



Functional disability, health care access, and mental health in Ukrainians displaced by the 2022 Russian invasion

Tarandeep S. Kang^{a,*}, Michael G Head^b, Ken Brackstone^b, Kateryna Buchko^{c,d}, Robin Goodwin^a

^a Department of Psychology, University of Warwick, United Kingdom

^b Clinical Informatics Research Unit, Faculty of Medicine, University of Southampton, United Kingdom

^c Department of Pedagogy and Social Work, Ukrainian Catholic University, Lviv, Ukraine

^d Department of Social Sciences, University of Stirling, United Kingdom

ARTICLE INFO

Keywords:

People with disabilities

Invasion of Ukraine

Refugees and internally displaced people

ABSTRACT

Armed conflict has negative mental health impacts on internally displaced people and refugees, however, much less is known of its effects on the mental health of displaced people and refugees with disabilities. We use pan-European data ($N = 9,676$), collected via an internet health needs survey across April–July 2022, to examine the mental health impacts of the 2022 Russian invasion of Ukraine on the mental health of displaced people with disabilities during the first months of the war. Regression models separately examined associations between functional impairment (vision, walking, existing mental health condition), access to healthcare, welfare payments, and anxiety and sleep quality, controlling for sociodemographic variables. The presence of pre-existing mental health conditions, mobility and vision impairment were each associated with higher levels of anxiety and poorer sleep quality. The ability to access health services and social security payments was also associated with better sleep and lower levels of anxiety. Humanitarian and local authorities must ensure Ukrainian refugees and IDPs are reviewed for their mental health needs, with particular attention to those with known disabilities.

1. Introduction

Warfare and armed conflict pose significant risks to mental health. A meta-analysis found that 13 % of individuals exposed to warfare or armed conflict were likely to have mild forms of depression, anxiety, or PTSD (Post Traumatic Stress Disorder), 4 % moderate disorder, and 5 % had severe disorders (Charlson et al., 2019). Displaced people are at particular risk of mental health disorders (anxiety, PTSD, and depression (Peconga and Høgh Thøgersen, 2020; Porter and Haslam, 2005).

War in Ukraine began in 2014, with an initial Russian invasion of the Donbas and Crimea regions. In 2022, this became a full-scale invasion of the entire country. This war sparked considerable migration: data from The Migration Observatory (Walsh and Sumption, 2022) show as of 22 July 2022 >>10 million border crossings out of Ukraine, and >6 million Ukrainian refugees across Europe as a result of the 2022 invasion. Surveys of Ukrainians internally displaced in the 2014 conflict found 55 % of respondents were at risk of somatic distress, with a high prevalence of PTSD (32 %), depression (22 %), and anxiety (17 %) (Cheung et al., 2019; Roberts et al., 2019). Data collected a few weeks after the 2022

invasion found 53 % of respondents met criteria for general psychological distress, 54 % for anxiety, 47 % for depression, and 12 % for insomnia (Xu et al., 2023). Further work suggested PTSD risk among Ukrainians was elevated by displacement, either internally or as a refugee (Ben-Ezra et al., 2023). Perhaps unsurprisingly therefore the WHO forecasts that by 2025, half of all Ukrainians will have mental health problems (Interagency Coordination Council on Mental Health Protection and Office of the President of Ukraine, 2023). This mental health burden has become a national health priority, with the First Lady of Ukraine Olena Zelenska initiating a National Program of Mental Health and Psychosocial Support (Office of the President of Ukraine, 2023).

Substantial previous research has shown that people with disabilities are likely to be at additional risk of negative mental health consequences from a broad range of disaster types, including armed conflict and warfare (Stough, 2009; Stough and Kelman, 2018). Researchers have raised particular concerns about the welfare and human rights of individuals with disabilities in the Ukraine conflict (Patwary et al., 2023; Ruškus, 2022). Geographical analysis of Ukrainian Government data

* Corresponding author.

E-mail address: tarandeep.kang@warwick.ac.uk (T.S. Kang).

<https://doi.org/10.1016/j.psychres.2024.116238>

Received 20 December 2023; Received in revised form 18 October 2024; Accepted 19 October 2024

Available online 21 October 2024

0165-1781/© 2024 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

from 2017 indicates that during the conflict in the Donbas region, individuals with disabilities were less likely to leave their homes, and where they were able to leave, moved shorter distances than individuals without disabilities (Mykhnenko et al., 2022). During the first wave of displacement, 2014–2022, the state treated all IDPs in the same way, despite multiple experiences of IDPs and their specific needs. In data collected shortly after the 2022 wide-scale invasion, the extent of functional disability in the Ukrainian population was associated with greater post-traumatic stress (Kang et al., 2023).

In this study we focus on three disabilities: poor visual health, restricted mobility, and pre-existing mental illness (Shakespeare, 2017). We use Europe-wide survey data from a large number of Ukrainian refugees displaced by the 2022 Russian invasion. We examine the association between functional disability, symptoms of anxiety, and sleep quality in people who were internally displaced or refugees. Anxiety disorders and sleep disorders appear highly comorbid, an American study of the general population finds that approximately 60 % of individuals with mood or anxiety disorders also endorse one symptom of insomnia (Soehner and Harvey, 2012) that being said, comorbidity rates among refugees do appear harder to estimate (Richter et al., 2020).

There is however another unique aspect to the anxiety-insomnia relationship among Ukrainian refugees which is the availability of air raid alerts via a mobile phone application that can be accessed by individuals even outside of the country i.e. refugees. Take as an illustrative example this description by the psychotherapist Galina Itskovich of her observation of someone's phone receiving an air raid alert in Odessa, although the gathering is now at a dinner party abroad:

“She slowly thaws, infected by our frivolous bravado, and then Elin's phone comes to life: there is another alarm in Odessa. This sound determines everything that follows, draws a dividing line between us and her, between the three of us and the rest of the diners. We are at war.” (Itskovich, 2023, pp. 27–28 Translated by the fourth author).

To our knowledge, this association has never been previously studied in the context of a large-forced migration to multiple European countries. We suggest several hypotheses. First, we anticipate that greater functional impairment will be associated with higher levels of anxiety (Frank et al., 2019; Turner et al., 2006) and poorer reported sleep quality (An and Joo, 2016; Ramos et al., 2014; Seow et al., 2020). Conversely, we predicted that adequate access to health services (Satinsky et al., 2019) will be associated with lower levels of anxiety and better sleep quality. Given that access to resources can act as a buffer against poor mental health (Hobfoll, 2014, 2012, 1989), we hypothesise that access to welfare payments would be associated with lower levels of anxiety and improved sleep quality. In line with previous research, we hypothesise that younger individuals and females (Faravelli et al., 2013) will be at a greater risk of anxiety and older individuals and females will be at greater risk of poor sleep quality (Madrid-Valero et al., 2017). We compare individuals remaining in Ukraine (IDPs) with those who moved elsewhere in Europe. We hypothesise that those who have moved elsewhere could be more likely to report more positive mental health (Ben-Ezra et al., 2023).

