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FEATURES OF PSYCHOSOCIAL FUNCTIONING OF PATIENTS WITH COMBAT TRAUMATIC BRAIN INJURY OF VARYING SEVERITY: ANALYSIS OF INTERCONNECTION

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Abstract

Relevance. The full-scale invasion of Ukraine by the Russian Federation has had a signifcant impact on the daily lives of the country's civilian population, radically undermining their sense of security and causing constant stress, the psychological consequences of which are dangerous for both adults and children. The hostilities have in some places turned into a hyper-extreme situation for certain groups of the population. The internal tension and discomfort they cause exceed human capacity. We often see violations of international humanitarian rights and the Geneva Conventions, which leads to a situation of general distrust and frustration. We can distinguish socio-psychological, physical, economic and medical factors that affect the health of the population in wartime. During war, social problems arise that are directly related to the emergency. **The purpose:** to compare the peculiarities of psychosocial functioning of patients with combat traumatic brain injury of varying severity in order to understand the basis for differentiating therapeutic and rehabilitation measures for this contingent. **Materials and methods**. The features of the severity of psychopathological

symptoms, including depressive, anxiety and post-traumatic, were studied in 350 patients with TBI of varying severity due to the action of a blast wave, taking into account the time elapsed since the injury. For this purpose, in each group according to the severity of TBI (mild (145 patients), moderate (125 people), severe (80 patients)), we identified three subgroups. Thus, the following groups of subjects were formed in the study: patients with mild TBI and the duration from the moment of injury to our examination from 6 to 12 months, numbering 35 patients; patients with mild TBI and the duration from the moment of injury from 1 to 3 years, numbering 60 patients; patients with mild TBI and the duration from the moment of injury from 4 to 7 years, numbering 50 patients; patients with moderate TBI and duration from the moment of injury from 6 to 12 months, in the number of 30 patients; patients with moderate TBI and duration from the moment of injury from 1 to 3 years, in the number of 45 patients; patients with moderate TBI and duration from the moment of injury from 4 to 7 years; patients with severe TBI and duration from the moment of injury from 6 to 12 months, in the number of 20 patients; patients with severe TBI and duration from the moment of injury from 1 to 3 years, in the number of 30 patients; patients with severe TBI and duration from the moment of injury from 4 to 7 years. The study of the features of psychosocial functioning was carried out using the methodology of the study of socio-psychological adaptation of K. Rogers - R. Diamond, the method of "Coping-test" by R. Lazarus and the Multidimensional Scale of Social Support. **Results and discussion**. The study of socio-psychological adaptation is important for understanding the complex picture of changes in the psychosocial functioning of patients with TBI. To understand the relationship between the severity of social and psychological adaptation and the intensity of psychopathological symptoms, we conducted a correlation analysis between these parameters. To do this, the study of the features of anxiety, depression, and posttraumatic symptoms was conducted using the Symptom Check List-90-Revised (SCL-90-R). **Conclusions**. It should also be noted that lower scores in patients with more severe TBI may also be associated with a subjective pessimistic perception of their own social interaction, inherent in patients with depressive and posttraumatic manifestations, which are significantly more pronounced in patients with more severe TBI.

Key words: combat traumatic brain injury; methodology for studying socio-psychological adaptation by K. Rogers - R. Diamond; R. Lazarus's "Coping Test" methodology; the Multidimensional Scale of Social Support

Introduction

The full-scale invasion of Ukraine by the Russian Federation has had a significant impact on the daily lives of the country's civilian population, radically undermining their sense of security and causing constant stress, the psychological consequences of which are dangerous for both adults and children. The hostilities have in some places turned into a hyper-extreme situation for certain groups of the population. The internal tension and discomfort they cause exceed human capacity. We often see violations of international humanitarian rights and the Geneva Conventions, which leads to a situation of general distrust and frustration [1].

We can distinguish socio-psychological, physical, economic and medical factors that affect the health of the population in wartime. During war, social problems arise that are directly related to the emergency. The peculiarities of the impact of these negative factors are global in nature, considerable duration, extremely rapid change of the situation depending on the military situation, the presence of a constant threat to the life and health of the country's inhabitants, uncertainty of the prospects for the development of the situation, and the negative impact of the information field [2]. The challenges of war increase vulnerability to psychosocial stress and lead to the development of mental, neurological and somatic disorders [3]. During the years of war, studies have been conducted that have demonstrated the psychological state of the country's population. An analysis of the mental health of Ukrainians shows a disappointing trend - an increase in the number of disorders associated with traumatic stress.

