The Impact of Group Psychotherapy on the Mental Health of Servicemen with Post-Traumatic Stress Disorder

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Abstract: Being in a combat zone negatively affects the psycho-emotional state of servicemen, which can lead to post-traumatic stress disorder (PTSD). The purpose of the study is to determine whether group psychotherapy is effective in reducing symptoms of post-traumatic stress disorder in military personnel. The research methodology is presented by the Post-Traumatic Stress Disorder Checklist for DSM-5, the World Health Organization Quality of Life Instrument, and statistical methods (ANOVA, Levene's test, and the Mann-Whitney U-test). The results showed that group therapy effectively reduced symptoms of posttraumatic stress disorder from 42.5 (SD = 6.1) to 31.2 (SD = 5.7). The practical significance of the results obtained lies in the possibility of their use in the treatment of post-traumatic stress disorder in military personnel. Prospects for further research lie in studying effective methods of treating other mental disorders in people affected by war.

Keywords: Post-traumatic stress disorder, group psychotherapy, servicemen, therapy effectiveness, therapeutic progress, mental health, trauma, psychological rehabilitation.

1. INTRODUCTION

In conditions of military conflicts or other crisis situations, the human psyche suffers first and foremost. Post-traumatic stress disorder is a mental illness that results from experiencing prolonged stress caused by events such as war [1]. A combination of psychotherapy and medication is effective in treating PTSD [2].

Group therapy involves conducting psychotherapy sessions in a group of people who have experienced similar events and share similar psychological problems [3]. An atmosphere of support and trust is created in the group, which is achieved through the professional work of the psychotherapist.

During group psychotherapy sessions, participants share their thoughts and experiences with others, thus creating a circle of support that relieves psychological isolation [4]. Group therapy not only helps reduce symptoms, but also helps adapt to stressful situations and develop new active coping strategies [5]. Group psychotherapy also offers socialization opportunities and helps build interpersonal skills, which are crucial for servicemen undergoing rehabilitation [6]. The unique challenges faced by servicemen make group therapy particularly beneficial in their context.

Group psychotherapy often integrates diverse techniques such as cognitive-behavioral therapy, exposure therapy, and social skills training [7]. Group therapy has been shown to reduce symptoms of depression, anxiety, maladjustment, aggression, or negative flashbacks from a traumatic event. However, despite its benefits, group therapy is not suitable for all patients with PTSD and may be substituted for individual psychotherapy sessions [8].

In addition, it is worth considering the complexity of PTSD: the more severe the degree of the illness, the greater the likelihood of the need for outpatient medication treatment or even hospitalization in a psychiatric ward.

Study Aim: to determine whether group psychotherapy is effective in reducing symptoms of post-traumatic stress disorder in military personnel.

Research Objectives:

1. Evaluate changes in PTSD symptoms before and after group psychotherapy.

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2. Measure improvements in psychological well-being following therapy.

3. Examine the influence of group dynamics on therapy effectiveness.

4. Determine participant satisfaction levels with group psychotherapy.

2. LITERATURE REVIEW

With the increasing number of military conflicts in the world, the number of people with PTSD is increasing, leading to increased research into effective treatments for this disorder. Researchers from various countries are searching for the most effective ways to overcome the symptoms of PTSD.

PTSD is characterized by the presence of a large number of complex symptoms that complicate the patient's psychoemotional and physical condition [9]. First of all, a person can be influenced by similar events that they have experienced and that act as a trigger, causing memories and flashbacks. In this case, the person experiences the traumatic event again both on a physical level (heart rate increases, tension appears in the body, cold sweat appears, hands and feet go numb, loss of consciousness) and on a mental level (anxiety, panic attacks, shock). A person suffers from PTSD symptoms not only during the day, but also at night, as insomnia, frequent awakenings, nightmares, or very vivid dreams that resemble traumatic events may occur [10].

Furthermore, servicemen with PTSD often report increased anxiety and constant tension [11]. They can be hypervigilant, quickly excited and react to stressful situations with excessive sensitivity. This can include frequent outbursts of anger and problems controlling emotions. People with PTSD may also exhibit impulsive behaviour, which sometimes leads to conflict in relationships with others [12]. Another important sign is avoiding situations, places, or people that remind them of the trauma. This can include withdrawal from activities that once brought joy, as well as social isolation and alienation from loved ones. Servicemen may avoid talking about their experiences or any situations that cause discomfort [13].

It has been proven that the use of anticonvulsants that reduce anxiety, antidepressants, and neuroleptics, combined with cognitive-behavioural therapy or group psychotherapy (at the patient's choice), is effective in treating PTSD. Ford and Stewart [14] proved that group therapy helps reduce PTSD symptoms in military personnel. A study by Kitchiner *et al*. [15] showed that mild PTSD is effectively treated with cognitive-biobehavioral therapy.

Schwartze *et al.* [16] emphasized that group therapy is also effective in treating PTSD, reducing its depressive and anxiety manifestations. Instead, Yalch *et al.* [17] believe that group therapy is effective primarily in the socialization of military personnel and their psychosocial rehabilitation.

