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Original Article

The efficacy of emotion regulation therapy in generalized anxiety disorder: symptom reduction and improving of emotion regulation and mindfulness skills: A case series

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Abstract

Introduction: According to Emotion Dysregulation Model (EDM), Generalized Anxiety Disorder (GAD) symptoms may be maintained by emotional hyperarousal, experience of intense emotion, poorer understanding of emotions, negative attitudes about emotions, and maladaptive emotion regulation and management. Based on the EDM, Emotion Regulation Therapy (ERT) is a mechanism-targeted intervention that cultivates emotion regulation skills.

Methods: Four men with generalized anxiety disorder were selected from counseling center of University of Tehran and Talieh Mehr clinic. Anxiety and Related Disorders Interview Schedule for DSM-IV (ADIS-IV) were used to diagnose GAD and other disorders. Subjects were selected using purposeful sampling; multiple baseline experimental single case studies were used as the method of the present study. The treatment program was carried out for 14 weekly sessions (14-session version), with a follow-up period of 2 months subsequent to treatment termination. Subjects completed the Pennsylvania State Worry Questionnaire (PSWQ), Beck Anxiety Inventory (BAI), GAD-7, The Emotion Regulation Questionnaire (ERQ), Five Facet Mindfulness Questionnaire (FFMQ) in the baseline, during treatment (PSWQ and BAI in sessions of 1, 3, 6, 9, 12, 14; ERQ and FFMQ in pre, mid and post treatment; GAD-7 in pre and post treatment), post-treatment and follow-up period.

Results: The patients' demonstrated distinct improvements in symptoms severity (i.e., worry, anxiety and GAD criteria in GAD-7), and in model-related outcomes including mindful attendance/acceptance and cognitive reappraisal. Patients maintained gains across the two-month follow-up period. In addition, ERT was very well tolerated by patients and all the patients completed there sessions.

Conclusion: Results of present study provide additional evidence for the efficacy of the ERT in the treatment of generalized anxiety disorder (GAD), and additional support for the role of emotion dysregulation in the onset, maintenance, and treatment of GAD.

Declaration of Interest: None.

Key words: Anxiety disorder, Emation, Body mind relation.

Introduction

Generalized Anxiety Disorder (GAD) is a chronic problem marked by pathological worry, and associated with a variety of physical, emotional, and cognitive symptoms, including, irritability, restlessness, muscle tension, concentration difficulty, fatigue, and sleep disturbance (1). The disorder causes significant impairment in social and general functioning (2). According to a WHO study, 38% of individuals with GAD had moderate to severe occupational role impairment (3).

The 12-month prevalence rate of GAD has been estimated to be between 1.2% and 1.9% and the

lifetime prevalence between 4.3 and 5.9% (4). Due to early onset, persistent course and resistance to change, GAD has been considered as the «basic» disorder. Furthermore, uncontrollable worry as central and defining feature of GAD is the primary element of anxiety (5).

Although recent meta-analyses have shown cognitive-behavioral therapy (CBT) to be efficacious as compared to wait-list or treatment - as-usual control groups (6,7,8), but only about 50% of treatment completers achieve high end-state functioning (6) or recovery (9) following treatment. One of the possible explanations for these relatively poor results might be that most CBT treatments are not based on a specific theoretical model for GAD (10).

In the past 15 years, various cognitive-behavioral models offer improvement for the understanding and treatment of GAD. These models including Avoidance Model of Worry and GAD (AMW; 11, 12), the Intolerance of Uncertainty Model (13), the Metacognitive Model (10), the Acceptance-Based Model of Generalized Anxiety Disorder (14), and the Emotion Dysregulation Model (15).

Borkovec's avoidance theory is one of the most comprehensive accounts of the role of worry in GAD (12). According to AMW, worry is a verbal linguistic, thought-based that inhibits vivid mental imagery and associated somatic and emotional activation activity (16). Although individuals with GAD may use worry to avoid distressing emotional experience, but this theory does not explain why this experience is so aversive that it would need to be avoided. To understand this, the characteristics of the emotional experience that may prompt avoidance need to be explored (17).

