Original article

The effect of cognitive processing therapy and schema therapy on marital satisfaction and avoidant coping in war veterans with chronic post-traumatic stress disorder

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Abstract

Background and Purpose: Post-traumatic stress disorder (PTSD) is a kind of psychiatric disorders, which is related to trauma and stress and created as a result of direct experience, observation, or hearing. The avoidance of trauma reminders is a perpetuating factor of this disorder. Regarding this, the aim of the present study was to compare the efficacy of cognitive processing therapy (CPT) and schema therapy (ST) in marital satisfaction and avoidance coping among the war veterans with chronic PTSD.

Methods: This semi-experimental study was conducted on 34 Iran-Iraq war veterans with PTSD, living in Kermanshah province, Iran. The participants of the study were selected using the purposive sampling technique, and then randomly assigned into two experimental groups, including the CPT and ST groups, and a control group. The data were collected by the PTSD Checklist-Military Version, escape-avoidance subscale from the Coping Styles Questionnaire, Golombok Rust Inventory, and Structured Clinical Interview for DSM-IV-TR Axis I Disorders. The data analysis was performed using the multivariate repeated measures analysis of variance with 95% confidence level through the SPSS version 22.

Results: Acceding to the results, there was a significant difference between the experimental groups and control group in terms of the marital satisfaction and avoidance coping ($P<0.05$). Accordingly, the administration of the CPT and ST resulted in the enhancement of marital satisfaction in the experimental groups, compared to that in the control group. The post-test mean marital satisfactions were 31.58±6.28 and 33.80±11.60 in the CPT and ST groups, respectively, while this value was 52.08±12.87 in the control group. Furthermore, CPT was observed to be more effective in reducing the avoidance coping, compared to the ST.

Conclusion: As the findings indicated, CPT, which is exclusively focused on trauma, and ST can encourage the clinicians to utilize an effective treatment for the recovery of PTSD.

Keywords: Chronic posttraumatic stress disorder, Cognitive processing therapy, Schema therapy, Veterans

Introduction

Traumatic stress disorder (PTSD) is a kind of psychiatric disorder, which is related to trauma and stress and created as a result of direct experience, observation, or hearing. People react to this situation with a state of fear. The individuals inflicted with this disorder suffer from repetitive event recalling, event-related nightmares, anxiety, irritability, alertness, as well as social and occupational dysfunctions. Furthermore, these people avoid the events that are related to the disorder (1).

The diagnosis of PTSD is prevalent. In a survey implemented by the World Health Organization (WHO) on 23,936 people who had been exposed to trauma in 13 countries, 6.6% of the cases showed clinical evidence or traumatic stress disorder syndrome in accordance with the criteria of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) (2). Compared to

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the natural traumatic events, the unnatural events, such as war, are not only more prevalent, but also accompanied by more intensified negative consequences regarding the physiological and psychological well-being.

Nevertheless, PTSD is associated with low mental index, increased physiologic symptoms, exacerbation of physical symptoms, high frequency of attending to the medical and health centers, and absenteeism. The rate of comorbidity of this disorder with other medical and mental problems has been estimated as 80% (3).

Marital satisfaction can be considered as one of the several indices of the married life, such as mutual understanding and the strength of the relationship between the family and others (4). Marital satisfaction denotes the degree of a spouse perception indicating the amount of the fulfilled desires and needs by the partner (5). Based on the theory of crisis, the couples react to stressful events, and these events can predict the direction and satisfaction of their marital life (6).

It seems that the family is the first manifestation of PTSD syndrome. The PTSD patients can have significant influences on other family members and the dynamicity of the family system as a whole (7). The low quality of marital satisfaction among the war veterans with PTSD has been reported in several studies (8-10). In the process of the stress-related diseases, the type of the reaction the person shows in face of stress is more important than the stress itself and its intensity.

In psychology, coping is referred to a constant effort for changing the specific cognitive and behavioral features in order to manage the inner and outer demands (11). The coping strategies can be adaptive or non-adaptive; in this regard, avoidance is a type of non-adaptive strategy. This coping strategy includes avoidance to involve in stressful situations and evasion from stress and its cognitive, behavioral, and emotional consequences (12).