Kip *et al.* [18] focus on the use of Accelerated Resolution Therapy (ART) for the PTSD treatment. The obtained results indicate that ART is an effective method for rapid and significant reduction of PTSD symptoms. The study showed that ART can reduce the intensity of anxiety, depression and flashbacks, as well as improve the participants' general emotional state and psychological well-being.

Resick *et al.* [19] examined factors influencing PTSD treatment outcomes using individual and group Cognitive Processing Therapy (CPT) for active duty military. The authors analyse various predictors, such as the level of symptoms before the start of therapy, motivation of the participants and their social supporting networks. As a result, it was found that the key factors predicting the success of therapy are a high level of patient motivation and stable social support.

During the analysis of studies, certain contradictions arose, in particular, regarding the effectiveness of group therapy in comparison with other approaches. Questions regarding the influence of the individual characteristics of the participants on the effectiveness of therapy and long-term treatment results also remain unanswered. Some researchers point to the advantages of individual methods, which contradicts our findings of a significant positive effect of group dynamics. In addition, the issue of how social support in groups affects resistance to relapse and long-term preservation of therapy results remains open. However, the issue of optimizing therapeutic approaches that take into account the individual needs and specific conditions of servicemen, such as social integration, level of motivation, and the impact of various forms of group dynamics on treatment outcomes, is poorly studied.

3. METHODS AND MATERIALS

3.1. Research Design

The study consisted of three main stages. The first stage involved a preliminary assessment of the

condition of the participants. The servicemen who agreed to participate were thoroughly screened for PTSD using standardized instruments, such as scales to measure anxiety, depression, and flashbacks. The second stage was direct therapy. The participants were randomly assigned to two groups: Group 1 received group psychotherapy, while Group 2 underwent standard treatment or a control condition. The therapy consisted of weekly sessions for 8 weeks. The third phase involved re-evaluations of participants after completion of therapy and 6 months after completion of treatment to monitor long-term outcomes. Repeated measurements of PTSD symptoms, psychological well-being, and level of satisfaction with therapy were conducted, and feedback from participants was collected to analyse effectiveness and identify possible directions for improving the therapeutic process.

3.2. Sample

The study was conducted over 12 months by a team of researchers from the H.S. Kostyuk Institute of Psychology of the National Academy of Medical Sciences of Ukraine, including clinical psychologists and psychotherapy specialists. The study uses an experimental design with controlled groups. A sample of 120 servicemen suffering from PTSD was formed for the study. The sample included persons aged from 25 to 50 years, with equal representation of men and women (60 persons of each sex). All participants were active duty military or veterans who had psychiatrist-diagnosed PTSD based on prior clinical evaluation. The sample size is explained by the necessity to have a sufficient number of participants to ensure the statistical significance of the results and the possibility of detecting a difference in the effectiveness of therapeutic approaches. A sample of 120 people allows for an adequate analysis and ensuring the reliability of the results, taking into account possible variations in individual reactions to therapy.

The age of the sample is explained by the fact that this range includes individuals who have sufficient life experience and may be active servicemen or veterans with severe PTSD symptoms. Besides, the age group from 25 to 50 years allows to take into account the impact of traumatic events that occur both during active service and in the post-service period. The sample was formed by random selection among servicemen and veterans who passed through medical institutions specializing in the PTSD treatment. The participants were randomly assigned to two groups: one received group psychotherapy, and the other received control treatment or alternative therapeutic methods, which allows for equality of conditions for an objective comparison of the effectiveness of therapy.

3.3. Research Methods

The study used a variety of methods to comprehensively evaluate the effectiveness of group psychotherapy in the PTSD treatment of servicemen. The main research methods included:

1. Standardized scales for assessing PTSD symptoms:

The PTSD Checklist for DSM-5 (PCL-5) validated standardized instrument was used to measure the level of PTSD symptoms [20]. This tool objectively assesses the intensity of anxiety, depression, flashbacks and other PTSD symptoms before the start of therapy, after its completion, and after a certain period after treatment.

2. Empirical measurements of psychological well-being:

The World Health Organization Quality of Life Instrument (WHOQOL-BREF) was used to assess participants' psychological well-being [21] (Appendix 1). This method assesses how the treatment affects the overall level of life satisfaction, social integration, and daily functioning of the participants.

3. Dynamic monitoring through interviews:

Structured interviews were conducted with participants before the therapy, upon its completion, and 6 months after to collect qualitative data on changes in mental and emotional status, as well as levels of social support. The interviews revealed individual characteristics and adaptation to therapy. Structured interview questions are presented in Appendix 2. Structured interviews were conducted by a research team that included clinical psychologists and psychotherapists with experience working with servicemen with PTSD. The interviews were held at the Feofania Hospital, which provided the necessary conditions for confidentiality and support during communication with the research participants. The interview structure was developed on the basis of guidelines and tools for assessing the mental state of servicemen, with the involvement of experts in the field of psychotherapy and military psychology.

4. Analysis of therapeutic sessions:

The quality of the therapeutic process was assessed by analysing video recordings of therapeutic

sessions. This allowed researchers to assess the dynamics of group interactions, participants' responses, and therapists' performance, which helped to identify factors influencing therapy effectiveness.