2. Methods

2.1. Recruitment and sample

The study is based on the online cross-sectional survey (“Health Needs of Ukrainian Refugees and Internally Displaced Persons”: <https://www.the-ciru.com/resin-ukraine>) (Head et al., 2022; Perelli-Harris et al., 2023). The study was advertised on Facebook between April 11 and July 15, 2022. Participants completed an online “health needs” survey using Qualtrics XM. Dissemination was conducted primarily using Facebook Ads Manager, with an advert describing the survey appearing on individuals' Facebook timelines along with the survey link. This allowed us to direct the survey toward Ukrainian speakers aged 18 and over living in Ukraine or in any European country

apart from Russia. Data from Ads Manager shows that the advert was seen by an estimated 1 million people during this period with the average respondent seeing advert 3.92 times in their feed. The survey was also shared by 1400 people on Facebook, reaching an estimated further 64,000 people.

The survey was advertised and conducted in Ukrainian. Native speakers translated the questions from English to Ukrainian, and other native speakers then reviewed the questions to ensure context and meaning was not lost. Participants provided informed consent after reading the study information. Ethical approval was received from the University of Southampton Ethics Committee (Institutional Review Board ID: 71,890) and the Ethics Committee of the Psychology Department, University of Warwick (Ref: PSY_PGR_22–23/34). Both ethical review processes covered participants in all countries of origin, including Ukraine. The study was conducted in accordance with the declaration of Helsinki (World Medical Association, 2013).

In total, 10,216 participants completed the survey. Thirty-seven participants were removed for being under 18 years of age, and 500 participants were removed for not answering fully the measures relevant to this study. Therefore, the sample in the present study consists of 9679 participants. The mean age of respondents was 43.11 ($SD = 10.83$; Age Range = 18–93), including 3933 IDPs and 5754 refugees.

2.2. Measures

2.2.1. Outcome variables

Mental health. Anxiety was measured using the GAD-2 (Kroenke et al., 2007; Plummer et al., 2016; Spitzer et al., 2006). Participants rated how often over the past 2 weeks they “felt nervous, anxious, or on edge” and “not able to stop or control worrying”; 0 = *not at all*, 3 = *nearly every day*; summed to form a single index ($\alpha = 0.76$).

Sleep quality. Respondents indicated perceived level of sleep quality over the past week with a single item (1 = *poor*; 5 = *excellent*) (Snyder et al., 2018), and the frequency of nightmares over the past two weeks (1 = *not at all*, 4 = *nearly every day*).

2.2.2. Displacement

To categorise displacement, a full list of countries was presented and participants indicated the country in which they currently were living. We distinguished between those located outside of Ukraine (refugees) and those inside the country (internally displaced).

2.2.3. Health and disability

We followed a broad and widely used definition of disability that is not restricted to physical or sensory impairments, but explicitly also includes mental health problems (Shakespeare, 2017). Health and disability-related variables were therefore assessed by three items: difficulty with walking 500 m (binary response: yes/no), vision (Likert scale; 1 = *very poor*; 5 = *excellent*), and the presence of previous a previous mental health condition (binary response yes/no).

2.2.4. Access to resources

We separately examined access to healthcare and access to welfare payments (both binary variables: access /no access).

2.2.5. Demographic variables

Participants indicated their age and gender. They also reported their education (high [university degree or higher] and lower); and previous settlement type (rural, urban). Participants' current residence was then collapsed these into two categories: still in Ukraine (IDP) or now living in another European country as a refugee. Relationship status was assessed as a binary variable (single/ not). Lastly, we used the Ukrainian region of origin to create a proxy for conflict intensity in the region of origin (binary variable) high (east and South of Ukraine) and lower intensity (all other regions).

2.3. Data analysis

We began by computing Welch's independent samples *t*-tests (Delacre et al., 2017) to examine differences in anxiety and sleep quality by gender. Next, we performed a pair of linear regression analyses with anxiety and sleep quality measures as separate outcomes. Predictors were entered hierarchically. The first block consisted of demographics (country of residence [internally displaced, elsewhere in Europe], primary language, current location as urban or rural, age, sex, and relationship status [single or not]). In the second block, we added disability-related variables (difficulty with walking, vision health, and the presence of a previous mental health condition). In the final block, we added variables measuring access to welfare payments and access to healthcare services.

We tested for multicollinearity using variance inflation factors with widely accepted cut-offs of 5–10 (James et al., 2021). Results were below 4 so we do not deem this to be an issue in the present dataset. We further assessed the normality of our residuals, graphically, using Q-Q plots, and found that this assumption was met.

3. Results

Overall respondents reported high levels of anxiety (M, 3.59 SD 1.77) and poor sleep quality (M, 2.72, SD, 0.85). The majority (68.5 %) of participants exceeded the GAD-2 cut-off score of 3 (Plummer et al., 2016). 42.2 % of respondents reported having nightmares on several days over the past two weeks, 16.4 % on more than half the days, and 11.5 % reported nightmares nearly every day. Women reported higher levels of anxiety (M 3.68 SD 1.73) than men (M 2.86 SD 1.89) $t(1230.42) = -13.11, p < 0.001$. Women also reported poorer sleep (M 2.71 SD 0.85) than men (M 2.85 SD 0.85) $t(1288.51) = 5.07, p < 0.001$ while older age was correlated with greater anxiety ($r = 0.021, p = .05$) and poorer sleep quality ($r = -0.068, p < 0.001$). Descriptive statistics for the key variables are in Table 1 and a full correlation matrix is presented in Table S1.

Table 2 provides frequentist linear regression models for associations with anxiety and sleep quality. Female gender was significantly associated with anxiety, as was remaining in Ukraine. We also found that being married, having a pre-existing mental health condition, living in a high-intensity conflict area and experiencing greater difficulties with vision and mobility were also associated with greater anxiety. Finally, not having access to welfare payments or healthcare was also associated with higher levels of anxiety. With regard to sleep quality, we found that those who are male, refugees rather than IDPs, and who have higher levels of education report better sleep quality. We found no association between regional conflict intensity and sleep quality. As with anxiety we again found that the presence of pre-existing mental health conditions,

Table 1
Descriptive statistics.

