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Effectiveness of Cognitive-Behavioral Therapy on Reducing the Maladaptive Schemas of Posttraumatic stress disorder in Veterans' Wives

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Abstract

Purpose: The purpose of the current study was to investigate the effect of cognitive-behavioral therapy on Young's areas of maladaptive schema in spouses of veterans with Posttraumatic stress disorder (PTSD). **Materials & Methods**: A quasi-experimental method with pre-test and post- test with control group design was conducted. Twenty spouses of veterans with PTSD after the screening were assigned to experimental and control groups. Secondary trauma stress scale was used for screening, and veterans' spouse who have low score in this scale were identified and were randomly assigned to experimental and control group. The early maladaptive scheme Scale-Short Form (YSQ-SF), was used for gathering of data. Treatment program was used in ۱۳sessions for experimental group. Data were analyzed with test of ANCOVA and MANCOVA. **Findings**: The results showed that the effect of cognitive-behavioral therapy on modifying of early maladaptive schemas was significant in three areas of Disconnection/ Rejection, over vigilance/Inhibition and Other-Directedness. But in the areas of Impaired Autonomy and/or Performance, and Impaired Limits did not change significantly**. Discussion**: Cognitive-behavioral therapy could significantly change early maladaptive schema in spouses of veterans with PTSD

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1. Introduction

War as a psychological stressor has profound, persistent, complex and negative effects on soldiers and their families, these effects do not stop with the return from the war (Rezaei, Younesi, Ahmadi, Askari & mirzaie, 2011; Ahmadi & Mokhtari, 2008). During a study about the families of the soldiers and veterans who had returned from the war, Solomon found that they have persistent sense of alienation, and often isolated and do not establish good relationships with others. These states could impact on their families, negatively. Veterans' wives often feel alone and they are vulnerable physically and psychologically. They often have feelings of anger and humiliation. Studies of many of researchers including Kulla, Nelso, Fairbank, Byrne, and Riggs showed that low mental health among spouses of veterans with PTSD has been associated with high stress and marital conflicts (Solomon,Shklar & Mikulincer, 2005; Ahmadi, Rezapour, Davoudi & Saberi, 2013).

About 15 to 45 percent of veterans suffer PTSD. This disorder has created many problems in the field of interpersonal relationships of old veterans and their performance. Symptoms of avoidance and overstimulation are consumedly among symptoms that decreases ability of person to marital intimacy and sexual desire and makes to increase aggression and instability in the job (Dekel & Solomon, 2007). Traumatic experiences of veterans' wives with PTSD are second hand and due to the close proximity to the primary victim caused (Dekel & Solomon, 2007; Figley, 2002).

2. Research Background

Living with pain and toil a family member suffering with chronic PTSD, in the long term can have profound effects on other family members, especially his wife (Klarić et al, 2012). Because the wife is one of the people closest PTSD veterans and has with him the closest emotional, cognitive, verbal and nonverbal communication (Rezaei et al, 2011). Veterans' wives have often responsible for making balance in emotional, practical and financial issues of the family and try to maintain optimal function of their families. Excessive and continuous attention and care of the family can cause resentment and burnout for them. This continuous involvement makes them extremely vulnerable to mental health problems (Rezaei, 2011; Franciskovic, 2007).

Figley (2002), Dekel and Solomon (2007), Goff and Smith (2014), from a different viewpoint pay to the theoretical explanation of psychological problems in spouses of veterans with PTSD, and they say problems of veterans' wife's problems are related to the cognitive schemas. Beck, Freeman, Davis & Young have defined maladaptive cognitive schemas as sustainable, unconditional and negative beliefs about self and others that organize persons' experience and behavior. Schemas are beyond belief, and constitute the deepest level of the cognition.

Our cognition system is consisting of schemas that we are equipped to categorize information and predict the events. These schemas as a cognitive pervasive processor structure are result of the nature and nurture (individual learning in development stages and as well as experiences of marital life).

