

GENDER-RELATED DIFFERENCES OF STRESS REACTIONS IN UKRAINIAN COMBATANTS

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Abstract: The overall current prevalence of clinically significant post-traumatic stress disorder (PTSD) symptoms across the sample was estimated at 20%. The mean symptoms severity was 15.98 (95% CI 12.67-19.27) with no statistically significant difference between men and women ($p=0.251$). The PTSD symptoms were twice more severe in the military exposed to war zone stress for 2 or more years, compared to others. Anxiety and alexithymia levels had significant gender differences. Anxiety was more pronounced in women compared to men (7.11 vs 5.29; $p=0.041$); and alexithymia levels were higher in men compared to women (63.17 vs 56.43; $p=0.032$). The problem of PTSD in the military is extremely relevant in Ukrainian reality. It requires urgent attention in the form of adaptation and implementation of effective therapeutic methods with proven efficacy for PTSD, such as Trauma-Focused Cognitive-Behavioral Therapy and/or Eye Movement Desensitization and Reprocessing.

Keywords: post-traumatic stress disorder, stress, combat, depression, anxiety

Introduction

Stress is one of the major risk factors for the development of many somatic and mental health problems. Among other forms of stress, participation in combat, as well as staying in the war zone, plays an important role. It has been established that post-traumatic stress disorder (PTSD) develops in every fifth individual in the combat zone [1, 2], and in the presence of additional aggravating factors (captivity, serious injuries) – in 25-50% of cases and even more frequently [3-5].

PTSD is by no means the only problem

faced by those who survived the intense single or multiple (as in the case of participation in warfare) stress. Among mental problems, stress is often one of the main causes for depressive episodes, adjustment disorders, as well as a whole range of psychosomatic disorders [6, 8, 9], and among somatic ones – a significant risk factor for coronary disease, heart rhythm disturbances and other cardiovascular problems [7].

Among the individuals in the combat zone, the prevalence of mental and physical health problems depends on the type of conflict, nature of the warfare, gender, and many other

factors. Thus, according to a systematic review conducted by the WHO, prevalence of PTSD symptoms among the civilian population of Afghanistan staying in the zone of active warfare ranged from 20 to 42 per cent, and certain symptoms of depression and anxiety disorders were observed in 67.0% and 72.2%, respectively. Among the civilian population of Lebanon residing in the combat zone, the prevalence of all DSM-III diagnoses was 16.3-41.9%. In the Gaza Strip, prevalence of PTSD among adolescents and young people amounted to 32.7%. After the armed conflict in Sri Lanka, psychological consequences were found in 64% of the population, including somatization in 41%, PTSD – in 27%, anxiety disorder – in 26%, major depressive disorder – in 15%, and functional disability – in 18%. Moreover, as the reviewers point out, post-traumatic conditions are seen more frequently in women, i.e., female gender is one of the risk factors [10].

In addition, the situation with stress-related disorders in Ukraine has recently acquired its specific features due to a number of new, previously unrelated factors associated with the war. These, in our opinion, include: 1) The presence of a background sensation of inadequate support, loss of basic trust due to the nihilistic elements creating a specific sense of guilt towards those "who remained in the war"; 2) Low level of social capital; 3) Full trust only towards those who were next to them in the war (the "war-ried"); 4) Mistrust and often resentment towards residents of the war-free territory, especially in situations of expressed and noisy entertainment outside the warfare zone; 5) Excessive sense of insult for those who fight in comparison with others; 6) Aggression provoked by injustice or incorrect statements towards the military; 7) Feelings of fatigue and suppression in case of prolonged periods of service and warfare; 8) Tendency to seek "traditional relaxation", primarily alcohol and sex without obligations; faster intoxication; 9) The situation of the ambivalent content in the media, especially television, where, along with negative information about the war, entertainment programs are