Variable	M (SD)	Frequency (%)
Age	43.11 (10.83)	
Gender (female)		8315 (85.9)
Education (higher)		6085 (73.1)
Settlement type (urban)		8389 (86.8)
Marital status (single)		2166 (22.4)
Home language (Ukrainian)		4410 (45.6)
IDP/refugee (IDP)		3933 (40.6)
Difficulties with walking	1.95 (0.21)	
Vision and eye health	3.16 (0.93)	
Existing mental health condition		2627 (27.1)
Access to welfare payments (payments received)		4408 (45.6)
Access to healthcare services (services available)		4121 (42.6)
GAD-2	3.59 (1.77)=	
GAD-2 Case (≥ 3) ¹		6628 (68.5)
Sleep quality	2.72 (0.85)	

¹ Suggested cut-off for GAD- from Plummer et al. (2016).

together with greater difficulties with vision and mobility, and a lack of access to healthcare and welfare payments, are each associated with poorer sleep quality.

4. Discussion

The situation for people with disabilities in Ukraine was difficult even prior to the invasion, with individuals facing stigma and discrimination, a lack of social and economic participation, inadequate access to healthcare, rehabilitation, and welfare, amongst other challenges (Byndyu, 2017; Gazizullin and Solodova, 2019; Lipsmeyer, 2003). In our study of almost 10,000 displaced Ukrainians nearly 70 % indicated a likely diagnosis of generalised anxiety disorder. Anxiety and poor sleep quality were positively associated with all 3 forms of disability assessed (visual, mobility and prior existing mental health problems). Access to healthcare facilities and welfare payments were positively associated with lower levels of anxiety and with better sleep quality. Female respondents were more vulnerable to symptoms of anxiety and poor sleep, as were IDPs compared with refugees.

The high prevalence of anxiety found in our study was consistent with other findings amongst Ukrainian refugees. A study of Ukrainian refugees in Germany (Buchcik et al., 2023) also found high prevalence of psychological distress, with this particularly high amongst females. This is also in line with much previous data on the mental health impacts of exposure to war and forced displacement (Blackmore et al., 2020; Charlson et al., 2019). We also found that pre-existing mental health conditions were associated with higher levels of anxiety and poorer sleep quality. This is also in line with previous research suggesting that pre-existing mental health is generally associated with poorer mental health in individuals exposed to armed conflict (Rozanov et al., 2019). Moreover, while we do find a high prevalence of anxiety and sleep disturbance in our sample it does not appear higher than in other similar studies, for example a large Europe-wide online study (Lushchak et al., 2024) conducted 9–12 months found that moderate and severe anxiety were present among 26.2 % and 25.8 % of respondents, respectively. Meanwhile, another study conducted from May to November 2022 (Boiko et al., 2024) of Ukrainian refugees collected using opportunity sampling via social media across several countries found an insomnia prevalence of 26.1 %.

We find evidence that good healthcare access is associated with lower levels of anxiety. Again, this is in accordance with previous research that healthcare access (Lebano et al., 2020) and, indeed concerns about access to healthcare, may themselves be a source of anxiety for refugee populations (Strong et al., 2015). An interview-based study of Ukrainians forced to flee to the UK (Galpin et al., 2023) also suggests that access to healthcare is itself a particular cause of concern among refugees, and this may be exacerbated by a lack of cultural competence and of familiarity with the system. These factors have also been highlighted by other studies in the UK, Romania, and Norway amongst others (Labberton et al., 2023; Poppleton et al., 2023, 2022; World Health Organization Regional Office for Europe, 2023). In previous research with refugees and asylum seekers given the right to remain in the UK (Rowley et al., 2020), security of access to the benefits system helps to mitigate mental health problems. In line with this study and with resource-based accounts of stress and coping, we hypothesised that access to social welfare systems as a means to financial resources would help to mitigate symptoms of psychological distress. Our results support this hypothesis and we find evidence that access to social welfare benefits is associated with decreases in symptoms of anxiety and poor sleep quality. However, it should be noted that negative attitudes towards receiving welfare payments appear prevalent across post-communist Europe (Lipsmeyer, 2003; Sätre, 2014). This may be particularly acute for recent forced migrants from Ukraine, who, in our dataset, were typically highly educated, and may prefer self-sufficiency (Galpin et al., 2023). This “useful migrant” narrative may help in part to counter racist attitudes in receiving countries towards “Eastern Europeans” as “benefit

Table 2
Linear regression.