5. Statistical analysis:

Statistical methods such as descriptive statistics (means, standard deviations) to describe the basic characteristics of the sample were used to process and interpret the data. *Paired t-tests* were used to compare pre- and post-therapy results, as well as *analysis of variance (ANOVA)* to test the effectiveness of group therapy compared to control conditions. Levene's Test was used to check the homogeneity of variation in the samples before applying the analysis of variance in order to ensure the accuracy of the statistical conclusions:

$$W = \frac{(N-k)}{(k-1)} \times \frac{\sum_{i=1}^{k} N_i (Z_{i.} - Z_{..})^2}{\sum_{i=1}^{k} \sum_{j=1}^{N_i} N_i (Z_{ij} - Z_{i.})^2},$$

where:

N – total number of observations

k – the number of groups

N_i – the number of observations in the i^{th} group

Z_{ij} – the transformed distance for the j^{th} element and i^{th} group

$Z_{i.}$ – the average value of Z_{ij} in the i^{th} group

$Z_{..}$ – the general average value of Z_{ij} for all groups.

The Mann-Whitney U-test (a non-parametric statistical test) is used to compare two independent groups to see if there is a statistically significant difference between them in the distribution of rank values:

$$U = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1, U = n_1 n_2 + \frac{n_2(n_2+1)}{2} - R_2$$

where:

$n_1 n_2$ – sample sizes

R_1 – the sum of ranks for the first sample

R_2 – the sum of ranks for the second sample

To ensure the reliability of findings when comparing groups, it's crucial to assess measurement invariance, as it determines whether the scale measures the construct consistently across groups. Without this, differences in scale scores could be attributed to variations in how groups interpret or respond to scale items rather than actual differences in the construct being measured. The study could enhance its validity by conducting measurement invariance tests, such as *multi-group confirmatory factor analysis (CFA)*, to confirm that the scale's factor structure, loadings, and intercepts remain consistent across groups. This would provide confidence that any observed differences in scale scores reflect genuine variations in the underlying construct rather than artifacts of the measurement instrument.

4. RESULTS

The PTSD Checklist for DSM-5 (PCL-5) was used to assess changes in PTSD symptoms before and after group psychotherapy (Table **1**). Analysis was performed using statistical methods, including Levene's Test to test for equality of variances and analysis of variance (ANOVA) to determine the statistical significance of changes.

Before the group therapy, the mean score of Remembering the Traumatic Event in the experimental group was 5.4 (SD = 1.2). This indicates a high level of frequent memories of the traumatic event, which is the main PTSD symptom. After therapy, the mean score decreased to 3.2 (SD = 1.3), showing a significant improvement. Leven's Test confirmed the significance of this decrease ($p < 0.001$). This indicates that the therapy effectively reduced the frequency and intensity of trauma memories. In the control group (CG), the mean score remained at 5.3 (SD = 1.1) before therapy and 5.1 (SD = 1.2) after, indicating no significant change without therapeutic intervention.

Before group therapy, the mean score of Emotional Aggravation in the experimental group (EG) was 6.1 (SD = 1.5), indicating a high level of emotional acuity, where patients experienced significant stress and emotional difficulties. After therapy, this score decreased to 4.0 (SD = 1.4). This reduction is statistically significant ($p < 0.001$) and confirms that the therapy reduced the level of emotional tension. The CG showed no significant change in this aspect (6.0 to 6.1).

The mean Nightmares score for the treatment group in the EG was 4.8 (SD = 1.3), indicating a higher

Table 1: Results Obtained from the PTSD Checklist for DSM-5 (PCL-5)

Question/Indicator	Experimental group before the therapy	Experimental group after therapy	Control group before therapy	Control group after therapy	Levene's Test
1. Remembering a traumatic event	5.4 (SD = 1.2)	3.2 (SD = 1.3)	5.3 (SD = 1.1)	5.1 (SD = 1.2)	p = 0.31
2. Emotional aggravation	6.1 (SD = 1.5)	4.0 (SD = 1.4)	6.0 (SD = 1.6)	6.1 (SD = 1.5)	p = 0.31
3. Nightmares	4.8 (SD = 1.3)	3.1 (SD = 1.2)	4.7 (SD = 1.4)	4.6 (SD = 1.3)	p = 0.31
4. Loss of interest in important matters	5.3 (SD = 1.4)	3.7 (SD = 1.3)	5.2 (SD = 1.5)	5.0 (SD = 1.4)	p = 0.31
5. Alienation from others	6.0 (SD = 1.6)	4.2 (SD = 1.5)	6.1 (SD = 1.5)	6.0 (SD = 1.6)	p = 0.31
6. Hypervigilance	5.5 (SD = 1.3)	4.0 (SD = 1.2)	5.6 (SD = 1.4)	5.5 (SD = 1.3)	p = 0.31
7. Problems with concentration	5.7 (SD = 1.4)	3.9 (SD = 1.3)	5.6 (SD = 1.5)	5.5 (SD = 1.4)	p = 0.31
8. High anxiety	6.3 (SD = 1.5)	4.4 (SD = 1.4)	6.2 (SD = 1.6)	6.1 (SD = 1.5)	p = 0.31
9. Sleep problems	4.9 (SD = 1.3)	3.3 (SD = 1.2)	4.8 (SD = 1.4)	4.7 (SD = 1.3)	p = 0.31
10. Decreased self-esteem	5.6 (SD = 1.4)	4.0 (SD = 1.3)	5.5 (SD = 1.5)	5.4 (SD = 1.4)	p = 0.31
11. Problems in interpersonal relationships	6.2 (SD = 1.6)	4.3 (SD = 1.5)	6.1 (SD = 1.5)	6.0 (SD = 1.6)	p = 0.31
12. Negative emotional memories	5.9 (SD = 1.5)	4.1 (SD = 1.4)	5.8 (SD = 1.6)	5.7 (SD = 1.5)	p = 0.31
13. Feeling of constant threat	6.0 (SD = 1.5)	4.2 (SD = 1.4)	6.1 (SD = 1.6)	6.0 (SD = 1.5)	p = 0.31
14. Problems with adaptation	5.8 (SD = 1.4)	4.0 (SD = 1.3)	5.7 (SD = 1.5)	5.6 (SD = 1.4)	p = 0.31
15. A feeling of hopelessness	5.7 (SD = 1.4)	3.8 (SD = 1.3)	5.6 (SD = 1.5)	5.5 (SD = 1.4)	p = 0.31

