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The effectiveness of holographic reprocessing therapy (HR) on the avoidance, intrusions and hyperarousal symptoms in PTSD patients

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ABSTRACT

Introduction: Avoidance, intrusions, and hyperarousal are common symptoms in people with PTSD (Post-traumatic stress disorder). In this study, the effectiveness of holographic reprocessing treatment, which is an evidence-based treatment in these patients, will be investigated so that in the future it can be used in therapeutic settings to reduce the symptoms of this mental disorder. *Materials and Methods:* The research method was semi-experimental and based on the pretest-posttest control group design, with follow-up after three months. The sample included 42 participants who were selected by a purposeful sampling method and placed randomly in the experimental and control groups. At first, at the same time, and in the same conditions, all the participants responded to the Posttraumatic Stress Disorder Checklist (PCL-5). Structured Clinical Interview for DSM Disorders (SCID-5) was used for people who scored 31 or higher. Event Scale-Revised questionnaire (ESR) was also used. The holographic reprocessing therapy (HR) was performed for the experimental group. In the end, both groups were evaluated by posttests, and then they were tracked after an interval of three months. In order to analyze data, ANCOVA and MANCOVA tests were applied through SPSS 22. *Results:* Findings showed that HR was meaningfully effective in decreasing avoidance, intrusions, and hyperarousal symptoms ($p<0.01$) and after three months, no significant changes were found in the results. *Conclusions:* While HR coincided with reductions in avoidance, intrusions, and hyperarousal symptoms in PTSD patients, more research with larger samples is needed to further examine the effectiveness of this treatment on these patients.

Keywords: Avoidance Learning, Intrusions, PTSD, Arousal.

1. INTRODUCTION

PTSD is caused by continuous and long-term exposure to traumatic events that directly or indirectly cause anxiety and cause many changes in cognition

and mood (Stein et al., 2014). PTSD is no longer classified as an Anxiety Disorder in the Fifth Edition Diagnostic and Statistical Manual (DSM-5) but is classified as a separate category as "Trauma- and Stress-or-Related Disorder" (Rosenfield et al., 2018). Symptoms of PTSD include severe chronic anxiety associated with re-experiencing a traumatic event, going back in time, nightmares, increased arousal, and decreased social life. People with PTSD are significantly (2-5 times) more at risk for suicidal ideation, suicidal attempt, and killing by suicide (Holliday et al., 2019; Holliday et al., 2018). Holographic reprocessing therapy, called HR for short, is one of the treatments that have empirical support to reduce the symptoms of PTSD, including hyperarousal and experiential avoidance. This treatment was developed by Katz in 2003. This treatment belongs to the group of an integrated theory of psychotherapy based on the integrated and universal theory of personality. The influential theory is Epstein's theory, introduced in 1973.

Holographic reprocessing therapy has been called a cognitive-experimental psychotherapy for the treatment of trauma; it states that the trauma is not limited to the injury identified by the Diagnostic and Statistical Manual of Disorders (DSM-5). In this treatment, a trauma in post-traumatic stress disorder (PTSD) is so life-threatening or organ-threatening that cannot be absorbed into the patient structure. Maladaptive behavior results from a wide range of emotions that create distressing experiences, such as threats to self-esteem and relationships. These distressing experiences also include overstimulation, disturbing memories, and avoidance of related situations (Katz et al., 2014; Ikram et al. 2021).

Since intrusions, hyperarousal, and avoidance of related situations are common symptoms in people with PTSD, in this study, the effectiveness of HR was investigated in order to be used in therapeutic settings in the future and reducing the symptoms of this mental disorder and help these people to have better quality in life.

2. MATERIALS AND METHODS

A multi-center RCT was conducted throughout Tehran city between January and November 2021. People who had meet inclusion criteria were solicited to sign up for this study between January and March 2021. Eligible participants were randomly allocated to the immediate experimental condition or to a waitlist control group. People in the experimental condition started HR within two weeks after allocation. All participants completed questionnaires at pre-treatment (T1), 12 weeks post-treatment (T2), and at follow-up 12 weeks (F1).

Ethical considerations

Information of all patients remained confidential and informed consent was obtained prior to the study. The protocol of study was approved by a local ethics committee (IR.SBMU.MSP.REC.1399.616).