Predictor	Outcome Anxiety					Outcome Sleep Quality								
	Coefficient (unstandardised)		St. Coeff	t	Sig	95 % CI		Coefficient (unst)		St. Coeff	t	Sig	95 % CI	
	B	S. E	β			Lower	Upper	B	S. E.	B			Lower	Upper
1 (Constant)	4.66	0.15		31.59	<0.001	4.37	4.95	2.86	0.07		39.89	<0.001	2.72	3.00
Age	0	0	0.02	1.55	0.121	0	0.01	-0.01	0	-0.06	-5.89	<0.001	-0.01	0
Gender (female)	0.97	0.06	0.17	15.74	<0.001	0.85	1.09	-0.21	0.03	-0.08	-6.93	<0.001	-0.27	-0.15
Married (high)	0.02	0.04	0.01	0.58	0.559	-0.05	0.1	-0.03	0.02	-0.02	-1.41	0.159	-0.06	0.01
Education	-0.02	0.02	-0.01	-0.97	0.334	-0.05	0.02	0.05	0.01	0.06	5.57	<0.001	0.03	0.07
IDP or refugee (refugee)	-0.35	0.04	-0.10	-8.55	<0.001	-0.43	-0.27	0.16	0.02	0.09	8.24	<0.001	0.13	0.2
Now in urban vs rural settlement (rural)	0	0.04	0	0.01	0.994	-0.09	0.09	0	0.02	0	0.18	0.854	-0.04	0.05
Conflict intensity (high)	0.15	0.04	0.04	3.65	<0.001	0.07	0.23	-0.02	0.02	-0.01	-1.04	0.297	-0.06	0.02
2 (Constant)	5.83	0.24		24.34	<0.001	5.36	6.3	2.03	0.12		17.31	<0.001	1.8	2.26
Age	0	0	-0.03	-2.62	<0.001	-0.01	0	0	0	-0.01	-0.96	0.336	0	0
Gender	0.9	0.06	0.16	15.11	<0.001	0.79	1.02	-0.18	0.03	-0.06	-5.99	<0.001	-0.23	-0.12
Married	0.09	0.04	0.02	2.29	0.022	0.01	0.16	-0.05	0.02	-0.03	-2.93	0.003	-0.09	-0.02
Education	0	0.02	0	0.08	0.939	-0.03	0.04	0.04	0.01	0.05	4.49	<0.001	0.02	0.06
IDP or refugee	-0.29	0.04	-0.08	-7.36	<0.001	-0.37	-0.22	0.14	0.02	0.08	7.09	<0.001	0.1	0.18
Rural settlement	0.02	0.04	0	0.39	0.7	-0.07	0.1	-0.01	0.02	0	-0.27	0.784	-0.05	0.04
Conflict intensity	0.14	0.04	0.04	3.57	<0.001	0.06	0.22	-0.02	0.02	-0.01	-0.9	0.367	-0.05	0.02
Vision (good)	-0.18	0.02	-0.1	-8.93	<0.001	-0.22	-0.14	0.12	0.01	0.13	12.16	<0.001	0.1	0.14
Walking (no difficulty)	-0.31	0.09	-0.04	-3.44	<0.001	-0.48	-0.13	0.2	0.04	0.05	4.55	<0.001	0.11	0.28
Depression / other mental condition (high)	0.84	0.04	0.21	20.31	<0.001	0.76	0.92	-0.3	0.02	-0.16	-14.71	<0.001	-0.34	-0.26
3 (Constant)	5.95	0.24		24.84	<0.001	5.48	6.41	1.98	0.12		16.87	<0.001	1.75	2.21
Age	0	0	-0.03	-2.31	0.021	-0.01	0	0	0	-0.01	-1.29	0.197	0	0
Gender	0.9	0.06	0.16	15.09	<0.001	0.78	1.02	-0.17	0.03	-0.06	-5.96	<0.001	-0.23	-0.12
Married	0.1	0.04	0.03	2.67	0.008	0.03	0.17	-0.06	0.02	-0.03	-3.32	0.001	-0.1	-0.02
Education	0	0.02	0	-0.11	0.914	-0.04	0.03	0.04	0.01	0.05	4.69	<0.001	0.02	0.06
IDP or refugee	-0.32	0.04	-0.09	-7.88	<0.001	-0.4	-0.24	0.15	0.02	0.09	7.59	<0.001	0.11	0.19
Rural settlement	0.01	0.04	0	0.15	0.881	-0.08	0.09	0	0.02	0	-0.04	0.972	-0.04	0.04
Conflict intensity	0.14	0.04	0.04	3.66	<0.001	0.07	0.22	-0.02	0.02	-0.01	-1.02	0.308	-0.06	0.02
Vision	-0.17	0.02	-0.09	-8.4	<0.001	-0.21	-0.13	0.12	0.01	0.13	11.62	<0.001	0.1	0.14
Walking	-0.3	0.09	-0.03	-3.35	<0.001	-0.47	-0.12	0.19	0.04	0.05	4.46	<0.001	0.11	0.28
Depression	0.83	0.04	0.21	20.1	<0.001	0.75	0.91	-0.29	0.02	-0.15	-14.48	<0.001	-0.33	-0.25
Healthcare access (high)	-0.24	0.04	-0.07	-6.46	<0.001	-0.32	-0.17	0.12	0.02	0.07	6.53	<0.001	0.08	0.16
Welfare payment (yes)	-0.12	0.04	-0.03	-3.32	<0.001	-0.2	-0.05	0.07	0.02	0.04	3.65	<0.001	0.03	0.1

tourists” (Burrell and Schweyher, 2019; Fox et al., 2015). Thus, it is important for future researchers to not only examine the availability of welfare payments, but also respondents’ willingness to access them, and to contrast this with the prevailing sentiment from the surrounding local communities and policies in receiving countries towards finding gainful employment.

We find that each of the three domains of functioning, mobility, pre-existing mental health condition, and vision health were associated with increased levels of anxiety and poorer sleep quality. This replicates findings with general populations of visually impaired individuals not affected by conflict showing visual impairment is associated with increasing levels of anxiety (Frank et al., 2019; Zhang et al., 2023) and poor sleep (Leger et al., 1996), as is mobility impairment (Peterson et al., 2021; Smith et al., 2019). Associations between pre-existing mental illness and anxiety disorders have been established both in the general population and trauma-exposed groups (Kroenke et al., 2007; Neria et al., 2010). Finally, previous research has also highlighted the co-occurrence of pre-existing mental health conditions and poor sleep quality in both general and trauma-exposed populations (Ohayon et al., 1998; Short et al., 2018). The present study also supports conclusions from our previous work with Ukrainians displaced by the war (Kang et al., 2023) and highlights the importance of studying multiple impairments. It is also, however, possible that individuals with especially severe impairments opted not to move, and so were not captured in the sample of this study. It may be especially beneficial for future researchers to focus on a wide range of types (and severity of impairments) because the role of disability in forced migration research remains understudied.

We found that individuals who were internally displaced reported the highest levels of distress. This may be because they are in greater

danger than those individuals who been able to leave the country. We note too that those more resourced may have been more easily able to leave: wealthier and better-connected individuals (Abramitzky et al., 2022; Munroe et al., 2023; UNHCR, 2022), and those with better health (Mykhnenko et al., 2022) are among those who are more likely to move a greater distance and leave the country if possible. This study focused only on adults. Many Ukrainian children with disabilities live in residential institutions, these institutions are places of captivity, arbitrariness and humiliation (Clegg, 2022; Matthews et al., 2015). Given this, the continuing war, and mental health impacts upon children with disabilities displaced in Ukraine are likely to be even more severe than the adults we have surveyed in the present work. Future work should focus in particular on children who are displaced and forced to become refugees.

Insomnia poses a substantial problem to refugee populations (Baskaran et al., 2023). One reason that individuals who remain in Ukraine may be specifically vulnerable to higher rates of poor sleep quality is because war-related remembering is associated with insomnia (Basishvili et al., 2012). For IDPs within Ukraine, they may not just be remembering, but are actively exposed to potential sources of danger and trauma. It is interesting to note that we find Russian speakers are a greater risk of poor sleep quality. This is in line with previous research finding lower levels of resilience in this population (Goodwin et al., 2023) and may also be related to the strengthening of the Ukrainian identity (and therefore of the Ukrainian language) that has taken place in recent years owing to hostilities since 2014 (Arel, 2018; Chayinska et al., 2022; Eras, 2023; Kurapov et al., 2024).

We recognise several limitations in our study. The main data source, Facebook, of this study is both a strength and limitation. By using

Facebook, we accessed a large sample of individuals who may have been otherwise hard to reach, and our number of participants greatly exceeds most other similar studies. Facebook has previously been shown to be useful in accessing such hard-to-reach populations (Iannelli et al., 2020; Kayrouz et al., 2016). On the other hand, the survey was explicitly advertised as a “health needs survey,” and individuals already more concerned than the average population about their health needs may be overrepresented in the sample. Relatedly, this study assessed only a limited number of functional impairments, which meant that it missed the full diversity of impacts of forced migration on other areas of functioning. Participants required access to the internet and a safe space to be able to complete the survey. Thus, we cannot be sure of how representative the survey is of the IDP and refugee population. Several of the measures we used required participants to select yes/no binaries, which may have caused to miss a finer-grained picture of these impacts. Finally, this study was conducted only in Ukrainian, which may have ignored some of the linguistic and cultural complexity of the country (Barrington and Herron, 2004). This is especially important given that recent research has shown that differences in cultural identification (as a speaker of either Ukrainian or Russian) differentially impacts perceptions of national resilience (Goodwin et al., 2023).

