Original Article

Do Males and Females Differ in Recovering from PTSD Symptoms?

Seyed-Hossein Salimi, PhD[1]
Ferdos Gomashchi, PhD[2]
S. Mohammad Reza Taghavi , PhD[3]

1 Research Center for Exercise Physiology, Department of Psychology, Baqiyatallah University of Medical Sciences, Tehran, Iran
2 Department of Social Studies, University of Police (Niroye-entezami), Tehran, Iran
3 Department of Clinical Psychology, University of Shiraz, Shiraz, Iran

Corresponding author:
Salimi, Seyed-Hossein PhD, Research Center for Exercise Physiology, Department of Psychology, Baqiyatallah University of Medical Sciences, Niavaran, Araj, P.O. Box: 19395-6558, Tehran, Iran.
Email:salimish617@yahoo.co.uk

Objective: The present study focuses on the effectiveness of problem-solving training program on female and male PTSD survivors of Bam earthquake in Iran.

Method: Female and male subjects were requested to fill in several questionnaires including clinical interview, coping skills questionnaire, and a demographic form. The subjects also participated in a problem-solving training program.

Results: The results showed that the training program was effective for both sex groups. The sex groups did not show significant differences on PTSD symptoms in the post-test phase. Females tended to maintain their emotion-focused skills in post-test phase while the males did not. However, for both groups the mean scores of problem coping skills similarity increased. Although the mean scores of some PTSD symptoms were increased for the female group, the majority of PTSD symptoms decreased for both sexes in the post-test phase.

Conclusion: It may be concluded that females are more likely to show PTSD symptoms than males. In addition, they may predispose to maintain negative attitudes towards life events than males.

Key Words:
Earthquakes, Iran, Gender, Posttraumatic stress disorder, Problem solving

Iran J Psychiatry 2008; 3: 20- 25

Disasters have affected the lives of many people psychologically, socially, and spiritually. The consequences of each disaster on communities may depend on different variables including gender, age, marital status and culture. Although studies supported that females are more prone to develop post traumatic stress disorder (PTSD) (1), epidemiological studies showed that males are more likely to experience traumatic events than females (1, 2).

Based on the emotional processing theory, PTSD survivors inhibit realistic processing traumatic events. It is possible that sex differences stem from several factor thoughts underlining individual differences in trauma recovery. More clearly, trauma memory (e.g., what, when, and where), belief about the trauma (e.g., why), and belief about the self and the world may be the reason for sex differences in trauma experiences (3). Recent studies concluded that PTSD symptoms in earthquake survivors decreased after a problem solving training intervention (4, 5). Moreover, debriefing and behavioral intervention on survivors of Bam earthquake in Iran may decrease some PTSD symptoms but not for PTSD's irritability sign.

More recently, Tolin and Foa analyzed data from the Post-Traumatic Cognitions Inventory (PTCI) including 303 male and female adults who reported a negative life event; it was revealed that females significantly had more scores on self-blame items than males (3, 6). Similar results were found for subjects who met DSM-IV trauma criteria. It was found that females' grater fear than males may be associated with an increased conditionability of fear-related responses (7). Findings showed that dysfunctional schema about the self and the world exists and subjects believed that they are totally incompetent and the world is completely dangerous. Findings from a more recent study related to Bam earthquake in Iran showed that older adults, females, low educated individuals, divorced or widowed and unemployed survivors had higher scores than those who were educated, married and employed (8).

With respect to the PTSD criteria, most of the studies have focused on the first criterion (the person was confronted with actual or threatened death or injury to self or others) but not on the second (the person responded with intense fear, helplessness, or horror). When the second criterion was counted in the studies, it appeared that males' trauma prevalence reduced comparing to the females' prevalence of PTSD (9). These findings showed that males are less likely to present traumatic symptoms which lead them to experience extreme fear.

Several studies reported that females had higher levels of PTSD in natural disasters. For example, a study in South Africa cited that females following a major flood disaster showed high levels of PTSD (10). In the

Armenia earthquake in 1988, females displayed increased fears and PTSD symptoms (11). In contrast, findings from several studies such as the sinking of a ferry off Belgium in 1987, showed no significance gender differences (12, 13). In a Palestinian sample, it was found that women reported lower level of lifetime trauma than men (14). However, exposure to trauma was associated with PTSD for both genders. For female subjects, anxiety, mood and somatoform disorders were developed by life time trauma but not among male samples.