In the beginning, schemas are formed by interaction of children's temperament and parenting styles and negative and positive life experiences, and then are strengthen and continued by repeated experiences and communication models in adulthood (Dekel R, Solomon, 2007; Nelson Goff et al, 2014; Tuschen-Caffier, Darien, ShafeeAbadi, Navabinejad, & Delavar, 2013; Riso, Du toit, Stein, & Young, 2007; Salavati, 2006). The marital relationship is affected by cognitions (Yousefi, Abedin, Tirgari, Fath Abadi, 2009). The experience of living with a person with PTSD disorder and chronic stressors would disrupt the assumptions and beliefs of the individual in relation to the world, others and self; and over the long term effect on feelings and behavior and provide readiness to psychological distress. So negative and maladaptive thoughts and beliefs, based on past experience and current experiences with a person with PTSD is formed or strengthened (Kazemi, Banijamali, Ahadi, Farrokhi, 2012).

Schemas are cognitive knowledge structures that affect the ways in which we select, interpret, organize, and evaluate life experiences. Some of these schemas are developed at a young age. It is these "early schemas" that tend to be especially pervasive, rigid, stable, and enduring. Obviously, not all of these early schemas are healthy and constructive (Seel Norbert, 2012). Early maladaptive schemas (EMS) are cognitive patterns of self-defense which have formed from childhood and continued throughout life. They may have arisen from bad emotional memories, tragedy, fear, abuse, ignoring, frustrations, rejection, or lack of natural affection (Young, Klosko & Weishaar, 2006). Young has asserted that these EMS fall into five clusters: a) *Disconnection and rejection domain (*a sense of interpersonal disconnection and rejection); b) impaired autonomy and / or performance; c) other-directedness (The belief that one has to surrender control to others and to suppress one's own needs and emotions and an excessive focus on meeting the needs of others at the expense of one's own needs and well-being); d) over vigilance / inhibition (an excessive concern about mistakes, resulting in over-vigilance to potential mistakes); e) and impaired limits (an impaired ability to stay within realistic personal limits). In general, changes in the cognitive schemas and individual belief systems occur as a result of empathic engagement with survivors of trauma (Klaric, Kvesic, Mandic, Petrov & Franciskovic, 2013; Cecero, Beitel & Prout, 2008). More inflexible incompatible schemes that have great strength, gradually leads to frustration and stress of individual and increases possibility of psychological vulnerability (Abolmaali & Aghaeepour Gavasaraee, 2015).

Despite the considerable distress in spouses of veterans with PTSD, there is very little research literature about the how to help them to reduce the incompatible schemas and deal with other psychological problems associated with it. In attention to the different approach, extensive range of interventions are used. These interventions are applied individually or groping treatment, depending on the needs and particular circumstances of this group of women (Dekel & Solomon, 2007). According to Schema Therapy, early maladaptive schemas (EMSs) are closely tied to interpersonal problems (Cecero et al, 2008).

Studies have shown that EMSs is negatively associated with marital intimacy, marital satisfaction, domains of self-differentiation, level of positive affect and adjustment (Zolfaghari, Fatehi Zadeh, & Abedi, 2008; Azadbakht & Vakili, 2013; Moradi, Akbari & Dausti, 2015; Napoleon, 2007; Cámara & Calvete, 2012) and positively associated with negative affect, depressive and anxiety symptoms (Napoleon, 2007; Cámara, María; Calvete, 2012; Balsamo, Carlucci, Sergi, Klein Murdock & Saggino, 2015) Thus, it seems that interventions to reduce EMSs can improve the adjustment, mental health and family connections in veterans' wives. Also shown schema-based training lead to reduce the secondary trauma symptoms in wives of veterans with PTSD (Abolmaali & Kamal, 2015). According to previous researches the effectiveness of cognitive-behavioral techniques on various problems of veterans' wives have been approved, such as symptoms of secondary trauma and psychological problems (Kazemi, 2012; Abolmaali & Aghaeepour Gavasaraee, 2015).