displayed, including jokes about the war, which triggers cognitive dissonance at the micro- and macrosocial level; 10) The sense of confusion regarding the current events: from the terminological to the ideological ("hybrid war", "trade with the aggressor", "business in the aggressor country", "former fraternal peoples", "smuggling in the war zone", etc.); 11) Ideas that one of the "major" countries negotiates and decides the fate of the nation clandestinely from its people ("the US, the EU and Russia will decide the fate of the country"); 12) Numerous family ties within the aggressor country; Everyday use of the cultural heritage of the aggressor country (language, books, films, songs, music, etc.); 13) Common religiosity with the aggressor country. Appeal to the same syncretical figures, with frequent loss of confidence in the domination of theological ideas; 14) The loss of resilience and amortization properties as opposed to massive information impact with double standards.

In addition, the war that continues in Ukraine is increasingly gaining the characteristics of conscientiality (from the Latin *conscientia* – understanding, consciousness, conscience); i.e., the war with the primary purpose of changing consciousness; rethinking the surrounding events; destroying national consciousness; spreading of nihilistic and pessimistic ideas, aiming at understatement of the level of the social capital. Such war is directed simultaneously at the entire society – towards the loss of national identity and towards each individual – the loss of self-identification, failure or reduction of individual amortization capacities due to abandonment of cultural-mnemonic unconscious protection mechanisms, and the loss of confidence in the basic protective functions of the state and micro-society. For a consciential war, certain forms of cognitive prejudice and cognitive distortion are particularly characteristic due to the loss of sufficient judgment of the powerful informational influence in the situation of uncertainty and constant expectation of calamity ahead, and to destruction of the spiritual values of previous generations along with the rupture of continuity with these generations.

All of the above requires new assessment of the condition of the people who are in the situation of chronic stress and distress, taking into account their mentality, psychological amortization properties, and social situation.

Thus, the so-called "war zone stress" is a serious risk factor for the development of PTSD, depression, anxiety and other mental disorders and somatic diseases. However, its prevalence varies depending on many external factors (type of the event), gender, age, and other factors. The purpose of this study was to determine the prevalence of PTSD, depression, and anxiety among the military serving in the anti-terrorist operation (ATO) zone, as well as the level of aggression, verbalization of emotions, and quality of life.

Materials and methods

The study was conducted in Donetsk and Lugansk regions of Ukraine in hospitals near the zone of active combat operations (ATO zone). The sample comprised the military exposed to active combat, and the military medical personnel. The study was conducted in 2 stages. At the first stage, assessment of the symptoms of PTSD, anxiety and depression was carried out. To evaluate the symptoms of PTSD, the PTSD Checklist questionnaire, translated and adapted by the staff of the Department of Psychosomatic Medicine and Psychotherapy of the Bogomolets National Medical University, was used. The questionnaire consists of evaluating the 4 main symptoms clusters according to the Diagnostic and Statistical Manual of Mental Disorders criteria – intrusion, avoidance, negative thoughts and emotions, and excessive arousal and hypervigilance (Weathers FW et al., 2013). The Hospital Anxiety and Depression Scale (HADS) was used to assess the symptoms of anxiety and depression (Zigmond AS, Snaith RP, 1983). At this stage, 100 men and women who were in the combat zone and were last exposed to it (or participated in combat) several hours or days before, were surveyed.

At the second stage, assessment of the level of aggression, level of verbalization of emotions, and the quality of life was carried out.

The sample comprised 74 men and women who were screened using the Bass-Darky Aggression Scale, the Toronto Alexithymia Scale (TAS), and the Chaban Quality of Life Scale (CQLS). It should be noted that the first and second stages were conducted on different samples; nevertheless, both included the military directly involved in warfare.

A database for processing the results was created, and the indices were analyzed using the SPSS Statistics 21 software. To calculate the clinical significance of intergroup differences, we used the variance analysis (ANOVA), and for correlation analysis – the correlation between Pearson or Spearman coefficients, depending on the type of variables.

Results

General characteristics of the sample.