The purpose of this study was to compare the peculiarities of psychosocial functioning of patients with combat traumatic brain injury of varying severity in order to understand the basis for differentiating therapeutic and rehabilitation measures for this contingent.

In compliance with the requirements of biomedical ethics set forth and approved in the following documents: International Code of Medical Ethics (1983), Declaration on the Independence and Professional Freedom of the Doctor (1986), Declaration on Euthanasia (1987), Helsinki Declaration (1964) and its latest version of 2008, Declaration on Transplantation of Human Organs (1987), Convention on the Rights of the Child (1989), Amsterdam Convention on Patients' Rights (1984), Council of Europe Convention for the Protection of Human Rights and Dignity of the Human Being with regard to Biomedicine (1997) [4], using clinical-psychopathological and psychodiagnostic research methods, 350 servicemen with combat traumatic brain injury were examined, who were divided into three groups depending on its severity: 145 people had mild TBI, 125 people had moderate TBI, and 80 people had severe TBI.

Diagnostics of psychosocial functioning was carried out using the method of studying the socio-psychological adaptation of K. Rogers - R. Diamond [5], R. Lazarus's "Coping Test" methodology [6] and the Multidimensional Scale of Social Support [7].

Results of the study and their discussion. The study of socio-psychological adaptation is important for understanding the complex picture of changes in the psychosocial functioning of patients with TBI. The results of the analysis of indicators of socio-psychological adaptation in servicemen who suffered TBI as a result of blast exposure are presented in Table 1.

Table 1

Indicators of socio-psychological adaptation in patients with different severity of TBI due to blast wave

Indicator.	Severity of TBI			p		
	Light, n=145	Moderate severity, n=125	Severe, n=80	Mild vs. moderate severity	Light vs. heavy	Moderate vs. severe
Adaptation	39,16±12,44	33,66±11,85	25,25±9,20	<0,01	<0,01	<0,01
Self-acceptance	33,48±11,55	29,44±13,43	21,21±13,23	<0,01	<0,01	<0,01
Acceptance of others	42,00±16,75	39,55±13,83	30,68±7,05	>0,05	<0,01	<0,01
Emotional comfort	38,52±11,87	32,94±9,95	28,89±9,00	<0,01	<0,01	<0,01
Internality	49,37±9,77	45,16±9,27	39,98±8,40	<0,01	<0,01	<0,01
Striving for dominance	25,37±17,18	21,40±14,19	18,23±12,92	>0,05	<0,01	>0,05

The adaptation index in the examined contingent was generally low. Thus, the value of the adaptation index in patients with mild TBI was 39.16±12.44 points, in patients with moderate TBI it was significantly ($p<0.01$) lower: 33.66±11.85 points, and in patients with severe TBI it was the lowest among all groups: 25.25±9.20 points ($p<0.01$).

The self-acceptance score also decreased with increasing TBI severity: while in patients with mild TBI the self-acceptance score was 33.48±11.55 points, in patients with moderate TBI it was significantly ($p<0.01$) lower: 29.44±13.43 points, and in patients with severe TBI - the lowest: 21.21±13.23 points ($p<0.01$).

The index of acceptance of others was also the highest in patients with mild TBI: 42.00±16.75 points, and in patients with moderate TBI it was lower: 39.55±13.83 points, but these differences were not statistically significant ($p>0.05$). On the other hand, the index of acceptance of others in patients with severe TBI was significantly ($p<0.01$) lower compared to patients with mild and moderate TBI: 30.68±7.05 points.

The emotional comfort score showed a clear tendency to decrease with increasing severity of TBI: in the group with mild TBI it was 38.52±11.87 points, in the group with moderate TBI - 32.94±9.95 points, and in the group with severe TBI - 28.89±9.00 points. All differences between the groups were statistically significant ($p<0.01$).

A greater severity of internalization was also inherent in patients with milder degrees of TBI: in patients with mild TBI, the mean value of the internalization index was 49.37±9.77 points, in patients with moderate TBI - 45.16±9.27 points, and in patients with severe TBI - 39.98±8.40 points ($p<0.01$).