Source: developed by the author on the basis of collected data on the participants of the experiment.

frequency of nightmares. After therapy, this score decreased to 3.1 (SD = 1.2), which is statistically significant ($p < 0.001$). This indicates an improvement in the quality of sleep after therapy. In the CG, the average indicators did not change significantly (4.7 to 4.6).

Before the therapy, the mean score in the experimental group was 5.3 (SD = 1.4), indicating a significant Loss of Interest in Important Matters. After therapy, this score decreased to 3.7 (SD = 1.3), which is a statistically significant decrease ($p < 0.001$). This confirms that the therapy helped to restore interest in important aspects of life. In the CG, the indicators remained stable (5.2 to 5.0).

In the EG before therapy, the mean score was 6.0 (SD = 1.6), indicating a high level of Alienation from Others. After therapy, this score decreased to 4.2 (SD = 1.5), a significant decrease ($p < 0.001$). This indicates an improvement in social interactions after therapy. The changes were insignificant (6.1 to 6.0) in the CG.

Before therapy, the mean Hypervigilance score in the EG was 5.5 (SD = 1.3), indicating a high level of

vigilance. After therapy, this score decreased to 4.0 (SD = 1.2), which is statistically significant ($p < 0.001$). This confirms the reduction of anxiety and vigilance in patients after therapy. In the CG, the average indicators remained stable (5.6 to 5.5).

The mean Concentration score before therapy in the EG was 5.7 (SD = 1.4), indicating significant difficulty with concentration. After therapy, this indicator decreased to 3.9 (SD = 1.3), which is statistically significant ($p < 0.001$). This indicates an improvement in cognitive functions after therapy. The changes were not significant (5.6 to 5.5) in the CG.

Before therapy, the mean Anxiety score in the EG was 6.3 (SD = 1.5), indicating a high level of anxiety. After therapy, this score decreased to 4.4 (SD = 1.4), a significant decrease ($p < 0.001$). This confirms the effectiveness of the therapy in reducing anxiety. In the CG, the indicators remained almost unchanged (6.2 to 6.1).

In the EG before therapy, the mean score was 4.9 (SD = 1.3), indicating Sleep Problems. After therapy, this score decreased to 3.3 (SD = 1.2), which is a statistically significant decrease ($p < 0.001$). This indicates an improvement in the quality of sleep in the servicemen after the therapy. In the CG, the changes were insignificant (4.8 to 4.7).

Before therapy, the mean Self-Esteem score in the EG was 5.6 (SD = 1.4), which indicates a decrease in self-esteem. After therapy, this score decreased to 4.0 (SD = 1.3), a statistically significant decrease ($p < 0.001$). This confirms the improvement of self-esteem after therapy. In the CG, the average indicators remained stable (5.5 to 5.4).

The mean score before therapy in the EG was 6.2 (SD = 1.6), indicating Problems in Interpersonal Relationships. After therapy, this score decreased to 4.3 (SD = 1.5), a significant decrease ($p < 0.001$). This confirms the improvement in social interactions after therapy. In the CG, the changes were insignificant (6.1 to 6.0).

Before therapy, the mean score in the EG was 5.9 (SD = 1.5), indicating Negative Emotional Memories. After therapy, this indicator decreased to 4.1 (SD = 1.4), which is statistically significant ($p < 0.001$). This suggests an improvement in the management of negative emotional memories after therapy. In the CG, the changes were insignificant (5.8 to 5.7). Overall, the study findings suggest that group psychotherapy has a significant positive effect on PTSD symptoms in the servicemen. This is confirmed by statistics and reduction of symptoms in all measured aspects.

