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Research Article

Mental health of the population in wartime depending on socio-demographic characteristics

Salud mental de la población en tiempos de guerra según características sociodemográficas

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ABSTRACT

Introduction: The ongoing war in Ukraine has significantly worsened the mental health of civilians. Socio-demographic factors such as age, gender, education, and employment status influence the psychological well-being of Internally Displaced Persons (IDPs) and refugees, yet their specific effects remain insufficiently studied.

Objective: To identify the specifics of psycho-emotional states of different categories of the affected population by comparing IDPs and refugees.


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Methods: A cross-sectional quantitative study was conducted with 200 respondents (100 IDPs and 100 refugees). Standardized tools (PHQ-9, GAD-7, PCL-5) were applied. Statistical analysis included descriptive statistics, t-tests, χ^2-tests, and multiple regression analysis.

Results: Refugees showed significantly higher depression (PHQ-9: 12.6 ± 4.9) and anxiety (GAD-7: 11.8 ± 4.6) scores compared to IDPs (10.2 ± 4.3 and 9.5 ± 4.1, respectively). Conversely, PTSD symptoms were more severe in IDPs (PCL-5: 44.3 ± 13.2) than in refugees (39.7 ± 12.5). Employment emerged as a strong protective factor, reducing depression (β = –0.34), anxiety (β = -0.29), and PTSD (β = –0.25). Female gender and older age were significant predictors of increased psycho-emotional distress.

Conclusions: Employment is the strongest protective factor, while women and older displaced Ukrainians face higher mental health risks. This first Ukrainian comparative study of IDPs and refugees by socio-demographic factors supports targeted psychosocial interventions and calls for longitudinal research during wartime.

Keywords: GAD-7; mental health; PCL-5; PHQ-9; public health; refugees; socio-demographic factors; statistical analysis; war.

RESUMEN

Introducción: La guerra en Ucrania ha empeorado de manera significativa la salud mental de la población civil. Factores socio-demográficos como edad, género, educación y situación laboral influyen en el bienestar psicológico de los desplazados internamente (PDI) y los refugiados; sin embargo, sus efectos aún no se han estudiado lo suficiente.

Objetivo: Identificar las particularidades de los estados psicoemocionales de diferentes categorías de población afectada, comparando a desplazados internos y refugiados.

Métodos: Estudio cuantitativo transversal con 200 encuestados (100 PDI y 100 refugiados). Se aplicaron herramientas estandarizadas (PHQ-9, GAD-7, PCL-5). El análisis estadístico incluyó estadística descriptiva, pruebas t, pruebas χ^2 y análisis de regresión múltiple.

Resultados: Los refugiados mostraron puntuaciones significativamente más altas de depresión (PHQ-9: 12,6 ± 4,9) y ansiedad (GAD-7: 11,8 ± 4,6) en comparación con los desplazados internos


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(10,2 ± 4,3 y 9,5 ± 4,1, respectivamente). Los síntomas de TEPT fueron más graves en los desplazados internos (PCL-5: 44,3 ± 13,2) que en los refugiados (39,7 ± 12,5). El empleo se identificó como un fuerte factor protector; reduciendo la depresión (β = –0,34), ansiedad (β = -0,29) y TEPT (β = –0,25). El sexo femenino y la edad avanzada fueron predictores significativos de mayor malestar psicoemocional.

Conclusiones: El empleo es el factor protector más importante, mientras que las mujeres y los desplazados de mayor edad enfrentan mayores riesgos de salud mental. Este primer estudio comparativo ucraniano sobre desplazados internos y refugiados, según factores sociodemográficos, apoya intervenciones psicosociales específicas y exige una investigación longitudinal durante la guerra.

Palabras clave: análisis estadístico; desplazados internos; factores sociodemográficos; GAD-7; guerra; PCL-5; PHQ-9; refugiados; salud mental; salud pública.

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INTRODUCTION

The full-scale war in Ukraine has significantly worsened the mental health of civilians, including internally displaced persons **(**IDPs), refugees, and military personnel. Traumatic events and economic instability have a profound impact,[1,2] and reports confirm serious psychological consequences.[3] Socio-demographic factors such as bereavement, gender, education, residence, and insurance shape post-traumatic stress disorder (PTSD),[4] while the presence of children further exacerbates symptoms. Social support mitigates distress, though the role of education and insurance requires more study. High levels of distress, depression, and anxiety are reported among Ukrainian refugees in Germany, with women particularly vulnerable.[5] This underlines the importance of gender-sensitive approaches in psychosocial support.


