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Determining the Difference Between the Effects of Cognitive Behavioral Therapy-Based Therapeutic Intervention and Cognitive Behavioral Hypnotherapy on Anxiety and Depression in Military Personnel

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ABSTRACT

Purpose: This study aimed to compare the effectiveness of Cognitive Behavioral Therapy (CBT) and Cognitive Behavioral Hypnotherapy (CBH) in reducing symptoms of anxiety and depression among military personnel.

Methods and Materials: The study employed a quasi-experimental design with a pre-test and post-test format, including a control group. Forty-five military personnel were recruited and randomly assigned to three groups: a CBT group (n=15), a CBH group (n=15), and a control group (n=15). The interventions consisted of eight 1.5-hour sessions over eight weeks. Anxiety and depression levels were assessed using the Depression, Anxiety, and Stress Scale (DASS-21) before and after the interventions. Data were analyzed using multivariate analysis of covariance (MANCOVA) to compare post-test scores while controlling for pre-test differences.

Findings: The results indicated that both CBT and CBH significantly reduced anxiety and depression compared to the control group. However, participants in the CBH group showed greater reductions in anxiety and depression post-intervention than those in the CBT group. All four statistical tests (Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root) confirmed the significant effect of group membership on post-test scores. The effect size was larger for CBH, suggesting that hypnotherapy provided additional benefits in reducing emotional distress.

Conclusion: Both CBT and CBH were effective in reducing anxiety and depression in military personnel, with CBH showing superior outcomes. Hypnotherapy's ability to access subconscious cognitive and emotional processes may enhance treatment efficacy, making it a valuable tool for addressing mental health issues in high-stress populations like the military.

Keywords: Anxiety, Depression, Cognitive Behavioral Therapy, Cognitive Behavioral Hypnotherapy

1. Introduction

Anxiety and depression often coexist, creating a complex clinical presentation that requires targeted interventions. Cognitive Behavioral Therapy (CBT) is one of the most widely researched and applied therapeutic interventions for these conditions. It is based on the premise that maladaptive thoughts contribute to emotional distress and dysfunctional behaviors (Aderka et al., 2012). CBT aims to alter these negative thought patterns and behaviors through cognitive restructuring and behavioral interventions, thereby reducing symptoms of anxiety and depression. Numerous studies have demonstrated the effectiveness of CBT in treating a variety of mental health disorders, including generalized anxiety disorder (Afshari et al., 2022), social anxiety disorder (Samantaray et al., 2022), and post-traumatic stress disorder (Bowler et al., 2012).

Cognitive Behavioral Hypnotherapy (CBH) combines the principles of CBT with hypnotherapy, a technique that uses relaxation, focused attention, and suggestion to achieve a heightened state of awareness, often referred to as a trance. Hypnotherapy has been shown to be effective in treating anxiety and depression by accessing subconscious thoughts and feelings, allowing individuals to modify deep-seated beliefs and emotional responses (Golden, 2012). Research suggests that hypnotherapy may enhance the therapeutic effects of CBT by facilitating cognitive and emotional change through altered states of consciousness (Fredette et al., 2013). Studies have demonstrated the efficacy of CBH in treating conditions such as irritable bowel syndrome (Vasant & Whorwell, 2019) and social anxiety disorder (Sakai, 2024), as well as in reducing anxiety in preoperative patients (Mubarak et al., 2021).

The military population is particularly vulnerable to anxiety and depression due to the high levels of stress, trauma, and danger associated with military service (Anasseri, 2021). Military personnel are often exposed to extreme situations that can lead to chronic stress, anxiety, and depression. Research has shown that targeted interventions, such as CBT and CBH, can be effective in reducing symptoms of these disorders in military personnel (Espejo et al., 2016). For example, a study by Anasseri (2021) demonstrated that group CBT significantly reduced anxiety and depression in war veterans (Anasseri, 2021), while a meta-analysis by Aderka et al. (2012) showed that sudden gains in psychological treatments, including CBT, are associated with improved outcomes for anxiety and depression (Aderka et al., 2012).