Procedure

To conduct the research, one of the hospitals under the auspices of Shahid Beheshti University of Medical Sciences was selected by simple random sampling. Participants had to meet to following inclusion criteria: 1) being at least 18 years old, 2) mastering written and spoken Persian, and 3) reporting PTSD symptom levels above clinical cut-off scores (31) on PCL questionnaire and clinical psychologist approval through Structured Clinical Interview for DSM Disorders (SCID-5). People interested were excluded when they suffered from a substance use disorder, psychotic disorder, or cognitive disability (e.g., Intellectual disability). As reported by the therapist based on the intake interview, in case a person reported a positive answer option on a suicidal ideation item of the questioner, he was referred to the psychiatrist and was excluded from the research.

Initially, 93 people were interviewed. Of these, 63 had the Structured Clinical Interview for DSM Disorders (SCID-5) criteria. Then the PCL questionnaire was administered. Of these, 42 had scores above 31. The participants were divided into two groups of control and experimental randomly. From the experimental group, 1 person in the third session (being in a situation of divorce crisis), 1 person in the 5th session (due to Quvid-19 disease), 1 person in the 6th session (not considering this treatment appropriate for his problem) excluded from the study. Two people in the control group did not participate in the post-test and follow-up for unknown reasons.

At first, the participants were asked whether they wanted to be informed about a study in which psychological help was offered to persons experiencing emotional problems. If they answered “yes”, an information form about the RCT was given to them for signing, including an informed consent form. After receiving the completed informed consent form, in- and exclusion criteria were checked. Eligible participants were randomized to the HR condition or waitlist control condition, by using a randomization procedure carried out by an independent researcher. Therapy costs were completely reimbursed by the researchers.

Treatment

The therapist read the book, Holographic Reprocessing: A cognitive-experiential psychotherapy for the treatment of trauma, as part of her training. This book had outlined detailed instructions on how to conduct HR. She also had live training and weekly supervision with the professors of HR for two years. The final protocol included twelve sessions of therapy which were taken from Katz treatment in 2014 (Katz et al., 2014). This treatment has been conducted in the Ayatollah Taleghani Hospital. The therapist received (upon request) supervision from the last two authors. The therapist received three-day training about HR protocol and was asked to report about the therapy progress daily and was monitored about treatment fidelity.

The HR treatment consisted of 12 sessions (of each 60 minutes) and 12 weeks period. In session 1 (Orientation), the therapist and client were introduced, made decisions about treatment expectations, and reviewed policies, procedures, and treatment rules. In session 2 (Introduction), establish therapeutic relationship empathy, safety, coping skills. In session 3 (Nightmares, good sleep) enhance coping skills, develop a sleep routine, explore dreams, make aromatherapy sachets for nightmares was offered. In session 4 (Anxiety, panic triggers, phobias) enhance coping skills, learning COPE strategy for anxiety, self-soothing techniques, explore fears and triggers, was conducted. In session 5 (Remembering trauma) processing trauma, introducing experiential holograms, and considering the impact of trauma from an observer vantage point was conducted. During the 6th (Identifying patterns) identifying interpersonal patterns, considering perspective (multiple truths) and context, and effective communication was done. In session 7 (Anger, resentments) release anger was conducted. During this session validation, poetic justice, radical acceptance, exploring sound, assertiveness communication skills, and finish identifying patterns was done. In session 8 (Shame, self-blame, guilt) release of self-blame was done. For this purpose reframing, multiple points of view, putting the blame in perspective, exploring meaning of power, shift perceptions were conducted. In session 9 (Healthy relationships) building new interpersonal patterns was conducted; during this session defining healthy relationships, mutual respect, exploring balance, communication skills: the art of negotiation were trained. In session 10 (Losses), grief Mourn losses, explore gratitude, ''releasing ritual,'' self-defense class was accomplished. In session 11 (Meaning Explore traumatic growth), purpose, values, and choosing (redefining) one's identity was conducted. Explore joy, review all material, and prepare for the exam in session 12 (Graduation) and this new growth was conducted.