Among the different types of traumas, studies showed that rape and sexual assault and combat are associated with higher rates of PTSD among both sexes (2). Trauma which violates existing beliefs about oneself, the world and the future may develop more severity victims. The nature of earthquake contains a large scale of changes in personality, future and life. Earthquake forces victims to change their global and might be judged as a severe event. Victims are prone to view themselves as vulnerable and lonely and thinking that the environment is unpredictable and dangerous.

In a study concerning motor vehicle accidents, the results showed that women are more at risk for a wide range of PTSD symptoms including intense feelings of distress, memories related to the accidents, avoidance/numbing, arousal, loss of interest in significant activates, sleep problems, difficulty concentrating, and exaggerated startle responses (15).

In the California sample, researchers found no relationships between gender and PTSD symptoms (16). For PTSD and marital status, analyses indicated that single persons attained lower scores than the married; and divorced subjects showed highest scores. In the Turkey sample, data reported significant relationships between PTSD and the number of children, experience of loss, education and gender but not with age or marital status (16). Those who had more children showed more PTSD symptoms. Those who lived in tents had higher levels of PTSD comparing with those who lived in a house. Survivors with no loss experiences had low levels of PTSD than those who reported loss experiences (family, relatives, friends, or neighbors). Individuals with low educational levels (elementary school education) had higher PTSD scores. Males also had low PTSD scores than females.

Sadock and Sadock reported that the lifetime prevalence of PTSD ranges from 10 to 12 percent for females and from 5 to 6 percent for males (17). The lifetime prevalence of PTSD is significantly more common in females. PTSD is found more among young adults and is most likely to occur among the following individuals: single, divorced, widowed, socially withdrawn, and those with low socioeconomic level.

The present study was conducted to study the PTSD symptoms in female and male survivors of Bam earthquake in Iran. The main question was that whether or not there are significant differences between the two sexes on PTSD symptoms. In addition, the study attempted to answer the question that the problem solving training program was more effective on the female survivor group or the male one.

Materials and Method

One hundred sixty male and female survivors of Bam earthquake were randomly selected for the study on 26 December 2003 in Iran. All subjects were identified as PTSD patients through both clinical interview and a PTSD inventory. Subjects were divided into two control and experimental groups (n = 40 each). The experimental group was offered 12 training sessions which aimed to identify the subjects' problems and how they could manage them more appropriately (5).

Several instruments were conducted in the study including a Personal Detail Form (indicating age, sex, educational level, and marital status); a clinical structured interview, including PTSD criterion and symptoms and the Farsi version of Mississippi PTSD scale (18, 19). The scale is valid and has sufficient reliability (18). In addition, coping Skills Questionnaire which comprises 19 items concerning different coping skills and applied by people in crisis and harsh environment, was used in the study. The validity of the scale was 78% (20). And finally, the Problem Solving Training Program (PSTP) was conducted. This program included 12 sessions in a period of one month (three sessions per week, each 2 hours) (5). In order to achieve a good quality in training, subjects in the experimental group were divided into two separate classes (each 20). All sessions were carried out by a therapist and a co-therapist.

Both groups completed the Mississippi scale and the Coping Skills Questionnaire before and after the Problem Solving Training Program (PSTP). The problem solving training program was conducted for the experimental group but not for the control group. With respect to the coping skills, subjects were divided into either problem-focused or emotion-focused coping skill groups. Data of the two groups were compared by SPSS.

Results

All the subjects were in the 15 to 60 age range and were educated (primary, %17; high school, %84.9; university, %4.4). 49 (30.6%) females and 111 (69.4%) males took part in the study. Of them, 31 (20.4%) survivors were single, 116 (76.3%) married and 5 (3.3%) widowed.

