

Original Article

After the intervention after the intervention an evaluation and analysis of visual art therapy in the treatment of PTSD

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Abstract: Objective: This study aimed to investigate the curative effect of visual art therapy (VAT) in post-traumatic stress disorder (PTSD). Methods: A total of 93 patients diagnosed with PTSD were randomly divided into a study group (n=50) and a control group (n=43). The control group received conventional drug therapy, and the study group received VAT combined with the conventional drug therapy. The Hamilton Anxiety Rating Scale (HAMA), Hamilton Depression Rating Scale (HAMD), and Davidson Trauma Scale (DTS) scores were recorded before the intervention, and at 15 days, at 1, 2, and 3 months after the intervention to compare the differences between the two groups. Meanwhile, the DSM-5 Scale scores before the intervention and at 3 months after the intervention in the two groups were analyzed. Results: The HAMA, HAMD, and DTS scores showed no significant differences in the two groups before the intervention ($P>0.05$). The HAMA, HAMD, and DSM-5 Scale scores in the study group were significantly lower than they were in the control group at 15 days, and at 1, 2, and 3 months after intervention ($P<0.05$). Before the intervention, there were no significant differences in the scores of all the dimensions of the DSM-5 Scale between the two groups ($P>0.05$). The scores of all the dimensions of the DSM-5 Scale in the study group were significantly lower than they were in the control group at 3 months after the intervention ($P<0.05$). Conclusion: VAT can considerably relieve anxiety and depression in patients diagnosed with PTSD, alleviate their clinical symptoms, and improve their cognitive and social abilities to some extent.

Keywords: Visual art therapy, PTSD, curative effect, evaluation and analysis

Introduction

Post-traumatic stress disorder (PTSD) is a delayed and lasting mental disorder triggered by witnessing or experiencing one or more actual deaths involving oneself or others, or being threatened with death, or being seriously traumatized, or being threatened in one's physical integrity. PTSD has many possible causes but mainly involves events that can cause intense trauma, such as car accidents, war, marital problems, and rape, etc. [1-3]. Clinically, the stress responses within one month after an individual suffers a mental trauma are commonly called acute stress disorders, and patients with a course of disease more than one month or even long-term who fail to recover are defined as PTSD patients [4].

At present, the pathogenesis of PTSD is not clear, but studies have found that patients with chronic stress may develop calcium overload and aberrations in the distribution of corticosteroid hormone receptors in the hippocampus. These aberrations can interfere with the regulation of the stress response in the brain, leading to traumatic memory disorders [5, 6]. Nowadays, there is still a lack of diversity in PTSD therapy, which can be generally divided into two categories: psychological intervention and drug treatment. The drug treatment is composed of psychiatric drugs, whose main function is to alleviate the patients' anxiety and depression and to improve their sleep quality, etc. However due to the long cycle of drug treatment, long-term medication may lead to significant side effects and cannot be afforded by some

patients with financial difficulties [7, 8]. Psychological intervention mainly refers to the use of cognitive-behavioral therapy, professional psychological aid to improve patients' negative emotions and help them restore their psychological balance in a short period of time. However, in clinical treatment, researchers have found that conventional traditional psychological intervention is regularly less adaptable [9]. Visual art therapy (VAT) is a novel psychological intervention. It aims to release the individual's emotional experience suppressed by speech through artistic expressions, which can deal with the individual's emotional distress, help individuals recognize and accept themselves at a deeper level, and reintegrate external stimuli, so as to achieve the goal of psychological therapy.

The purpose of this research was to investigate the feasibility of applying VAT to PTSD patients and to analyze the impact of VAT on the different dimensions of anxiety, depression, and trauma in PTSD patients, in order to provide a theoretical basis for accelerating the recovery of PTSD patients and improving the prognosis of PTSD patients. The details follow.

Materials and methods

General materials

A total of 93 patients with PTSD admitted to Wonkwang University Medical School between January 2019 and December 2019 were enrolled and randomly divided into the study group (n=50) and the control group (n=43).