We would like to acknowledge some further limitations of the methodology regarding unexamined variables. In particular, we were unable to examine the extent of exposure to warfare. We also did not measure the number of elderly people children the household, as the care needs of these individuals, as well as persons with disabilities may require interruptions to sleep. Shelling and the associated air raid alerts most often take place at night and in the early hours of the morning, therefore a proportion of the disturbed sleep observed among internally displaced people in this study may not be a direct result of disability but simply due to war exposure.

We have noted that refugees living abroad may still be impacted by air raid alerts, however, the actions they must take in response will differ from those who remain internally displaced. Refugees outside the country may be awoken by their alarms, but will not need to evacuate to a shelter, and remain there for long periods, without perhaps a place to sleep, or certainly the ideal conditions to do so. In the case of people with disabilities, repeated requirement to move to shelter be especially disruptive to sleep given the extra time such actions would take. Moreover, individuals with the most severe disabilities may not be able to evacuate at all and may suffer even greater distress and sleep disruption given their heightened vulnerability. Comparing sleep disruption as a result of exposure to air raids among individuals with and without disabilities, and those inside and out of Ukraine, will be fruitful for future research and will help us to further understand the causes and consequences of this regular disruption to sleep for individuals with disabilities during a period of armed conflict.

Our study has several practical implications. Real-time data in humanitarian situations are difficult to gather, and our large sample size provides useful and practical insight. Countries receiving refugees should be especially cognisant of providing them with timely and appropriate healthcare and welfare, as problems with accessing such services can themselves be a substantial source of distress, alongside the need to treat sources of distress and trauma, themselves. Individuals with poor vision may be particularly vulnerable to post-migration distress, so clinicians may wish to pre-emptively engage with members of this group. Finally, as noted above, individuals who are most severely impaired in domains other than vision (intellectual impairment or those requiring full-time use of a wheelchair) may have particularly acute difficulties with migration, and so may have been unable to leave. It is therefore likely to be important for local authority, national-level governments, and humanitarian agencies to provide the Ukrainian state with additional medical assistance to better provide for the needs of IDPs who remain in the country, and for the refugee populations.

At the time of writing, the Ukraine displacement crisis is arguably the highest-profile crisis of its kind globally. However, there must also be

continuing conversations around the plight of refugees in other settings, for example in West Africa with Burkina Faso refugees in Ghana (Inusah et al., 2023) or in East Africa with Ethiopia taking many refugees from Somalia and South Sudan (UNHCR, 2023). There is an urgent need to pool the lessons learned from each of these displacements and to globally and collectively manage their socio-economic and health impacts.

CRedit authorship contribution statement

Tarandeep S. Kang: Writing – original draft, Software, Methodology, Investigation, Formal analysis, Conceptualization. **Michael G Head:** Writing – review & editing, Data curation. **Ken Brackstone:** Writing – review & editing, Data curation. **Kateryna Buchko:** Writing – review & editing, Conceptualization. **Robin Goodwin:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of competing interest

None.

References

- Abramitzky, R., Baseler, T., Sin, I., 2022. Persecution and Migrant Self-Selection: Evidence from the Collapse of the Communist Bloc (No. w30204). National Bureau of Economic Research, Cambridge, MA. <https://doi.org/10.3386/w30204>.
- An, Y., Joo, C.-K., 2016. The U-shaped association between self-reported sleep duration and visual impairment in Korean adults: a population-based study. *Sleep Med.* 26, 30–36. <https://doi.org/10.1016/j.sleep.2016.08.005>.
- Arel, D., 2018. How Ukraine has become more Ukrainian. *Post-Sov. Aff.* 34, 186–189. <https://doi.org/10.1080/1060586X.2018.1445460>.
- Barrington, L.W., Herron, E.S., 2004. One Ukraine or many? Regionalism in Ukraine and its political consequences. *Natl. Pap.* 32, 53–86. <https://doi.org/10.1080/0090599042000186179>.
- Basishvili, T., Eliazishvili, M., Maisuradze, L., Lortkipanidze, N., Nachkebia, N., Oniani, T., Gvilia, I., Darchia, N., 2012. Insomnia in a displaced population is related to war-associated remembered stress. *Stress Health* 28, 186–192. <https://doi.org/10.1002/smi.1421>.
- Baskaran, A., Marogi, E., Bitar, R., Attarian, H., Saadi, A., 2023. Improving sleep health among refugees: a systematic review. *Neurol. Clin. Pract.* 13. <https://doi.org/10.1212/CPJ.000000000000200139>.
- Ben-Ezra, M., Goodwin, R., Leshem, E., Hamama-Raz, Y., 2023. PTSD symptoms among civilians being displaced inside and outside the Ukraine during the 2022 Russian invasion. *Psychiatry Res.* 320, 115011. <https://doi.org/10.1016/j.psychres.2022.115011>.
- Blackmore, R., Boyle, J.A., Fazel, M., Ranasinha, S., Gray, K.M., Fitzgerald, G., Misso, M., Gibson-Helm, M., 2020. The prevalence of mental illness in refugees and asylum seekers: a systematic review and meta-analysis. *PLOS Med.* 17, e1003337. <https://doi.org/10.1371/journal.pmed.1003337>.
- Boiko, D.I., Shyrai, P.O., Mats, O.V., Karpik, Z.I., Rahman, M.H., Khan, A.A., Alanazi, A. M., Skrypnikov, A.M., 2024. Mental health and sleep disturbances among Ukrainian refugees in the context of Russian-Ukrainian war: a preliminary result from online-survey. *Sleep Med.* 113, 342–348. <https://doi.org/10.1016/j.sleep.2023.12.004>.
- Buchcik, J., Kovach, V., Adedeji, A., 2023. Mental health outcomes and quality of life of Ukrainian refugees in Germany. *Health Qual. Life Outcomes* 21, 23. <https://doi.org/10.1186/s12955-023-02101-5>.
- Burrell, K., Schweyher, M., 2019. Conditional citizens and hostile environments: polish migrants in pre-Brexit Britain. *Geoforum* 106, 193–201. <https://doi.org/10.1016/j.geoforum.2019.08.014>.
- Byndyu, V., 2017. Problems and prospects of social protection in Ukraine. *FBIM Trans.* 2, 15–23. <https://doi.org/10.12709/fbim.02.02.02.02>.
- 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* 394, 240–248. [https://doi.org/10.1016/S0140-6736\(19\)30934-1](https://doi.org/10.1016/S0140-6736(19)30934-1).
- Chayinska, M., Kende, A., Wohl, M.J.A., 2022. National identity and beliefs about historical linguicide are associated with support for exclusive language policies among the Ukrainian linguistic majority. *Group Process. Intergroup Relat.* 25, 924–940. <https://doi.org/10.1177/1368430220985911>.
- Cheung, A., Makhshvili, N., Javakhishvili, J., Karachevsky, A., Kharchenko, N., Shpiker, M., Roberts, B., 2019. Patterns of somatic distress among internally displaced persons in Ukraine: analysis of a cross-sectional survey. *Soc. Psychiatry Psychiatr. Epidemiol.* 54, 1265–1274. <https://doi.org/10.1007/s00127-019-01652-7>.
- Clegg, R., 2022. Disabled children abused in Ukraine's Orphanages, Warns UN [WWW Document]. BBC News. URL <https://www.bbc.com/news/disability-62513459> (accessed 8.19.24).
- Delacre, M., Lakens, D., Leys, C., 2017. Why psychologists should by default use Welch's *t*-test instead of student's *t*-test. *Int. Rev. Soc. Psychol.* 30, 92–101. <https://doi.org/10.5334/irsp.82>.