Data analysis

Data was collected on the baseline pre-intervention and the last day of the 4th-week post-intervention. SPSS version 22.0 was used for analysis. Data analysis included descriptive characteristics of the subjects, ANCOVA and MANCOVA tests.

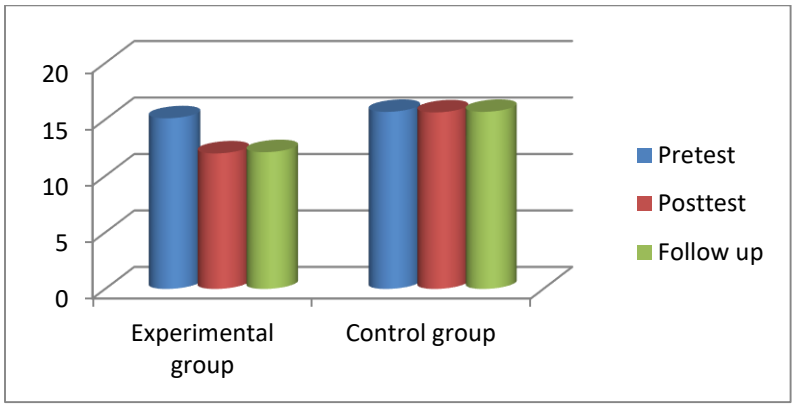
3. RESULTS

The research findings are described in table 1, graph 1, 2 and 3 and the results will be presented. As Table 2 shows, in the results there is a significant difference of $p<0.01$ between the experimental and control groups in the PTSD posttest scores. So it can be concluded that HR is effective in reducing PTSD symptoms.

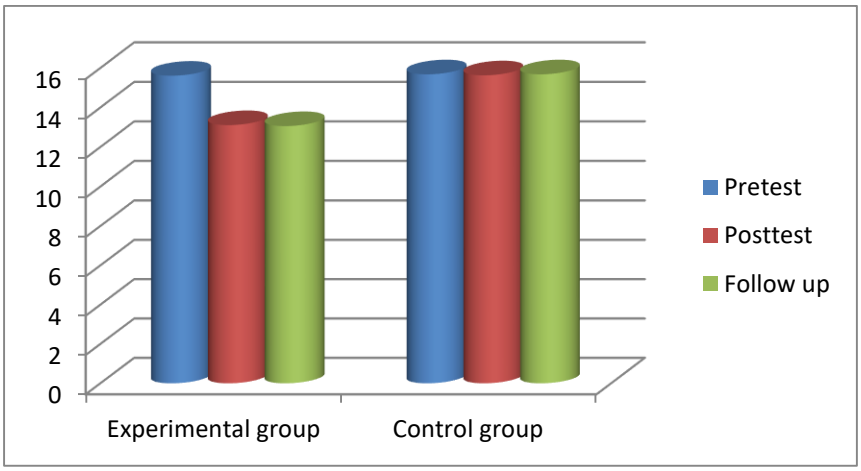
Table 1 Descriptive Statics

Scales	levels	Experimental group		Control group	
		Mean	Std.Deviation	Mean	Std.Deviation
Avoidance	Pretest	15.11	4.39	15.68	4.124
	Posttest	12.00	2.54	15.63	3.933
	Follow up	12.11	2.32	15.68	3.874
Intrusions	Pretest	15.61	3.55	14.84	3.516
	Posttest	13.11	2.78	14.84	3.404
	Follow up	13.06	2.77	15.11	3.430
Hyperarousal	Pretest	15.17	3.65	14.68	3.449
	Posttest	12.22	2.46	14.42	3.339
	Follow up	12.22	2.26	14.63	3.218
IES-R total score	Pretest	45.89	9.12	45.21	9.467
	Posttest	37.33	5.89	44.84	9.020
	Follow up	37.39	5.22	45.42	8.802
PCL-5 total	Pretest	51.56	7.66	51.79	7.969