Inclusion criteria: patients who (1) met the diagnostic criteria for PTSD in the *Classification and Diagnostic Criteria for Mental Disorders in China*, 3rd edition (CCMD-3) issued by the *Chinese Journal of Psychiatry* in 2000 [10], and who presented with the corresponding clinical symptoms, patients (2) with complete medical records, patients (3) who had experienced natural disasters, technological disasters, crimes or domestic violence, the accidental death of relatives or friends, patients (4) ≥ 18 years old, patients (5) who could complete the survey and evaluation independently at the junior high school level or above, and patients (6) who signed the informed consent with the agreement of their family members. This study

was approved by the Ethics Committee of Wonkwang University Medical School.

Exclusion criteria: patients (1) with severe mental illness or mental retardation, patients (2) unable to complete the questionnaire, patients (3) with severe organic diseases such as liver and kidney dysfunction, patients (4) with a severe coma after trauma, patients (5) unable to recall the traumatic experience or scene completely, and patients (5) who abused alcohol or drugs.

Criteria for lost patients: patients (1) who died during the investigation, patients (2) with whom we lost contact during the investigation, and patients (3) who asked to withdraw from the investigation.

Methods of intervention

Conventional drug treatment was adopted for the control group, and clonidine hydrochloride administration was selected (manufacturer: Changzhou Pharmaceutical Co., LTD; specification: 75 μg /piece; approval number: H3202-1681; 0.075 mg/time, and 2 times/day), topiramate (manufacturer: Xi'an Janssen Pharmaceutical Ltd.; specification: 25 mg/piece; approval number: H20020555; 25 mg/time, and 2 times/day) and lamotrigine (manufacturers: GlaxoSmithKline Pharmaceuticals S.A.; specification: 50 mg/tablet; approval number: H20180093, 50 mg/time, and 1 time/day).

The study group received VAT, which mainly consisted of sandplay therapy and painting therapy, along with the same drug treatment the control group received. The specific steps were as follows: (1) Emotional catharsis. In the sandplay and painting therapy, the patients were asked to create scenarios in their minds and were encouraged to express their emotions. The patients were informed of the normal stress responses after severe accidents, and were encouraged to overcome their negative emotions by crying, speaking, writing, painting, etc. (2) Reality realization. The patients were guided to further discover the solution to the plights after their emotional catharsis. Generally, after severe accidents, the patients would feel disappointed, sad, and even hopeless, but their feelings were sometimes difficult to express in words. Therefore, sandplay and painting were suitable tools to guide the

patients to express their predicaments, and through careful work, a good relationship would be established between the consultants and patients. (3) Thought organization. After the problems were presented, the consultants would discuss with the patients the problems they were faced with and asked the patients to sort out the problems, which would help them clarify the crucial points necessary to solve the problems, and urge them to take appropriate actions. (4) Farewell to the past. The sandplay and painting helped people fully recognize the damage caused by the traumatic moments, which could activate their vitality, actively complete their psychological restoration, help the patients sort out their traumatic experiences and take appropriate measures for dealing with the loss and trauma. The patients were told not to blindly recall the past, (5) Self-interrogation. This process mainly prompted the patients to look forward to the future and to reinstate their hopes for the future by making them present their desired future scenarios in the forms of sandplay and painting.

Indicators and evaluation standards

Analysis of the patients' anxiety before and after the intervention: The Hamilton Anxiety Rating Scale (HAMA) was used to evaluate the anxiety of the patients in the two groups before the intervention, at 15 days, and at 1, 2 and 3 months after the intervention respectively. The HAMA Scale was compiled by Hamilton in 1959 and was one of the earliest psychiatric clinical scales. The scale includes 14 items and adopts 0-4 points at 5 levels. The total scores of the scale are the sum of the scores of each item, and higher scores indicate more severe symptoms [11, 12].

Analysis of the depression before and after the intervention: The Hamilton Depression Rating Scale (HAMD) was employed to assess the depression of the patients in the two groups before the intervention, at 15 days, and at 1, 2, and 3 months after the intervention, respectively. The HAMD Scale was compiled by Hamilton in 1960 and is the most common scale used to evaluate depression. The scale consists of 17 items. A score below 7 indicates normal, a score between 7 and 16 indicates the possibility of depression, a score between 17 and 24 indicates actual depression, and a score above 24 represents severe depression [13].