The least significant differences between groups with different severity of TBI were found in relation to the desire for dominance, although this indicator also showed a tendency to decrease with increasing TBI severity. Thus, in patients with mild TBI, the index of internality was 25.37±17.18 points, in patients with moderate TBI - 21.40±14.19 points, and in patients with severe TBI - 18.23±12.92 points. Statistically significant differences were found only when comparing groups of patients with mild and severe TBI ($p<0.01$) (Fig. 1).

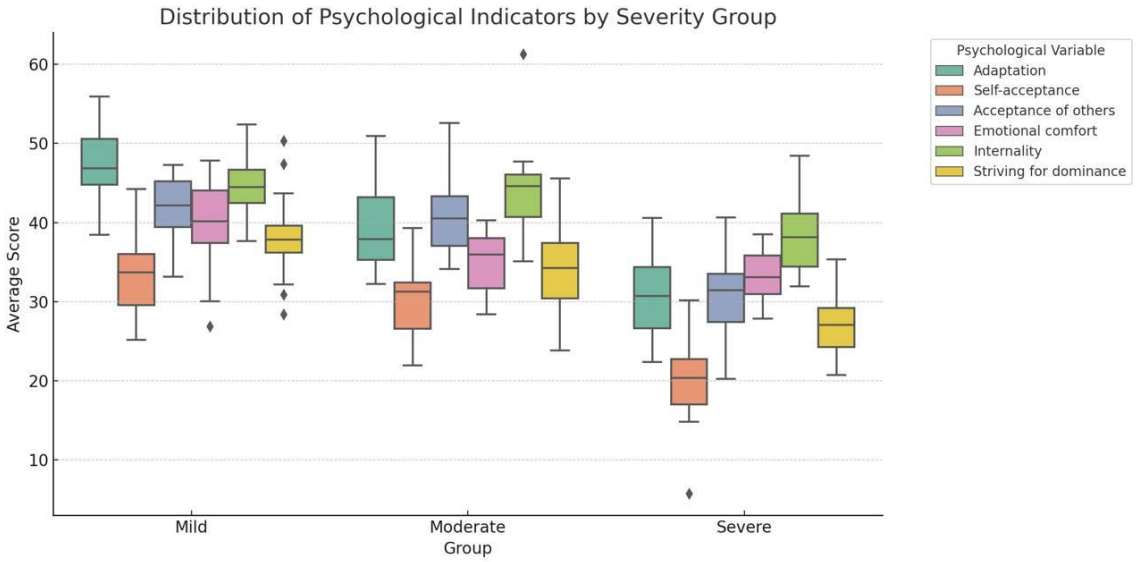

Fig. 1. Indicators of socio-psychological adaptation in points (squares indicate median values of indicators, rectangles - interquartile range, horizontal lines - full range of indicator values)

To understand the relationship between the severity of social and psychological adaptation and the intensity of psychopathological symptoms, we conducted a correlation analysis between these parameters. To do this, the study of the features of anxiety, depression,

and posttraumatic symptoms was conducted using the Symptom Check List-90-Revised (SCL-90-R) [8, 9].

The results of the correlation analysis of the relationship between the severity of psychopathological symptoms and indicators of social and psychological adaptation in patients with different severity of TBI due to blast exposure are presented in Table 2.

Table 2

The results of correlation analysis of the relationship between the severity of psychopathological symptoms and indicators of social and psychological adaptation in patients with different severity of TBI due to blast wave

Indicator.	Adaptation		Self-acceptance		Acceptance of others	
	r_S	p	r_S	p	r_S	p
Somatization	-0,361	<0,01	-0,431	<0,01	-0,288	<0,01
Obsessive-compulsive disorders	-0,217	<0,01	-0,242	<0,01	-0,127	<0,05
Interpersonal sensitivity	-0,391	<0,01	-0,384	<0,01	-0,342	<0,01
Depression	-0,586	<0,01	-0,548	<0,01	-0,509	<0,01
Anxiety	-0,177	<0,01	-0,271	<0,01	-0,165	<0,01
Hostility	-0,437	<0,01	-0,394	<0,01	-0,295	<0,01
Phobic anxiety	-0,135	<0,05	-0,219	<0,01	-0,088	0,102
Indicator.	Emotional comfort		Internality		Striving for dominance	
	r_S	p	r_S	p	r_S	p
Somatization	-0,260	<0,01	-0,324	<0,01	-0,241	<0,01
Obsessive-compulsive disorders	-0,141	<0,01	-0,211	<0,01	-0,054	>0,05
Interpersonal sensitivity	-0,248	<0,01	-0,368	<0,01	-0,326	<0,01
Depression	-0,452	<0,01	-0,561	<0,01	-0,342	<0,01
Anxiety	-0,121	<0,05	-0,113	<0,05	-0,167	<0,01
Hostility	-0,369	<0,01	-0,406	<0,01	-0,284	<0,01
Phobic anxiety	-0,075	>0,05	-0,122	<0,05	-0,169	<0,01