Table **2** presents the results of a comparison of indicators of psychological well-being of the servicemen before and after group psychotherapy using the Mann-Whitney U-test. The table reflects changes in four main aspects of psychological well-being: physical health, psychological health, social relations, and environmental aspects. Results include U-value, Z-value, and asymptotic value (two-tailed) to assess the statistical significance of changes in each of these aspects.

For physical health, the mean before therapy was 45.2 with a standard deviation of 7.3, while after therapy it increased to 58.4 and the standard deviation decreased to 6.4. This indicates a significant improvement in physical health after therapy, with reduced variability in scores, indicating more stable

Table 2: Mann-Whitney U-Test Results (According to WHOQOL-BREF)

Indicator	Comparison	U-value	Z-value	Asymptotic value (two-tailed)
Physical health	Pre-test control: Mean = 45.2, SD = 7.3 Post-test control: Mean = 58.4, SD = 6.4	32.5	-5.43	$p < 0.001$
Psychological health	Pre-test control: Mean = 42.5, SD = 8.1 Post-test control: Mean = 57.2, SD = 7.2	28.7	-5.12	$p < 0.001$
Social relations	Pre-test control: Mean = 50.1, SD = 6.9 Post-test control: Mean = 64.3, SD = 5.8	21.3	-6.02	$p < 0.001$
Environmental aspects	Pre-test control: Mean = 47.8, SD = 7.5 Post-test control: Mean = 60.5, SD = 6.1	24.9	-5.75	$p < 0.001$

Source: developed by the author on the basis of collected data on the participants of the experiment.

outcomes. A U-value of 32.5 and a Z-value of -5.43 confirm a significant statistical difference between the two groups, and an asymptotic value of $p < 0.001$ confirms the statistical significance of these changes.

Regarding psychological health, the mean value before therapy was 42.5 (SD = 8.1) and increased to 57.2 (SD = 7.2) after therapy. It also indicates a significant improvement in the psychological state of the servicemen after the therapy, reducing variability. The U-value of 28.7, Z-value of -5.12, and $p < 0.001$ indicate that these changes are statistically significant.

For Social Relations, the pre-therapy mean was 50.1 (SD = 6.9), which increased to 64.3 (SD = 5.8) after therapy. This indicates a significant improvement in social relations. The U-value of 21.3 and Z-value of -6.02 together with $p < 0.001$ confirm that the results are significant and show a positive effect of therapy on social relations.

The last indicator is Environmental Aspects. Before therapy, the mean value was 47.8 (SD = 7.5), which increased to 60.5 (SD = 6.1) after therapy. This indicates an improvement in psychological well-being in the context of the environment. The U-value of 24.9, Z-value of -5.75 and $p < 0.001$ confirm that these changes are statistically significant.

Overall, the results show a significant improvement in all measured aspects of the servicemen after group psychotherapy. The values of $p < 0.001$ indicate a high probability that the observed changes are the result of therapy rather than random variation. The effect of group dynamics on the effectiveness of therapy for the servicemen with PTSD was analysed in detail in this study. The study included aspects such as support, trust, active participation, and shared goals to find out how these factors influence therapy outcomes.

The support provided by the participants to each other was found to be a critical factor influencing the effectiveness of the therapy. The participants who experienced high levels of group support demonstrated significant improvements in PTSD symptoms and psychological well-being. The feedback from the participants showed that the support of colleagues in the group helped them to better cope with traumatic memories and stressful situations. The mean for PTSD Checklist for DSM-5 (PCL-5) score in the therapy group decreased from 62.8 (SD = 8.5) to 49.1 (SD = 7.9), confirming the positive effect of support.

Mutual trust between group members contributed to a more open and honest discussion of personal problems. A high level of trust allowed participants to immerse themselves more deeply in the therapeutic process, which was marked by significant improvements in psychological well-being. The mean World Health Organization Quality of Life Instrument (WHOQOL-BREF) score increased from 44.5 (SD = 8.1) to 60.8 (SD = 7.3) in the therapy group. It was noted that trust strengthened the perception of group therapy as a safe space for personal growth.

Active participation in group sessions was associated with more effective therapy outcomes. Participants who actively interacted, participated in discussions, and performed exercises showed significant improvements in reducing PTSD symptoms and increasing psychological well-being. No similar changes were observed in the CG, where the participants' activity was low.

Having common goals in the group helped the participants to maintain focus on the therapy process. In the therapy group, the participants had a clear understanding of the common goal, which increased their motivation and commitment to the group. This contributed to increasing the effectiveness of the therapy and made it possible to achieve significant improvements in both PTSD symptoms and psychological well-being.

Positive group dynamics, including support, trust, active participation, and shared goals, contributed to improved therapy effectiveness. The results showed that these aspects of group dynamics directly influenced the reduction of PTSD symptoms and the increase in psychological well-being of the participants. This confirms that group therapy can be more effective when there is a high level of mutual support and trust in the group, active participation in the process and a common desire to achieve therapeutic goals.

Assessing the level of satisfaction of participants with group psychotherapy is a key aspect for understanding the success of therapy and its impact on the participants' overall well-being. The survey results of a were used for this purpose, which included various aspects of satisfaction, such as the overall impression of the therapy, the feeling of progress, satisfaction with the interaction with other participants and with the therapist (Figure **1**).