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Dufynets V. et al.[6] note significant legislative gaps, low funding, and insufficient coordination of services. This limits the availability and quality of psychological care for survivors. *Salelew.* et al.[7] emphasize that age, gender, education, marital status, and employment significantly determine psychological vulnerability.

Goto R. et al.[8] note that existing evidence on the impact of displacement on mental health is limited, which complicates the development of effective intervention policies. This observation aligns with broader evidence from conflict psychology. Armed conflicts are consistently associated with a substantial increase in mental health disorders, particularly depression, anxiety, and post-traumatic stress disorder (PTSD). Contemporary research indicates that exposure to war-related stressors disrupts psychological adaptation mechanisms, alters coping strategies, and intensifies vulnerability to psycho-emotional disturbances. Displacement, in particular, represents a complex stressor combining trauma exposure, loss of social networks, economic instability, and uncertainty regarding future prospects.

Previous studies demonstrate that socio-demographic factors play a critical role in moderating mental health outcomes in conflict-affected populations. Age-related differences in stress processing, gender-specific coping patterns, employment-related psychological stability, and educational resources have been identified as significant determinants of psycho-emotional resilience. However, empirical findings remain inconsistent, especially regarding the protective role of education and the differential effects of displacement type (internal vs. external).

This limitation is partially addressed by a meta-analytic study[9] that synthesizes empirical findings from different armed conflict zones and proves significantly higher risks of developing PTSD and depression among women. The authors emphasize that gender is one of the most important predictors of psycho-emotional disorders, especially in unstable environments.

Khosravi M. [10] study identifies the barriers to refugee children's access to mental health care and the lack of a systematic assessment of their needs. The author suggests multi-level strategies that are culture-, context-, and trauma-sensitive, and are relevant to Ukrainian children. Despite this, the Ukrainian academic community lacks empirical research examining the relationship between socio-demographic characteristics and mental health of IDPs and refugees.


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This study provides a comprehensive assessment of the mental health of IDPs and Ukrainian refugees in wartime, with particular emphasis on depression, anxiety, and PTSD symptoms. The study examines the impact of socio-demographic factors — age, gender, education level, marital status, and employment — on mental health outcomes in these populations.

The aim of the study is to identify the specifics of psycho-emotional states of different categories of the affected population by comparing IDPs and refugees.

METHODS

Research design

Descriptive cross-sectional design with group comparisons. Data were collected over a two-month period (April–May 2025) and the study consisted of the following stages:

- Preparatory stage (April 1-15, 2025): questionnaire development, selection of methods.
- Main stage (April 16 - May 10, 2025): data collection.
- Final stage (May 11 - May 31, 2025): analysis and presentation of results.

Subjects

The study involved 214 respondents, 200 were included in the analysis after screening and refusals.

- IDPs from Ukraine (Kyiv, Dnipro, Lviv) (n= 100);
- Ukrainian refugees in Poland, Germany, and the Czech Republic (n= 100).

The ratio allows comparing two categories that adapt in different environments. The sample is gender-balanced, mainly aged 18-50, also includes middle-aged representatives. The respondents were randomly involved through:


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- Registration databases of charitable organizations
- Volunteer centres in Lviv, Dnipro, and Kyiv
- Associations for refugees in Warsaw, Berlin, and Prague
- Facebook, Telegram, and Viber communities of Ukrainians that help IDPs and refugees.

Due to psycho-emotional fatigue, unwillingness to recall traumas, lack of time or indifference to the topic, 14 people refused to take part.

Variables

Socio-demographic characteristics (age, gender, education level, marital status, and employment status); depression; anxiety; and post-traumatic stress symptoms.

Procedures and analysis

Validated psychometric instruments were used: the Patient Health Questionnaire-9 (PHQ-9)[11] for depression screening, the Generalized Anxiety Disorder-7 (GAD-7)[12] for anxiety assessment, and the PTSD Checklist for DSM-5 (PCL-5)[13] for post-traumatic stress symptoms.

Data were collected via Google Forms and processed using IBM-SPSS Statistics 29.0, with visualization performed in Microsoft Excel. Group comparisons (IDPs vs. refugees) were conducted using mean differences with 95% confidence intervals, Cohen's d effect sizes, and $p < 0.05$ as the significance threshold. Multiple linear regression analyses were performed to examine socio-demographic predictors, with diagnostic tests (variance inflation factor (VIF), residual analysis, heteroscedasticity) confirming model adequacy.

