Effectiveness of emotion regulation and distress tolerance skills training on coping strategies, emotion regulation, and perceived stress in prisoners

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Abstract

Background: Emotional dysregulation and coping strategies of individuals in coping with distress and their significance in promoting general health have always been of interest to researchers. The present study was conducted to examine the effectiveness of emotion regulation and distress tolerance skills training on coping strategies, emotion regulation, and perceived stress in prisoners.

Methods: A quasi-experimental study was conducted. The statistical population consisted of 200 prisoners in Fuman Prison, Iran. A total of 30 individuals who met the inclusion criteria were selected using convenient sampling method and then randomly assigned into two experimental and control groups (15 each). Participants in the two groups were matched for education level and age. Experimental group received 12 sessions of teaching emotion regulation and distress tolerance skills one hour per week. Both groups filled out cognitive emotion regulation questionnaire (CERQ-P), Blinger and Mouse's coping responses inventory (CRI), Cohen's perceived stress scale (PSS-14) at baseline and after treatment. The data was analyzed using one-way ANOVA and multivariate analysis of covariance in IBM SPSS Statistics for Windows, Version 21.0.

Results: About 60% of the participants were in age range of 31-45 and more than 60% had imprisonment experience. Moreover, 80% of them were illiterate and 66% were unemployed. Since Eta value was 0.97 for variables including coping strategies, emotion regulation, and perceived stress, it seems that teaching emotion regulation and distress tolerance skills have been highly effective in improving coping strategies and reducing perceived stress in prisoners ($P<0.001$).

Conclusion: Emotion regulation and distress tolerance skills improved emotion regulation and coping strategies, and reduced using emotion-focused coping strategies and perceived stress in prisoners.

Introduction

More than 10.1 million people all around the world and 220'000 people in Iran are held in prisons and at least half of them suffer from personality disorders (1) and 75-85% suffer from mental disorders (2). In this regard, each year, thousands of prisoners commit suicide in prisons all around the world (1). Untreated psychiatric disorders of prisoners may seriously affect the mental health status and quality of life in them and their families (3). According to recent evidences of psychological disorders, failure in emotion regulation is a factor affecting creation and continuation of psychiatric disorders (4) that have impacts on the relationship with others and the ability to cope with life challenges interfering with relationships (5).

Dialectical Behavior Therapy (DBT) is among the most recent psychological treatments. There are four core skills in DBT that include: (1) mindfulness skills, that aim for enhancement of tolerance, (2) interpersonal effectiveness skills, that aim to decrease interpersonal problems, (3) emotion regulation skills, that aim to decrease mood and emotion dysregulation, and (4) distress tolerance skills, that aim to decrease impulsive behaviors (6).

Emotion regulation consists of using behavioral and cognitive strategies to reduce intensity of emotion and to control it (7), that may be effective in regulating emotions and using suitable copying strategies (8). In another study, it was shown that there is a negative significant relationship between emotion regulation and delinquency so that offenders fail to regulate their emotions (9).

Another effective factor in continuation of mental problems is inability in distress tolerance (10). Distress tolerance means tolerating a wide range of negative inner states such as negative emotions, ambiguity, frustration, physical, and mental tensions (11). Several studies indicate that inability in distress tolerance is related to some of dysfunctional and anti-social behaviors, addictive gambling, self-harm, overeating, suicide gesture, alcohol and substance use, and behavioral disorder (12, 13).

Healthy coping strategies consist of cognitive and behavioral attempts of individuals to deal with hard situations leading to stress reduction and problem solving (14). Various studies about health psychology have indicated that adaptive coping strategies in stressful situations lead to individuals' distress tolerance and mental and psychological wellbeing (15).

Several studies showed that lack of efficient coping strategies is in relation with low perception of emotions, inability to cope with perceived stresses, lack of distress tolerance, and various psychiatric disorders (16). In other words, efficient coping strategies can reduce perceived stress caused by stressful factors and improve emotion regulation and mental health (17). Since prisoners are in trouble and due to inability in emotion regulation and distress tolerance have unhealthy coping strategies, teaching emotion regulation and distress tolerance strengthens their coping strategies and improves their mental health. Accordingly, the current study aimed to examine the effectiveness of emotion regulation and distress tolerance skills training on coping strategies, emotion regulation, and perceived stress in prisoners.

Methods

In the present quasi-experimental study, statistical population consisted of 200 prisoners in Fuman Prison in Iran. A total of 30 prisoners who had inclusion criteria were selected using convenient sampling method and then assigned into two experimental and control groups via simple randomization (15 each).