Given the high prevalence of anxiety and depression in military personnel, there is a pressing need to explore effective interventions that can address the unique challenges faced by this population. Hypnotherapy, in particular, may offer additional benefits in this context by helping individuals manage traumatic memories and regulate emotional responses. Studies have shown that hypnotherapy can reduce the intensity of traumatic memories and facilitate emotional healing (Basir et al., 2020). Furthermore, hypnotherapy has been found to be particularly effective in reducing anxiety and depression in individuals with chronic stress and trauma, making it a promising intervention for military personnel (Rismawan et al., 2023).

In addition to its clinical efficacy, hypnotherapy has been found to be a highly acceptable and well-tolerated intervention. Research by Aoki et al. (2023) demonstrated the development and acceptability of a decision aid for anxiety disorder treatment, which included hypnotherapy as an option for discontinuing benzodiazepine anxiolytics. The study found that patients were receptive to hypnotherapy and reported significant reductions in anxiety symptoms after the intervention. This highlights the potential of hypnotherapy as an alternative or adjunctive treatment to pharmacotherapy in the management of anxiety and depression (Aoki et al., 2023).

Despite the growing body of evidence supporting the efficacy of hypnotherapy, there is still a need for more research comparing its effects to other established therapies, such as CBT. Studies comparing the two approaches have yielded mixed results, with some indicating that CBT is more effective for certain populations and conditions, while others suggest that hypnotherapy may be more beneficial in reducing symptoms of anxiety and depression (Ahmadi et al., 2023; Esmaeili, 2023). For instance, research by Moghtader (2017) found that cognitive hypnosis was more effective than CBT in reducing depression in students with premenstrual syndrome. Similarly, Bahrami and Heidari (2021) reported that a combination of transactional analysis therapy and hypnotherapy was highly effective in resolving emotional conflicts, further supporting the potential of hypnotherapy as a powerful therapeutic tool (Bahrami & Heidari, 2021).

The present study seeks to build on this existing research by conducting a direct comparison of CBT and CBH in a sample of military personnel. The primary aim is to determine which intervention is more effective in reducing symptoms of anxiety and depression in this population. This

research is particularly timely given the increasing recognition of the mental health challenges faced by military personnel and the need for evidence-based interventions to support their psychological well-being.

2. Methods and Materials

2.1. Study Design and Participants

This research is applied in terms of its objective, and its method is quasi-experimental with two experimental groups and one control group, accompanied by pretest and posttest designs.

The statistical population of this study includes all military personnel in the city of Kermanshah. The sampling method is purposive sampling. From among the military personnel aged 20 to 50 years in Kermanshah, 45 individuals were selected as the sample based on inclusion criteria, which included willingness to participate in the study, having emotional problems as assessed by the DASS test and a semi-structured interview, and an initial screening conducted by the researcher. The participants were divided into three groups of 15, consisting of two experimental groups and one control group. It should be noted that individuals with chronic disorders were excluded from the study.

Additionally, two sets of intervention sessions, using Cognitive Behavioral Therapy and Hypnotherapy methods, were conducted for the participants, with each method being delivered in eight 1.5-hour sessions.

The necessary information was collected through the World Wide Web, relevant articles, and reputable books.

2.2. Data Collection

Data were gathered using the DASS-21 scale. Antony and colleagues (1998) performed a factor analysis on this scale, and their study results indicated three factors: depression, anxiety, and stress. Their findings demonstrated that 68% of the total variance of the scale is accounted for by these three factors. The eigenvalues for stress, depression, and anxiety factors in their research were 9.07, 2.89, and 1.2, respectively, and the alpha coefficients for these three factors were 0.97, 0.92, and 0.95, respectively. Each of the DASS subscales contains seven questions, and the final score for each is obtained by summing the scores of the related questions (Mahdian et al., 2021; Ofem, 2023).