It should be acknowledged that although avoidance as a coping strategy reduces the amount of emotional contact with the traumatic event for a short time, it affects the sustainability of PTSD syndrome due to interfering with the emotional processing (13). In addition, many of the war veterans who refer to receive the therapy some years after the traumatic event show major irritation during the psychotherapy, which is the result of trying to avoid the situations that recall the memories of the respective event (14).

The review of the related literature revealed that the majority of the studies investigating this issue were restricted to theoretical, descriptive, and correlational research with the emphasis on the relationship of the aforementioned variables with PTSD. With this background in mind, the present study aimed to compare the effectiveness of cognitive processing therapy (CPT) (with exclusive orientation to PTSD) and schema therapy (ST) (with the applicability for a wide range of mental disorders) on marital satisfaction and avoidance coping among the war veterans suffering from PTSD.

Materials and Methods

This semi-experimental study was conducted on the Iraq-Iran war veteran with PTSD living in Kermanshah, Iran, in 2014. The present study employed a pre- and post-test design and a one-month follow-up period. For the purpose of the study, the participants were randomly assigned into two experimental groups, including the CPT and ST groups, as well as a control group. The PTSD diagnosis was approved by the Medical Committee.

The inclusion criteria were: 1) being male and married, 2) having at least secondary education, 3) having less than 70 years of age, and 4) obtaining a score above the cut-off point in the PTSD Checklist-Military Version (PCL-M). On the other hand, the exclusion criteria included: 1) psychotic and bipolar disorders, 2) a severe dependence on substances, 3) harmful behaviors (e.g., aggression and suicidal attempts), 4) disability rating of > 70%, and 5) lack of consent to participate in the intervention.

In line with the related literature, 36 participants were selected through the purposive sampling technique based on the level and type of injury (i.e., chemical, physical, mental, or a combination of these types) as well as other demographic variables,

including the drugs they consumed. Subsequently, the patients were randomly assigned into three equal groups, including the CPT, ST, and control groups. Two participants in the CPT group were excluded from the treatment and statistical analysis due to having inappropriate physical conditions.

The instruments applied in the study were the PCL-M, escape-avoidance subscale from the Coping Styles Questionnaire, Golombok-Rust Inventory of Marital State (GRIMS), and Structured Clinical Interview for DSM-IV-TR Axis I Disorders.

Post-traumatic Stress Disorder Checklist-Military Version

The PCL-M consists of 17 items, which are rated on a five-point Likert scale (ranging from never=1 to too much=5). In this scale, the minimum and maximum scores for each person are 17 and 85, respectively.

The cut-off score for the diagnosis of PTSD in the war veterans was considered as 50. This scale covers the signs and symptoms of trauma or re-experiencing the traumatic event (intrusive or harassment) (five items), avoidance symptoms and numbness (seven items), as well as signs and symptoms of intense arousal (five items). This instrument is based on the DSM-IV criteria for the diagnosis of PTSD and has three versions (i.e., military, ordinary, and special).

This scale was developed by Weathers et al. (15) and validated by Goudarzi (16). According to Weathers et al. (15), the internal consistency and reliability of this measure were 0.97 and 0.96, respectively. In the present study, the reliability of this scale was estimated using a pre-test conducted on 36 participants, which rendered a Cronbach's alpha of 0.83.

Coping Styles Questionnaire

The Coping Styles Questionnaire, which was developed by Folkman and Lazarus (17), evaluates the practices of dealing with the stress. The new version of this questionnaire entails 66 items, rated on a four-point Likert scale ranging from 0-3. There are 50 main items and 16 incidental items that were not used in the scoring proccess, which evaluate eight common strategies (i.e., encounter, distance, restraint, support to social search, accountability, avoid or escape, planned problem solving, and positive re-evaluation).

The reliability of this instrument was reported to be 0.93 in a study conducted by Rad et al. (18). In this study, we employed the escape-avoidance subscale (i.e., items 11, 16, 33, 40, 47, 50, 58, and 59) of this instrument, which evaluates the avoidance coping strategies. In the present study, the internal consistency of this subscale was estimated as 0.71 using the Cronbach's alpha coefficient.