One of the possible domains for improving treatment for GAD is through an understanding of the role of emotion dysregulation in the disorder. Emotion regulation, as a field of study, examines "the processes by which individuals influence which emotions they have, when they have them, and haw they experience and express these emotions (18). Mennin et al. (2002) offered the Emotion Dysregulation Model (EDM) for GAD (19). The EDM consists of four major components. These four components include: 1. emotional hyperarousal, or emotions that are more intense than those of most other people. 2. poorer understanding of emotions, 3. negative attitudes about emotions and 4. maladaptive emotion regulation and management (20).

Mennin et al. (2005), provide preliminary support for EDM of GAD. They found that individuals with GAD reported heightened intensity of emotions, poor understanding of emotions, greater negative reactivity to emotional experience, and less ability to self-soothe after negative emotions than controls. Moreover, after controlling for worry, anxiety, and depressive symptoms, composite emotion regulation score significantly predicted GAD. These findings were largely replicated with a clinical sample, studies 1 & 2 (17). Based on EDM, Mennin and Fresco (2009) developed an integrative, emotion-based treatment: Emotion Regulation Therapy (ERT) (21). Emotion regulation therapy addresses cognitive, emotional and contextual factors that may contribute to maladaptive responses (22). ERT is a mechanism z-targeted intervention focusing on patterns of motivational dysfunction while cultivating emotion regulation skills (i.e, attending, allowing, distancing and reframing), (23).

Recently, efficacy of ERT in an open trial of patients with GAD and co-occurring depressive symptoms has been demonstrated. In term of clinical outcomes, patients evidenced reductions in both clinician assessed and self-reported measures of GAD severity, worry, anxious trait and depression symptoms, and in model-related outcomes including emotional/motivational intensity, mindful attending/acceptance, decentering, and cognitive reappraisal. These gains were maintained for a nine-month follow-up period (24).

However, this evidence is preliminary and its necessary to ERT applicability in different samples of GAD patient. Given their promising potential for the treatment of GAD, the present study was conducted to examination of the efficacy of ERT utilizing a case study.

Methods

Four men with Generalized Anxiety Disorder (GAD) were selected from counseling center of University of Tehran and Talieh Mehr clinic. Treatment sessions were conducted in these

centers. Anxiety and Related Disorders Interview Schedule for DSM-IV (ADIS-IV) is semi-structured diagnostic interview that were used to diagnose GAD and other disorders. A score of 4 or greater (range = 0–8) is given for diagnoses that meet full DSM-IV criteria and are clinically significant. Subjects were selected using purposeful sampling, and underwent the treatment process subsequent to obtaining treatment requirements. Patients included in the study if they met the following inclusion criteria: Having the diagnostic criteria of GAD and medication free or stable on medication. The exclusion criteria were as follows: The evidence of a psychotic disorder, bipolar disorders, substance abuse; receiving cognitive behavior therapy in the six month before referral; and evidence of a serious problem during the study such as suicidal thoughts or change in rates of psychotropic medications dose. After selecting the clients, the research purpose, duration and the therapist and client expectations & responsibilities in the study were explained to them. They were told that they will participate in a study and all the information taken would remain confidential. Subsequently, a written consent was obtained from them (client and therapist contract) for participation in ERT.