At the first stage, we examined 31 women and 69 men. Of the total sample, the majority (n=89) were military personnel who had recently taken part in active warfare – from several hours to several days prior to the survey. The average duration of stay in the ATO zone was at 44.77 weeks (standard deviation (SD) 44.701)), and the average length of stay in the service was 128.1 weeks (SD 226.9). The average age of the surveyed was 32.83 years (SD 10.122). The marital status was distributed as follows: 20 were single, 37 were married, 19 were divorced, and one was widowed. Fourteen people did not provide any information regarding their marital status. The majority (n=59) had secondary or college education; 30 had university education, and 11 did not provide any information. At the second stage, over 150 people were examined. Of these, 74 underwent the full assessment of the quality of life on the Chaban Quality of Life Scale, and 39 people were assessed on the TAS scale. The results of the Bass-Darky scale were excluded from the final analysis due to a large number of the "missing data" and the low validity of the results.

Symptoms of PTSD, anxiety, and depression. In total, the final analysis included 97 people who provided complete information

on their symptoms. 20.6% of the sample (n=20) fully met the PTSD criteria, i.e., they survived a traumatic event (criterion A), had at least one symptom of intrusion and avoidance (criteria B and C), and 2 symptoms of negative cognition and emotions, and excessive arousal and hyper-vigilance (criteria D and E). The variance analysis of the differences in the PTSD symptoms between men and women is presented in Table 1.

The average total score on the PCL-5 scale (PTSD Checklist) among the subjects was 15.98 points (95% CI 12.67-19.27). In women, PTSD symptoms were more pronounced than in men (18.90 vs 14.72). The mean difference was 4.18 points, which equals to 0.25 of the standard deviation, but it does not reach the level of statistical significance.

Table 1. *Difference in PTSD symptoms between men and women according to the PCL-5 scale*

Index	Gender	Mean	95% CI*	Reliability of difference (p)
Intrusion symptoms (questions 1-5)	Male	4.03	2.88 – 5.17	0.360
	Female	4.97	3.32 – 6.61	
	Total	4.31	3.38 – 5.24	–
Avoidance (questions 6-7)	Male	1.35	0.90 – 1.79	0.139
	Female	1.97	1.23 – 2.70	
	Total	1.53	1.15 – 1.91	–
Negative cognition and emotions (questions 8-14)	Male	4.67	3.07 – 6.28	0.181
	Female	6.55	4.46 – 8.64	
	Total	5.24	3.96 – 6.52	–
Excessive reactivity (questions 15-20)	Male	4.61	3.41 – 5.82	0.490
	Female	5.34	3.70 – 6.99	
	Total	4.83	3.87 – 5.80	–
Total	Male	14.72	10.58 – 18.85	0.251
	Female	18.90	13.34 – 24.45	
	Total	15.98	12.67 – 19.27	–

In relation to the range of possible scores, the most pronounced were the symptoms of excessive reactivity and the symptoms of intrusion. The subjects surveyed scored 0.805 points on average in each question on excessive reactivity and 0.862 points in each question of the scale (the range of possible scores for each question of the scale was 0-4). According to the results of the correlation analysis between the severity of PTSD, age and duration of stay in the

ATO zone (Pearson correlation), no reliable correlations were found. However, after separation of the examined subjects into groups according to the duration of stay in the ATO zone, it was found that the individuals who had stayed in the ATO zone for over 2 years had significantly higher rates of excessive reactivity (p=0.043) than those whose stay in the ATO zone lasted less than 1 year (Table 2).