Analysis of the DTS Scale before and after the intervention: The DTS Scale was employed to evaluate the PTSD symptoms in the two groups before the intervention and at 3 months after the intervention, including 17 questions covering three areas in the PTSD group, of which questions 1-4 and 17 assessed the symptoms of the participants' re-experiences, questions 5-11 assessed the symptoms of avoidance and numbness, and questions 12-16 assessed the hyperarousal symptoms. The total possible score was 136 points, and higher scores represented more severe symptoms [14].

The DSM-5 Scale analysis before and after the intervention: The DSM-5 Scale was employed to evaluate the clinical situations of the two groups before the intervention and at 3 months after the intervention, including five dimensions in the diagnosis of PTSD, namely impaired social function, awakening and response change, negative changes, avoiding symptoms, and intrusive symptoms. The scale comprises a total of 48 questions, which are scaled from 0 to 4 points. 0 indicates no symptoms, and 4 indicates evident symptoms. Higher scores indicate more severe trauma in the relevant dimensions [15].

Statistical analysis

SPSS 20.0 software was used to analyze the data collected. The measurement data are presented in the form of ($\bar{x} \pm s$), and Student's t tests were used to compare the differences between the two groups. The enumeration data are presented in the form of [n (%)], and chi-square tests are used to compare the differences between the two groups. The continuous variables in the different time points are analyzed using Student's t tests. For the comparisons of multiple groups, F tests are used. Statistical significance is defined as $P < 0.05$ [16].

Results

The differences between the two groups in their general clinical indicators

There were no significant differences in the general clinical indicators, such as gender, average age, average weight, education level, family income, marital status, or underlying diseases, etc. between the two groups ($P > 0.05$, **Table 1**).

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Table 1. General indicators of the two groups ($\bar{x} \pm s$)/[n (%)]

General indicators		Study group (n=50)	Control group (n=43)	t/ χ^2	P
Gender	male	30	27	0.076	0.783
	female	20	16		
Average age (years)		21.98±2.32	22.01±2.41	0.061	0.951
Average course (months)		8.17±0.33	8.21±0.29	0.616	0.539
Average BMI (kg/m ²)		20.18±2.10	19.98±2.09	0.459	0.647
Average weight (kgs)		59.18±3.21	59.21±3.32	0.044	0.965
Education	Junior high school	20	15	0.258	0.612
	Senior high school and above	30	28		
Marital condition	Married	4	3	0.035	0.852
	Unmarried	46	40		
Family income	<1000	8	6	0.445	0.651
	1000-3000	26	27		
	>3000	16	10		

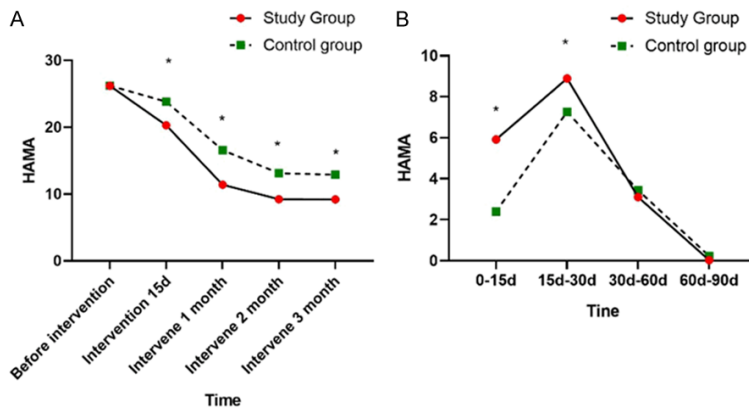


Figure 1. Analysis of the anxiety before and after the intervention. There was no significant difference in the HAMA Scale scores between the two groups before the intervention ($P>0.05$), and the HAMA Scale scores in the study group at 15 days, 1, 2, and 3 months after the intervention were significantly lower than those in the control group ($P<0.05$) (A). The HAMA Scale scores showed a larger decline than they did in the control group at 0-15 days and 15-30 days ($P<0.05$) (B); *denotes a significant difference between the two groups at the same time point for the same indicator.