Multiple baseline experimental single case studies were used as the method of the present study. The treatment program was carried out for 14 weekly sessions from October to January 2015, with a follow-up period of 2 months subsequent to treatment termination. Subjects completed the Pennsylvania State Worry Questionnaire (PSWQ), Beck Anxiety Inventory (BAI), GAD-7, The Emotion Regulation Questionnaire (ERQ), Five Facet Mindfulness Questionnaire (FFMQ) in the baseline, during treatment (PSWQ and BAI in sessions of 1, 3, 6, 9, 12, 14; ERQ and FFMQ in pre- mid and post treatment; GAD-7 in pre and post treatment), post-treatment and follow-up period. Graphical representation and visual inspection (Charts and Tabels) were utilized for data analysis. Percent of recovery for each patient is calculated. Furthermore, Hedges' g was utilized to calculate effect size estimates. Effect size estimates were interpreted conservatively, with 0.2, 0.5, and 0.8 reflecting small, medium, and large effects (25)

Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV)

The ADIS-IV is a structured diagnostic interview designed to assess the presence, nature, and severity of DSM-IV anxiety, mood, and somatoform and substance use disorders. Brown, DiNardo, Lehman, and Campbell (26) provided evidence of acceptable inter-rater reliability for the anxiety disorders investigated in the present study (k = 0.59 – 0.79). Principal and additional diagnoses are assigned a clinical severity rating (CSR) on a scale from 0 (no symptoms) to 8 (extremely severe symptoms), with a rating of 4 or above (definitely disturbing /disabling) passing the clinical threshold for DSM-IV diagnostic criteria.

Beck Anxiety Inventory (BAI). The BAI was Included as a general measure of anxiety related symptoms across the disorders. The BAI also contains 21 items scored in a similar way and focuses on common symptoms that are more unique to anxiety, such as somatic and certain cognitive symptoms (27). Adequate internal consistency and validity have been reported for both clinical and non-clinical participants (28).

Penn State Worry Questionnaire (PSWQ): The PSWQ was included to assess symptoms related to GAD, it is a 16-item self-report questionnaire designed to assess the tendency to worry as well as intensity and excessiveness of worry (29). The PSWQ has demonstrated good internal consistency and test-retest reliability (29).

Emotion Regulation Questionnaire (ERQ): Is a 10-item self-report questionnaire, which consists of two scales corresponding to two different emotion regulation strategies:

cognitive reappraisal (6 items) and *expressive suppression* (4 items). ERQ demonstrated good internal consistency and a 2-month test-retest reliability of about 0.7 (30).

Five Facet Mindfulness Questionnaire (FFMQ):

The Five Facet Mindfulness Questionnaire is a 39-item scale that was developed based on an item pool of previously existing mindfulness questionnaires. Factor analyses over these items yielded five facets of mindfulness: observing, describing, acting with awareness, non-judging of inner experience and non-reactivity to inner experience. The five subscales have presented with adequate to good internal consistency (31).

Generalized Anxiety Disorder 7-item (GAD-7):
Spitzer at al., reported the development of a brief 7 item screening tool to assess the presence of GAD in a primary care population. GAD-7 had good reliability, as well as, construct, factorial and procedural validity. A cut point was identified that adequate sensitivity (89%) and specificity (82%). Therefore, GAD-7 is a valid and efficient tool for screening for GAD and assessing its severity in clinical practice and research (32).

Treatment

The psychological treatment of GAD using ERT includes several skills that mindful attending (i.e., the ability to focus, sustain, and flexibly move attention), allowing (i.e., the ability to openly turn towards, allow, and remain in personal contact with an emotional experience), distancing (i.e., the ability to identify, observe, and generate psychological perspective from inner experiences), reframing (i.e., the ability to change one's evaluation of an event such that the event is altered in its emotional significance), counteractive responding and take action. In this study we used a version of 14 session of ERT. ERT utilize a phasic structure that help clients build skills in the first half of treatment that are deployed in the second half of therapy during exposure exercises. In the first half of treatment, sessions focus on teaching emotion regulation strategies (mindful attending, allowing, distancing, reframing) so that clients respond "counteractively" (instead of "reactively"). In the second half of ERT, clients endeavor to become more antecedent or "proactive" in their deployment of regulation skills by engaging contexts that simultaneously invoke both elevated reward and threat motivations via in-session exposure exercises and out-of-session exposure exercises. A sample session-by-session outline is presented in Table 1 (33).

