Moral choice or moral conflict? Peculiarities of PTSD in Ukrainian military

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I have no potential conflict of interest to report

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The war in Ukraine is a tragedy of the whole civilized world

Russia's full-scale invasion of Ukraine in 2022 caused a global shock, ending a three-decade period of globalization and cooperation, and became the largest security crisis in Europe since World War II.

https://www.slovoidilo.ua/2023/03/09/infografika/suspilstvo/skilky-cyvilnyx-ukrayincziv-zahynulo-chas

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A tragedy for Ukraine

- As of the end of 2023, according to the United Nations, 8,173 Ukrainian civilians were killed and 13,620 were injured in the Russian Federation's war of aggression against Ukraine
- Among the dead are 3,600 men and 2,100 women, as well as almost 500 children
- The majority of civilian deaths (94%) were caused by explosive weapons with a large area of destruction. Another 6% were killed by mines and explosive devices

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https://www.slovoidilo.ua/2023/03/09/infografika/suspilstvo/skilky-cyvilnyx-ukrayincziv-zahynulo-chas

The path of the Ukrainian military is complicated and significantly different from all modern wars

- All men have to defend their homeland, but the military in Ukraine is made up of people who mostly had no military training before the war and worked as engineers, actors, teachers, etc. before the war
- They are faced with a choice - to leave their families in the cities and villages where they need protection (there is no safe place in Ukraine) or to go to war
- The war destroys their homes and kills not only their comrades but also civilians

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https://imi.org.ua/news/vijskovyj-foto-z-knygoyu-yakogo-oprylyudnyv-timoti-snajder-chytaye-troma-movamy-i49972

The moral conflict of the Ukrainian military

Awar with people who share a common identity

Psychological pressure

Severance of family and social ties

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https://imi.org.ua/news/vijskovyj-foto-z-knygoyu-yakogo-oprylyudnyv-timoti-snajder-chytaye-troma-movamy-i49972

Cultural peculiarities of post-Soviet society - men do not cry

- But they do!
- If this crying is not noticed from the outside, it happens inside

The sample of the pilot study was 213 active-duty military. The data was collected between January and April 2024 at the Medical Rehabilitation Center. All study participants had mild and moderate TBI.

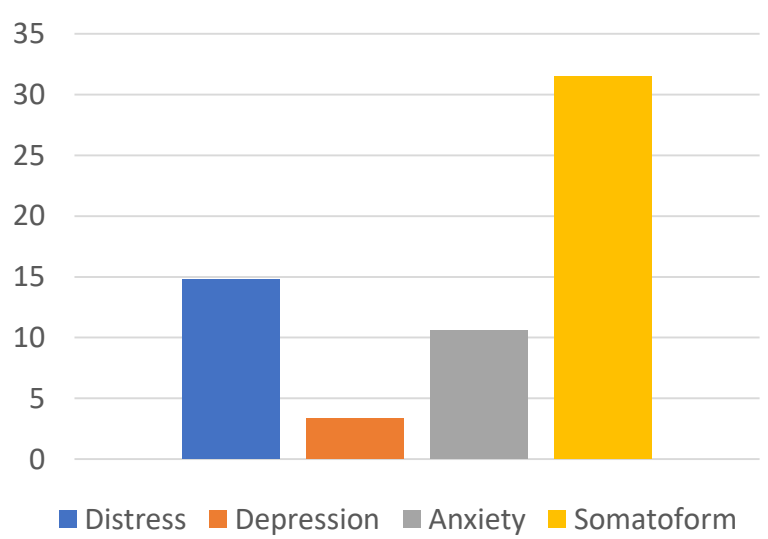
Age	%
25-3	30%
30-40	28%
40-60	42%

Scales	M	Max
PHQ-9	5,40	36
GAD-7	3,56	21
PCL-5	5,10	80
SSS-8	21,17	32

4DSQ	M	Max
Subscales		
Distress	14,78	32
Depression	3,36	12
Anxiety	10,62	24
Somatoform	31.48	32