Golombok-Rust Inventory of Marital State

The GRIMS that was introduced by Rust et al. (19) consists of 28 items covering the marital state. This inventory measures four factors, including marital satisfaction, marital relationship, common interests, as well as trust and respect. This instrument is rated on a four-point Likert scale ranging from totally agree to totally disagree. The scores 0-3 are given to each item depending on the content of that item. The minimum and maximum scores of this inventory are 0 and 84, respectively.

The important thing is that the higher scores in this test shows lower marital satisfaction. In this regard, obtaining scores of 37-41, 42-46, and > 47 in this scale signify bad, very bad, and extremely bad marital satisfaction. On the other hand, scores lower than 37 indicate good marital satisfaction. Rust et al. (19) reported the reliability of this instrument as 0.89 and 0.85 for the females and males, respectively. In the present study, the reliability of this scale was calculated as 0.82 using the Spearman-Brown split-half.

Structured clinical interview

The structured interview is a set of constructs with predetermined orders and diction. The content of this type of interview is not officially written out, and the sequence of the questions is determined. Therefore, these types of interviews do not rely on the clinical experience and expert judgment of the interviewer. The assessment of the structured interviews is based on objective and predetermined yardstick. One of the most popular kinds of structured clinical interviews is the clinical structured interview, which

is based on the DSM-IV-TR.

Although this type of interview entails the experimental approach, its diagnostic sensitivity has been confirmed by the clinicians. Mohammadkhani et al. (20) published a book for the implementation of the structured interviews that assess the mental disorders on two levels. In the present study, with the help of this source, the clinical interview was used to determine the main criteria for the inclusion and exclusion.

Cognitive processing therapy

Resick and Astin have successfully applied the CPT, which is a combination of a long exposure and cognitive restructuring, for the first time on the female rape victims with PTSD in 1992. This clinical approach, which is derived from cognitive therapy, consists of 12 sessions with a structured pattern and health-based guidelines. The effectiveness of this therapy has been confirmed by different clinicians based on the educational and psychological orientations of this approach. In the present study, the army version of the CPT (Resick et al., 2009, 2014) was utilized.

Schema therapy

Schema therapy is one of the current approaches introduced by Young et al. (21), which is based on the traditional cognitive therapy. In this type of psychotherapy, the cognitive-behavioral school, Gestalt, object relationships, attachment, structuralism, and psychoanalysis were combined in form of a model, which resulted in a valuable conceptual integration. Although many of the concepts were adapted from the mentioned list, this method should not be considered as an eclectic approach (22).

In the present study, we utilized an educational package of ST, a collection of experimental cognitive and behavioral techniques, and a comprehensive source of individual and group ST, which were extracted from a book entitled 'The Schema Therapy Clinician's Guide' (21, 23, 24).

Statistical Analysis

The data were analyzed using the descriptive (i.e., the frequency, percentage, mean, standard deviation, minimum, and maximum) and inferential statistics, including the independent t-test and multivariate repeated measures analysis of variance. The data analysis was performed through the SPSS version 22.

Results

The findings of the present study supported the argument that CPT and ST could lead to the reduction of avoidance coping and enhancement of marital satisfaction in the experimental groups, compared to those in the control group. In addition, the comparison of the effectiveness of the two therapeutic methods with each other revealed that the impact of the CPT on avoidance coping was more significant than that of the ST.