- Eras, L., 2023. War, identity politics, and attitudes toward a linguistic minority: prejudice against Russian-speaking Ukrainians in Ukraine between 1995 and 2018. *Natl. Pap.* 51, 114–135. <https://doi.org/10.1017/nps.2021.100>.
- Faravelli, C., Alessandra Scarpato, M., Castellini, G., Lo Sauro, C., 2013. Gender differences in depression and anxiety: the role of age. *Psychiatry Res.* 210, 1301–1303. <https://doi.org/10.1016/j.psychres.2013.09.027>.
- Fox, J.E., Moroşanu, L., Szilassy, E., 2015. Denying discrimination: status, 'race', and the whitening of Britain's New Europeans. *J. Ethn. Migr. Stud.* 41, 729–748. <https://doi.org/10.1080/1369183X.2014.962491>.
- Frank, C.R., Xiang, X., Stagg, B.C., Ehrlich, J.R., 2019. Longitudinal associations of self-reported vision impairment with symptoms of anxiety and depression among older adults in the United States. *JAMA Ophthalmol.* 137, 793–800. <https://doi.org/10.1001/jamaophthalmol.2019.1085>.
- Galpin, C., Jones, S., Kogut, N., Rohe, M., 2023. Support For Displaced Ukrainians in the UK: The Role of History & Stereotypes. The University of Birmingham, Birmingham: UK.
- Gazizullin, I., Solodova, D., 2019. How People with Disabilities Live in the Donetsk and Luhansk Oblasts: SCORE Results. USAID, Centre For Sustainable Peace and Democratic Development, United Nations Ukraine.
- Goodwin, R., Hamama-Raz, Y., Leshem, E., Ben-Ezra, M., 2023. National resilience in Ukraine following the 2022 Russian invasion. *Int. J. Disaster Risk Reduct.* 85, 103487. <https://doi.org/10.1016/j.ijdrr.2022.103487>.
- Head, M., Brackstone, K., Crane, K., Walker, I., Perelli-Harris, B., 2022. Understanding health needs of Ukrainian refugees and displaced populations. [doi:10.6084/m9.figshare.20231346.v1](https://doi.org/10.6084/m9.figshare.20231346.v1).
- Hobfoll, S., 2014. Resource caravans and resource caravan passageways: a new paradigm for trauma responding. *Interv. J. Ment. Health Psychosoc. Support Confl. Affect. Areas* 12, 21.
- Hobfoll, S.E., 2012. Conservation of resources and disaster in cultural context: the caravans and passageways for resources. *Psychiatry Interpers. Biol. Process.* 75, 227–232. <https://doi.org/10.1521/psyc.2012.75.3.227>.
- Hobfoll, S.E., 1989. Conservation of resources: a new attempt at conceptualizing stress. *Am. Psychol.* 44, 513–524. <https://doi.org/10.1037/0003-066X.44.3.513>.
- Iannelli, L., Giglietto, F., Rossi, L., Zurovac, E., 2020. Facebook digital traces for survey research: assessing the efficiency and effectiveness of a Facebook ad-based procedure for recruiting online survey respondents in niche and difficult-to-reach populations. *Soc. Sci. Comput. Rev.* 38, 462–476. <https://doi.org/10.1177/0894439318816638>.
- Interagency Coordination Council on Mental Health Protection, Office of the President of Ukraine, 2023. We must turn appalling experience into post-traumatic growth - first lady at the interagency coordination council on mental health protection [WWW Document]. Off. Website Pres. Ukr. URL <https://www.president.gov.ua/en/news/mayemo-pereplaviti-zahlivij-dosvid-na-posttravmatiche-zros-80849> (accessed 10.14.23).
- Inusah, A.-W., Brackstone, K., Head, M., Ahmed, T.I., Nartey, D.T., Ziblim, S.-D., 2023. Household food insecurity, living conditions, and individual sense of security among Burkinabe refugees in Ghana: a cross-sectional survey using in-person data collection. [doi:10.1101/2023.07.31.23293476](https://doi.org/10.1101/2023.07.31.23293476).
- Itskovich, G., 2023. The diary of a psychotherapist. *Vremena* 26, 7–55.
- James, G., Witten, D., Hastie, T., Tibshirani, R., 2021. An Introduction to Statistical Learning: With Applications in R, Springer Texts in Statistics. Springer US, New York, NY. <https://doi.org/10.1007/978-1-0716-1418-1>.
- Kang, T.S., Goodwin, R., Hamama-Raz, Y., Leshem, E., Ben-Ezra, M., 2023. Disability and post-traumatic stress symptoms in the Ukrainian general population during the 2022 Russian invasion. *Epidemiol. Psychiatr. Sci.* 32, e21. <https://doi.org/10.1017/S204579602300015X>.
- Kayrouz, R., Dear, B.F., Karim, E., Titov, N., 2016. Facebook as an effective recruitment strategy for mental health research of hard to reach populations. *Internet Interv.* 4, 1–10. <https://doi.org/10.1016/j.invent.2016.01.001>.
- Kroenke, K., Spitzer, R.L., Williams, J.B.W., Monahan, P.O., Löwe, B., 2007. Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. *Ann. Intern. Med.* 146, 317–325. <https://doi.org/10.7326/0003-4819-146-5-200703060-00004>.
- Kurapov, A., Balashevych, O., Bamberg, C., Boski, P., 2024. Cutting cultural ties? Reasons why Ukrainians terminate or continue to interact with Russian culture despite the ongoing Russian-Ukrainian war. *J. Cross-Cult. Psychol.* <https://doi.org/10.1177/00220221241256322>, 00220221241256322.
- Labberton, A.S., Hansen, T.M., Skogheim, T.S., Helland, Y., 2023. Healthcare Needs Among Refugees from Ukraine arriving in Norway during 2022. Norwegian Institute of Public Health, Oslo.
- Lebano, A., Hamed, S., Bradby, H., Gil-Salmerón, A., Durá-Ferrandis, E., Garcés-Ferrer, J., Azzedine, F., Riza, E., Karnaki, P., Zota, D., Linos, A., 2020. Migrants' and refugees' health status and healthcare in Europe: a scoping literature review. *BMC Public Health* 20, 1039. <https://doi.org/10.1186/s12889-020-08749-8>.
- Leger, D., Guilleminault, C., Defrance, R., Domont, A., Paillard, M., 1996. Blindness and sleep patterns. *Lancet* 348, 830–831. [https://doi.org/10.1016/S0140-6736\(05\)62566-7](https://doi.org/10.1016/S0140-6736(05)62566-7).
- Lipsmeyer, C.S., 2003. Welfare and the discriminating public: evaluating entitlement attitudes in post-communist Europe. *Policy Stud. J.* 31, 545–564. <https://doi.org/10.1111/1541-0072.00042>.
- 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. *Lancet Reg. Health - Eur.* 36. <https://doi.org/10.1016/j.lanepe.2023.100773>.
- Madrid-Valero, J.J., Martínez-Selva, J.M., Couto, B.R., Sánchez-Romera, J.F., Ordoñana, J.R., 2017. Age and gender effects on the prevalence of poor sleep quality in the adult population. *Gac. Sanit.* 31, 18–22. <https://doi.org/10.1016/j.gaceta.2016.05.013>.