Table 1. A sample session-by-session treatment plan (33)

شکل	Outline	Skills
1	Introduction to emotion regulation perspective and treatment	Attending skill: mindful diaphragmatic breathing
2	Intense emotions and the motivation for security and reward	Attending skill: mindful body and muscle awareness
3	Action, learning consequences, opposite orientation	Attending skill: mindfulness of emotions
4	Allowance and pause allowing	Skill: open presence meditation
5	Cultivating Perspective and Healthy Distance (Part I)	Distancing skill: perspective in time
6	Cultivating perspective and healthy distance (Part II)	Distancing skill: perspective in space
7	Reframing (Part I)	Reframing skill: courageous and compassionate reappraisal
8	Reframing (Part II)	Reframing skill: courageous and compassionate reappraisal (continued)
9	Skills practice introducing values exploring between session valued actions	
10-13	Valued action delineation experiential exposure to valued action and associated obstacles utilizing transformed emotional meaning in valued action	
14	Assessment of clients' acquisition of ERT skills consolidating gains and "larger step" valued actions anticipating lapses and relapses termination processing	

Results

Demographical characteristics and comorbid disorder of patients are presented in Table 2. Each patient's scores on the BAI, PSWQ, GAD-7, ERQ and FFMQ during the baseline and treatment phases shown in Tables 3 and 4, and figures of 1, 2, 3, 4, 5, 6. The Scores of patients in PSWQ, BAI and GAD-7 is decreased over the course of treatment, and these reductions were largely maintained at follow-up.

Moreover, percent of recovery for each patient is calculated. The patients demonstrated distinct improvements in symptom severity (i.e., worry, anxiety and GAD cretria in GAD-7). Total percent recovery for all of patients in BAI,

PSWQ and GAD-7 respectively include 73%, 43% and 78%. Also, total percent recovery for all of patients in FFMQ: 24% and ERQ (R,S): 30%, 36%. Graphs were constructed for the weekly sessions and at the time-points (baseline, end of therapy, 2-month follow-up) outcome measures to demonstrate detailed changes across the whole course of therapy (Figs 1 and 2, 3, 4, 5, 6).

Table 2. Demographic characteristics, diagnosis conditions and medication status of the patients

Patients	Age	Gender	Marital Status	Education	Comorbid Disorder	Medication
1	30	Male	Single	PhD student	-	No
2	25	Male	Married	Masters	Panic Disorder	No
3	25	Male	Married	Masters	Social Anxiety Disorder	No
4	28	Male	Single	Bachelor	-	No

Table 3. The Summary of results in PSWQ and BDI

Patients / Measures	1	2	3	4
PSWQ (based-line)	64	77	62	75
PSWQ (session 1)	61	78	61	74
PSWQ (session 3)	65	62	57	61
PSWQ (session 6)	55	55	55	47
PSWQ (session 9)	42	51	41	57
PSWQ (session 12)	40	45	38	46
PSWQ (session 14)	41	42	37	38
Percent of recovery	36%	45%	40%	49%
Total percent of recovery	42%			
BAI (based-line)	17	28	30	22
BAI (session 1)	18	29	25	21
BAI (session 3)	11	31	21	19
BAI (session 6)	9	11	16	7
BAI (session 9)	6	7	9	9
BAI (session 12)	6	6	9	10
BAI (session 14)	5	6	7	8
Percent of recovery	71%	79%	77%	64%
Total percent of recovery	73%			
GAD-7 (based-line)	12	19	11	13
GAD-7 (session 1)	11	19	12	12
GAD-7 (session 14)	4	4	2	2
% of recovery	67%	79%	82%	85%
Total percent of recovery	78%			