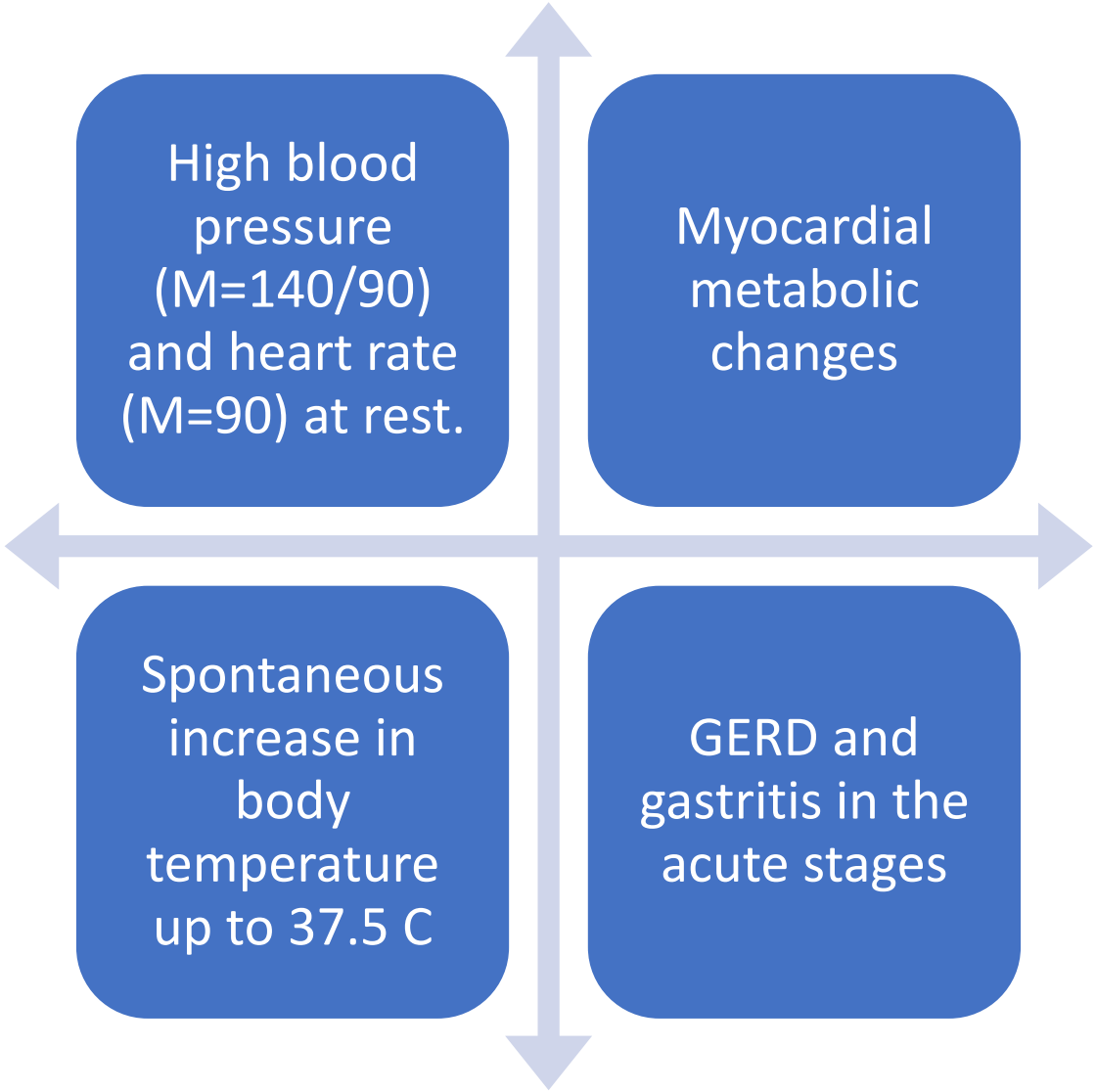
With <u>low scores on the PCL-5 scale</u>, we have <u>high rates of somatization (SSS-8, 4DSQ)</u>. The highest scores were recorded among the questions related to complaints of <u>excessive sweating, heart palpitations, chest pain, and indigestion</u>.

It was also noted that <u>the highest PCL-5 scores were among military personnel aged 25-40 (p<0.001).</u>



A departure from the classic manifestations of PTSD in active military?

The processed data from the medical records (n=213) show:

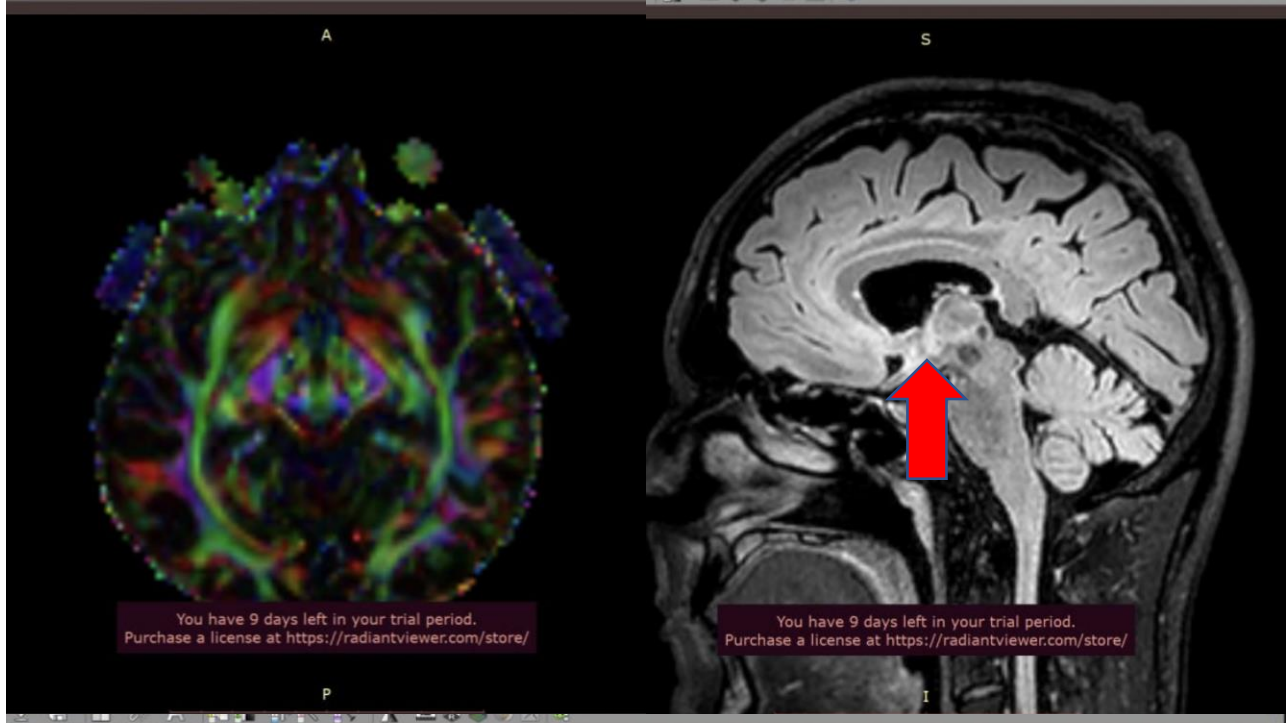


Active military
46 y.o.

TBI
Consolidated fracture of the tibia
Blood preasure 140/90
Heart rate 88
Met. changes in the myocardium

Scales	Total
PCL-5	0
SSS-8	20

MR signs of cerebral vasculopathy, smaller volumes of the hippocampus bilaterally.



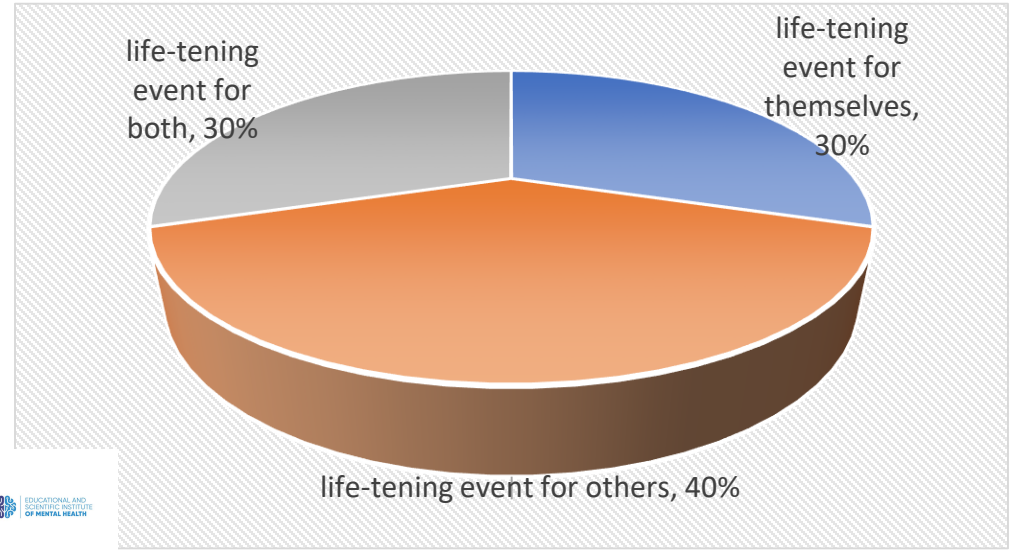
War veterans (n=50) - high scores on the CAPS-5 scale

All of the study participants had several mild to moderate mine-blast TBIs
25% had missing lower or upper limbs

Characteristics	n=50
Age (years), M±SD	44,68±5,20
Men, n	39
Women, n	11

Criteria CAPS-5	M	SD	Q1-Q3
B	15.23	2.61	12.62-17.84
C	6.18	0.93	5.25-7.11
D	18.97	4.5	14.47- 23.47
E	14.63	3.03	11.6 -17.66

- Moderate intrusion symptoms (M=15.23),
- Mild avoidance symptoms (M=6.16),
- Severe/ markedly increased negative thoughts and emotions symptoms (M=18.97),
- Moderate overreactivity/excitability symptoms (M=14.63).