As can be seen from Table 2, almost all psychopathological symptoms showed significant inverse correlations (with the increase of the corresponding symptom, the indicators of social and psychological adaptation deteriorate). At the same time, the correlations were found to be mainly of moderate (for depression, somatization, and hostility) and weak (for the rest of the psychopathological symptoms) strength, indicating a complex multifactorial genesis of psychosocial adaptation in patients with TBI due to blast exposure.

The severity of psychopathological manifestations in the genesis of socio-psychological maladjustment in this contingent is an important, but not the only component. In our opinion, both psychopathological factors and individual psychological characteristics of patients, in

particular, the nature of the coping repertoire and the factor of the microsocial environment, play a role in the formation of psychosocial maladjustment in patients with TBI due to blast exposure. This is confirmed by the following results obtained in our study [10].

The study of the coping repertoire in patients with TBI of varying severity revealed a shift in coping toward nonconstructive strategies in patients with more severe trauma (Table 3).

Table 3.

Indicators of the severity of different coping strategies in patients with different severity of TBI due to blast wave

Indicator.	Severity of TBI			P		
	Light, n=145	Moderate severity, n=125	Severe, n=80	Mild vs. moderate severity	Light vs. heavy	Moderate vs. severe
Confrontational copying	34,35±10,22	41,90±10,24	46,23±8,43	<0,01	<0,01	<0,01
Distancing	61,99±14,08	54,04±12,10	47,77±9,35	<0,01	<0,01	<0,01
Self-control	79,05±12,05	71,97±8,19	66,92±4,90	<0,01	<0,01	<0,01
Search for social support	76,51±8,68	69,20±11,74	65,06±9,74	<0,01	<0,01	<0,01
Acceptance of responsibility	72,25±14,47	65,93±19,14	64,27±17,35	<0,01	<0,01	>0,05
Escape-avoidance	26,77±7,12	39,27±4,25	46,75±1,76	<0,01	<0,01	<0,01
Planning a solution to the problem	63,14±16,19	52,36±13,24	45,76±9,67	<0,01	<0,01	<0,01
Positive reassessment	55,01±13,54	46,89±10,63	40,66±7,43	<0,01	<0,01	<0,01

Confrontational coping, which consists in directing untargeted behavioral activity to solve the problem of impulsive behavior with elements of hostility and conflict, aggressiveness, stubbornness, problems with predicting the outcome of such actions, planning and correction, turned out to be a strategy that was more common in patients with severe TBI (Fig. 2). Coping behavior in this type loses its purposefulness and is primarily a means of relieving emotional tension. In patients with long-term consequences of TBI, this strategy is often based on specific personality changes with affective instability and a tendency to dysphoric forms of response, which is a consequence of organic brain damage. In patients with mild TBI, confrontational coping was one of the least pronounced strategies (mean score 34.35±10.22 points), in patients with moderate TBI it was the penultimate (41.90±10.24 points), and in patients with severe TBI it was more pronounced than constructive coping strategies of planning a solution to the problem and positive reassessment (46.23±8.43 points).

The second most common coping strategy among the surveyed patients was the strategy of seeking social support, which involves an individual's attempt to attract an external social resource in the form of emotional, informational, or effective support to solve a problem [11]. This type of coping is characterized by the desire for attention, sympathy, and help from other people. The value of the indicator for this strategy decreased with increasing severity of TBI: in patients with mild TBI it was 76.51±8.68 points, in patients with moderate TBI - 69.20±11.74 points, in patients with severe TBI - 65.06±9.74 points ($p<0.01$) (Fig. 2).