An analysis of the anxiety before and after the intervention

There was no significant difference in the HAMA Scale scores between the two groups before the intervention ($P>0.05$), but the HAMA Scale scores in the two groups after the intervention were significantly lower than they were before the intervention ($P<0.05$). Meanwhile, the study group scores at the same time points were lower than those of the control group ($P<0.05$) (Figure 1).

An analysis of the depression levels before and after the intervention

There was no significant difference in the HAMA Scale scores between the two groups before the intervention ($P>0.05$). The HAMA Scale scores in the two groups after the intervention were significantly lower than those before the intervention ($P<0.05$). Additionally, the HAMA Scale scores in the study groups at 15 days, 1, 2, and 3 months after the intervention were significantly lower than they were in the control group ($P<0.05$) (Figure 2).

An analysis of the DTS scale scores before and after the intervention

There was no significant difference in the scores of all dimensions of the DTS Scale between the two groups before the intervention ($P>0.05$). The DTS Scale scores in the two groups after the intervention were significantly lower than they were before the intervention ($P<0.05$). Moreover, the scores of all the dimensions in the study group were lower than they were in control group ($P<0.05$) (Figure 3).

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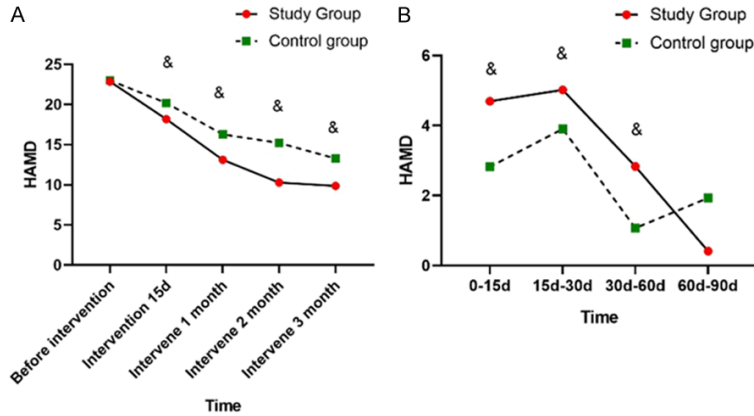


Figure 2. Analysis of anxiety before and after the intervention. There was no significant difference in the HAMD Scale scores between the two groups before the intervention ($P>0.05$), and the HAMD Scale scores in the two groups at 15 days, 1, 2, and 3 months after the intervention were significantly lower than they were before the intervention ($P<0.05$). The HAMD Scale scores in the study group were lower than they were in the control group at the same time point ($P<0.05$) (A). The HAMD Scale scores showed a larger decline than the scores in the two groups at 0-15 days, 15-30 days and 30-60 days, and the study group' scores were lower than the control group's at the respective time points ($P<0.05$) (B); &denotes a significant difference between the two groups at the same time point for the same indicator.

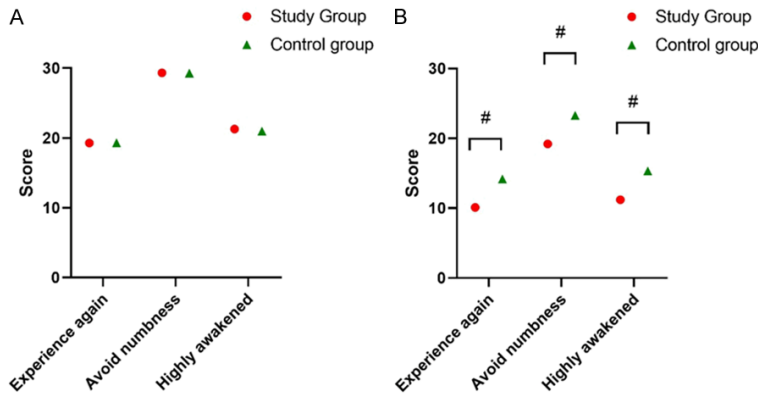


Figure 3. Analysis of the DTS Scales before and after the intervention. There was no significant difference in the dimensions, re-experience, avoidance, and numbness scores between the two groups before the intervention ($P>0.05$) (A) The scores of the 3 dimensions in the study group were significantly lower than they were in the control group ($P<0.05$) (B). #denotes a significant difference between the two groups for the same indicator.