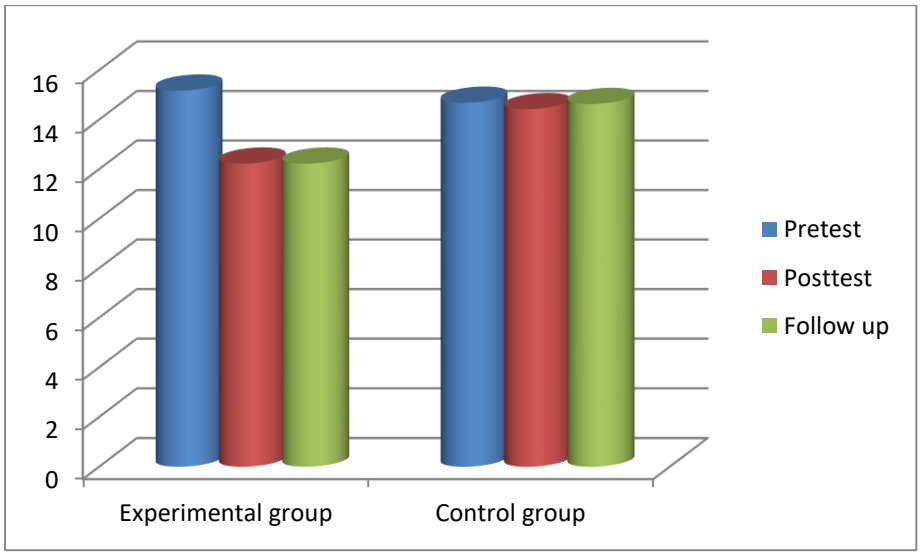
score	Posttest	39.28	9.20	51.58	7.698
	Follow up	39.17	8.82	51.68	8.070



Graph 1 The mean of Avoidance



Graph 2 The mean of Intrusions



Graph 3 The mean of Hyperarousal

Table 2 Covariance analysis of PTSD (PCL-5) in the groups' post test

Source	SS	df	MS	F	P	Eta	Statistical power
PTSD pretest	738.42	1	738.42	14.18	0.01	0.29	0.95
Group Memberships	1367.29	1	1367.29	26.26	0.00	0.43	0.99

Table 3 MANCOVA of PTSD (IES-R) in the groups' post test

Source	Dependent Variable	SS	df	MS	F	P
Avoidance pretest	Avoidance	174.33	1	174.33	115.21	0.01
	Intrusions	0.34	1	0.34	0.18	0.66
	Hyper arousal	0.21	1	0.21	0.06	0.80
Intrusions pretest	Avoidance	0.01	1	0.01	0.01	0.96
	Intrusions	188.89	1	188.89	103.16	0.01
	Hyper arousal	21.62	1	21.62	6.26	0.01
Hyper arousal pretest	Avoidance	0.60	1	0.60	0.39	0.53
	Intrusions	4.90	1	4.90	2.67	0.11
	Hyper arousal	68.10	1	68.10	19.73	0.01
Group Memberships	Avoidance	93.93	1	93.93	62.08	.00
	Intrusions	50.75	1	50.75	27.72	0.01
	Hyper arousal	62.92	1	62.92	18.23	0.01

Table 3 shows, in the results there is a significant difference of $p<0.01$ between the experimental and control groups in the avoidance, intrusions and hyperarousal posttest scores. So, conclusion is that HR is effective in reducing PTSD symptoms. Table 4 shows, the difference between the posttest and follow-up on two groups was not significant ($p>0.05$). So, the hypothesis that HR is effective in reducing the PTSD symptoms after 3months was approved. Table 5 shows, the difference between the posttest and follow-up on two groups was not significant ($p>0.05$). So, the hypothesis is that the HR in reducing the avoidance, intrusions, hyperarousal is effective after 3 months was approved.

Table 4 Covariance analysis of PTSD (PCL-5) in the groups' follow-up

Source	SS	df	MS	F	P	Eta	Statistical power
PTSD post-test	2369.02	1	2369.02	631.34	0.00	.94	1.00
Group Memberships	1.87	1	1.87	0.50	0.48	.01	.10

Table 5 MANCOVA of PTSD (IES-R) in the groups' follow-up

Source	Dependent Variable	SS	df	MS	F	P
Avoidance pretest	Avoidance	246.51	1	246.51	683.13	0.01
	Intrusions	2.56	1	2.56	3.51	0.70
	Hyper arousal	0.26	1	0.26	0.38	0.54
Intrusions pretest	Avoidance	0.10	1	0.10	0.29	0.59
	Intrusions	214.25	1	214.25	293.45	0.01
	Hyper arousal	0.03	1	0.03	0.04	0.82