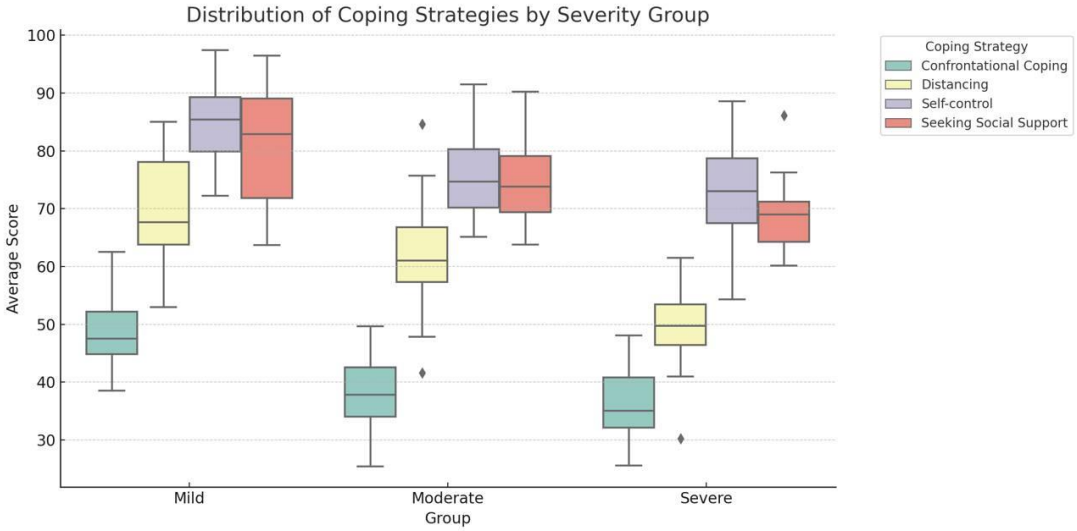

Fig. 2. Indicators of the severity of coping strategies of confrontational coping, distancing, self-control and seeking social support in points (squares indicate the median values of indicators, rectangles - the interquartile range, horizontal lines - the full range of indicator values)

The distancing strategy, which consists in attempts to overcome stressful experiences by subjectively reducing the significance of the problem and weakening emotional involvement in a stressful situation, using intellectual techniques of detachment, distraction, rationalization, humor, devaluation and others, in patients with mild TBI was quite pronounced (61.99±14.08 points), while in patients with moderate TBI the index of this coping was significantly ($p<0.01$) was lower (54.04±12.10 points), and in patients with severe TBI - the lowest among all groups (47.77±9.35 points, $p<0.01$) (Fig. 2).

Coping strategy of self-control, which consists in attempts to purposefully suppress emotions and minimize their impact on the choice of behavioral strategy and assessment of the situation, a high level of behavioral control and the desire to control one's own emotions, the

desire to hide one's feelings about a stressful situation from others [12]. Taking into account the characteristics of the contingent (military personnel who took direct part in hostilities), its dominance in patients with minimal manifestations of TBI is natural (the average value of this strategy was 79.05±12.05 points). In patients with more severe manifestations of TBI, this strategy is also leading, however, its severity is significantly reduced: to 71.97±8.19 points in patients with moderate TBI, and to 66.92±4.90 points in patients with severe TBI (Fig. 2).

The third most common coping strategy in servicemen with TBI due to blast exposure was the coping strategy of accepting responsibility, which involves recognizing one's own responsibility for the problem situation and for its resolution, possibly with self-criticism and self-blame (Fig. 3). The highest scores for this strategy were found in patients with mild TBI: 72.25±14.47 points, significantly lower - in patients with moderate TBI (65.93±19.14 points) and severe TBI (64.27±17.35 points). At the same time, the differences in indicators between the groups with moderate and severe TBI were not statistically significant (p>0.05).