Inclusion criteria consisted of more than one-year condemnation, a minimum education level to read and learn, obtaining the lower-average scores on emotion regulation and distress

tolerance scale, and having a history of criminal behaviors. Exclusion criteria were having psychotic disorders, treatments for mood and drug abuse disorders, and less than one-year condemnation.

The two groups were matched based on age and education level. Experimental group participated in intervention for 12 sessions, each session lasting for 1.5 hours. Both groups filled out cognitive emotion regulation questionnaire (CERQ-P), Blinger and Mouse's coping responses inventory (CRI), Cohen's perceived stress scale (PSS-14) at baseline and after intervention. The data were analyzed using one-way ANOVA and multivariate analysis of covariance in IBM SPSS Statistics for Windows, Version 21.0.

Instruments

To collect data, demographic questionnaire, cognitive emotion regulation questionnaire (CERQ-P), coping responses inventory (CRI), and perceived stress scale (PSS-14d) were the instrument used to assess emotion regulation and coping strategy.

Demographic questionnaire: This 12-item questionnaire included age, job, education and duration of condemnation. This questionnaire was distributed among prisoners.

Cognitive emotion regulation questionnaire (CERQ-P): This questionnaire consists of 36 items and 9 subscales that evaluate a specific cognitive strategy. Subscales include self-blame, acceptance, rumination, planned re-focus, positive reassessment, taking a look, catastrophe, and blaming others.

According to psychiatric specifications assessment by Garnovskiiet al., the reliability of this questionnaire was reported 0.91, 0.87, and 0.93, respectively, using Cronbach's alpha coefficient (18). In Iran, Samani et al. examined subscales extracted from this instrument with total score of DASS and approved convergence and divergence of this instrument (19). Hasani also reported reliability of this

questionnaire using Cronbach's alpha of 0.83 indicating suitable validity and reliability of this scale (20).

Blinger and Mouse's coping responses inventory (CRI): This is a 32-item questionnaire consisting of 5 scales based on problem solving, physical coping, emotion-focused coping, and social support attraction-based coping. The obtained reliability coefficients of this questionnaire for normal population was 0.79 using retest method and Cronbach's alpha coefficients obtained were 0.90, 0.68, 0.90, and 0.90 for problem solving, cognitive assessment, social support attraction-based coping, and physical coping, respectively (21).

Cohen's perceived stress scale (PSS-14): This questionnaire consists of 14 items to measure general perceived stress within the past month examining thoughts and feelings of participants about stressful incidents, control, overcoming, coping with mental tension, and experienced stress. In addition, this scale measures risk factors in behavioral disorders indicating stressful relationships. Cronbach's alpha of this scale was obtained to be 0.84, 0.85 in a study (22) and 0.86 in our study.

Educational Package

Dialectical Behaviour Therapy (DBT) was written by Linhan (1993) for training DBT skills (6). Contents of session included: Session 1: Introducing group members and explaining rules of group and presenting DBT. Session 2: Distraction techniques, such as counting numbers to divert attention and to engage in enjoyable activities. Session 3: Diaphragmatic breathing and relaxation techniques training. Session 4: Training distress tolerance techniques such as self-soothing techniques. Session 5: Training mindfulness skills, such as mindfull breathing. Session 6: Training emotion regulation skills, such as emotion identification, emotion validation, and emotion acceptance. Session 7: Training emotion regulation skills such as

describing emotions, writing negative emotions, releasing of excitement with sports and activities. Session 8: Verbal expression of emotions using positive sentences, such as "I feel angry.". Session 9: Training emotion regulation skills, such as problem solving skill. Session 10: Training emotion regulation skills, such as half smile and mindfulness meditation. Session 11: Training walking and eating meditation. Session 12: Review of total sessions. Every session lasted for 1.5 hours and a clinical psychologist managed the sessions.

Results

Demographic data of research members in experimental and control groups are reported in Table 1. According to the obtained results, about 60% of prisoners were in age range of 31-45 and more than 60% had imprisonment experience. Moreover, 80% of them were illiterate and 66% were unemployed.

