PTSD symptoms among civilians being displaced inside and outside the Ukraine during the 2022 Russian invasion

Introduction

On 24 February 2022, Russia invaded Ukraine, leading to the displacement of nearly 6.5 million inside Ukraine, with a further 3.2 million fleeing the country (Zaliska et al., 2022). Previous research has demonstrated that refugees have a higher risk of poor mental health, both as a consequence of adverse or traumatic premigration experiences and as a result of post-migration difficulties (Porter and Haslam, 2005). Post-traumatic stress disorder (PTSD) and other mental disorders affect at least one in three refugees (Turrini et al., 2017). In a meta-analysis, prevalence of posttraumatic stress disorder (PTSD) was 31.46% (95% CI 24.43–38.5%) amongst refugees and asylum seekers (Blackmore et al., 2020). A recent study, using the ICD-11, found 36.1% of Syrian refugees and asylum seekers reported complex PTSD (Vallières et al., 2018). Several risk factors, including female gender, older age, and residing without a spouse or children were associated with psychological distress among adult refugees who arrived in Germany between 2013 and 2016 (Walther et., 2020). However, the impacts of internal displacement during conflict have been understudied. Additionally, we know of no studies examining PTSD symptoms amongst refugees during an ongoing invasion. In this study we explored war-related factors and PTSD symptoms amongst those displaced inside and outside the Ukraine during the 2022 Russian invasion.

Methods

Procedure and Participants

This study was conducted in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology guidelines for observational studies (STROBE). A probable quota sampling approach aimed for a nationally representative sample in terms of age, sex and region of Ukraine prior to the Russian invasion. A Ukrainian survey company (Kantar) conducted the survey using an established online panel in Ukraine between 7-15 April 2022, sampling by age, sex and region before displacement. Inclusion criteria were age (18-55) and fluency in Ukrainian. Participants were approached using a variety of online platforms and via email. Each participant then received a digital invitation and provided electronic informed consent. The study was approved by the Institutional Review Board of the first author.

We estimated a sample of 1975 participants would be required to detect low-medium effect sizes of 0.20, with 99% power and a 1% significance level using Gpower software version 3.1.9.4 (Faul et al., 2009). To recruit this sample 39,769 invitations were sent, of which 2,765 completed the survey (response rate = 6.95%), 176 (6.4%) of whom failed to meet inclusion criteria, 326 (11.8%) dropped out and 263 (9.5%) exceeded quotas for representative sampling (final N=2000, M age 37.18, SD = 9.23, range 18-55, 51.3% women, 66.6% married or living in co-habitation, 52.4% with at least one child under age 16).

Measurements

Alongside demographics (age, sex, marital status, having children under the age of 16) we measured war-related factors using the following questions: 1) "Do you have relatives wounded during the 2022 Russian invasion of Ukraine?" and 2) "Do you have relatives killed during the 2022 Russian invasion of Ukraine?". Each

question was rated on the following categories `1` No, `2` Don't know, `3` Yes. Displacement group (refugee) status was coded as `1` Not displaced, `2` Displaced within Ukraine due to the Russian invasion, `3` Displaced outside Ukraine due to the Russian invasion. ICD-11 PTSD symptoms were measured using the six-item International Trauma Questionnaire (ITQ; Cloitre et al., 2018). Each response was measured `0` not at all to `4` extremely (Cronbach's α= 0.86, potential scores range from 0-24). Elevated risk of PTSD was computed using the algorithm reported in the original formulation of the ITQ[7]. Survey items can be found in the online supporting material.

Statistical analysis

Preliminary ANOVA assessed differences between the groups (non-displaced vs. internally displaced vs. externally displaced) along with a post-hoc Scheffe test. Subsequent ANCOVA analysis compared PTSD symptoms with displacement group as the main factor while controlling for age, sex, marital status, number of children aged 16 and below and war related variables (having a relative wounded and/or killed during the Russian invasion of the Ukraine). Contrast measurement assessed whether group differences remain after controlling for the aforementioned variables.