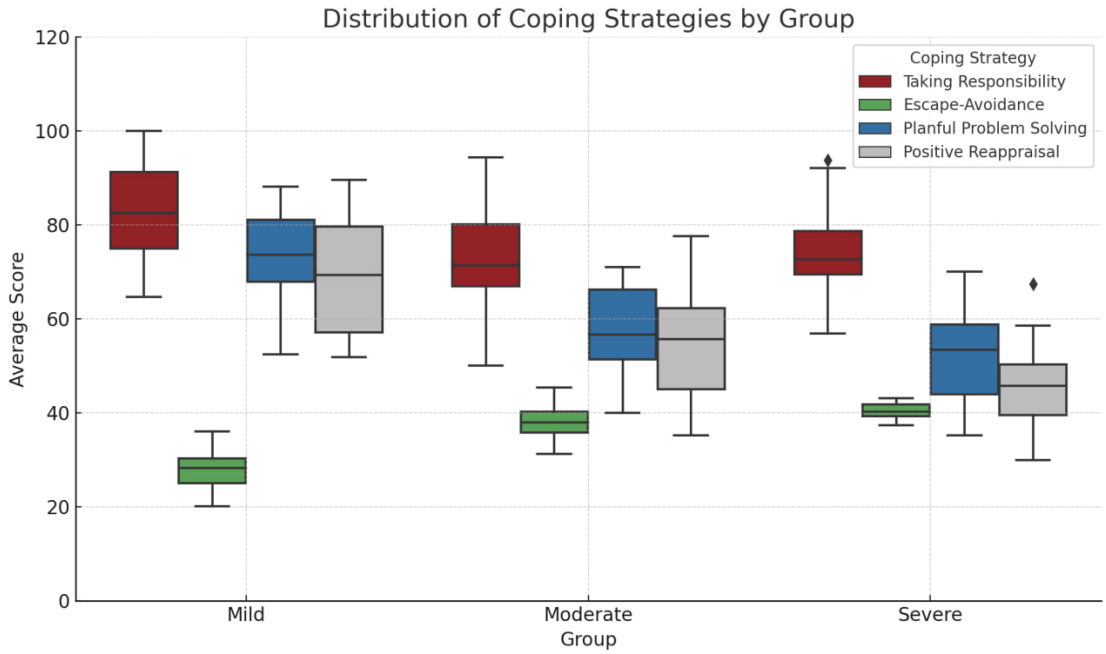

Fig. 3. Indicators of the severity of coping strategies of acceptance of responsibility, escape-avoidance, planning for problem solving and positive reassessment in points (squares indicate median values of indicators, rectangles - interquartile range, horizontal lines - full range of indicator values)

The escape-avoidance strategy, which consists in reducing emotional stress in connection with a stressful situation through fantasizing, denial of the problem, unjustified

expectations, etc., was the least pronounced in servicemen with TBI consequences. The quantitative value of this strategy in the group with mild TBI was the lowest (26.77±7.12 points), and increased with increasing severity of TBI: up to 39.27±4.25 points in patients with moderate TBI, and up to 46.75±1.76 points in patients with severe TBI ($p<0.01$).

The most constructive coping strategy for planning problem solving was significantly more pronounced in patients with mild TBI: 63.14±16.19 points versus 52.36±13.24 points in patients with moderate TBI and 45.76±9.67 points in patients with severe TBI (Fig. 3). The strategy of planning the solution of the problem consists in a targeted analysis of the stressful situation and the development of a strategy for solving the problem, taking into account past experience, own capabilities and available resources.

The coping strategy of positive reappraisal, which involves a positive rethinking of the situation and perception of it as a stimulus for personal growth, was atypical for patients with TBI (Fig. 3). In the group with mild TBI, the average value of this type of coping was 55.01±13.54 points, in the group of patients with moderate TBI - 46.89±10.63 points, and in the group of patients with severe TBI - 40.66±7.43 points. Differences in the indicators between all groups are statistically significant ($p<0.01$).

We also conducted a correlation analysis of the relationship between the severity of different coping strategies and indicators of social and psychological adaptation. The results of the analysis are presented in Table 4.

The correlation analysis revealed significant correlations between the severity of certain types of coping and indicators of social and psychological adaptation. Thus, the severity of confrontational coping was inversely correlated with indicators of adaptation, self-acceptance, acceptance of others, emotional comfort, internality, and the desire for dominance; all correlations were of medium strength (rank correlation coefficient values ranged from 0.3 to 0.7). Also, inverse correlations of moderate strength were found for the coping strategy of escape-avoidance and indicators of adaptation, self-acceptance, emotional comfort, and internality, and weak significant correlations for indicators of acceptance of others and the desire for dominance. Thus, a higher severity of confrontational and avoidance coping strategies correlated with worse social and psychological adaptation. On the contrary, direct correlations (with an increase in the severity of this coping strategy, social and psychological adaptation improves) were found between the coping strategies of problem-solving planning, positive reassessment, seeking social support, and self-control and indicators of adaptation, self-acceptance, acceptance of others, emotional comfort, internality, and desire for dominance.