As it can be seen in Table 1, there were no

Table 1. Comparison of the three study groups based on demographic characteristics

Demographic characteristics	Groups	Standard deviation	Mean	df	F	*P-value*
Age (days, years)	CPT group	4.47	52.70	2 3 1	0.438	0.694
	ST group	6.19	54.66			
	Control	5.92	52.83	33		
Duration of participation in the war (years/ days)	CPT group	1.64	4.40	2	1.822	0.169
	ST group	1.50	4.08	31		
	Control	1.21	3.25	33		
Disability percentage	CPT group	10.48	46.00	2	0.173	0.842
	ST group	12.58	44.16	31		
	Control	13.22	47.08	33		

CPT: cognitive processing therapy, ST: schema therapy

Table 2. Descriptive statistics of avoidance and marital satisfaction in three stages of pre-test, post t-test, and follow-up

Process	Groups	Variables	Mean	Standard deviation	Maximum	Minimum	Range
Pre-test	CPT	Avoidance	18.70	1.76	23	17	6
	ST	Marital satisfaction	49.90	18.48	77	17	60
	Control	Avoidance	19.83	1.74	23	17	6
	CPT	Marital satisfaction	47.16	11.28	62	21	41
	ST	Avoidance	19.16	1.33	21	17	4
	Control	Marital satisfaction	51.58	13.02	70	20	50
Post-test	CPT	Avoidance	10.60	2.06	14	7	7
	ST	Marital satisfaction	33.80	11.60	52	18	34
	Control	Avoidance	15.25	1.71	18	12	6
	CPT	Marital satisfaction	31.58	6.27	42	19	23
	ST	Avoidance	19.33	1.77	22	17	5
	Control	Marital satisfaction	52.08	12.87	68	23	45
Follow-up	CPT	Avoidance	10.90	1.96	14	8	6
	ST	Marital satisfaction	33.60	11.25	51	17	34
	Control	Avoidance	12.25	2.22	18	10	8
	CPT	Marital satisfaction	32.08	6.20	40	20	20
	ST	Avoidance	19.33	1.43	22	17	5
	Control	Marital satisfaction	52.75	11.96	70	24	46

CPT: cognitive processing therapy, ST: schema therapy

significant differences among the groups in terms of the demographic characteristics ($P>0.05$). Therefore, based on the significance level of the age distribution, duration of participation in the war, and disability percentage, it could be stated that there was no reason to reject the null hypothesis. The descriptive statistics of avoidance and marital satisfaction in three stages of pre-test, post-test, and follow-up is displayed in Table 2.

As illustrated in Table 2, the experimental groups showed reduced avoidance and increased marital satisfaction, compared to the control group. The CPT group showed a significant reduction in avoidance scores in the post-test and follow-up stages. On the other hand, the ST group demonstrated a significant decrease in the marital satisfaction in the post-test and follow-up.

Due to the significance level of the dependent variables in all the stages of the pre-test, post-test, and follow-up, the normal assumption of data distribution was established ($P>0.05$). The values obtained in the Levene's test was used assess the homogeneity of variances between the groups. Additionally, the Box's M test was utilized with the aim of evaluating the assumption of the co-variance consistency. No significant difference was observed between the dependent variables ($P>0.05$). Therefore, the conditions of the two assumptions were established.

Finally, the assumptions regarding the equality of the intra-group variances or the lack of similarity in the relationships of the independent and dependent variables were evaluated by Mauchly's sphericity test. The results of the Mauchely's test for the two independent variables are shown in Table 3.

As the results indicated, the intra-group equality of variance was established. Therefore, the analysis of variance with repeated measurement was permitted. Due to the significance level ($P>0.05$) of the Mauchely's test, there was a violation in marital satisfaction variance. As a result of the analysis of variance test with repeated measurements, the correct Green-house Geisser and Hin-Felt were

Table 3. Mauchely's test of intra-group equality of variance for two dependent variables

Variance source	Dependent variable	Mauchely's statistics	df	Sig	Correction type	
Interaction time effect* group membership	Avoidance	0.904	2	0.219	The lack of urgency with regard to significant levels	
	Marital satisfaction	0.459	2	0.001	Green-house Geisser	Hin-Felt
					0.649	0.709

Table 4. Multivariance tests of repeated measure design for avoidance coping and marital satisfaction

Variables	Factor	Wilkes	F	Df1	Df2	*P-value*	η^2
Avoidance coping	Repeat factor	0.135	96.374	2	30	0.001	0.865
	Repeat factor* group	0.194	19.064	4	60	0.001	0.560
Marital satisfaction	Repeat factor	0.271	40.268	2	30	0.001	0.729
	Repeat factor* group	0.395	8.859	4	60	0.001	0.371

used (Table 4).