Internal consistency was assessed by Cronbach's α, the value of which exceeded 0.80 for all scales, confirming their high reliability.

Normality of distribution — Shapiro-Wilk test; homogeneity of variances - Levene test. Nonparametric methods were used for violations, in particular the Mann-Whitney U-test.

The level of missing data was less than 5%. Listwise deletion was used, which did not affect the representativeness of the sample.

The sample size provided statistical power of more than 80% to detect moderate effects ($d \approx 0.35$) at $\alpha = 0.05$.


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Ethics and consent

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Participation was voluntary, all respondents provided informed consent before the survey. The survey was conducted anonymously via an online platform, and no personal data were collected. The participants were informed about the purpose of the study and the right to withdraw without consequences at any time. Aggregated data were used for research purposes only. Formal approval from an ethics committee was not required due to the non-interventional nature and anonymity.

RESULTS

Analysis of socio-demographic characteristics of IDPs and refugees revealed certain differences. Among IDPs, there are more people with higher education and employment, among refugees -more with secondary education and lower employment rates. Younger respondents are more common among refugees, older ones- among IDPs. This may reflect different conditions of professional integration. The gender composition of the samples is approximately balanced: women make up 55% of IDPs and 58% of refugees. This avoids significant gender bias. Younger people are more likely to go abroad; older people stay in the country. Table 1 provides socio-demographic characteristics of IDPs and refugees.


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Table 1 – Socio-demographic characteristics of IDPs and refugees

Category	IDP (%)	Refugees (%)
Higher education	52	48
Other education	48	52
Employed	59	41
Unemployed	36	54
Out of the labor market	5	5
Age 18–25	28	35
Age 26–35	42	40
Age 36–50	30	25
Women	55	58
Men	45	42

Analysis of mean values revealed significant group differences. Refugees reported higher depression (PHQ-9: 12.6 vs. 10.2) and anxiety (GAD-7: 11.8 vs. 9.5), reflecting vulnerability linked to adaptation and loss of social ties. In contrast, IDPs showed higher PTSD (PCL-5: 44.3 vs. 39.7), likely due to prolonged exposure to combat (table 2).

Table 2 – Mean values and standard deviations on the PHQ-9, GAD-7, PCL-5 scales in IDPs and refugees

Questionnaire	IDP: M (SD)	Refugees: M (SD)	Δ (95% CI)	Cohen's d	*p*-value
PHQ-9 (depression)	10.2 (4.3)	12.5 (4.9)	2.4 (1.0-3.8)	0.52	< 0.05
GAD-7 (anxiety)	9.5 (4.1)	11.8 (4.6)	2.3 (0.9-3.7)	0.52	< 0.05
PCL-5 (PTSD)	44.3 (13.2)	39.7 (12.5)	4.6 (1.8-7.4)	0.36	< 0.05

Comparative analysis of the PHQ-9, GAD-7, and PCL-5 scores between the IDP and refugee groups revealed statistically significant differences ($p < 0.05$). The difference between the groups (Δ) and 95% confidence intervals: PHQ-9 — 2.4 (1.0-3.8), GAD-7 - 2.3 (0.9–3.7), PCL-5 - 4.6 (1.8-7.4).

The effect sizes according to Cohen's d were moderate for PHQ-9 and GAD-7 (d = 0.52). For PCL-5, they were small (d = 0.36), indicating the practical significance of the differences.

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Stratification by age showed an increase in psycho-emotional distress scores with age, which was confirmed by correlation analysis.

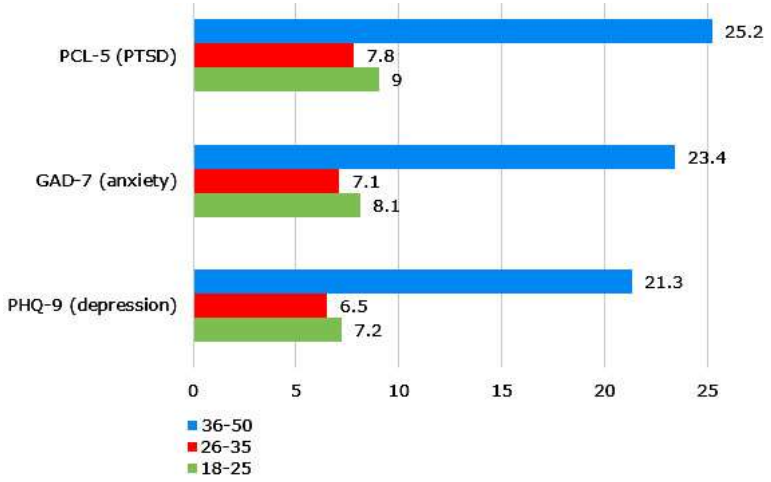

Fig. 1 – Level of mental distress by age.