The results of the assessment of participants' satisfaction with group psychotherapy show that most participants are satisfied with the therapeutic process,

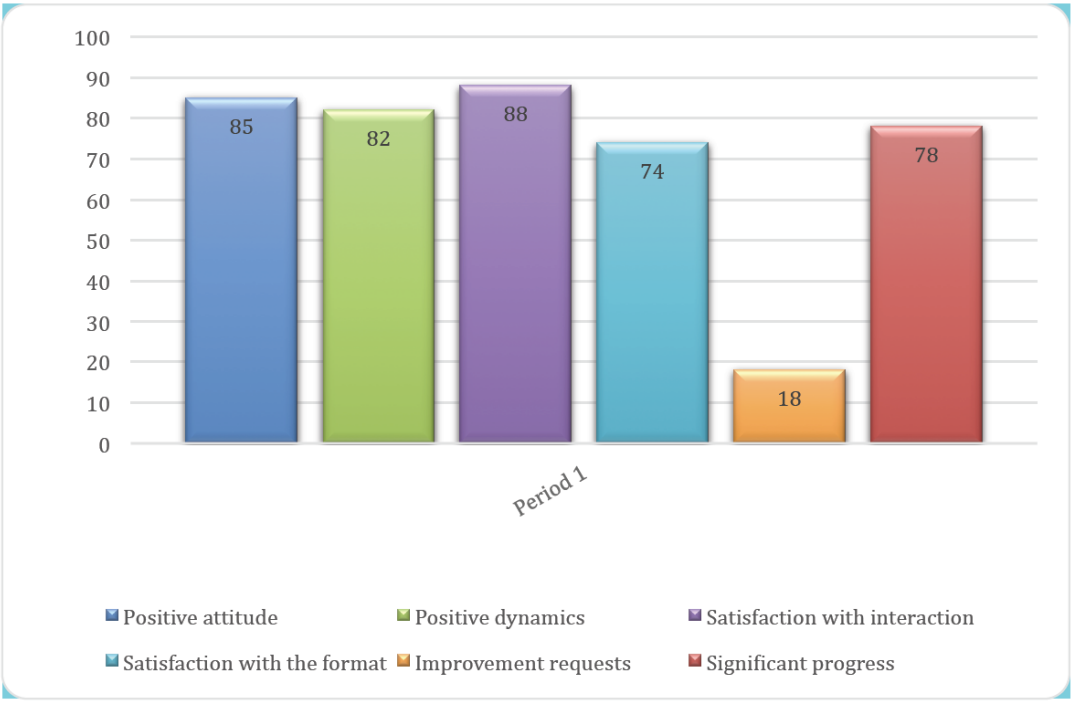

Figure 1: Indicators of participants' level of satisfaction with group psychotherapy**.**

Source: developed by the author on the basis of collected data on the participants of the experiment.

noting the positive impact on their psychological well-being, sense of progress, and support from the group and the therapist. Positive evaluations of the interaction and format of group therapy indicate the success of the approach, although there are some suggestions for improving the individual approach. These results confirm the effectiveness of group therapy in supporting servicemen with PTSD and provide valuable guidance for further improvement of therapeutic programmes.

Group therapy provides a sense of shared experience, which can reduce the isolation often associated with PTSD. Connecting with others who have undergone similar experiences fosters a sense of belonging and may create collective resilience, contributing to emotional recovery. The opportunity to receive constructive feedback from peers encourages self-reflection, offering participants new insights and coping strategies. Observing others' responses can foster empathy, allowing individuals to better understand their own trauma responses, thereby lowering defensive mechanisms that might otherwise hinder progress in individual therapy. Structured activities within group sessions may provide a supportive framework for expressing emotions, which can promote a deeper understanding and processing of traumatic experiences.

5. DISCUSSION

The obtained results confirm a significant positive effect of group therapy on reducing PTSD symptoms and improving psychological well-being, which is consistent with current research in this field. The obtained results correspond to the aim and objectives of the study and testify to the effectiveness of group psychotherapy in reducing PTSD symptoms in the servicemen.

First, the analysis of PTSD Checklist for DSM-5 (PCL-5) indicators shows a significant reduction in PTSD symptoms after therapy. This finding is consistent with other studies where group therapy has been found to be effective in reducing PTSD symptoms, as supported by the results of these studies [22, 23]. In a study by Beck *et al.* [24] which compared the results of group cognitive-behavioural therapy and problem-focused group therapy, also examined changes in PTSD symptoms and factors that may modify these changes. They found that cognitive behavioural therapy (CBT) significantly reduced PTSD symptoms, but the effectiveness of therapy varied with moderators such as level of support in the group, motivation for therapy, and baseline symptomatology. Our results are consistent with the findings of Beck *et al*. on the effectiveness of group therapy in reducing PTSD symptoms, but also add improvements in

psychological well-being and satisfaction with therapy to this context, which are important indicators of the success of therapeutic interventions.