It seems that the intervention which carried out in wives of veterans suffering from secondary trauma, is empowering individuals to deal effectively with a variety of specific problems in their life. Cognitive-behavioral approach using stress management strategies, cognitive restructuring, increase communication skills and problem-solving skills (Franciskovic et al, 2007) can be effective in changing the early maladaptive schema. In cognitive-behavioral therapy emphasized on correct the distorted cognition and training new behaviors. Cognitive-behavioral therapy in terms of nature is active, guidance, structured, focused on now and short-term. Its Methods and techniques are varied and numerous and most important feature of all of them is cognitive restructuring (Corey, 2005; Prochaska & Norcross, 2007; Beck, 1998) It can be about a wide range of populations performed with a variety of problems (Thiel et al, 2014; Corey, 2005; Pourafshar, Ahmadi-noude & Elyasi, 2009; Hofmann, Asnaani, Vonk, Sawyer & Fang, 2012).

According to a few research evidence of the prevalence of secondary trauma and psychological problems among veterans' wives with PTSD in different countries (Ahmadi & Mokhtari, 2008; Dekel & Solomon, 2007; Klarić et al, 2012; Franciskovic et al, 2007; Abolmaali & Aghaeepour Gavasaraee, 2015; Abolmaali & Kamal, 2015; Solomon, Dekel, Zerach & Horesh, 2009; Renshaw, Rodrigues & Jones, 2008) and taking into account the mentioned earlier treatment and training suggestions, as well as the rigorous empirical evidence on the effectiveness of cognitive-behavioral approach about the extensive range of clinical disorders and a variety of psychological problems as well as chronic physical diseases (Thiel et al, 2014; Corey, 2005; Hofmann et al, 2012). Perhaps the use of cognitive-behavioral techniques can be considered as the first step in determination an effective and efficient intervention to change the schema of veterans' wives with PTSD. Given the mentioned matters in this study, main questions raised by this study is whether does cognitive-behavioral therapy reduce early incompatible schema in the veterans' wives with PTSD?

3. Method

This study was performed with a quasi-experimental method with pre- and post-test and control group design. The statistical population of study was all veterans' wives with post-traumatic stress disorder resides in Tehran. Twenty-two of them were selected after screening for targeted and randomly were assigned to experimental and control groups. Inclusion criteria include: was the acquisition of the necessary score in YSQ-SP (cut off point 15); no history of psychiatric hospitalization; avoiding the use of psychiatric drugs and psychological treatment in the past year, duration of marriage 10 years; the age range, 55-35 Y, level of education, at least five elementary. And exclusion criteria of the study were not met inclusion criteria.

The average and standard deviation age of experimental group was 43.64 and 5.97 and the average and standard deviation age of the control group was43.36 and 6.50. In terms of education level, 3 of the experimental group and two control group were below High school diploma and 2 of the experimental group and 3 of the control group were Masters and 1 of the experimental group and 1 of the control group were senior masters. In terms of jobs, 7 of the experimental group and 9 of the control group were housewives, 3% of the experimental group and two control subjects were employees.

It is one of the experimental group were retired. Average and The standard deviation duration of marriage to wives in experimental group was 22.73 and 5.18, and Average and The standard of deviation in the duration of marriage to control group was 22.55 and 5.16. Sample size, in the significant level 0.05 and size effect 0.50, and power of test 0.65, for each experimental and control group, 11 individuals was calculated (Cristofolini, 2000). One of the participants in the experimental group were deterred from continuing to work, thus 10 people were studied in the experimental group.

1.3. Data collection method

The steps of the present study implementation were as follows:

1- At the beginning of the files in a Sadr psychiatric hospital, admitted within the past 10 years (means, 82 to 92 years), 300 cases were investigated. And from 80 eligible women were invited to participate in the study. Finally, among them people who would like to participate in the study and were eligible for the study, was invited. The 22 students were selected and randomly assigned to two groups: Control and Experimental.

2- The experimental group underwent 13 sessions of 135 minutes of weekly cognitive-behavioral therapy, respectively. Research Associate was used for doing in this study the pre-test, post-test and homemade homework.

3- After completing the training sessions and at the end of the thirteenth session, subjects were tested again YSQ-SP-72 and the results of that were compared with pre-test results. Data with, Statistical

method of ANOVA and MANOVA were analyzed. The structure used in the study has followed of cognitive behavior-compliance patterns (Beck, 1998).

4- Providing independent variable mean training of cognitive-behavioral techniques in this study involves three categories of cognitive, behavioral and experimental techniques, according to results of studies done on effective interventions and techniques on adjustment schemes were used. According to the cognitive-behavioral principles, training process in Table 1 was performed.