In order to test whether or not there were significant differences between the two sexes in PTSD symptoms, female and male groups were assessed before the training program ;and the results showed that there were not significant differences between female and male groups [$t = 1.42$, $P = 0 .15$] (Table 1). The both groups had similar severity symptoms of PTSD before starting problem solving program training. As demonstrated in table 1, the mean scores decreased from pre-test to post test in the both sex groups. Again, analysis by independent t-test failed to show significant

Table 1. Severity of PTSD symptoms mean scores with respect to subjects' sexes.

test		female			Male		
		N	M	SD	N	M	SD
PTSD symptoms	Pre-test	49	67.23	17.34	110	61.67	19.15
	Post-test	49	57	14.63	110	58	15.20
Problem solving							
Emotion-focused	Pre-test	48	8.89	2.01	103	8.59	2.23
	Post-test	48	8.29	1.91	103	7.27	1.88
Problem-focused	Pre-test	48	12.1	3.24	103	10.47	3
	Post-test	48	14.32	4.9	103	14.9	5.3

Table 2. Frequencies and percentages of psychological symptoms in survivors.

Psychological symptoms	F(%)
Depressed mood	87(54.4)
Distress & Anxiety (intensive fear, helplessness, horror)	79(49.4)
Sleep problems (falling or staying asleep)	68 (42.5)
Headache	53(33.1)
I irritability & Agitation (out burst of anger)	52(32.5)
Nightmare (distressing dreams of the event)	52(32.5)
Low appetite	44(27.5)
Startle & panic attacks (exaggerated startle response)	40(25)
Major changes in life	37(23.1)
Tremble	34(21.3)
Occupational thoughts	33(20.6)
Impulsive behaviors	21(13.1)
Suicide ideas	20(12.5)
Indecisive & fickle	18(11.3)
Diminished interest (unable to have loving feelings)	16(10)
Quick decisions	15(9.4)
Worthless life (sense of foreshortened future)	15(9.4)
Hopelessness & despair	15 (9.4)
Feeling of lonely and detachment	11(6.9)
Absentees from work without permission	11(6.9)

differences between the groups ($t=1.47$, $P=0.157$). With respect to emotion-focused skills, data showed that the female group attained similar scores in both pre and post tests while for the male group the mean scores decreased in the post-test. However, analyses by t test demonstrated that there were significant differences between the female and the male groups in post-test ($t=2.42$, $P<0.05$). On the problem-focused coping skills, the mean scores for the both groups increased from pre-test to post-test while this rising was more in the male group. Analyses by t test revealed in the post-test, there were not any differences between the sex groups (Table 1).

Moreover, analyses by pair samples t-test showed that for the female group there were not significant differences either on PTSD symptoms or problem-focused coping skills while for the male groups there were significant differences on the PTSD symptoms ($t=-0.095$, $P<0.001$) and on the problem-focused coping skill ($t=2.146$, $P<0.05$) (Table1).

As Table 2 demonstrates, most survivors showed high percentages of psychological problems including depressed mood (54.4%), anxiety (49.4%) and sleep problems (42.5%). Subjects reported that they suffered from intense fear and horror and they have often experienced falling or staying asleep. They also often had recurrent and intrusive distressing recollections of the event's images, thoughts and perceptions. However, some symptoms such as diminished interest, quick decision, feeling of detachment, and foreshortened future were not frequently experienced by the survivors. They also reported relatively job absentees.

Table 3. Frequencies and percentages of psychological symptoms in survivors

Psychological symptoms	Female		Male	
	pre	post	pre	post
Depressed mood	0.51	0.63	0.55	0.51
Distress & Anxiety (intensive fear, helplessness, horror)	0.63	0.57	0.58	0.46
Sleep problems (falling or staying asleep)	0.43	0.43	0.43	0.42
Headache	0.33	0.33	0.30	0.33
Irritability & Agitation (out burst of anger)	0.27	0.31	0.42	0.33
Nightmare (distressing dreams of the event)	0.23	0.27	0.41	0.35
Low appetite	0.39	0.31	0.41	0.26
Startle & panic attacks (exaggerated startle response)	0.33	0.27	0.40	0.24
Major changes in life	0.23	0.24	0.26	0.23
Tremble	0.23	0.27	0.29	0.19
Occupational thoughts	0.45	0.24	0.57	0.19
Impulsive behaviors	0.20	0.10	0.24	0.14
Suicide ideas	0.12	0.06	0.14	0.15
Indecisive & fickle	0.10	0.12	0.06	0.11
Diminished interest (unable to have loving feelings)	0.14	0.08	0.29	0.11
Quick decisions	0.16	0.08	0.25	0.11
Worthless life (sense of foreshortened future)	0.20	0.10	0.23	0.09
Hopelessness & despair	0.31	0.10	0.48	0.09
Feeling of lonely and detachment	0.18	0.08	0.29	0.06
Absentees from work without permission	0.00	0.02	0.11	0.09