Scales	M	SD	Q1-Q3
GAD-7	16.56	2.75	13.81-19.31
PHQ-9	15.59	6.17	9.42-21.76
SF 36	17.25	31.82	14.57 - 49.07

- Moderate or severe anxiety (M=16.56)
- Manifestations of depression (M=15. 59)
- Reduced quality of life (M=17.25).

Preprint L.Sak, O. Chaban

Conclusion :

The results showed us interesting findings that there are no mental manifestations of PTSD in active Ukrainian military, but we have a high incidence of mental manifestations of PTSD in veterans.

The absence of psychiatric manifestations in active military personnel may not always indicate the absence of PTSD.

Challenges in PTSD Treatment in the Context of War

Problem Identification: The ongoing war in Ukraine has highlighted significant gaps in effective PTSD treatments.

Limitations of Current Therapies: Most evidence-based approaches require **revisiting traumatic memories** through visualization.

- Many patients prefer to avoid reliving trauma, choosing instead to suppress or forget their experiences.

Key Outcome: This avoidance has led to a **high rate of refusals** to participate in psychotherapy for PTSD.

Innovative Approach to Combat-Related PTSD Treatment

- **Development:**
A team of specialists from our institute has created a protocol for **virtual exposure therapy**.
- **Target:**
Focused on treating **combat-related PTSD**.
- **Technology:**
Utilizes advanced **virtual reality technology** to enhance therapeutic outcomes.

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Team

Prof. Oleh Chaban

Lesia Sak, MD, PhD

Anna Oliinyk, clinical psychologist

Andrii Burdeinyi, MD

Effectiveness of Virtual Exposure Therapy

- **Evidence from Studies:**

Virtual environments elicit **emotional, physiological, and behavioral responses** similar to real-life situations.

- **Application in PTSD Treatment:**

Facilitates **gradual emotional engagement** during exposure to virtual combat environments.

- Helps **reduce avoidance symptoms** and treatment dropout.

- **Key Advantage:** Therapists maintain **complete control** over the exposure process, which is not possible with imagination-based methods.

Virtual Reality in PTSD Treatment

Foundation:

✓ Based on **physiological responses to stress** (e.g., increased heart rate, breathing rate, sweating).

How It Works:

Uses **virtual reality** and **graded exposure** to help individuals:

✓ Adapt to **stress stimuli**.

✓ Manage their **reactions** effectively.

Goals:

✓ Reduce **PTSD symptoms**.

✓ Address both **physiological** and **psychological** aspects of the stress response.

Innovation:

✓ Combines **advanced scientific methods** in psychotherapy with **innovative technologies** to enhance treatment outcomes.

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Customized VR Scenarios for Ukrainian War PTSD Patients

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Purpose:

✓Tailored VR scenarios address **specific triggers** experienced by Ukrainian war PTSD patients.

Customizable Effects:

✓Enable/disable **corpses, smoke, blood, fire, wounded soldiers, and artillery strikes**.

✓ Adjust **combat intensity** based on patient readiness.

Flexibility:

✓Thousands of unique scenario combinations allow therapists to **match patients' experiences, triggers, and emotional sensitivity.**

Key Features:

Therapist-Controlled Panel:

✓ Adjust triggers in real time.

✓ Customize intensity and type of experiences.

Scenarios Include:

1. **Defending a trench** under attack by infantry and heavy machinery.
2. **Enduring bombardments** by the missiles, drones, and artillery.
3. **Guarding a trench** at night with a flashlight or night-vision goggles.
4. **Riding in a personnel carrier** under attack and bombardment.

Protocol for Physiologically Facilitated Virtual Exposure Therapy with Gradual Impact

Overview:

• **Duration:** 10 sessions, each lasting **60 minutes**.

Key Goals:

✓ Combat intrusive thoughts by reframing and managing traumatic memories.

✓ Enhance adaptive emotional regulation and coping skills for daily life.

Session Structure:

1. **Session 1:**
• Psychoeducation on PTSD (onset, symptoms, treatment strategies).
• Relaxation training.
2. **Session 2:**
• Controlled **reactivation of traumatic memories** under therapist supervision.
• Relaxation exercises and physiological monitoring (heart rate, respiratory rate, blood pressure).
3. **Sessions 3–5:**
• Introduction of **VR scenarios** with gradual memory activation.
• Focus on **attention-switching skills** and recontextualizing trauma.
4. **Sessions 6–9:**
• VR therapy with **guided narrative construction** of the traumatic experience.
• Continued relaxation, physiological monitoring, and emotional regulation training.
5. **Session 10:**
• Assessment of **emotional state** and relaxation skills.
• Development of self-stabilizing techniques (cognitive restructuring, psychophysiological modulation).