Hyper arousal pretest	Avoidance	0.15	1	0.15	0.43	0.51
	Intrusions	1.22	1	1.22	1.67	0.20
	Hyper arousal	153.94	1	153.94	220.88	0.01
Group Memberships	Avoidance	0.09	1	0.09	0.26	.60
	Intrusions	0.30	1	0.30	0.41	0.52
	Hyper arousal	1.66	1	1.66	2.38	1.32

4. DISCUSSION

This study aimed to evaluate the efficacy of holographic reprocessing therapy (HR) on the avoidance, intrusions, and hyperarousal symptoms in PTSD patients. The results showed that HR can be effective in reducing avoidance, intrusions, and hyperarousal. This means that for the patients who participated in the healing process, their symptoms were significantly reduced. This result is consistent with the results of studies by (Aghajani et al., 2021; Katz, 2016; Katz et al., 2014; Kazemi et al., 2016; Salehi et al., 2020), based on the holographic reprocessing therapy. In explaining this hypothesis, it can be said that HR uses a lot of techniques and strategies to reduce PTSD symptoms (Katz, 2016). The success of holographic reprocessing therapy in reducing the symptoms of arousal can be related to the variety of relaxation techniques of this treatment. Teaching coping skills in the first phase of treatment such as relaxation techniques, emotion exploration, emotion tolerance, emotion expression, and emotion design helps the client to identify and express their feelings and emotions. Relieving excitement and using relaxation techniques can greatly help reduce the symptoms of arousal. Experimental exploration and extraction of experimental holograms in the second stage of treatment identifies hidden and repressed emotions and reprocessing in the third stage leads to perceptual and cognitive change. The results also show that the symptoms of disturbing memories in these patients are reduced. To justify this finding, we can say that according to Epstein, people have a natural adaptive system for information processing. Poor or partial processing of the incident is a source of constant emotional struggle. If a disturbing emotional event is not fully processed, setting up that situation recreates the original experience and can help to resolve it.

Emotional struggle is considered as an obstruction. Poor processing forces the individual to become entangled in a cycles of relationships that replaces one aspect of the former trauma. It prevents the person from fully experiencing the event and, as a result, the anxiety and discomfort caused by is not resolved. According to Katz, a person's perception of trauma is more important than the trauma itself. Holographic reprocessing therapy uses reprocessing techniques to review the traumatic event and create a new conceptualization of the trauma that greatly helps the patient recover. It helps patient identify his compensatory and avoidance strategies and become aware of the remaining emotions. By extracting the experimental hologram to the unresolved conflicts, realizes his negative emotions such as shame, guilt, and negative perceptions. The therapist reconstructs them in the reprocessing stage. Therefore, the success of holographic reprocessing treatment in reducing the symptoms of re-experiencing can be related to the variety of experimental confrontation techniques, cognitive reconstruction and providing the possibility of reprocessing. Holographic reprocessing therapy uses the main techniques of psychodynamic, cognitive and behavioral therapies as well as experimental therapy in combinationso can be more effective in reducing all the symptoms than other treatments.

As the results showed, the effects of treatment continued during the 3-month follow-up period and in some cases, the healing process continued. Although patients' scores after the intervention showed that symptoms of PTSD had much decreased in comparison to before treatment, symptoms still have not completely disappeared. To explain this, the traumas experienced by the subjects were very severe and painful, and the subjects have been struggling with PTSD for a long time. Therefore, complete treatment of PTSD will require more patience and treatment.

5. CONCLUSION

Due to the positive changes in the criteria of effectiveness, which are referred to clinical studies as indicators of the effectiveness of a treatment method, it is concluded that holographic reprocessing treatment has been successful in reducing the symptoms of patients and this treatment can be added to other treatments for PTSD.

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Authors' contributions

All authors contributed to the design of the study, data collection, analysis and writing of the manuscript. All authors read and approved the final manuscript.

Ethical Approval

The study was approved by the Ethics committee of ShahidBeheshti University of medical sciences (IR.SBMU.MSP.REC.1399.616).

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Conflict of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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