Table 3 illustrates the mean scores of PTSD symptoms for the female and male groups in pre and post test phases. Based on these data, the mean scores of PTSD symptoms may be considered in several categories. In the first category, the mean scores of symptoms such as depression, irritability and agitation, tremble, and nightmare symptom increased from pre-test phase to post-test phase for the female group while this was reversed for the male group. In the second group, the mean scores of PTSD symptoms such as distress and anxiety, low appetite, startle and panic attacks, major change in life, impulsive behaviors, occupational thoughts, diminished interest, quick decision, worthless life, hopeless and despair, and feeling of lonely and detachment for both groups decreased from pre-test to post test phases. In the third category, the mean scores of PTSD symptoms such as indecisive and fickle were increased in both sexes in two phases.

Finally, the mean scores of PTSD symptoms such as sleep problems, headache, and absentees from work without permission were similar in two phases. However, the mean scores of suicide ideas decreased in the female group while the mean scores were similar in the male group. However, analyses by t test failed to show significant differences between the two groups in each phase.

Discussion

Our results demonstrated that the coping strategy and the problem solving training program may play a protective role for either female or male survivors. After the problem solving training program, all survivors were more prone to recover form PTSD symptoms and had better feelings and experienced positive changes in themselves (4, 5). However, results failed to show any significant differences between the two sex groups although both groups relatively recovered from the PTSD symptoms.

As previous studies confirmed, the present study showed that females were more likely to express emotional symptoms and negative life events than males (3, 7, 8), our results reveled that the male group significantly attained lower mean scores in emotion-focused skills than the female group in the post-test phase. In contrast, the mean scores of problem-focused skills decreased for both sex groups from pre-test phase to post-test phase. That is, the problem solving intervention ameliorates the PTSD symptoms in survivors and changes the PTSD survivors' attitudes about the negative life events. It is possible that after a traumatic event, females hold different beliefs about themselves as well as the world. In addition, female survivors may be more prone to keep negative and personalized attribution about traumatic events than males. It seems that the survivors of traumatic events who had memory records of the experience and held an excessive amount of self-blame or guilt-related beliefs, were more at risk to show PTSD symptoms than those without such beliefs .

In a similar line, we found that for female survivors, symptoms such as depression, irritability, tremble and nightmare had not decreased from pre-test phase to post-test phase. It can be gathered that female survivors tend to maintain their negative attitudes towards negative life events. Furthermore, they are more likely to express certain anxiety symptoms than males. However, the problem solving training program has positive effects on most PTSD symptoms (e.g. anxiety, appetite, startle and panic attacks, impulsive behaviors, diminished interest, hopeless and despair) for both sexes .

In order to present a better understanding, additional researches should be conducted on symptoms of PTSD sex group survivors. However, females may view themselves as incompetent individuals than males. Needs for support and cultural factors put females at higher risk in the community than males. This may develop a negative belief in female victims to view the world as a dangerous place (3). Studies confirmed a higher prevalence of exposure to trauma in men than in women (14). However, it appears that women are more vulnerable than men suffering from PTSD symptoms and from other psychological problems. It seems that Middle Eastern cultures contain a special context for females and males. Males are appreciated for their patience, resistance, and struggles. On the other hand, females should be supported to release their distress and sorrows, they are permitted to show their weakness or to lack control and they can demand their needs

As previous studies reported, for certain types of trauma female victims are at more risk while males are more at risk for other types of trauma (2, 3, 15). As Kalayjian et al. showed, the present study did not support this idea and failed to show significant differences between female and male victims (16). In fact, both female and male victims are equally at risk for demonstrating PTSD symptoms. Perhaps, the prevalence in certain types of traumatic events such as earthquake is similar for both sexes .

In summary, males and females tend to experiences different types of traumatic events in their life span. Overall, females still are relatively more at risk for PTSD. Furthermore, the cognitive model of PTSD provides useful information on gender differences in the prevalence of PTSD. It appears that females are more likely to blame themselves more and view themselves as incompetent. In addition, they believe that the world is more dangerous for them than for males. It seems that the cognitive schemas for females are more negative. However, the nature of certain traumatic events may put females in danger; this may be due to gender factors or due in part to differences in the trauma itself. In order to have a better explanation for these differences, further research should be conducted on both gender and trauma nature. Longitudinal studies are needed to assess traumatic attributions, cognition schemas and PTSD symptoms .