Study Participants and Criteria

Participants

- **Group:** 50 Ukrainian war veterans with PTSD.
- **Study Duration:** January–July 2024.

Inclusion Criteria:

1. **Age:** 18–65 years, male or female.
2. **PTSD Symptoms:** Persist for at least **1 month post-trauma**.
3. **CAPS-5 Criteria Met:**

✓ Traumatic event exposure.
✓ Score ≥ 2 on at least one item from **Criteria B and C**.
✓ Score ≥ 2 on at least two items from **Criteria D and E**.

Exclusion Criteria:

1. PTSD symptoms less than **1 month post-trauma**.
2. CAPS-5 criteria unmet.
3. Comorbidities:

✓ Organic pathology, substance abuse, pregnancy, significant cognitive impairments.
✓ Negative reaction to VR technology.

4. **Pronounced adverse reactions** to VR that are unmanageable.
5. **Elevated suicide risk** or severe cognitive impairments.
6. **Psychotic symptoms** or high risk of retraumatization without a developed therapeutic roadmap.

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Virtual Reality Exposure Therapy Protocol for Post-Traumatic Stress Disorder Treatment in Military Veterans: Cross-Cultural Adaptation of Virtual Exposure Therapy in Ukraine.

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Abstract

Introduction. *The integration of virtual reality technologies into PTSD treatment in Ukraine presents new opportunities for enhancing the mental health of military personnel, veterans, and individuals affected by war-related trauma. During military operations, soldiers often experience intense stress, anxiety, and intrusive memories, which can lead to PTSD. VR therapy uses fully and partially immersive technologies to create a safe virtual environment where patients can explore and process traumatic experiences under the guidance of a qualified specialist.*

The use of VR technologies for PTSD treatment during the ongoing conflict in Ukraine may become a crucial tool for addressing and healing trauma in both military personnel and civilians. This method provides a structured setting that fosters emotional processing and therapeutic engagement, aiming to alleviate psychological burdens and improve mental health outcomes.

Purpose: *To conduct a cross-cultural adaptation of the physiologically facilitated Virtual Reality Exposure Therapy (VRET) protocol with gradually increasing exposure, develop a Ukrainian version of the protocol tailored to the specific needs of Ukrainian PTSD patients, create VR technology and content that reflect the unique aspects of the Ukrainian war experience, and pilot test this protocol with a focus group of Ukrainian war veterans diagnosed with PTSD and carrying war-related traumatic memories.*

Methodology: *For the cross-cultural adaptation of the Virtual Reality Exposure Therapy (VRET) protocol, a physiologically facilitated version with gradually increasing exposure was selected. This protocol was translated by two independent translators, followed by synthesis into a single version, back-translation, analysis, and final approval by a working group. The finalized Ukrainian version was prepared for field studies with a focus group of Ukrainian war veterans (n=50). All veterans underwent diagnostic assessments both before and after the VRET intervention, using the following standardized scales: the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) for PTSD evaluation, the Generalized Anxiety Disorder 7-item (GAD-7) scale for anxiety disorders, the Patient Health Questionnaire-9 (PHQ-9) for depression, the Columbia-Suicide Severity Rating Scale (C-SSRS) for suicidal intentions, the Short Form Survey (SF-36) for quality of life, and the Alcohol Use Disorders Identification Test (AUDIT) for alcohol dependence.*

A series of VR scenarios were developed specifically to address the needs of Ukrainian war PTSD

Post-Intervention Results

Overview:

• Participants were reassessed after the VRET intervention to evaluate changes in PTSD symptoms.

Results showed a **significant reduction** in all four CAPS-5 symptom clusters:

Intrusion Symptoms:

• **Baseline:** 15.23 • **Post-Intervention:** 10.13 → **Marked reduction** in perceived severity.

Avoidance Symptoms:

• **Baseline:** 6.16 • **Post-Intervention:** 2.18 → **Lower avoidance behavior**.

Negative Thoughts/Emotions:

• **Baseline:** 18.97 • **Post-Intervention:** 8.92 → **Substantial decrease** in negative cognitive and emotional responses.

Hyper-reactivity/Arousal Symptoms:

• **Baseline:** 14.63 • **Post-Intervention:** 7.63 → **Significant improvement** in emotional regulation

Criterion	Baseline (M ± SD)	Post-intervention (M ± SD)	t-value (t)	p-value (p)
Criterion B (Intrusion)	15.23 ± 2.61	10.13 ± 2.1	4.54	<0.001
Criterion C (Avoidance)	6.18 ± 0.93	2.18 ± 0.21	9.53	<0.001
Criterion D (Negative Thoughts/Emotions)	18.97 ± 5.2	8.92 ± 2.5	19.51	<0.001
Criterion E (Hyper-reactivity/Arousal)	14.63 ± 3.03	7.63 ± 1.03	21.85	<0.001

Conclusion:

The VRET intervention demonstrated **effective symptom reduction** across all key PTSD clusters, reflecting enhanced emotional regulation and reduced PTSD severity.

