in mental health without examining validity of such an approach. This limitation is especially relevant when the pre-existing mental health state is unknown. While we cannot verify the validity of the measure of change, the GAD-7 is a well-established assessment tool. Third, our study is cross-sectional and relies on self-report measures. Therefore, we cannot determine whether higher anxiety led to more difficulty performing activities of daily life, or vice versa. Other variables, such as years of conflict exposure, may have both contributed to heightened anxiety and disrupted daily routines.

Nevertheless, this study offers valuable insights into how Ukrainian citizens responded psychologically to daily activity changes since the Russian invasion. Ongoing assessments are necessary to ascertain whether these changes in daily life reflect a temporary, normal psychological response to extreme circumstances or if they indicate the initial signs of enduring functional impairment and reduced well-being. There is a need for development and further study of psychosocial interventions in the area of management of daily activities that would support those individuals who are at risk for increased anxiety during the time of war.

#### The authors share equal contributions

**Y.L., R.B., P.H., F.V., M.S., T.K., E.M., M.L.V., B.L., M.B.E., and D.M.** The authors Designed and performed the research, analyzed the data and wrote the paper.

#### Declaration of Competing Interest

All authors declare: we have no financial/personal interest to disclose.

#### Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.psychres.2023.115530](https://doi.org/10.1016/j.psychres.2023.115530).

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