References

1. Breslau N, Kessler RC, Chilcoat HD, Schultz LR, Davis GC, Andreski P. Trauma and posttraumatic stress disorder in the community. *Arch Gen Psychiatry* 1998; 55: 626-632.
2. Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry* 1995; 52: 1048-1060.
3. Tolin DF, Foa EB. Gender and PTSD: A cognitive model. In: Kimerling R, Ouimette P, Wolfe J, eds. *Gender and PTSD*. New York: Guilford Press; 2002. p. 76-97.
4. Fakour Y, Mohammadi MR, Mahmoudi Gharaei J, Karimi M, Azar M [The effect of debriefing and group behavioral intervention on PTSD symptoms of Bam Earthquake survivors in Iran]. *advances in cognitive science* 2004; 6: 85-92.
5. Ghomashchi F, Salimi SH. The effectiveness of problem solving skills in decreasing PTSD symptoms in suvivors of Bam earthquake. *Pakistan J Med Sci* 2007; 23: 736.
6. Foa EB, Tolin DF, Ehlers A, Clark DM, Orsillo SM. The Posttraumatic Cognitions Inventory(PTCI): Development and validation. *Psychol Assess* 1999; 11: 303-314.
7. Foa EB, Rothbaum BO. *Treating the Trauma of Rape: Cognitive-Behavioral Therapy for PTSD*. New York: Guilford Press; 1998.
8. Montazeri A, Baradaran H, Omidvari S, Azin S. „Ebadi, M., Garmaroudi, G., et al.(2005). Psychological distress among Bam earthquake survivors in Iran: A population-based study. Biomed Central Public Health.
9. Perkonigg A, Kessler RC, Storz S, Wittchen HU. Traumatic events and post-traumatic stress disorder in the community: prevalence, risk factors and comorbidity. *Acta Psychiatr Scand* 2000; 101: 46-59.
10. Burger L, Van-Staden F, Nieuwoudt J. The Free State floods: A case study. *S Afr J Psychol* 1989; 19: 205–209.
11. Pynoos RS, Goenjian A, Tashjian M, Karakashian M, Manjikian R, Manoukian G, et al. Post-traumatic stress reactions in children after the 1988 Armenian earthquake. *Br J Psychiatry* 1993; 163: 239.
12. Joseph S, Yule W, Williams R, Hodgkinson P. Correlates of post-traumatic stress at 30 months: the Herald of Free Enterprise disaster. *Behav Res Ther* 1994; 32: 521-524.
13. Burger L. *Coping with Repetitive Natural Disasters: A Study of the Ladysmith Floods*. Pretoria: Dept. of Psychology, University of South Africa; 1992.
14. Punamaki RL, Komproe IH, Qouta S, Elmasri M, de Jong J. The Role of Peritraumatic Dissociation and Gender in the Association Between Trauma and Mental Health in a Palestinian Community Sample. *Am J Psychiatry* 2005; 162: 545-551.
15. Fullerton CS, Ursano RJ, Epstein RS, Crowley B, Vance K, Kao TC, et al. Gender differences

in posttraumatic stress disorder after motor vehicle accidents. *Am J Psychiatr* 2001; 158: 1486-1491.

16. Kalayjian A, Kanazi RL, Aberson CL, Feygin L. a cross- cultural study of the psychosocial and spritual impact of natural disaster *International Journal of Group Tensions* 2002; 31: 175-186.
17. Sadock BJ, Sadock VA. *Kaplan and Sadock's Synopsis of Psychiatry: Behavioral Sciences/Clinical Psychiatry*. Ninth ed. Philladelphia, PA: Lippincott Williams & Wilkins; 2003.
18. Goodarzi MA. [Evaluating reliability and validity of the Mississippi Scale for the post traumatic stress disorder]. *Journal of Psychology* 2003; 7: 153-178.
19. Keane TM, Caddell JM, Taylor KL. Mississippi scale for combat-related posttraumatic stress disorder: three studies in reliability and validity. *J Consult Clin Psychol* 1988; 56: 85-90.
20. Porshabaz A. *Relationships between life events and personality types in leukemia patients.* [Master dissertation in clinical psychology]. Tehran: University of Medical Sciences; 1992.