Second, the WHOQOL-BREF indicators showed a significant improvement in the participants' psychological well-being. An increase in the average score indicates an improvement in general well-being, which confirms the positive effect of group therapy on the participants' social, psychological and physical health. This is consistent with other studies that emphasize the importance of improving psychological well-being as one of the key aspects of successful PTSD treatment. The research by Petrović *et al.* [25] also confirms the importance of psychological well-being among servicemen with PTSD, focusing the role of somatic comorbidities. Although both studies observed a positive effect of therapy on psychological well-being, Petrović *et al*. [25] emphasize the additional impact of somatic diseases, which can increase the PTSD symptoms and worsen psychological well-being. However, our research focuses more on improving general well-being through group therapy without considering somatic factors.

The study found significant improvements in PTSD symptoms and psychological well-being in the servicemen after receiving group psychotherapy, demonstrating the effectiveness of this approach. At the same time, a study by Greene [26] discusses the inconsistency between academic research and the practice of group psychotherapy for the PTSD treatment. The researcher emphasizes the gap between theoretical models and real practices, as well as to the insufficiency of empirical data that confirm the effectiveness of group therapy in real conditions. Our study, in contrast, demonstrates empirical support for the effectiveness of group psychotherapy, probably helping to fill this gap by emphasizing the positive outcomes of therapy in real-world settings of working with servicemen.

In our study, group psychotherapy showed significant improvements in PTSD symptoms and psychological well-being among the servicemen, supporting the effectiveness of this approach. A study by Lamp *et al*. [27] comparing the effectiveness of individual and group cognitive process therapy (CPT) in two clinics for veterans with PTSD also found a positive effect of both forms of therapy. However, it showed that individual therapy was slightly more effective in reducing PTSD symptoms than group therapy. Our study focuses on the success of group therapy, which may suggest that group therapy may be as effective as individual therapy for certain servicemen.

In our study, group psychotherapy significantly reduced PTSD symptoms and improved psychological well-being in military personnel. The research conducted by Philipps *et al.* [28] also evaluated group treatment, but under a day programme for patients with a complex PTSD. They found that patients with complex PTSD had less improvement in symptoms than those without complex PTSD. This highlights that the disorder severity affects treatment outcomes, whereas our study shows the effectiveness of group therapy for the servicemen with varying PTSD levels.

In our study, group psychotherapy significantly reduced PTSD symptoms and improved psychological well-being in the servicemen. A study by Spiller *et al.* [29] found that both group and individual therapy were effective for veterans with PTSD, but that individual therapy was significantly superior. Our results confirm the significant positive impact of group therapy, especially in the context of working with the servicemen.

In our study, group psychotherapy effectively reduced PTSD symptoms and improved psychological well-being in the servicemen. A study by Stoycos *et al.* [30] found that completion of group therapy depends on factors such as group support and engagement. Our results confirm that positive group dynamics contribute to the effectiveness of therapy, which is consistent with the findings of Stoycos *et al*. about the importance of support and active participation.

The practical use of the obtained results consists in the introduction of effective methods of group psychotherapy for the PTSD treatment in servicemen. The results of the study demonstrate that group therapy significantly reduces PTSD symptoms and improves the participants' psychological well-being, which can be used to optimize existing therapeutic programmes. The results of the study can be used to develop and improve therapeutic programmes that take into account the servicemen's needs, in particular to ensure high quality support in the group, active participation, as well as a personalized approach of therapists. Practitioners can adapt therapeutic strategies based on identified factors, such as group dynamics and participant satisfaction levels, to improve treatment effectiveness.

6. CONCLUSIONS

Evaluating the effectiveness of group psychotherapy for servicemen with PTSD is important for understanding its impact on specific mental and social difficulties. The results of the study indicate the high effectiveness of group psychotherapy for the servicemen with PTSD. The satisfaction indicators of the participants turned out to be high. The majority of participants rated the therapy as useful and effective, as evidenced by a reduction in PTSD symptoms and an improvement in psychological well-being. Observations of group dynamics showed that a high level of support, mutual trust, active participation, and shared goals significantly influenced a positive therapeutic outcome. This confirms the importance of quality group dynamics for the therapy success. The participants who received a high level of support and actively participated in the sessions performed better, emphasizing the importance of an active and supportive group atmosphere. The high level of participant satisfaction indicates that group psychotherapy is an effective treatment for PTSD that can be used to improve treatment programmes for the servicemen. The practitioners can use this data to improve their programmes, including by increasing levels of support, promoting mutual trust, ensuring active participation and setting shared goals.

To enhance the practical significance in the conclusions, consider detailing how the results could refine military PTSD rehabilitation by introducing specific therapy protocols. Results may support integrating personalized therapeutic techniques tailored to the unique triggers and stress responses in military personnel. If emotional regulation proved impactful, protocols might include regular, structured emotion-management exercises to enhance coping mechanisms. Based on findings, introduce protocols emphasizing peer support networks, as social adaptation and communal healing might be crucial. This could involve routine group therapy sessions or buddy systems, fostering collective resilience and mitigating isolation effects. Continuous assessment models for PTSD severity and improvement based on the study's indicators could be adopted, allowing for real-time adjustments in therapy plans, ensuring the long-term adaptation of treatment to individual progress. Rehabilitation staff might receive additional training on recognizing subtle emotional responses, potentially improving therapeutic relationships and facilitating more responsive, adaptive care.