Direct correlations of moderate, closer to weak, strength were found between the distancing strategy and indicators of adaptation, self-acceptance, acceptance of others, emotional comfort, and internality, and weak correlations were found with the strategy of striving for dominance. The severity of the coping strategy of accepting responsibility revealed direct weak (rank correlation coefficient value less than 0.3) correlations with indicators of adaptation, self-acceptance, acceptance of others, emotional comfort, and internality.

Table 4

The results of correlation analysis of the relationship between the severity of different coping strategies and indicators of social and psychological adaptation in patients with different severity of TBI due to blast wave

Copying	Adaptation		Self-acceptance		Acceptance of others	
	rs	P	rs	p	rs	p
Confrontational copying	-0,560	<0,01	-0,542	<0,01	-0,510	<0,01
Distancing	0,421	<0,01	0,363	<0,01	0,332	<0,01
Self-control	0,556	<0,01	0,536	<0,01	0,488	<0,01
Search for social support	0,580	<0,01	0,580	<0,01	0,496	<0,01
Acceptance of responsibility	0,204	<0,01	0,145	<0,01	0,161	<0,01
Escape-avoidance	-0,359	<0,01	-0,354	<0,01	-0,271	<0,01
Planning a solution to the problem	0,572	<0,01	0,545	<0,01	0,495	<0,01
Positive reassessment	0,563	<0,01	0,540	<0,01	0,491	<0,01
Copying	Emotional comfort		Internality		Striving for dominance	
	rs	P	rs	p	rs	p
Confrontational copying	-0,423	<0,01	-0,518	<0,01	-0,371	<0,01
Remote control.	0,392	<0,01	0,388	<0,01	0,216	<0,01
Self-control	0,422	<0,01	0,519	<0,01	0,361	<0,01
Search for social support	0,441	<0,01	0,543	<0,01	0,335	<0,01
Acceptance of responsibility	0,123	<0,05	0,201	<0,01	0,066	>0,05
Escape-avoidance	-0,324	<0,01	-0,332	<0,01	-0,164	<0,01
Planning a solution to the problem	0,457	<0,01	0,533	<0,01	0,346	<0,01
Positive reassessment	0,442	<0,01	0,520	<0,01	0,341	<0,01

The microsocial environment plays an important role in the rehabilitation of servicemen with TBI. The presence of constant and effective support from the immediate microsocial environment - family, friends, significant others - is an important factor in the patient's compliance with the recommended regimen, treatment regimen, general adherence to therapy and compliance, as well as an important psychotherapeutic factor. An unfavorable microsocial environment is a powerful psychotraumatic factor that can significantly worsen the course of psychopathological manifestations, cause neuroticism, and slow down the recovery of the

nervous system. Therefore, the study of the peculiarities of social support for patients with TBI is an important component of a comprehensive picture of social and psychological adaptation, and the results of the assessment of social support should be taken into account when personalizing treatment and rehabilitation measures for patients with TBI.

With this in mind, we studied the peculiarities of social support for patients with different severity of TBI due to blast exposure. The results of the analysis are presented in Table 5.

Table 5

Indicators of social support for patients with different severity of TBI due to blast exposure

Indicator.	Severity of TBI			P		
	Light, n=145	Moderate severity, n=125	Severe, n=80	Mild vs. moderate severity	Light vs. heavy	Moderate severity vs severe
Social support for the family	23,78±3,52	19,93±3,96	16,85±3,89	<0,01	<0,01	<0,01
Social support from friends	23,79±4,41	19,27±5,68	16,45±4,78	<0,01	<0,01	<0,01
Social support of significant others	23,82±3,38	18,86±3,15	15,94±2,95	<0,01	<0,01	<0,01
Total indicator	71,39±10,13	58,06±11,65	49,24±10,27	<0,01	<0,01	<0,01

As can be seen from Table 5, servicemen with mild TBI as a result of blast exposure were characterized by a fairly high level of social support: the value of the total social support index in this group was 71.39±10.13 points. At the same time, the level of social support in different spheres in these patients is approximately the same and quite high: the index of social support of the family in this group was 23.78±3.52 points, social support of friends - 23.79±4.41 points, social support of significant others - 23.82±3.38 points.