The findings showed a significant increase in the mean scores of respondents in posttest in terms of problem solving strategy (19.67), acceptance (30.60), positive focus restoration (16.87), planned re-focus (15.93), positive reassessment (18.07), and taking a look (16.53), while there was a significant reduction in

Table 1. Demographic findings of experimental and control groups

Variable			N (%)
Age	Experimental	15-30	5 (33.3)
		31-45	10 (66.7)
		60-46	0
	Control	15-30	2 (13.3)
		31-45	9 (60)
		60-46	4 (26.7)
Education	Experimental	Primary school	8 (53.3)
		Secondary school	5 (33.3)
		College	2 (13.4)
	Control	Primary school	9 (60)
		Secondary school	4 (33.3)
		College	1 (6.7)
Job	Experimental	Unemployed	10 (66.7)
		Self-employed	4 (26.6)
		Governmental	1 (6.7)
	Control	Unemployed	12 (80)
		Self-employed	3 (20)
		Governmental	0
Imprisonment experience	Experimental	1-3	6 (40)
		<3	9 (60)
	Control	1-3	4 (26.7)
		<3	11 (73.3)
Conviction period	Experimental	2-5	9 (60)
		5-10	4 (26.7)
		>10	2 (13.3)
	Control	2-5	9 (60)
		5-10	3 (20)
		>10	3 (20)

variables including emotion focused strategy (30.60), blaming (4), rumination (5.47), catastrophe (6.27), blame others (4.47), and perceived stress (22.00). The results of adjusted mean approved the significant difference between experimental and control groups. In other words, prisoners who learned emotion regulation and distress tolerance skills had higher levels of acceptance, positive focus restoration, planned re-focus, and reassessment compared with control group, while experimental group had lower levels of blaming, rumination, catastrophe, and blamed others than control group (Tables 2).

Results of multivariate analysis of variance were as follows: (F(5.12)=17.568, *P*<0.01, Lambda test=0.023, Partial=0.997) indicating the significant difference between experimental group that received emotion regulation and distress tolerance skills and control group that received no training. This difference was in favor of experimental group considering the adjusted means.

In addition, the results obtained from Eta square, shown in Table 3, indicate a share of variance that is related to new combined variables. In Table 3, Eta value was obtained to be 0.977 for new combined variable indicating the high effectiveness of emotion regulation and distress tolerance skills in experimental group.

According to Table 4, results of one-way ANOVA indicate that since the model has 12 dependent variables, Bonferroni correction was implemented dividing 0.01 by 12. Hence, the significance level is lower than 0.0008. This case is true for all of 12 variables, including problem-solving strategy, emotion focused strategy, blaming, acceptance, rumination, positive focus restoration, planned re-focus, positive reassessment, taking a look, catastrophe, blaming others, and perceived stress. The results showed that the independent variable was effective on reducing stress, emotion dysregulation, and coping strategies (Table 4).

Table 2. The mean and standard deviation for dependent variables in experimental and control groups

Variables	Experimental group			Control group		
	Pre test	Post test	Modified	Pre test	Post test	Modified
CRI	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Problem solving strategy	12.13 (2.64)	19.6 (2.32)	21.1 (1.22)	11.7 (2.64)	12.2 (2.57)	10.7 (1.22)
Emotion focused strategy	46.4 (6.37)	30.6 (6.03)	25.5 (2.98)	42.8 (8.31)	43.6 (5.13)	48.7 (2.98)
Total	58,53(4,68)	50.024(4,13)	46,6(2,54)	54,5(5,21)	55,8(4,94)	59.4(2,18)
CERQ-P						
Blaming	17.6 (1.29)	4.0 (1.94)	3.4 (0.84)	14.7 (1.83)	14.0 (1.69)	14.5 (0.84)
Acceptance	5.6 (1.11)	17.8 (1.08)	19.6 (0.71)	9.1 (2.20)	10.6 (2.61)	8.7 (0.71)
Rumination	14.3 (2.58)	5.4 (1.55)	5.44 (0.86)	16.2 (1.62)	15.3 (1.58)	15.3 (0.86)
Positive focus restoration	5.6 (2.05)	16.8 (1.50)	19.2 (0.70)	10.5 (2.32)	11.1 (2.61)	8.5 (0.70)
Planned re-focus	7.1 (2.38)	15.9 (2.31)	16.8 (0.81)	9.8 (1.59)	10.7 (1.62)	9.8 (0.81)
Positive reassessment	7.3 (1.54)	18.0 (0.88)	18.3 (0.64)	9.7 (1.87)	10.5 (1.76)	10.2 (0.64)
Taking a look	8.0 (2.73)	16.5 (1.59)	15.9 (0.65)	8.8 (1.18)	9.4 (1.12)	9.9 (0.65)
Catastrophe	13.4 (1.72)	6.2 (1.90)	5.7 (0.87)	13.0 (2.15)	12.0 (2.15)	12.5 (0.87)
Blame others	15.2 (2.08)	4.4 (2.58)	3.7 (1.36)	15.6 (1.87)	14.8 (1.76)	15.6 (1.36)
Total	94.1(2,03)	104,9(1,62)	108,04(0,89)	108,5(2,34)	114,04	116,13(0,79)
PSS-14: Total perceived stress	43.0 (6.55)	22.0 (5.43)	19.9 (2.99)	43.0 (8.37)	42.0 (8.18)	44.0 (2.99)

Table 3. Results of multivariate analysis of covariance for combined variable of coping strategies, emotion regulation and perceived stress

Source	Value	F (12.5)	P	Eta
Combined variable (group)	0.023	17.568	0.003	0.977

As shown in Table 4, the significance level of variables of emotion regulation, coping strategies, and perceived stress was lower than 0.001.