Table 2. Symptoms of PTSD on the PLC-5 scale, depending on the time spent in the ATO zone

Symptoms	Length of stay in the ATO zone	Average value, points	95% Confidence intervals
Intrusion symptoms (questions 1-5)	Less than 1 year	3.86	2.62 – 5.11
	1 to 2 years	4.50	2.88 – 6.12
	Over 2 years	6.50	1.05 – 11.95
Avoidance (questions 6-7)	Less than 1 year	1.20	0.73 – 1.67
	1 to 2 years	2.20	1.11 – 3.29
	Over 2 years	2.25	0.12 – 4.38
Negative cognition and emotions (questions 8-14)	Less than 1 year	4.90	3.18 – 6.61
	1 to 2 years	5.60	3.20 – 8.00
	Over 2 years	9.13	1.28 – 16.97
Excessive reactivity (questions 15-20)	Less than 1 year	4.33	2.95 – 5.71
	1 to 2 years	4.45	2.76 – 6.14
	Over 2 years	8.38	2.46 – 14.29
Total	Less than 1 year	14.38	9.83 – 18.92
	1 to 2 years	16.75	10.63 – 22.87
	Over 2 years	26.25	12.51 – 19.99

Subsequently, we analyzed the relationship between the symptoms of PTSD and the marital status. According to the dispersion analysis, the unmarried subjects had significantly lower scores on the PCL-5 scale (13.31; 95% CI 9.33-17.09) than the married ones (20.29; 95% CI 13.80-26.78; $p=0.049$). At the same time, the greatest differences were observed in the symptoms of negative thoughts and emotions (4.13 vs 6.83; $p=0.044$). The HADS survey showed relatively high levels of anxiety in the examined groups. It must be remembered that the borderline level of anxiety or depression equals to 8 or more points on the corresponding subscale. For the symptoms of depression, the average score was 4.92 (95% CI 4.17-5.66) for anxiety – 5.82 (95% CI 5.02-6.63). The symptoms of anxiety among women were significantly higher than those in men (7.11 vs 5.29; $p=0.041$). The symptoms of depression among males and females were not significantly different (4.96 vs 4.83; $p=0.876$).

Spearman's correlation analysis demonstrated the relationship between the symptoms of depression and the time spent in the ATO zone. The correlation was weak ($r=0.268$) but reliable ($p=0.018$), i.e., the symptoms of depression

somewhat increased with the increase of stay in the ATO zone. Also, a strong direct correlation was observed between the symptoms of anxiety and depression ($r=0.569$; $p<0.001$), anxiety and PTSD ($r=0.784$; $p<0.001$), and depression and PTSD ($r=0.649$; $p<0.001$).

Comparison of individuals who stayed in the ATO zone for less than 1 year and those who stayed there for 1 year or longer showed a statistically significant difference in the symptoms of depression. Thus, among the former, the average number of points was 4.31 (95% CI 3.40-5.21), and among the latter – 6.32 (95% CI 4.59-8.05), $p=0.023$.

Quality of life and level of alexithymia.

The TAS scale survey showed an average score of 59.54 (95% CI 56.34-62.74). Let us remember that the empirical cut on this scale for a low level of alexithymia is less than 52 points, and for high level – over 60 points. The variance analysis showed a statistically significant difference between men and women (63.17 vs 56.43; $p=0.032$). Thus, the absolute difference between the means amounted to 6.74 points, and the standardized mean difference was 0.68, i.e., the effect size was medium.

Table 3. Analysis of differences in the level of alexithymia between men and women according to the Toronto Alexithymia Scale

Gender	Number of examined subjects	Mean	Standard deviation	95% confidence interval
Men	18	63.17	10.848	57.77 – 68.56
Women	21	56.43	7.941	52.81 – 60.04
Total	39	59.54	9.870	56.34 – 62.74

* The difference between the mean number of points among men and women was reliable ($p=0.032$)

The average number of points scored on the CQLS was 61.61, which is a medium indicator for a healthy population. In general, women had a higher quality of life than men (62.70 vs 51.14), but this difference was unreliable ($p=0.101$).

The biological and socio-psychological

components of the quality of life in men and women were analyzed separately. Thus, according to the biological component, no significant differences were found (33.86 vs 29.72; $p=0.309$), but the socio-psychological component in men was almost 2 times lower than in women (18.71 vs 33.03; $p\leq 0.001$) (Table 4).