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Need for VRET in Civilian PTSD Treatment:

Research findings on veterans demonstrate the potential for Virtual Reality Exposure Therapy (VRET) to be adapted for civilians.

Development of Therapeutic VR Environments:

-Creation of tailored virtual environments for **therapeutic exposure**.

- Realistic replication of **key elements associated with war and distress** for effective therapy.

Why did we start using technology?

Technology has made it possible to reduce the workload of specialists and reduce the risk of burnout syndrome.

Increase the number of people who can be treated.

Society has more trust in technology than in mental health professionals.

Survey War Experience

Objectives

Identifying Individual Triggers:

- Detection of individual triggers related to traumatic war events.

Defining Common Triggers:

- Establishment of common triggers to create realistic and therapeutically valuable VR scenarios.

Enhancing Therapy Effectiveness:

- Improving therapy outcomes by tailoring it to individual experiences.

Survey Structure

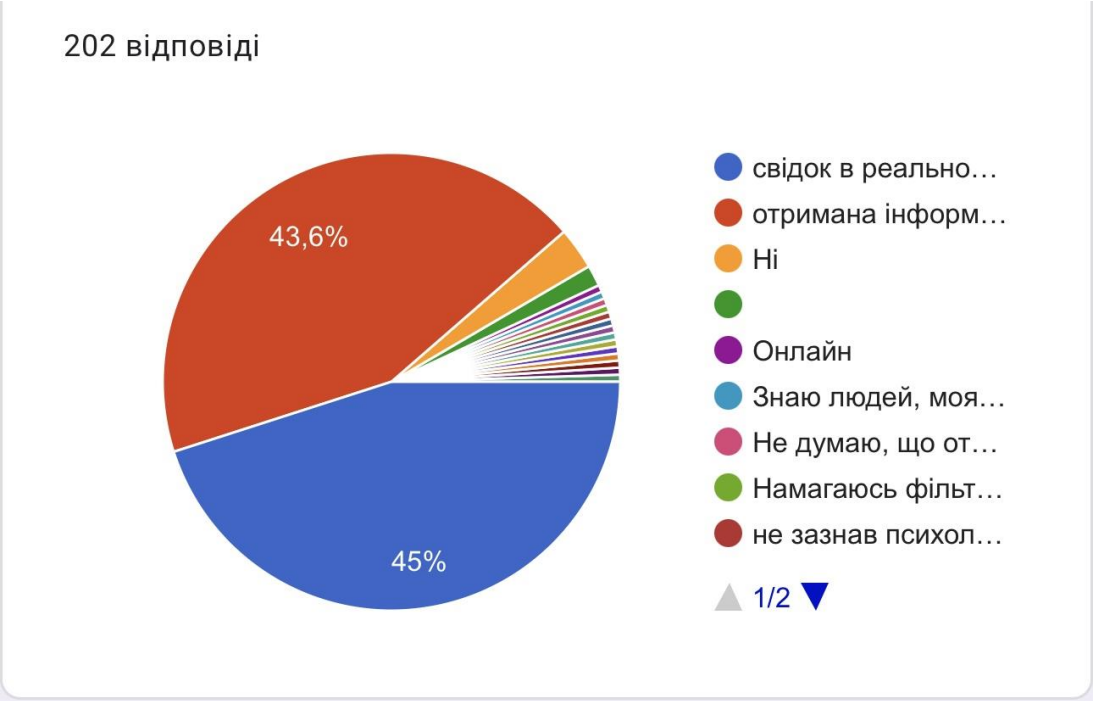
- **Visual, auditory, and other sensory images of war** (e.g., shelters, explosions, sirens).
- **Description of the most traumatic events** and their impact on mental health.
- **Emotional reactions and feelings** triggered by memories of events.

- **Strategies for coping with memories:** (e.g., family communication, physical activity, seeking professional help).
- **Impact of war on social connections:** Changes in relationships, feelings of isolation, and relocations.