2.3. Intervention

2.3.1. Cognitive- Behavioral Hypnotherapy

The hypnotherapy-based intervention is designed to reduce anxiety and depression by addressing cognitive distortions and emotional regulation through group hypnosis sessions. Each session builds upon the previous ones, gradually leading participants toward greater self-awareness, emotional regulation, and positive visualization. The protocol integrates education about cognitive and emotional processes with hypnotic techniques aimed at reinforcing positive beliefs and reducing the emotional impact of negative experiences (Bahrami & Heidari, 2021; Basir et al., 2020; Fuhr, 2023; Golden, 2012; Hamid et al., 2020; Häuser, 2024; Lövdahl et al., 2015; Mubarakah et al., 2021; Rismawan et al., 2023; Téllez et al., 2017; Vasant & Whorwell, 2019).

Session 1:

Participants are welcomed, introduced to each other, and provided with an overview of the group counseling process and its rules. The session focuses on explaining the symptoms, classifications, and physical, psychological, and social consequences of anxiety and depression. Emphasis is placed on the importance of maintaining calm in both work and family settings, considering the participants' job characteristics. The session also introduces the logic behind hypnosis and hypnotherapy, concluding with a homework assignment.

Session 2:

This session covers the role of cognitive processes and self-talk in influencing emotions and behaviors. Group discussions focus on changing lifestyle habits and cognitive-behavioral styles when facing anxiety-provoking or discouraging situations, comparing passive, assertive, and aggressive responses. Participants share their written negative self-talk from the previous session's homework, and several group hypnosis clips are shown to prepare them for hypnosis.

Session 3:

The connection between thoughts and emotions is explored, providing insight into common cognitive distortions seen in individuals with anxiety and depression. Participants are taught to replace negative cognitive patterns with positive ones during anxiety-provoking or discouraging situations. Group hypnosis is performed with the goal of cognitive restructuring of negative thought patterns.

Session 4:

This session defines self-confidence and self-satisfaction, explaining the difference between the two concepts. It highlights the importance of self-love and positive regard for others in reducing anxiety and depression. Group hypnosis is conducted, focusing on boosting self-confidence, self-concept, and positive self-image through the use of effective hypnotic metaphors.

Session 5:

Group hypnosis is conducted to evoke positive emotions and enhance self-confidence in anxiety-provoking and discouraging situations.

Session 6:

The group hypnosis session in this meeting is aimed at diminishing the emotional intensity and significance of unpleasant past memories.

Session 7:

Participants are introduced to the general principles of entering a hypnotic trance, including how to administer self-hypnosis suggestions and recognize the characteristics and signs of being in a hypnotic state. The session includes a group practice of entering a self-hypnotic trance.

Session 8:

Group hypnosis is conducted with a focus on fostering positive and hopeful visualizations about the future, including achieving goals, desires, and ambitions. The session ends with a review of the content covered and participant feedback.

2.3.2. Cognitive-Behavioral Therapy (CBT)

The CBT intervention protocol is designed to help participants understand and challenge the cognitive patterns contributing to their anxiety and depression. The intervention introduces participants to techniques such as cognitive restructuring, problem-solving, and assertiveness training, empowering them to address maladaptive thoughts and behaviors (Anasseri, 2021; Atayi et al., 2018; Gao et al., 2019; Rajaeinia, 2022).

Session 1:

In the first session, participants are introduced to each other and the group rules. The group is provided with information about anxiety and depression and how these factors influence daily life. The cognitive-behavioral approach is introduced, expectations from the group are discussed, and relaxation techniques are taught.

Sessions 2 and 3:

These sessions focus on educating participants about the cognitive model, introducing the concept of automatic

thoughts, and distributing dysfunctional thought record sheets. Participants learn to identify anxiety- and depression-triggering thoughts and the associated unpleasant emotions. Any difficulties in recording thoughts and identifying emotions are discussed, and support is offered to help participants resolve these issues.