Table 1: Protocol of treatment Research

sessions	The content of therapy sessions
First and second session	Introduction meeting, representing principles and rules of the group, Implementation of pretest for Screening and Evaluation; the therapeutic relationship and trust, to familiarize the group with the disorder, process model training program, Naturalizing person problems And inspire hope (the beginning of the process of cognitive restructuring).
Third Session VI	Learn to identify negative thoughts and also continue to acquaint people with cognitive therapy, relaxation training Imaging method of secure environment, And deep abdominal breathing, assess and challenge dysfunctional thoughts and providing more balanced alternative interpretations.
Seventh session	Efforts to identify and deal with the problem and solving it in a way adjusting, through education, problem-solving techniques.
The eighth to the eleventh session	The introduction of conditional beliefs and schemas to identify and review their practices method, challenge them and provide techniques that helps in shaping balanced schemes, pushing the team towards the end of the period.
Twelfth Session	Training the techniques "assertiveness" and "distraction" and a response to concerns about the termination of treatment.
The thirteenth session (final)	To help the client to use the techniques learned in group to convey to real life and holding self-help meetings, the implementation of the test.

4. Measurement tools

1.4. Demographics information questionnaire

This questionnaire included information related to age, duration of marriage, education, history of hospitalization due to psychiatric illness and else.

2.4. Secondary trauma scale (STS)

For identify PTSD veterans' wives who suffer from secondary trauma (ST). This scale has three subscales: intrusive thoughts and notions, symptoms of avoidance and arousal responses of people who are in close contact with people with PTSD. Score of 38 and above indicate indices secondary trauma. Factor structure of secondary trauma stress scale (STSS) using confirmatory factor analysis were examined, Indices of goodness of fit (GFI= 0/96, CFI= 0/94, IFI= 0/94, RMSEA= 0/069) were acceptable. Also, in an example of the Iranian veterans' wives and children were used STSS and the factor structure of confirmatory factor analysis showed that goodness of fit indices is appropriate (Bride, Robinson, Yegidis & Figley, 2004). In different researches, range of Test-retest and internal consistency was to 0/62-0/98 (Bride, Robinson, Yegidis, Figley, 2004; Ahmadi, Rezapour, Davoodi & Saberi, 2012).

3.4. The Early maladaptive schema questionnaire (YSQ-SF)

This questionnaire was developed by Young (Young, 1998). In this questionnaire fifteen schemes in five areas are considered: Disconnection / Rejection (emotional deprivation, abandonment / instability, mistrust / abuse, defectiveness / shame, social isolation / alienation), autonomy and impaired performance (failure, dependence / incompetence, vulnerability to harm or illness, caught / self-developed), other-directedness , (obedience, sacrifice), over vigilance/Inhibition (Emotional inhibition, unrelenting standards), Impaired Limits (Fitness / Secretary, self-control / self-discipline inadequate) (Schmidt, Joiner, Young & Telch, 1995).The first comprehensive study on the psychometric properties

of these instruments, Smith, Cronbach's alpha coefficients for subscales non-clinical population were reported between 0.5 and 0.82. This questionnaire has positive relationship with psychological distress scale and personality disorders and therefore it has desirable validity (Shamat, Sabeti & Rezvani, 2009). Cronbach's alpha range is obtained between 0/90 – 0/62 (Hamid pour, Dolatshai, Pour shahbaz & Dadkhah, 2011). In Iran test-retest validity of this inventory was reported between 0.64 and 0.85 (Sadooghi, Aguilar-Vafaie, Rasoulzadeh Tabatabaie & Esfehanian, 2008; Moloodi, Dezhkam, Moutabi & Omidvar, 2010).

4. Findings

In this section, the first for description of data, the mean and standard deviation in the pre-test and post-test (in both experimental and control groups, separately) are reported in Table 1. And then Analysis of covariance was used to analyze the data.