Figure 1 shows that younger respondents (18–25 years) reported the lowest levels of depression, anxiety, and PTSD. Indicators increased slightly in the 26–35 age group and were highest among participants aged 36–50. This suggests a trend of growing psycho-emotional distress with age. This trend indicates a gradual increase in the level of psycho-emotional distress with age. It may be associated with the accumulation of stress factors and a decrease in adaptive resources in older age groups (table 3).


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Table 3 – Mental health indicators by socio-demographic characteristics (M ± SD)

Category	PHQ-9 (M ± SD)	GAD-7 (M ± SD)	PCL-5 (M ± SD)
Age group			
18-25 years	7.2 ± 4.5	6.5 ± 4.1	21.3 ± 10.8
26-35 years	8.1 ± 4.7	7.1 ± 4.3	23.4 ± 11.2
36-50 years	9.0 ± 4.9	7.8 ± 4.5	25.2 ± 11.7
Employment			
Employed	9.8 ± 4.2	9.1 ± 3.9	41.0 ± 12.8
Unemployed	12.4 ± 5.0	11.3 ± 4.6	43.5 ± 13.5
Education			
Higher education	10.1 ± 4.5	9.4 ± 4.1	41.2 ± 12.7
Secondary education/incomplete	11.9 ± 4.8	10.7 ± 4.3	42.9 ± 13.3
Gender (IDP vs refugees)			
Women – IDPs	11.2 ± 4.6	10.3 ± 4.2	45.6 ± 13.4
Women - refugees	13.4 ± 5.0	12.4 ± 4.8	40.1 ± 12.6
Men - IDPs	9.1 ± 4.0	8.5 ± 3.9	42.7 ± 12.8
Men - refugees	11.5 ± 4.4	10.9 ± 4.3	39.3 ± 12.3

Women showed higher depression and anxiety, with refugee women scoring the highest (PHQ-9: 13.4; GAD-7: 12.4). Regression confirmed female gender as a predictor of distress. IDP men had the lowest values, while PTSD peaked in IDP women (45.6) and was lowest in male refugees (39.3). Age correlated with depression ($r = 0.29$) and anxiety ($r = 0.25$), but not PTSD. Employment was strongly protective (PHQ-9: $r = –0.36$; GAD-7: $r = –0.30$; PCL-5: $r = –0.27$), whereas education showed weak, non-significant effects (table 4).


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Table 4 – Correlation and regression analysis of socio-demographic predictors of mental health

Predictor	PHQ-9 (depression)	GAD-7 (anxiety)	PCL-5 (PTSD)
Correlation (r)			
Age	r = 0.29*	r = 0.25*	r = 0.21
Education (1 = higher)	r = –0.12	r = –0.10	r = –0.05
Employment (1 = yes)	r = –0.36**	r = –0.30**	r = –0.27*
Regression (β, 95% CI)			
Age (older)	0.27 (0.10–0.44), p < 0.05	0.22 (0.05–0.39), p < 0.05	0.19 (–0.01–0.39), ns
Gender (female=1)	0.19 (0.04–0.34), p < 0.05	0.15 (0.01–0.32), p < 0.05	0.05 (–0.12–0.22), ns
Education (higher=1)	–0.10 (–0.22–0.02), ns	–0.09 (–0.21–0.03), ns	–0.07 (–0.19–0.05), ns
Employment (yes=1)	–0.34 (–0.47– –0.21), p < 0.01	–0.29 (–0.42– –0.16), p < 0.01	–0.25 (–0.38– –0.12), p < 0.05
Refugee status (1=yes)	0.22 (0.07–0.37), p<0.05	0.20 (0.05–0.35), p<0.05	0.07 (–0.08–0.22), ns
Adjusted R^2	0.30	0.30	0.30

For all three models Adjusted R^2 = 0.30. VIF values ranged within 1.2–1.5, indicating the absence of multicollinearity.