Analysis of Survey Results on Traumatic Event Experience (n=202)

Proportion of respondents who were direct witnesses or participants in combat:

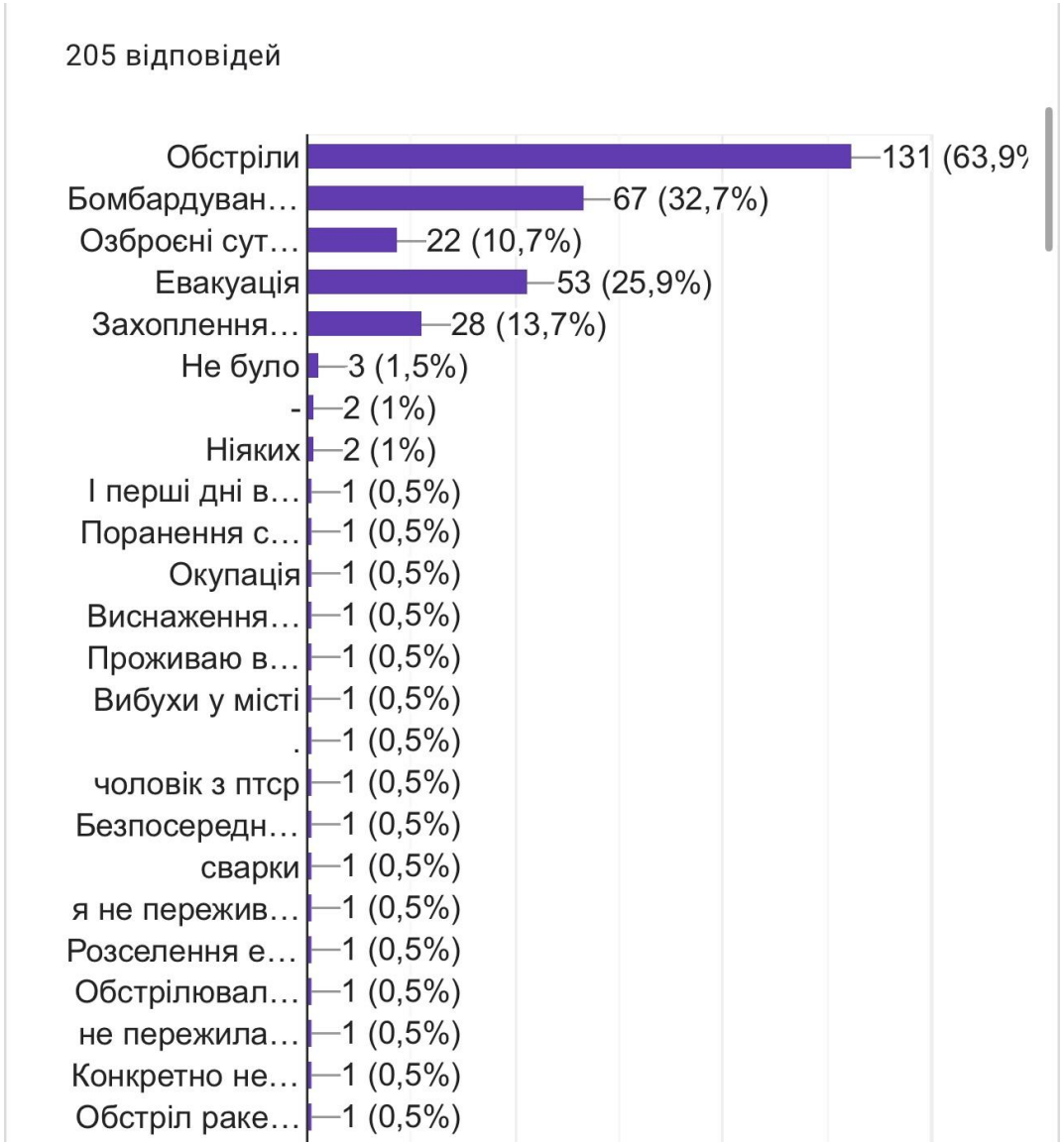
- 43% received information from media sources.
- 45% were directly exposed as witnesses to the events.



Witness trauma

Key results of the survey
The most common types of traumatic events experienced

1. **Shelling:** 131 (63.9%)
2. **Bombardments:** 67 (32.7%)
3. **Armed confrontation:** 22 (10.7%)
4. **Evacuation:** 53 (25.9%)
5. **Occupation:** 28 (13.7%)
6. **No events experienced:** 3 (1.5%)
7. **Unspecified:** 2 (1%)
8. **None:** 2 (1%)
9. **Early days of the war:** 1 (0.5%)
10. **Wounds and injuries:** 1 (0.5%)



Impact on physical health:

201 Responses

1. **Injuries:** 12 (6%)
2. **Loss of limbs:** 1 (0.5%)
3. **Illnesses:** 39 (19.4%)
4. **Exhaustion:** 134 (66.7%)
5. **Started harmful habits:** 23 (11.4%)
6. **Became hyper-vigilant:** 59 (29.4%)
7. **Became aggressive:** 63 (31.3%)
8. **Other:** 9 (4.5%)
9. **None:** 3 (1.5%)
10. **Anxiety:** 2 (1%)
11. **“I can’t handle it”:** 1 (0.5%)
12. **Anxiety and fear:** 1 (0.5%)
13. **Social withdrawal:** 1 (0.5%)