Sessions 4 and 5:

Participants are introduced to the concept of challenging irrational thoughts and beliefs. These sessions teach how to dispute irrational beliefs as a means to alter them. Practical challenges to the irrational thoughts recorded by participants during the week are discussed and addressed in the group.

Sessions 6 and 7:

These sessions focus on problem-solving, assertiveness training, and activity planning. Problem-solving is presented as a method for managing worry, and participants are taught three behavioral styles (passive, assertive, and aggressive) for use in interpersonal situations.

Session 8:

The final session is a summary and review of the previous seven sessions. Participants are introduced to books on cognitive therapy to deepen their understanding. The session also emphasizes awareness of intermediate beliefs and underlying assumptions, and participants provide feedback on the therapy process.

2.4. Data Collection

For data analysis in this study, SPSS-24 was used to process and analyze the collected data. Initially, descriptive statistics, including means and standard deviations, were calculated for the pre-test and post-test scores of anxiety and depression across all three groups (control, Cognitive Behavioral Therapy, and Cognitive Behavioral Hypnotherapy). The normality of the data distribution was assessed using the Shapiro-Wilk test, confirming that the data followed a normal distribution. To compare the effects of the interventions between the groups, multivariate analysis of covariance (MANCOVA) was conducted, controlling for pre-test scores to examine the differences in post-test scores for anxiety and depression. Additionally, Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root tests were used to evaluate the significance of the group effects. Between-subjects effects were further analyzed to determine the effect size and power for both anxiety and depression outcomes.

3. Findings and Results

The results indicated that the mean post-test scores in the control group did not change compared to the pre-test, while

in both experimental groups, the post-test scores for anxiety and depression showed a significant change compared to the pre-test (Table 1).

Table 1

Descriptive Statistics of Pre-test and Post-test Scores on Emotional Problems Subscales in the Three Groups

Variable	Group	N	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD
Anxiety	Control	15	14.75	1.465	12.95	2.166
	Cognitive-Behavioral	15	14.44	1.273	11.93	2.699
	Hypnotherapy	15	13.59	1.248	9.86	1.185
Depression	Control	15	14.39	1.988	13.08	1.645
	Cognitive-Behavioral	15	15.01	2.158	11.21	1.337
	Hypnotherapy	15	15.68	2.006	10.19	1.005

Furthermore, the results showed that the Shapiro-Wilk statistic for anxiety and depression was close to one, and the corresponding significance values in both pre-test and post-

test conditions were greater than 0.05, indicating that the data in the three groups followed a normal distribution with 95% confidence.

Table 2

Multivariate Covariance Analysis for Comparing the Mean Anxiety and Depression Scores in the Two Experimental Groups (Cognitive Behavioral Therapy and Cognitive Behavioral Hypnotherapy)

Effect	Indicator	Value	F	df	Error df	Significance
Group	Pillai's Trace	0.562	8.134	3	25	0.001
	Wilks' Lambda	0.394	8.134	3	25	0.001
	Hotelling's Trace	1.202	8.134	3	25	0.001
	Roy's Largest Root	1.202	8.134	3	25	0.001

The results showed that all four tests—Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root—were significant for post-test scores at $P < 0.01$, indicating that the independent variable group (Cognitive Behavioral

Therapy and Cognitive Behavioral Hypnotherapy) had a significant effect on post-test anxiety and depression scores (Table 2).

Table 3

Tests of Between-Subjects Effects for Comparing the Post-test Mean Scores of Anxiety and Depression in the Two Experimental Groups (Cognitive Behavioral Therapy and Cognitive Behavioral Hypnotherapy)

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	Significance	Effect Size	Power
Group	Post-test Anxiety	11.926	1	11.926	7.228	0.026	0.425	0.789
	Post-test Depression	16.309	1	16.309	9.911	0.003	0.367	0.812

The results in Table 3 showed that the effect sizes of Cognitive Behavioral Therapy compared to Hypnotherapy on reducing anxiety and depression were 0.13, 0.20, and 0.21, respectively.