Regression analysis confirmed that age predicts higher levels of depression and anxiety, though not PTSD. Gender also plays a role, with women consistently showing greater vulnerability across all three indicators. Education was associated with slightly better outcomes, but without statistical significance.

Employment emerged as the strongest protective factor, linked to lower depression, anxiety, and PTSD. Refugee status was associated with increased depression and anxiety, but not PTSD. Overall, the model explained about one-third of the variation in mental health, highlighting the multifactorial nature of socio-demographic influences. Diagnostic checks confirmed the robustness of the models.

DISCUSSION

Mental health in wartime is shaped by individual, socio-demographic, cultural, and institutional factors. Prior research highlights vulnerable groups: children,[14] adolescents,[8] women,[7,16,17] students,[19,20,21] IDPs,[22] and veterans.[23,24,25,26] Ukrainians show the highest PTSD levels among 11 countries, linked to loneliness and trauma;[27] other studies report suicidal ideation and long-


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term effects for older adults.[28,29] Predictors of PTSD and anxiety are consistently confirmed,[4,30] though the role of education is debated.[4] Overall, existing evidence emphasizes the mental health toll of war but lacks comprehensive empirical designs for Ukrainian IDPs and refugees. Our study addresses this gap using validated instruments and comparative analysis.

The results confirmed significant psycho-emotional disorders among IDPs and refugees, with unemployment, gender, age, and education as key predictors. International comparisons support this: 93.5% of Ukrainian refugees met criteria for acute stress disorder, with financial instability and loneliness as major risks.[31] High anxiety rates among refugees are consistently recorded,[32] although the mean GAD-7 score for refugees was 11.8 (SD = 4.6), lower than reported elsewhere, likely due to broader sampling. Depression was also lower than in studies reporting 81% at risk,[33] but unemployment was confirmed as the strongest predictor ($\beta = -0.34$; $p < 0.01$).

Digital methods, such as ML applied to PCL-5,[34] highlight potential but often lack socio-demographic depth. The analysis linked symptoms to employment, gender, age, and education, enabling structured risk group identification. Psychosocial interventions in Europe have been shown to be effective,[35] yet higher PTSD levels were observed among IDPs compared to refugees (PCL-5: 44.3 vs. 39.7), pointing to chronic traumatization. CBT reduced depression in refugees,[36] consistent with our finding of particular vulnerability among refugee women (PHQ-9: 13.4; GAD-7: 12.4). Gender-related risks are also documented in Somalia.[22,37] Unlike previous Ukrainian studies that used the same scales without subgroup analysis,[3,38] we quantitatively demonstrated structural differences between IDPs and refugees.

In summary, the mental health of Ukrainian displaced persons is multifaceted, linked to loss of social ties and socio-economic decline. The findings confirm unemployment, gender, age, and education as significant predictors of distress. These results strengthen the evidence base for differentiated psychosocial programmes tailored to displacement type, gender, and socio-economic background. The novelty lies in combining quantitative analysis with socio-structural interpretation, while the practical value is in targeted interventions to improve public health during war.


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The main limitation of the study is the relatively small sample size, which limits the generalizability of the findings. The study was based on a single wave of the survey, which makes it impossible to trace the dynamics of changes in the psycho-emotional state of the participants. Besides, the use of self-report methods, despite their validity, may lead to socially desirable responses and not reflect clinical symptoms.

Further research may involve larger and more representative samples, as well as to implement a longitudinal design to assess changes in mental state over time. It is also appropriate to combine quantitative methods with in-depth interviews, which will help to better understand individual mechanisms of adaptation, stress resistance, and the specifics of psycho-emotional reactions in displaced persons.

The study confirmed that socio-demographic characteristics significantly influence psycho-emotional well-being among internally displaced persons (IDPs) and Ukrainian refugees in wartime. Employment emerged as the strongest protective factor, consistently associated with lower levels of depression, anxiety, and PTSD, whereas unemployment markedly increased mental health risks. Women demonstrated greater vulnerability across mental health indicators, with refugee women representing the most at-risk group. Age was associated with increased psycho-emotional distress, while education level did not demonstrate a statistically significant protective effect.

These findings highlight the importance of targeted psychosocial interventions, particularly for unemployed individuals and refugee women.

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Conflicts of interest

The authors declare no conflicts of interest.

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Data availability

The data that support the findings of this study are available on request from the corresponding author.