Table 1: average and standard deviation of maladaptive schemas in pretest and posttest.in experimental and control group

Groups	Test	Statistical indexes	*EMS* D/R	IA/P	OD	OV/I	IL
Experimental group (N=10)	Pretest	M	79.30	60.03	38.80	39.05	34.50
		SD	27.18	10.88	9.18	8.29	12.59
	Posttest	M	57.50	47.10	27.60	31.11	24.21
		SD	18.17	15.13	3.74	8.52	5.33
Control group (N=11)	Pretest	M	74.54	59.63	41.18	38.16	30.64
		SD	28.25	20.21	10.75	11.25	9.35
	Posttest	M	75.54	59.09	43.72	41.11	31.09
		SD	26.40	25.17	8.09	11.92	10.71

Note: EMS: Early maladaptive schemas; D/R: Disconnection/Rejection; IA/P: Impaired Autonomy and/or performance; OD: Other-Directedness; OV/I: Over vigilance/Inhibition; IL: impaired limits

For consideration of research hypothesis was used multivariate analysis of variance (MANCOVA). M. Box test showed that the matrix of variance - covariance between the experimental and control groups were similar (P= 0.081, F =1.549, Box M = 32.842). On the other hand, the results of sphericity Bartlett's test with degrees of freedom 14, equal to 29.029 were significant at level 0.01. These results indicate that there is an acceptable level of correlation between the dependent variables. Hence, the ANOVA is appropriate test for comparing the effects of independent variables in the present study.

According to Tabachnick and Fidell (Tabachnick & Fidell, 2013) of the four statistics (Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root, Wilks lambda test was used to calculate F value. The results of multivariate analysis of variance using Wilks' Lambda statistics showed that linear combination of dependent variables (disconnection/rejection, impaired autonomy and/or performance , other-directedness, over vigilance/inhibition, impaired Limits) significantly is different between experimental and control groups (P> 0.006 , F=6.554 F (10,5), Wilks lambda = 0.234 , partial η^2=0.766). This means that implementation of the independent variables at least in one dependent variable makes a meaningful difference in both the experimental and control groups. For this reason, in order to awareness of the effect of the independent variable on each levels of the dependent variable separately, one-way analysis of covariance was used. In Table 2 one-way analysis of covariance was reported for comparing disconnection/rejection, impaired autonomy and/or performance, other-directedness, over-vigilance/inhibition, impaired limits show in two groups.

Table 2. ANOVA for comparison of early maladaptive schemas dimensions in both experimental and control groups

Dependent variables	The average of squares (Total errors)	F	Level of significance	partial$\eta 2$
D/R	1824.35,215.93	8.449	0.011	0.376
IA/ or P	526.43,217.12	2.425	0.142	0.148
OD	941.71,26.06	36.213	0.001	0.721
OV/I	568.20,65.89	8.623	0.011	0.381
IL	118.25,54.75	2.167	0.163	0.134

Note: 1. D/R: Disconnection/Rejection; IA/P: Impaired Autonomy and/or performance; OD: Other-Directedness; OV/I: Over vigilance/Inhibition; IL: impaired limits 2. For all aspects of early maladaptive schemas degree of freedom equal to 1 and degrees of freedom for error variance equal to 14.

As it can be seen in table 2. The results of ANOVA showed that areas of early maladaptive schemas such as disconnection/rejection ($p< 0.05$, F (14.1) - 8.449, over vigilance/inhibition ($p > 0.05$, F (14, 1) - 8.623), and dimension of other-directedness ($p<0.05$, F (14.1) – 36.213) were affected by the cognitive behavior therapy and CBT has caused to decrease in average scores of disconnection/rejection, other-directedness, over vigilance/inhibition.

5. Discussion

Based on the result of this research cognitive-behavioral therapy could reduce the early maladaptive schema in the 3 area of disconnection/rejection, other-directedness, over vigilance/inhibition in PTSD veterans' wives. In query management, although similar research results that can be compared with results of this research, was not found. But previous research showed that schema based group therapy and schema based training could improve various disorders in veterans' wives (Darien et al, 2013; Hamidpour et al, 2011; Tabatabaei-Bozorgi, Sohrabi, Karimi-Zarchi, 2012; Ghaderi, Kalantari & Mehrabi, 2015; Nazari & Ahmadian, 2014; Jafari et al, 2013; Moosaviasl & Moosavi, 2014; Boden, John, Goldin, Werner, Heimberg & Gross, 2012; Simpson, Morrow, Vreeswijk & Reid, 2010; Skewes, Samson, Simpson & Vreeswijk 2015; Heilemanna, Pietersa, Kehoea & Yanga, 2011).