4. Discussion and Conclusion

This study aimed to compare the effectiveness of Cognitive Behavioral Therapy (CBT) and Cognitive Behavioral Hypnotherapy (CBH) in reducing symptoms of anxiety and depression in military personnel. The findings indicate that both interventions significantly reduced anxiety and depression levels compared to the control group, with CBH showing a greater reduction in both anxiety and depression post-intervention. This suggests that while CBT

is a well-established and effective method for treating anxiety and depression, incorporating hypnotherapy may further enhance the treatment's effectiveness, particularly in populations with high stress, such as military personnel.

The results showed that the post-test mean scores for anxiety and depression in the control group remained relatively unchanged from the pre-test scores, while both experimental groups (CBT and CBH) demonstrated significant reductions. These findings align with previous research that highlights the effectiveness of CBT in reducing anxiety and depression (Afshari et al., 2022; Byrne et al., 2022). CBT has been widely used to treat various mental health disorders, including generalized anxiety disorder, social anxiety disorder, and depression, by targeting maladaptive thoughts and behaviors (Aderka et al., 2012). The significant reductions in anxiety and depression observed in the CBT group confirm the established efficacy of this approach in addressing these conditions, particularly in populations exposed to high levels of stress, such as military personnel (Esmaeili, 2023).

However, the results also indicated that CBH was more effective than CBT in reducing symptoms of anxiety and depression, as evidenced by the lower post-test scores in the CBH group. This finding is consistent with research suggesting that hypnotherapy, when combined with cognitive-behavioral techniques, can enhance the treatment outcomes for anxiety and depression by facilitating deeper cognitive and emotional processing (Golden, 2012). Hypnotherapy allows individuals to access subconscious thoughts and beliefs, which may be more resistant to change through traditional cognitive restructuring alone (Fredette et al., 2013). The ability of hypnotherapy to reach deeper levels of consciousness and modify ingrained patterns of thinking and feeling may explain its superior efficacy in this study. Previous studies have also highlighted the benefits of combining hypnotherapy with CBT in treating conditions such as irritable bowel syndrome and post-traumatic stress disorder, further supporting the potential of CBH as a powerful therapeutic tool (Moghtader, 2017; Vasant & Whorwell, 2019).

The greater reduction in anxiety and depression observed in the CBH group may also be attributed to the unique challenges faced by military personnel. Military environments are characterized by high levels of psychological trauma, stress, and emotional strain, which can result in deeply entrenched negative cognitive patterns and emotional responses (Anasseri, 2021). Hypnotherapy's ability to address these subconscious processes may make it

particularly effective for individuals exposed to such extreme stressors. Additionally, hypnotherapy has been found to be effective in managing traumatic memories and reducing the emotional intensity of distressing experiences, which is particularly relevant for military personnel who may have experienced trauma during their service (Basir et al., 2020). This supports the notion that hypnotherapy could be a valuable adjunct to traditional CBT, offering an additional layer of therapeutic depth that addresses the unique psychological needs of military personnel.

Further supporting this, studies such as those by Rismawan et al. (2023) and Fredette et al. (2013) suggest that hypnotherapy can facilitate emotional regulation and cognitive restructuring in ways that standard CBT may not fully address. In populations with chronic stress or trauma exposure, such as military personnel, the ability to manage traumatic memories and reduce emotional arousal can be critical in alleviating symptoms of anxiety and depression. These findings align with the results of the present study, which showed that CBH was more effective in reducing anxiety and depression than CBT alone. By enabling participants to access and alter subconscious beliefs and emotions, hypnotherapy may offer a more comprehensive approach to treatment, addressing both the conscious and unconscious aspects of anxiety and depression (Fredette et al., 2013; Rismawan et al., 2023).

The results of this study also echo previous research that has shown the superiority of CBH over CBT in certain contexts. For example, Bahrami and Heidari (2021) reported that combining transactional analysis therapy with hypnotherapy led to significant improvements in resolving emotional conflicts, supporting the idea that hypnotherapy can enhance the effectiveness of traditional cognitive-behavioral techniques. Similarly, Moghtader (2017) found that cognitive hypnosis was more effective than CBT in reducing depression in students with premenstrual syndrome, further highlighting the potential of CBH in addressing complex emotional and psychological issues.