Results

Across the sample, 30.8% (616 respondents) met the criteria for elevated risk for PTSD. Preliminary one-way ANOVA revealed a significant difference between the displacement groups in PTSD symptoms (Group 1: non-displaced M = 11.02 [SD = 4.88; n = 1455], Group 2: displaced within the Ukraine M = 12.55 [SD = 4.94; n = 389], Group 3: displaced outside the Ukraine M = 12.90 [SD = 4.61; n = 156] one-

way ANOVA F (2,1999) = 21.93; p <.001). A post-hoc Scheffe test showed a significant difference between Groups 1 vs. group 2 (Mean difference = -1.49 [SE = .28], p <.001) and group 1 vs. group 3 (Mean difference = -1.88 [SE = .41], p <.001). No significant differences were found between group 2 and group 3 (displaced inside and outside the Ukraine). ANCOVA analysis showed that the displacement group factor was associated with PTSD symptoms (F = 10.865; p <.001; Partial η^2 =.009). In addition, sex was significantly associated with PTSD symptoms (F = 121.198; p <.001; Partial η^2 =.049) as well as having children under the age of 16 (F = 9.716; p =.002; Partial η^2 =.004) and having relatives wounded during the Russian invasion (F = 10.634; p = .001; Partial η^2 =.005). No Group x Sex interaction was found. For more information, see Table 1. A contrast analysis replicated the post hoc Scheffe test (Group 2 vs. Group 1 (Contrast Estimate = 1.120; [SE = .251]; p < .001) Group 3 vs. group 1 (Contrast Estimate = .792; [SE = .397]; p < .046). There were no differences in the level of PTSD symptoms between those displaced inside the Ukraine in comparison to those displaced outside the Ukraine during the Russian invasion. In sum, civilians displaced inside and outside of Ukraine reported higher levels of PTSD symptoms than those not displaced.

Discussion

Our findings show that those displaced inside or outside Ukraine during the measurement period reported higher levels of PTSD symptoms in comparison to those not displaced. There were no significant differences in PTSD between those displaced within and outside their home country as a result of the invasion. This suggests that even evacuation from battered or besieged cities to other parts of Ukraine results in mental health problems (i.e., PTSD symptoms). The higher PTSD symptoms amongst those displaced may arise from the additional burden this displacement involves,

including losing one’s home, extra caregiving responsibilities, financial uncertainties, and lack of access to nourishment and healthcare. Given this, health care providers as well as policy makers are recommended to tailor psychological interventions to meet the needs of the displaced (Ioffe et al., 2022). These interventions should target those being displaced inside the country along with those who become refugees in other countries. Such actions may reduce the prevalence of mental health problems especially amongst higher risk groups (females, those with children under the age of 16 and those who reported having a relative wounded due to the war).

The main limitations of the study include the use of a cross-sectional design, possible response bias, and lack of pre-measurement of participants with pre-existing stress. Given the volatile situation in Ukraine following the Russian invasion (power shortages, lack of internet access and general problems with communication) we were unable to accurately assess the number of people who received the invitation to participate in the study, and thus can provide no true response rate. While internet penetration in Ukraine was estimated at around 90% in 2022 (Statista, 2022) internet usage is highly correlated with age, with penetration rates dropping substantially for those aged over 55. Our sample therefore excluded older respondents, who, despite suffering high levels of distress during the Russian incursions (Summers et al., 2019) may have been less likely to have moved between regions or left the country (Mykhnenko et al., 2022).

Despite the above limitations, we believe our findings suggest the possible mental health cost of being a "refugee" in your own country during a time of armed conflict. Further research is needed in this area to establish if there are similar associations between PTSD symptoms and displacement during other conflicts and disasters.

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Tables

Table 1. ANCOVA of War related factors and PTSD symptoms during the Russian invasion of the Ukraine (n = 2000).

Factor	Sum of Squares	Mean Square	F	Sig.	Partial η^2
Age	.103	.103	.005	.946	.000
Sex	2682.818	2682.818	121.198	<.001	.049
Marital status	19.678	19.678	.889	.346	.000
Having children under the age of 16	215.074	215.074	9.716	.002	.004
Relative wounded due to the Russian invasion	235.400	235.400	10.634	.001	.005
Relative killed due to the Russian invasion	50.612	50.612	2.286	.131	.001
Being displaced	481.013	240.507	10.865	<.001	.009

*p<0.05. **p<0.01. ***p<0.001.