In explaining the findings of this study can be said that cognitive behavioral therapy with changing and correction schemas and maladaptive coping strategies, and replacing more adaptive cognitive and behavioral patterns creates an opportunity to improve and modify the incompatible schemas and psychological problems resulting from it. In cognitive-behavioral approach, individuals were trained that recognize and correct their distorted and inconsistent cognition to find more adjustment with the environment. This approach emphasis that cognition and behavior are modified by cognitive restructuring and provides an opportunity to adaptation and using effective emotional (Thiel et al, 2014; Corey, 2005; Prochaska & Norcross, 2007).

In other words, three types of interventions in cognitive-behavioral approach for intended aims have been specifically shown that to successfully modify the Incompatible schema fields that contains: Cognitive interventions, the aim of which is cognitive processes, By examining the relationship between cognition and emotion, identify and challenge the infrastructure knowledge, To help patients to cause The situation more realistic in dealing with infrastructure knowledge (to put back) or schemas (in the words of Yung).

In other words, the main objective cognitive strategies are improving information processing system relating to schemes and reforming and changing distorted cognition of people, about themselves, the future of the world and others, which are derived from Incompatible schema. The aim of the cognitive behavioral interventions is to improve communication skills, problem solving, and conflict resolution that can help to persons replaced the maladaptive strategies created by schemas with a more adaptive way. And by changing their behavioral pathological patterns (such as avoidance, submission, and compensation extreme) reduce likelihood of the continuation of schemes and psychological problems. As well as, it is effective in overcoming on the change obstacles.

The third group of experimental interventions are interventions that identify the schema of a person's emotional level and then challenges these schemas. (Seel Norbert, 2012; Prochaska & Norcross, 2007; Beck, 1998; Shorey, Stuart, Anderson & Strong, 2013; Gilbert & Leahy, 2009). Research different evidence on the treatments and based on cognitive-behavioral approach group trainings and other psychotherapy, suggests that factors in the group has facilitating role in activation techniques, there is reparative important works in the field of cuts and rejection. The research evidence show that group cognitive behavior therapy and other therapeutic and instructional interventions have much benefit. In group therapy, connection and closer interaction between members could create supportive environment for new learning. As well as group therapy could increase self-efficacy and self-assertiveness of members, and empower them for confronting with deconstruction of behavior.

The results also showed that cognitive behavioral strategies used in the study to improve and modify the schema of two fields of impaired autonomy, performance, and disrupted limits have not been the effectiveness. According to the author and available scientific literature, perhaps because of the use of short-term treatment in this study, the possibility of satisfying emotional needs is not provided. Therefore, it is recommended that further study apply long-term treatment to modify the schema (Renshaw, Rodrigues, & Jones).

The results showed that cognitive-behavioral therapy approach, in line with some researches (Azadbakht & Vakili, 2013; Cámara & Calvete, 2012; Ghaderi, Kalantari & Mehrabi, 2015; Hofmann & collegue, 2012) is effective strategy for adjusting of maladaptive schema in women veterans with post-traumatic stress disorder, with the symptoms of secondary trauma. in the cognitive model proposed that When people dealing with chronic stressors, and experiences traumatic events, Negative fundamental assumptions and beliefs about the world, others and also in their interpersonal relationships are formed, the cognitive disturbances in women veterans with chronic PTSD, along with a big problem in understanding the behavior of their husbands, Lead to resonance and continuation of EMS and also creates a new maladaptive schema in this group of women.

As a result, using a variety of, cognitive, behavioral and experimental techniques that to identify, change and reform schemes has been approved and Their effectiveness has been proven in many studies, can be effective in modify the schema in study groups. Also in this study because of some limitations in terms of time, place and financial conditions follow-up study failed, so, in the end is suggested that future studies with follow-up study be done. The researchers recommended controlling in future research variables such as economic conditions, employment, and the amount of secondary trauma in women veterans with PTSD, veterans of the physical, personality characteristics and a history of imprisonment.

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