Despite the promising results, this study has several limitations that should be considered. First, the sample size was relatively small, consisting of only 45 participants, which may limit the generalizability of the findings. While the sample size was sufficient for detecting significant differences between the groups, larger studies are needed to confirm these results and provide more robust evidence for the effectiveness of CBH in military populations. Additionally, the study was conducted in a specific military setting, and the results may not be applicable to other

populations or settings with different stressors and psychological challenges. Another limitation is the reliance on self-reported measures of anxiety and depression, which may be subject to response biases, such as social desirability or recall bias. Future studies should consider incorporating objective measures of psychological distress, such as physiological indicators of stress or clinician-rated assessments of anxiety and depression, to provide a more comprehensive understanding of the treatment effects.

Moreover, the study did not include long-term follow-up assessments, which limits the ability to determine the lasting effects of the interventions. Anxiety and depression are often chronic conditions that require sustained treatment, and it is unclear whether the observed reductions in symptoms were maintained over time. Future research should include follow-up assessments at multiple time points to evaluate the durability of the treatment effects and to identify potential relapse or symptom recurrence. Finally, while the study compared the effectiveness of CBT and CBH, it did not explore the specific mechanisms underlying the greater efficacy of CBH. Future studies should aim to elucidate the mechanisms of change in hypnotherapy, such as changes in cognitive processing, emotional regulation, or memory reconsolidation, to better understand why CBH may be more effective than CBT in certain populations.

Based on the limitations outlined above, several suggestions for future research can be made. First, future studies should aim to replicate the findings of this study with larger and more diverse samples to enhance the generalizability of the results. Including participants from different military branches or other high-stress professions, such as healthcare workers or first responders, could provide valuable insights into the effectiveness of CBH in various high-stress environments. Second, future research should incorporate objective measures of psychological distress, such as heart rate variability, cortisol levels, or brain imaging, to complement self-reported data and provide a more comprehensive understanding of the treatment effects. Additionally, exploring the long-term effects of CBH through follow-up assessments over six months or a year would be beneficial in determining the durability of the treatment effects. Finally, qualitative research could be conducted to explore participants' experiences of hypnotherapy and CBT, providing rich, in-depth data on how these therapies are perceived and experienced by individuals with anxiety and depression.

In terms of practical applications, the findings of this study suggest several important implications for clinical

practice. First, clinicians working with military personnel or other high-stress populations should consider incorporating hypnotherapy into their therapeutic approaches, particularly for individuals with deeply ingrained cognitive and emotional patterns. Hypnotherapy offers a complementary approach to CBT that can enhance treatment outcomes by addressing both conscious and subconscious processes. Second, the results suggest that CBH may be particularly effective for individuals who have experienced trauma or chronic stress, as it can help them manage traumatic memories and regulate emotional responses. Clinicians working with trauma-exposed populations, such as veterans or survivors of natural disasters, should explore the potential benefits of hypnotherapy as part of a comprehensive treatment plan. Lastly, the findings highlight the importance of tailoring interventions to the specific needs of the population being treated. In the case of military personnel, where stress and trauma are common, hypnotherapy may offer an additional layer of support that enhances the effectiveness of traditional CBT interventions.

In conclusion, this study contributes to the growing body of research on the effectiveness of CBT and hypnotherapy in reducing symptoms of anxiety and depression. The results demonstrate that while both CBT and CBH are effective interventions, hypnotherapy may offer additional benefits, particularly in high-stress populations such as military personnel. Future research should aim to build on these findings by exploring the mechanisms of change in hypnotherapy and examining the long-term effects of these interventions across diverse populations. For practitioners, the incorporation of hypnotherapy into treatment plans for anxiety and depression could enhance therapeutic outcomes and provide more comprehensive care for individuals with complex psychological needs.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

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