Table 4. Analysis of the quality of life and social and biological components, according to the CQLS scale

Quality of life component	Gender	Number of examined subjects	Mean	Standard deviation
Biological component	Men	7	33.86	9.063
	Women	67	29.72	10.275
	Total	74	30.11	10.183
Socio - psychological component	Men	7	18.71	3.988
	Women	67	33.03	8.704
	Total	74	31.68	9.359
Total	Men	7	51.14	13.095
	Women	67	62.70	17.886
	Total	74	61.61	17.746

* Reliability of the difference between men and women according to the biological component: $p=0.309$; according to the socio-psychological component: $p < 0.001$; according to the total number of points: $p=0.101$.

Discussion

Among the military serving in the ATO zone, a high level of symptoms of stress response in the form of discrete symptoms of

post-traumatic stress states and subclinical anxiety is observed, indicating the need for preventive psychological counseling during military service and screening for the presence of PTSD

after demobilization.

At the same time, the pronounced gender difference in the response to stress is manifested by more frequent psychological symptoms in men in the form of open and conscious experience in contrast to somatized symptoms in women with unconscious projective bodily reactions not manifested as psychiatric symptoms. In effect, females serving in the military, despite their external emotionality and tendency to experience, are more likely to develop unconscious psychosomatic problems primarily related to the reproductive function.

Considering the protective effect of education against the symptoms of anxiety, psychological education of the military regarding the post-traumatic stress states can be an effective preventive measure. At the same time, the military females show greater sensitivity to stress as well as the signs of stress tension with a greater probability of developing a post-stress response in the form of anxiety, depression and PTSD phenomena, somatic disorders and manifestations of discrete symptoms.

Taking into account the obtained results, the following suggestions may be formulated regarding work with military servicemen and women: 1. Reinforcement of staffing of military hospitals by physicians – psychiatrists, narcolo-gists, and medical psychologists. 2. Meticulous approach to recruitment and precontractual stage: screening for emotional disorders in a frustrating situation; examination of the hidden motives for the army service; examination of the amortization psychological properties, personal-ity features, including communicative abilities. 3. Training of the command staff in the basics of psychiatric propaedeutics (detecting mental disorders) and emergency measures of psycho-logical assistance in acute and post-traumatic stress disorders. 4. Directly during the perfor-mance of official duties, permanent measures for removing excessive emotional stress must be introduced: sports competitions (more effective if held between groups); shooting contests; Balint groups with trained volunteer psycholo-gists from the military; anonymous polling on

problem issues with subsequent analysis; hobby clubs (volunteers from the military); psychother-apeutic activities (conversations, tests (the Bass-Darky Aggression scale, the Toronto Alex-ithymia Scale, etc.); teaching relaxation and coping with distress techniques). 5. Supplying medical centers with fast-acting antipsychotic drugs. 6. Solving legal issues of expertise of the military with addictive behavior (primarily alco-hol abuse) and mental disorders.

Conclusions

Thus, within the study framework, the PTSD symptoms, levels of anxiety, depression, and alexithymia, and the quality of life, as well as their gender differences, were assessed. It has been established that about 20% of military personnel have symptoms of PTSD reaching the clinically significant level. These symptoms increase significantly in case of staying in the ATO zone for more than 2 years. The borderline level of anxiety was observed in one-third of the sample, and depression was found in 22.75%. Moreover, the symptoms of anxiety were signifi-cantly more pronounced in women (7.11 points; 95% CI 5.62-8.59) than in men (5.29 points; 95% CI 4.34-6.24), $p=0.041$. In addition, the high level of alexithymia among men (63.17 points on the TAS) is noteworthy, which is significantly higher than in women (56.43 points on the TAS, $p=0.032$). It should be noted that this work is incomplete and will be continued with the follow-up study of the surveyed subjects and the final assessment of effective-ness of the questionnaire on the symptoms of post-traumatic stress disorder "PTSD Checklist" and the other above mentioned scales in the circumstances of Ukraine, with possible recom-mendation for wider application.

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