An analysis of DSM-5 scale scores before and after the intervention

There was no significant difference in the 5 dimensions of DSM-5 Scale scores between the two groups before the intervention ($P>0.05$). The scores of all the dimensions of the DSM-5 Scale in the two groups after the intervention were significantly lower than they were before the intervention ($P<0.05$), and the scor-

es of all the dimensions in the study group were lower than they were in the control group ($P<0.05$) (Figure 4).

Discussion

Sudden accidents are a part of a special type of incidents in life, and studies have shown that approximately one in four adults has experienced trauma. The clinical definition of trauma is that an individual witnesses or experiences an event or a series of events, such as serious injury, the integrity of oneself or others threatened, actual death or death threats, incidents beyond the capacity of individuals and groups, which lead to a variety of stress responses [17, 18]. The most serious outcome of trauma is PTSD. PTSD can contribute to long-term alterations in a variety of personality characteristics such as emotional expressions, value orientations, life beliefs, and ways of thinking, among which anxiety and depression are the most noticeable symptoms. According to a survey by the American Psychiatric Association, the overall prevalence of PTSD in the U.S. is about 1%-14%, with an average of about 8%, and the lifetime prevalence of PTSD in individuals is about 3%-58%, with women twice as likely as men to experience PTSD [19, 20].

The typical three core symptoms of PTSD include traumatic re-experience, continuous avoidance, or numbness and increased vigilance. PTSD will not only greatly affect the social functions, work and life, but it will also trigger anxiety, depression, drug abuse, phobias and so on, which significantly affects the quality of life. Currently, PTSD is the fourth most common mental disorder in humans [21, 22].

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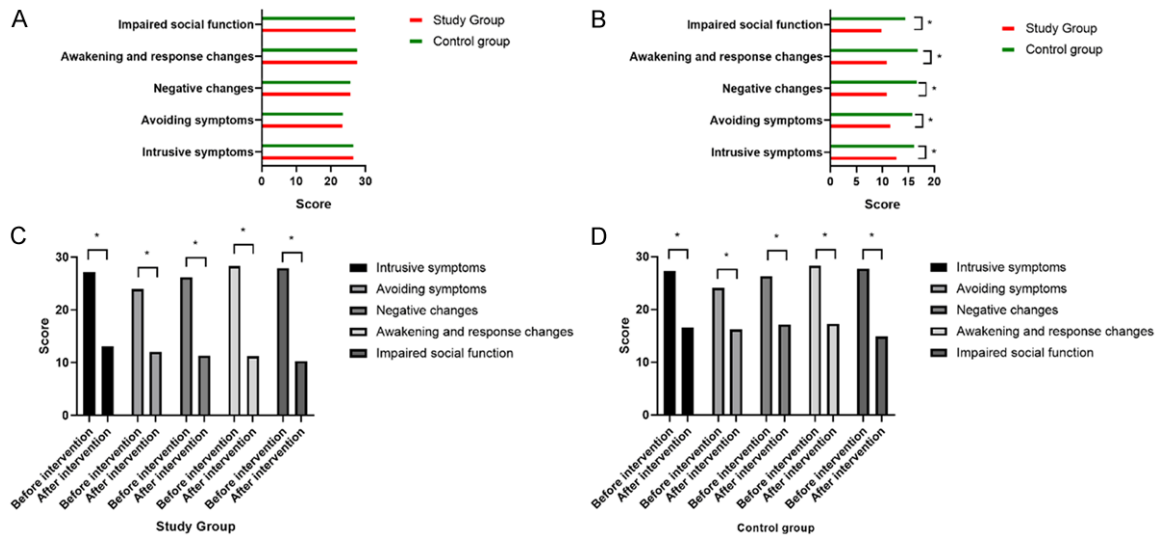


Figure 4. Analysis of the DSM-5 Scale before and after the intervention. There was no significant difference in the scores of all the dimensions of the DSM-5 Scale between the two groups before the intervention ($P > 0.05$) (A); the dimension, impaired social function, awakening and response change, negative changes, avoiding symptoms, and intrusive symptoms scores in the study group were significantly lower than they were in the control group ($P < 0.05$) (B); the DSM-5 scores of the study group and the control group were significantly different before and after the intervention ($P < 0.05$) (C and D). *denotes a significant difference between the two groups for the same indicator.