6.1. Research limitations

One of the main limitations of this study is the relatively small sample size, which may limit the generalizability of the findings and make it difficult to extrapolate the findings to the broader population of the servicemen with PTSD. Besides, the study was conducted in a single geographic region, which may also affect the generalizability of the findings, as cultural and social factors may play an important role in the experience of PTSD and response to therapy.

6.2. Research Prospects

One of the promising areas of further research in the field of PTSD treatment in servicemen is the implementation and evaluation of integrated approaches to psychotherapy. These approaches combine traditional methods with new technologies such as virtual reality (VR) and artificial intelligence (AI). Another promising area is personalized therapy, which uses AI to adapt treatment according to the individual characteristics of the patient. This provides for big data analysis to determine optimal therapeutic approaches based on genetic information, treatment history and other factors. This approach has the potential to significantly improve the effectiveness of therapy by making it more targeted and flexible. Research in these areas can significantly expand the possibilities of treating PTSD, providing innovative and effective methods for improving the mental health of servicemen.

6.3. Recommendations

The results of this study give grounds to recommend the integration of group psychotherapy as an important component in the rehabilitation programme for servicemen with PTSD. The possibility of combining traditional therapy methods with innovative approaches, such as the use of VR can also be considered to create a controlled environment that will facilitate the safe processing of traumatic memories. In addition, it is important to continue to investigate the effectiveness of different therapeutic approaches in the long run, which will help to better understand the sustainability of results and optimize treatment strategies.

APPENDIX 1

World Health Organization Quality of Life Instrument (WHOQOL-BREF)

1. How would you rate your quality of life?

2. How satisfied are you with your health?

3. To what extent do you feel that physical pain prevents you from doing what you need to do?

4. Do you have enough energy for daily activities?

5. How satisfied are you with your sleep?

6. How satisfied are you with your ability to do the job?

7. How satisfied are you with your mobility?

8. How often do you experience negative feelings such as bruises, despair, or depression?

9. How satisfied are you with your ability to concentrate?

10. How satisfied are you with your ability to make decisions?

11. How satisfied are you with your relationships with other people?

12. How satisfied are you with the support you receive from your friends?

13. How satisfied are you with your sexual activity?

14. How satisfied are you with your home?

15. How satisfied are you with your access to medical services?

16. How satisfied are you with your transport?

17. How often do you have feelings of anxiety?

18. How often do you feel stressed?

19. How often do you feel joy and satisfaction with life?

20. How satisfied are you with your financial situation?

21. How do you rate your sense of security in your everyday life?

22. How do you rate your ability to achieve goals in your life?

23. How satisfied are you with your physical appearance?

24. How satisfied are you with your spiritual life or religious faith?

25. How often do you feel supported by other people?

26. How do you assess the environmental conditions in which you live?

APPENDIX 2

Interview before the therapy

1. How do you rate your general mental state today?

- Very bad
- Bad
- Satisfactory
- Good
- Very good

2. How often do you feel anxious or stressed during the day?

- Constantly
- Several times a day
- Once a day
- Several times a week
- Rarely or never

3. Do you have problems sleeping?

- Constant problems
- There are often problems
- Sometimes there are problems
- Problems rarely arise
- No problems with sleep

4. How do you deal with negative emotions (anger, irritation)?

- I can’t control
- With difficulties of control
- Sometimes I control
- I mostly control
- I have complete control

5. How do you rate your social relationships (relationships with family, friends, colleagues)?

- Very bad
- Bad
- Satisfactory
- Good
- Very good

Interview upon completion of the therapy

1. How do you rate your general mental state today?

- Very bad
- Bad
- Satisfactory
- Good
- Very good

2. How often do you feel anxious or stressed during the day compared to when you started therapy?

- More often
- Same
- A little less often
- Much less often
- Never

3. How has your sleep changed after therapy?

- It became worse
- Hasn't changed
- A little improved
- Much improved
- Completely normalized

4. How has your ability to cope with negative emotions changed after therapy?

- It became worse
- It hasn't changed
- It has improved a little
- Much improved
- Completely improved

5. How have your social relationships changed after therapy?

- They have become worse
- They haven't changed
- They improved a little
- Much improved
- Completely improved

Interview 6 months after therapy

1. How do you rate your general mental state today compared to the time after the completion of therapy?

- It became worse
- Hasn't changed
- A little improved
- Much improved
- Completely improved

2. How often do you feel anxious or stressed during the day now?

- Constantly
- Several times a day
- Once a day
- Several times a week
- Rarely or never

3. How has your sleep changed within 6 months after therapy?

- It became worse
- Hasn't changed
- A little improved
- Much improved
- Completely normalized

4. How do you rate your ability to cope with negative emotions now?

- It became worse

- It hasn't changed

- It has improved a little

- Much improved

- Completely improved

5. How do you rate your social relationships 6 months after therapy?

- They have become worse

- They haven't changed

- They improved a little

- Much improved

- Completely improved

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