Discussion

The results of the current study showed that emotion regulation and distress tolerance skills training could improve coping strategies, emotion regulation, and perceived stress in prisoners.

Our findings were in line with findings of Sadatnadab et al. who showed in their research that emotion regulation skill and distress tolerance could reduce impulsion and aggression in imprisoned women (23). Dillon et al. conducted a study and indicated a significant relation between dysfunctional behaviors like violence and crime commitment with lack of emotion regulation and maladaptive behaviors (24).

The results reported by Clerck et al. implied that aggressive imprisoners behave significantly more impulsive that non-aggressive imprisoners and teaching emotion regulation skills to them could reduce their impulsive behaviors (25). Shahbazi et al. carried out a study and showed that criminals and prisoners have lower emotion regulation when coping with stressful situations; this finding is in line with results of the present study (26).

Moreover, the results of the current study showed that distress tolerance and emotion regulation skills could improve prisoners' mental health. These findings are consistent with those of Fekri Shiran (27) and Moradi et al. (28) who showed that DBT strategies, such as distress tolerance and emotion regulation skills, could improve prisoners' mental health.

Table 4. Results of one-way ANOVA for coping strategies, emotion regulation, and perceived stress

Variables	F	P	Eta
CRI			
Problem solving strategy	20.11	<0.001	0.557
Emotion focused strategy	17.00	<0.001	0.515
Total	18.24	<0.001	0.568
CERQ-P			
Blaming	48.67	<0.001	0.753
Acceptance	65.81	<0.001	0.804
Rumination	36.72	<0.001	0.697
Positive focus restoration	61.46	<0.001	0.793
Planned re-focus	20.57	<0.001	0.563
Positive reassessment	45.63	<0.001	0.740
Taking a look	23.10	<0.001	0.591
Catastrophe	17.35	<0.001	0.520
Blame others	21.47	<0.001	0.573
Total	39.15	<0.001	0.745
PSS-14: Total perceived stress	18.21	<0.001	0.532

Findings obtained by Zamani et al. also showed a significant difference between experimental and control groups after intervention (29). In other words, teaching distress tolerance and emotion regulation skills could significantly reduce impulsion and aggression in imprisoned women; this finding is in line with the results of our study.

However, study of Davydov et al. was not in line with the results of the present study. They indicated that teaching emotion regulation skills could not improve emotion regulation and anger management. The substantial point in their study was low resilience of prisoners against tensions such that this problem remained after distress tolerance training courses (30). It can be explained that the role of some variables such as resilience should be considered and improved. Nevertheless, emotion regulation learning and increasing distress tolerance can improve resilience and strengthen individuals' ability to cope with life problems. These results can be explained in that prison's environment make prisoners to have effective coping strategies to deal with negative affections (31). In other words, prisoners suffer from mental disorders and stress due to lack of freedom and support of family and friend, uncertainty, physical restriction, and stigma. Emotion regulation and distress tolerance could lead to some cognitive and emotional changes and reduction in mental and physical symptoms, exposure to negative thoughts and feelings, and accepting them. This could reduce interpersonal and perceived stress in prisoners (32-34).

It could be stated that positive cognitive-emotion regulation strategies such as acceptance, self-soothing strategies, planned re-focus, and problem-solving strategies are effective in dealing with stressful events, negative emotions, and maladaptive behaviors (35). Increase in coping ability followed by distress tolerance learning and emotion regulation can increase capacity of individuals to tolerate stressful conditions (36-38).

The limitations of the current study included studying only male prisoners. Hence, it is recommended that further studies be conducted on female prisoners. Also, another limitation was loss of long-term follow-ups.

The results of the present study showed that emotion regulation and distress tolerance skills could improve ability to regulate emotions and to reduce perceived stress in prisoners. Improved ability for emotion regulation of prisoners enables them to use adaptive coping strategies for life challenging. Therefore, it could reduce prisoners' perceived stress and psychological problem and promote their mental health in prisoners.

Conflict of interest

Authors declare no conflict of interests.

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