Wilks' statistics is helpful to determine the effectiveness or lack of effectiveness of the two therapy methods applied on marital satisfaction and avoidance coping (Table 5). It was assumed that the intervention was effective in increasing the marital satisfaction and reducing the avoidance coping in the course of treatment for the veterans.

As indicated in Table 5, the results of the repeat factor (time measurement) excluding the experimental group on avoidance scores (η^2=764.0, P=555.100>P, (2, 64) F) and marital satisfaction (η^2=672/0, P=512.63>P, (2, 64), F) were significant. Therefore, there was a significant difference among the mean scores of the pre-test, post-test, and follow-up in this regard. In addition, the effect of the interaction between repetition and group for any of the two variables was significant.

In order to check the interaction between the group and time measurement on marital satisfaction and avoidance scores while keeping the time constant, the mean of these two variables were investigated by using Sidak test (Table 6).

The paired comparison of the triple groups in terms of the marital satisfaction and avoidance coping revealed a significant difference in the mean scores of both experimental groups in this regard, compared to the control group (*P<0.50*). Furthermore, the CPT was more significant in the reduction of the coping avoidance scores, in comparison with the ST. Finally, no significant difference was observed between the CPT and

Table 5. Intra- and inter-group tests of repeated measurement design for marital satisfaction and avoidance coping

Variables	Source	Factor	SS	df	MS	F	Sig	η^2
Avoidance coping	Intra- group	Repeat factor	382.505	2	191.292	100.555	0.001	0.764
		Repeat factor* group	245.705	4	61.426	32.296	0.001	0.676
		Mistake	117.922	62	1.902		0.001	
	Inter-group	Group	566.022	2	283.011	48.567	0.001	0.758
		Mistake	180.644	31	5.827		0.001	
Marital satisfaction	Intra- group	Repeat factor	2375.977	2	1178.999	63.512	0.001	0.672
		Repeat factor* group	1424.646	4	356.162	19.186	0.001	0.553
		Mistake	1150.922	62	18.563			
	Inter- group	Group	4782.753	2	2391.376	6.291	0.005	0.289
		Mistake	11783.561	31	380.115			

Table 6. Sidak test for paired comparison of two dependent variables of the study between different groups during pre-test, post-test, and follow-up

Variables	Group (J)	Group (I)	Mean difference (I-J)	ST	*P-value*
Avoidance coping	Control	Cognitive processing	5.878	0.597	0.001
		Schema therapy	2.500	0.569	0.001
	Cognitive processing	Schema therapy	-3.378	0.597	0.001
Marital satisfaction	Control	Cognitive processing	13.039	4.820	0.033
		Schema therapy	15.194	4.595	0.007
	Cognitive processing	Schema therapy	2.156	4.820	0.960

ST groups regarding the mean scores of marital satisfaction ($P<0.50$).

Discussion

As the findings of the present study indicated, the CPT and ST resulted in the reduction of avoidance coping and enhancement of marital satisfaction in the experimental groups as compared to the control group. In addition, the CPT was found to have a more significant effect on the avoidance coping than the ST. In this regard, MacDonald et al. (25) believed that the linear reduction of avoidance/ emotional pattern in the CPT was due to the fact that in this method, the immediate reflections are focused through the application of the written expression about the traumatic event. As a result, this could indicate the superiority of the CPT in the reduction of avoidance, compared to the ST.

In accordance with the adaptability with trauma theories, cognitive processing facilitates the review of the schema or reassessment of the trauma. Since the traumatic events intuitively result in the formation of the beliefs and assumptions about oneself and the world, the exposure to frequent memories related to the trauma may facilitate the building of cognitive processing and enhance effective adaptation (26). Regarding the effect of the traumatic stress disorder on marital satisfaction and quality of life, the cognitive theories of PTSD consider the cognitive variation as a consequence of the traumatic leaps that might be generalized to other situations (27).