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Impact on mental health

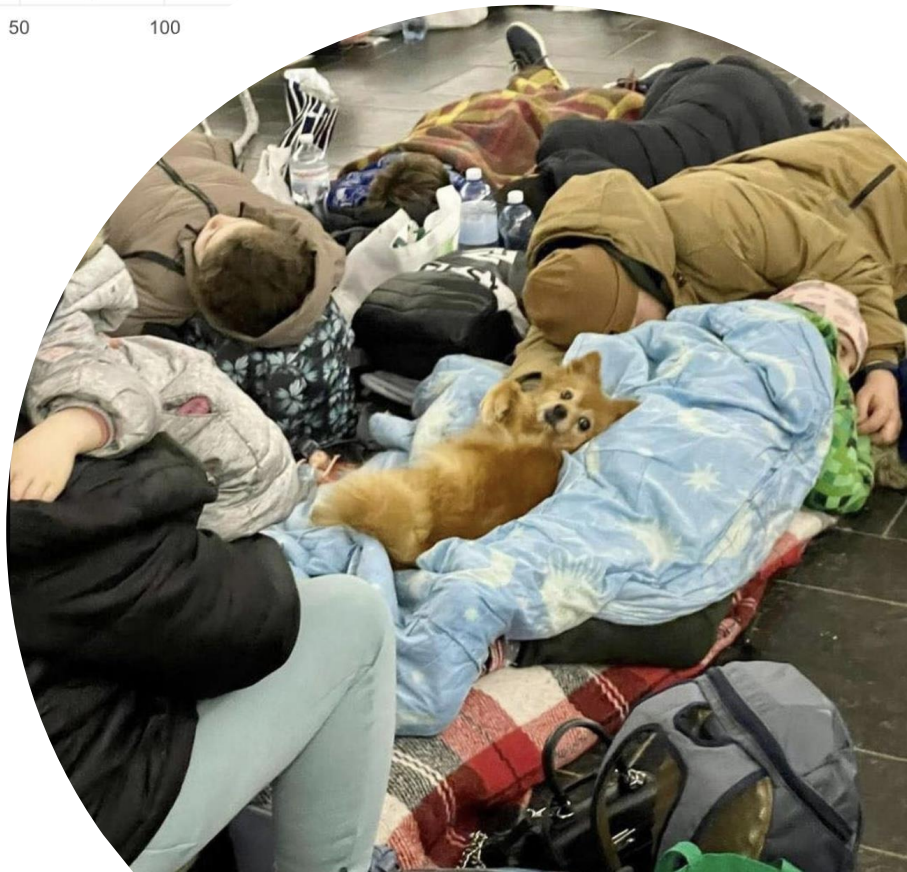
205 Responses

1. **Anxiety/Constant tension:** 157 (76.6%)
2. **Depression:** 76 (37.1%)
3. **PTSD (Post-Traumatic Stress Disorder):** 46 (22.4%)
4. **Insomnia/Sleep disturbances:** 127 (62%)
5. **Appetite disorders:** 64 (31.2%)
6. **No impact of these events:** 1 (0.5%)
7. **Think it had no effect:** 1 (0.5%)
8. **No effect:** 1 (0.5%)
9. **Frequent panic attacks:** 1 (0.5%)
10. **Constant tension:** 1 (0.5%)

Sleep disturbances

182 Responses

1. **Reduced overall sleep quality:** 83 (45.6%)
2. **Difficulty falling asleep:** 82 (45.1%)
3. **Waking up during the night:** 92 (50.5%)
4. **Feeling drowsy during the day:** 101 (55.5%)
5. **Feeling restless during sleep:** 64 (35.2%)
6. **Nightmares:** 47 (25.8%)
7. **Anxious sleep:** 84 (46.2%)
8. **Frequent awakenings:** 1 (0.5%)
9. **Early morning awakenings:** 1 (0.5%)
10. **Sleep paralysis:** 1 (0.5%)
11. **Normal sleep:** 1 (0.5%)



Development and Research of VTRET Scenarios for civilian

Based on the obtained results, specific scenarios were developed for virtual exposure therapy targeting civilian populations affected by war traumatic events.

Currently, research is underway to evaluate the effectiveness of VTRET in civilian settings population.

In 2025 for PTSD treatment we are launching:
-VRET enhanced by transcranial direct current stimulation (tdcs)

-Transcranial magnetic stimulation (tms)

Thank you for your attention!