- Matthews, E., Rosenthal, E., Ahern, L., Kurylo, H., 2015. No Way Home: The Exploitation and Abuse of Children in Ukraine's Orphanages. Disability Rights International, Washington, DC.
- Munroe, E., Nosach, A., Pedrozo, M., Guarnieri, E., Riaño, J.F., Tur-Prats, A., Valencia Caicedo, F., 2023. The legacies of war for Ukraine. *Econ. Policy.* <https://doi.org/10.1093/epolic/eiad001>.
- Mykhnenko, V., Delahaye, E., Mehdi, N., 2022. Understanding forced internal displacement in Ukraine: insights and lessons for today's crises. *Oxf. Rev. Econ. Policy* 38, 699–716. <https://doi.org/10.1093/oxrep/grac020>.
- Neria, Y., Besser, A., Kiper, D., Westphal, M., 2010. A longitudinal study of posttraumatic stress disorder, depression, and generalized anxiety disorder in Israeli civilians exposed to war trauma. *J. Trauma. Stress* 23, 322–330. <https://doi.org/10.1002/jts.20522>.
- Office of the President of Ukraine, 2023. Olena Zelenska told how the initiative to create the National Program of Mental Health and Psychosocial Support is being implemented [WWW Document]. Official website of the President of Ukraine. URL <https://www.president.gov.ua/en/news/olena-zelenska-rozповila-yak-vtiluyetsya-iniciativa-zi-stvo-80109> (accessed 10.14.23).
- Ohayon, M.M., Caulet, M., Lemoine, P., 1998. Comorbidity of mental and insomnia disorders in the general population. *Compr. Psychiatry* 39, 185–197. [https://doi.org/10.1016/S0010-440X\(98\)90059-1](https://doi.org/10.1016/S0010-440X(98)90059-1).
- Patwary, M.M., Polack, S., Zharkova, A., Swed, S., Shoib, S., 2023. People with disabilities in Ukraine – a call for action. *Prehospital. Disaster Med.* 38, 139–140. <https://doi.org/10.1017/S1049023X22002400>.
- Peconga, E.K., Høgh Thøgersen, M., 2020. Post-traumatic stress disorder, depression, and anxiety in adult Syrian refugees: what do we know? *Scand. J. Public Health* 48, 677–687. <https://doi.org/10.1177/1403494819882137>.
- Perelli-Harris, B., Torrisi, O., Head, M.G., Brackstone, K., 2023. Demographic and household composition of refugee and internally displaced Ukraine populations: findings from an online survey (No. 74). Migration Research Series. International Organization for Migration (IoM), Geneva.
- Peterson, M.D., Lin, P., Kamdar, N., Mahmoudi, E., Marsack-Topolewski, C.N., Haapala, H., Muraszko, K., Hurvitz, E.A., 2021. Psychological morbidity among adults with cerebral palsy and spina bifida. *Psychol. Med.* 51, 694–701. <https://doi.org/10.1017/S0033291720001981>.
- Plummer, F., Manea, L., Trepel, D., McMillan, D., 2016. Screening for anxiety disorders with the GAD-7 and GAD-2: a systematic review and diagnostic meta-analysis. *Gen. Hosp. Psychiatry* 39, 24–31. <https://doi.org/10.1016/j.genhosppsych.2015.11.005>.
- Poppleton, A., Ougrin, D., Kolesnyk, P., Morton, S., 2023. Where are we after a year? Providing responsive primary care for Ukrainian refugees. *Br. J. Gen. Pract.* 73, 220–221. <https://doi.org/10.3399/bjgp23X732765>.
- Poppleton, A., Ougrin, D., Maksymets, Y., 2022. Providing responsive primary care for Ukrainian refugees. *Br. J. Gen. Pract.* 72, 274–275. <https://doi.org/10.3399/bjgp22X719633>.
- Porter, M., Haslam, N., 2005. Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons: a meta-analysis. *JAMA* 294, 602–612. <https://doi.org/10.1001/jama.294.5.602>.
- Ramos, A.R., Wallace, D.M., Williams, N.J., Spence, D.W., Pandi-Perumal, S.R., Zizi, F., Jean-Louis, G., 2014. Association between visual impairment and sleep duration: analysis of the 2009 National Health Interview Survey (NHIS). *BMC Ophthalmol.* 14, 115. <https://doi.org/10.1186/1471-2415-14-115>.
- Richter, K., Baumgärtner, L., Niklewski, G., Peter, L., Köck, M., Kellner, S., Hillemecher, T., Büttner-Teleaga, A., 2020. Sleep disorders in migrants and refugees: a systematic review with implications for personalized medical approach. *EPMA J.* 11, 251–260. <https://doi.org/10.1007/s13167-020-00205-2>.
- Roberts, B., Makhshvili, N., Javakhishvili, J., Karachevskyy, A., Kharchenko, N., Shpiker, M., Richardson, E., 2019. Mental health care utilisation among internally displaced persons in Ukraine: results from a nation-wide survey. *Epidemiol. Psychiatr. Sci.* 28, 100–111. <https://doi.org/10.1017/S2045796017000385>.
- Rowley, L., Morant, N., Katona, C., 2020. Refugees who have experienced extreme cruelty: a qualitative study of mental health and wellbeing after being granted leave to remain in the UK. *J. Immigr. Refug. Stud.* 18, 357–374. <https://doi.org/10.1080/15562948.2019.1677974>.
- Rozanov, V., Franciško, T., Marinić, I., Macarena, M.-M., Leticia-Crepulja, M., Mužinić, L., Jayatunge, R., Sisask, M., Vevera, J., Wiederhold, B., Wiederhold, M., Miller, I., Pagkalos, G., 2019. Mental health consequences of war conflicts. In: Javed, A., Fountoulakis, K.N. (Eds.), *Advances in Psychiatry*. Springer International Publishing, Cham, pp. 281–304. https://doi.org/10.1007/978-3-319-70554-5_17.
- Ruškus, J., 2022. Disastrous exposure of persons with disabilities to Russian aggression against Ukraine. *Int. J. Disabil. Soc. Justice* 2, 8–14. <https://doi.org/10.13169/intljofdisocjus.2.2.0008>.
- Satinsky, E., Fuhr, D.C., Woodward, A., Sondorp, E., Roberts, B., 2019. Mental health care utilisation and access among refugees and asylum seekers in Europe: a systematic review. *Health Policy* 123, 851–863. <https://doi.org/10.1016/j.healthpol.2019.02.007>. Health policies and mixed migration – lessons learnt from the 'European refugee crisis'.
- Såtre, A.-M., 2014. Attitudes, poverty and agency in Russia and Ukraine. *Debatte: J. Contemp. Cent. East. Eur.* 22, 266–268. <https://doi.org/10.1080/0965156X.2014.988492>.
- Seow, L.S.E., Tan, X.W., Chong, S.A., Vaingankar, J.A., Abidin, E., Shafie, S., Chua, B.Y., Heng, D., Subramaniam, M., 2020. Independent and combined associations of sleep duration and sleep quality with common physical and mental disorders: results from