In patients with moderate TBI, the social support index is significantly lower - 58.06±11.65 points. In our opinion, the lower value of the social support index in patients with more severe TBI is primarily due to the greater severity of psychopathological symptoms, primarily dysphoric, depressive and posttraumatic symptoms. Such psychopathological symptoms have a bi-directional negative impact - on the one hand, depressive and dysphoric manifestations contribute to the patient's seclusion and isolation, and on the other hand, they alienate the microsocial environment, as manifestations of dysphoria, irritation, and affective instability are directed primarily at those who most often come into contact with the patient. This can be confirmed by relatively higher rates of social support from family (the highest rate, 19.93±3.96 points) and friends (the second highest rate, 19.27±5.68 points), i.e. people who are

most psychologically attached to the patient and maintain this attachment for the longest time. Instead, the indicator of social support from significant others is lower (18.86±3.15 points), which, in our opinion, confirms the above patterns (Fig. 4).

This is also confirmed by the lowest rates of social support in patients with severe TBI, in whom the severity of psychopathological manifestations is the highest. The average value of the social support index was 49.24±10.27 points; in this group, the highest social support index was also the index of social support from family - 16.85±3.89 points, slightly lower - social support from friends: 16.45±4.78 points, and the lowest - social support from significant others: 15.94±2.95 points (Fig. 4).

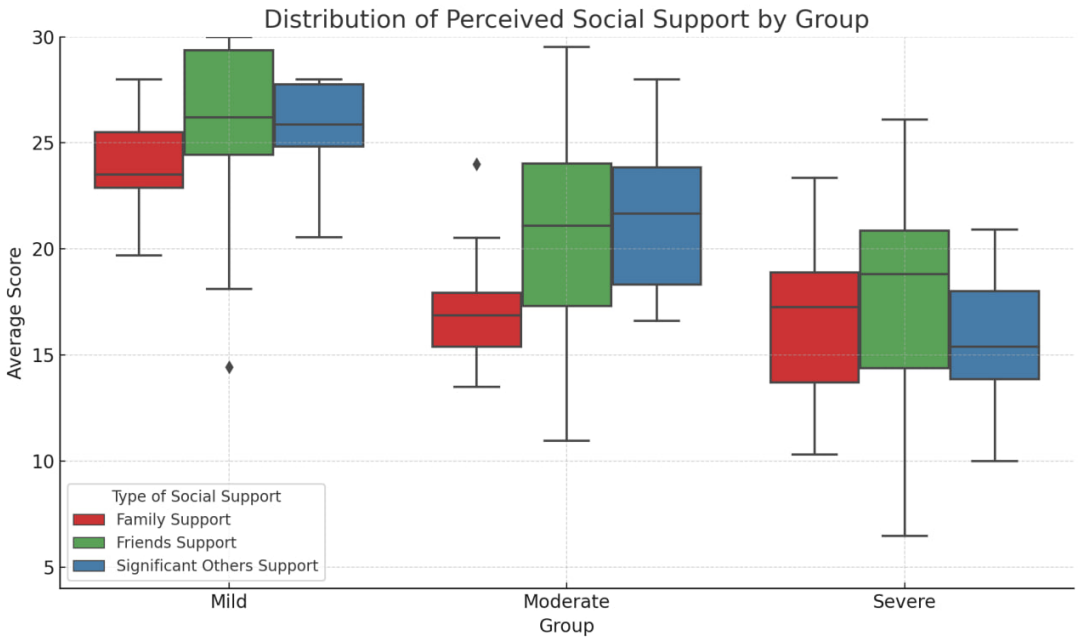

Fig. 4. Indicators of social support from family, friends and significant others in points (squares indicate median values of indicators, rectangles - interquartile range, horizontal lines - full range of indicators)

Conclusions. It should also be noted that lower scores in patients with more severe TBI may also be associated with a subjective pessimistic perception of their own social interaction, inherent in patients with depressive and posttraumatic manifestations, which are significantly more pronounced in patients with more severe TBI.

Thus, we have established significant differences in the state of social and psychological adaptation, coping repertoire and social support of patients with TBI due to blast exposure,

depending on the severity of the injury. The identified patterns should be taken into account when planning treatment and rehabilitation measures for this category of patients.

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Prospects for further research.

Further study of the existing model for providing qualified medical care and subsequent rehabilitation to combatants with the consequences of combat-related traumatic brain injuries, as well as the search for ways to improve and enhance it.

Conflict of interest

The authors state no conflict of interest.

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