In the literature, the majority of the studies have investigated the role of cognitive processing and its correlation with other variables. Furthermore, these studies acknowledged the basic incompatibilities, avoidance coping, and low quality of marital relations in the patients with PTSD. Based on the findings of a study conducted by Wright et al. (28), the basic incompatibility schemes play the role of a mediator during the trauma occurrence or PTSD.

Furthermore, in the mentioned study, the cognitive incompatibility schemes led to some problems for the PTSD sufferers in such fields as intimacy, trust, as well as intrapersonal and interpersonal security. The basic incompatible schema is considered as one of the most important factor in marital life failure. In case of the elevation of this schema in cognitive structures, it would lead to the reduction of marital satisfaction and intimacy and increase the application of unsuccessful methods for conflict resolution (29).

Miller et al. (30) stressed the low quality of marital relations in the veterans with PTSD. The weakness of the literature put limitation on the possibility of comparing the findings of other similar studies with to those of the current study. However, in a study, Moosaviassl and Moosavi Sadat (31) investigated the effectiveness of ST in reducing the PTSD syndrome among the veterans.

Additionally, in a randomized clinical trial, Mac Donald et al. (25) examined the effectiveness of CPT in 60 participants who suffered from PTSD. They demonstrated that this therapeutic approach decreased the PTSD syndrome, especially avoidance in the control group. Furthermore, these changes were reported to be stable after a month of follow-up. Cockram et al. (32) reported that the ST led to the reduction of the PTSD syndrome severity.

One of the limitations of the present study was the inclusion of the males. In addition, we only investigated the PTSD caused by the war. In terms of the treatment, it is worth noting that the treatment was implemented for a group not for an individual. With regard to the fact that the therapeutic interventions were performed in form of group therapy rather than individual therapy, the therapeutic methods in this study were reported to be significant from a statistical perspective and not a clinical aspect. Therefore the effectiveness of the implemented therapies was determined based on the mean of the whole group. In other words, this treatment might result in unsatisfactory outcomes for a particular person.

Regarding the vulnerability to PTSD, clinical symptoms, and even effective treatment, the therapists always stress on the dangerous factors before, during, and after the occurrence of a trauma, including a history of psychiatric disorders, previous experiences facing trauma, and social supporting networks. Due to the passage of more than three decades since the outbreak of the war, these features could not be tracked at least before and during the occurrence of a disorder. It is recommended to the other researchers to take the suggestions in the present study into consideration.

Further studies are recommended to investigate the effectiveness of the CPT and ST in the PTSD resulting from other factors, including car accidents and rape, and among the females. Furthermore, future studies can examine the effectiveness of these two therapeutic approach in other groups with special needs, such as the blind and the deaf. Some of the negative emotions, such as the fictitious emotions (e.g., the feeling of shame and guilt) not the real ones (e.g., anger, hostility, fear, and sadness) are the consequences of PTSD. The future researchers can also target the effectiveness of these two therapies on PTSD subcategories, such as compound PTSD or secondary PTSD.

Conclusion

The specific features of the CPT approach include specific instructions, step by step procedures, inclusion of mental-educational approaches by using home assignments with the aim of the dissemination of positive outcomes, group and individual therapies, combination of cognitive-behavioral treatment benefits (cognitive restructuring), and long exposures (event exposure by writing event reporting), high experimental support in the foreign literature. Furthermore, this therapeutic method is exclusively applied for the treatment of PTSD. Regarding this, the psychology therapists can employ this therapeutic approach.

Furthermore, considering the high prevalence of PTSD and its various conditions, the patients suffering from this disorder may enjoy the positive outcomes of this intervention. Moreover, based on the findings of the present study, the cognitive approach, which is based on the ST interventions can have satisfactory outcomes for the treatment of PTSD, especially by improving and modifying the interpersonal relationships.

Conflicts of interest

There are no conflicts of interest.

Authors' contributions

B. Amirpour contributed with data collection, analysis, and interpretation and writing the first

draft of the article. A. Badri translated the manuscript into English. A. Aghayousefi designed and supervised the work. A. Alipour and H. Zare were advisors of the article.

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