At present, the pathogenesis of PTSD is still unclear. Some studies have manifested that aberrations in the hormone receptors in the hippocampus might influence the brain's regulation of the stress response, leading to recurrent traumatic memories in individuals. Other studies have declared that the amygdala and limbic system of PTSD are significantly more sensitive to traumatic stimuli. At present, the treatment measures for PTSD still lack generalization, in which simple drug treatment has been found to have some drawbacks such as the long duration of medication, significant side effects, poor patient compliance, etc. [22].

With the development of psychological interventions in recent years, the effects of psychotherapy, like cognitive behavioral therapy, hypnotherapy, and psychoanalysis, have been confirmed in the treatment of patients diagnosed with PTSD.

The present study evaluated the curative effect of VAT in PTSD patients using different methods. The results showed that compared with simple drug intervention, the anxiety and depression symptoms of the study group patients were apparently alleviated, and there was a significant difference between the two groups at the same time points after the inter-

vention. In a study of 89 cases of patients with PTSD, the results showed that 75.28% of the patients had significant anxiety and depression, and it was found in further interviews that mild anxiety and depression can affect the normal lives of PTSD patients and reduce their quality of life, and patients with severe anxiety and depression will experience symptoms such as suicide and self-injury, so some scholars suggest that an intervention in the anxiety and depression symptoms should be strengthened in patients with PTSD [23].

The VAT applied in the study is a type of expressive art therapy. Expressive art therapy originates from art therapy, but it is distinct from the goals of art therapy, of which the purpose is to use art as a means of treatment. VAT uses the creative process as a reflection of the patients' inner situation. Psychological consultants can use targeted interventions according to the relevant situations, eventually ameliorating the negative emotions of patients and improving the patients' quality of life. Some scholars found that VAT includes two types of interventions, sandplay and painting, which aim to guide the patients to express their emotions, realize reality, sort out their thoughts, and move on from the past, finally achieving

self-acceptance and making plans for the future. The purpose of the early emotional catharsis in the process is to make the patients completely release their adverse emotions, and express their anxiety and depression in the form of sandplay and painting. This process has been shown to be effective in improving the patients' anxiety and depression, and this view is also confirmed by the comparisons between the two groups at the different time points after the intervention in this study [24].

The study also analyzed the differences between the scores of the different dimensions of the PTSD scales in the two groups after the intervention. The results showed that the DTS and DSM-5 Scale scores in the study group after the intervention were significantly lower than they were in the control group. The typical clinical symptoms of PTSD patients include recurrent traumatic memories. Through the intervention, the study group scores in the DTS and DSM-5 Scale were lower than those of the control group, revealing that the VAT significantly relieved the traumatic memories. The reasons might be the emotional catharsis in sandplay and painting therapy, which can make the patients realize reality, sort out their minds, and face traumatic memories. Therefore, the patients can actively restore their mental health [25, 26]. After the intervention, the study group showed a decline in the scores of all the dimensions, negative cognitive and mood change, arousal and response change, in DSM-5 Scale after the intervention, which also supports this theory. Finally, the results of the inter-group comparisons of the social functional dimension in the DSM-5 Scale suggested that VAT also has a relatively positive effect in improving the quality of life of patients with PTSD, indicating that the therapy may have a long-term impact on the prognosis of patients.

In conclusion, VAT can significantly alleviate anxiety and depression in patients with PTSD, relieve other clinical symptoms, and improve cognitive and social functions, so it is worthy of clinical application. The innovation of this study is to abandon the conventional single drug therapy or psychological intervention for PTSD, and choose to combine the drug intervention with VAT in the treatment of PTSD patients, advocating the use of non-conversational methods to promote the release of negative

emotions, which is more applicable. The deficiencies of this study are as follows: (1) The sample size was too small, resulting in a lack of representativeness of the results, and (2) The follow-up time of the patients was too short, so the long-term evaluation is lacking. In view of these deficiencies, interventions with larger sample sizes and longer follow-up times are planned in the next step in order to provide a more detailed theoretical basis for the treatment of PTSD patients.

Disclosure of conflict of interest

None.

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