- a multi-ethnic population-based study. *PLOS One* 15, e0235816. <https://doi.org/10.1371/journal.pone.0235816>.
- Shakespeare, T., 2017. *Disability: The Basics*. Routledge, London. <https://doi.org/10.4324/9781315624839>.
- Short, N.A., Allan, N.P., Stentz, L., Portero, A.K., Schmidt, N.B., 2018. Predictors of insomnia symptoms and nightmares among individuals with post-traumatic stress disorder: an ecological momentary assessment study. *J. Sleep Res.* 27, 64–72. <https://doi.org/10.1111/jsr.12589>.
- Smith, K.J., Peterson, M.D., O'Connell, N.E., Victor, C., Liverani, S., Anokye, N., Ryan, J. M., 2019. Risk of depression and anxiety in adults with cerebral palsy. *JAMA Neurol.* 76, 294–300. <https://doi.org/10.1001/jamaneurol.2018.4147>.
- Snyder, E., Cai, B., DeMuro, C., Morrison, M.F., Ball, W., 2018. A new single-item sleep quality scale: results of psychometric evaluation in patients with chronic primary insomnia and depression. *J. Clin. Sleep Med. JCSM Off. Publ. Am. Acad. Sleep Med.* 14, 1849–1857. <https://doi.org/10.5664/jcsm.7478>.
- Soehner, A.M., Harvey, A.G., 2012. Prevalence and functional consequences of severe insomnia symptoms in mood and anxiety disorders: results from a nationally representative sample. *Sleep* 35, 1367–1375. <https://doi.org/10.5665/sleep.2116>.
- Spitzer, R.L., Kroenke, K., Williams, J.B.W., Löwe, B., 2006. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch. Intern. Med.* 166, 1092. <https://doi.org/10.1001/archinte.166.10.1092>.
- Stough, L.M., 2009. The effects of disaster on the mental health of individuals with disabilities. In: Neria, Y., Galea, S., Norris, F.H. (Eds.), *Mental Health and Disasters*. Cambridge University Press, Cambridge, pp. 264–276. <https://doi.org/10.1017/CBO9780511730030.015>.
- Stough, L.M., Kelman, I., 2018. People with disabilities and disasters. In: Rodríguez, H., Donner, W., Trainor, J.E. (Eds.), *Handbook of Disaster Research, Handbooks of Sociology and Social Research*. Springer International Publishing, Cham, pp. 225–242. https://doi.org/10.1007/978-3-319-63254-4_12.
- Strong, J., Varady, C., Chahda, N., Doocy, S., Burnham, G., 2015. Health status and health needs of older refugees from Syria in Lebanon. *Confl. Health* 9, 12. <https://doi.org/10.1186/s13031-014-0029-y>.
- Turner, R.J., Lloyd, D.A., Taylor, J., 2006. Physical disability and mental health: an epidemiology of psychiatric and substance disorders. *Rehabil. Psychol.* 51, 214. <https://doi.org/10.1037/0090-5550.51.3.214>.
- UNHCR, 2023. Ethiopia: refugees and asylum-seekers (As of May 31 2023.) - Ethiopia | ReliefWeb [WWW Document]. ReliefWeb. URL <https://reliefweb.int/report/ethiopia/ethiopia-refugees-and-asylum-seekers-may-31-2023> (accessed 10.10.23).
- UNHCR, 2022. Lives On Hold: Profiles and Intentions of Refugees from Ukraine #1. UNHCR Regional Bureau For Europe, Geneva.
- Walsh, P.W., Sumption, M., 2022. Q&A: the UK and the Ukraine refugee situation [WWW Document]. Migr. Obs. URL <https://migrationobservatory.ox.ac.uk/resources/briefings/qa-the-uk-and-the-ukraine-refugee-situation/> (accessed 3.24.23).
- World Health Organization Regional Office for Europe, 2023. *Behavioural Insights On Health Service Needs and Access: Results of A Qualitative Study Among Refugees from Ukraine in Romania*. World Health Organization. Regional Office for Europe. July–September 2022 (No. WHO/EURO:2023-7292-47058-68796).
- World Medical Association, 2013. World medical association declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA* 310, 2191–2194. <https://doi.org/10.1001/jama.2013.281053>.
- Xu, W., Pavlova, I., Chen, X., Petrytsa, P., Graf-Vlachy, L., Zhang, S.X., 2023. Mental health symptoms and coping strategies among Ukrainians during the Russia-Ukraine war in March 2022. *Int. J. Soc. Psychiatry.* <https://doi.org/10.1177/00207640221143919>, 00207640221143919.
- Zhang, X., Wang, S., Du, Z., Seth, I., Wang, Y., Liang, Y., Wu, G., Huang, Y., Liu, S., Hu, Yunyan, Shang, X., Hu, Yijun, Zhu, Z., Yu, H., 2023. The associations and mediators between visual disabilities and anxiety disorders in middle-aged and older adults: a population-based study. *Am. Psychol.* 78, 982–994. <https://doi.org/10.1037/amp0001143>.