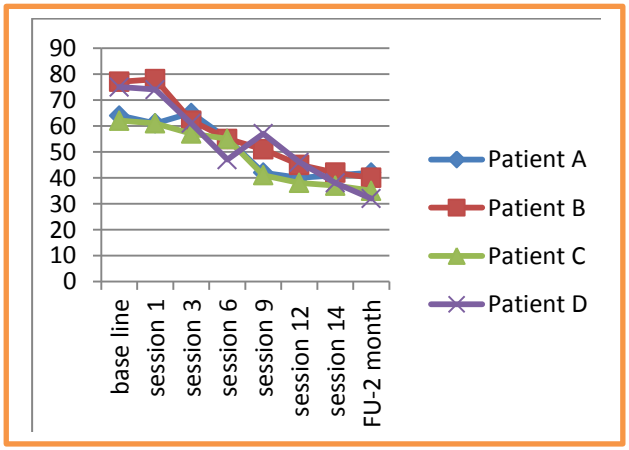

Fig. 1 Scores of patients in PSWQ

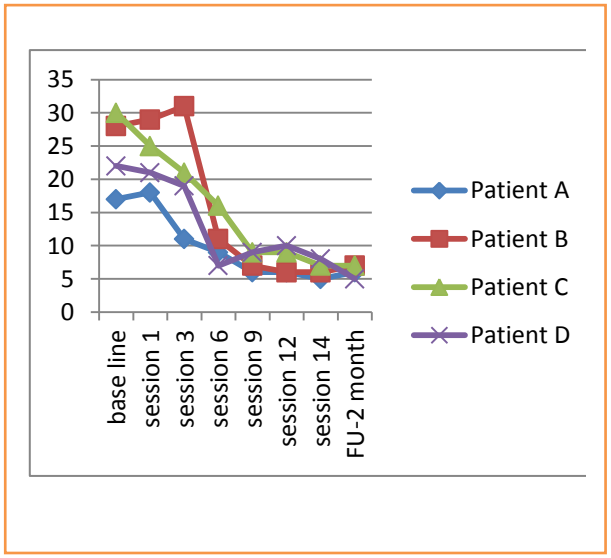

Fig. 2 cores of patients in BAI

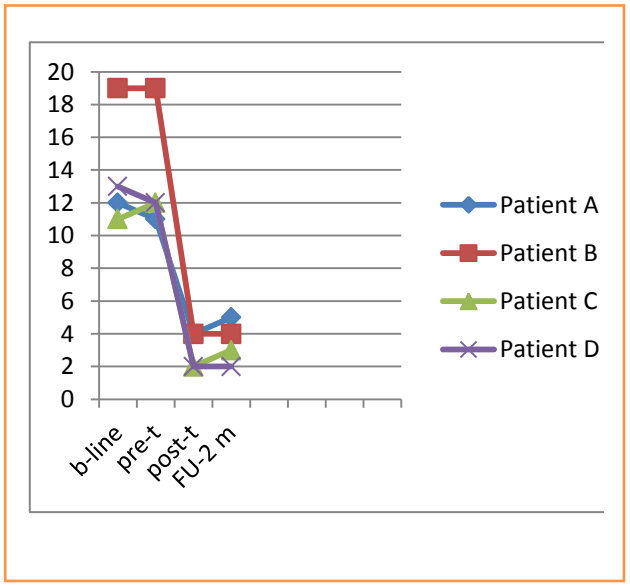

Fig 3 Scores of patients in GAD-7

Table 4. The summary of results in FFMQ and ERQ (reappraisal and suppression subscales)

Patients Measures	1		2		3		4	
FFMQ (based-line)	106		114		107		98	
FFMQ (pre-treatment)	105		115		110		101	
FFMQ (mid-treatment)	120		132		128		125	
FFMQ (post-treatment)	135		136		134		128	
Percent of recovery	21%		19%		25%		31%	
Total percent of recovery	24%							
ERQ	R	S	R	S	R	S	R	S
ERQ (based-line)	24	16	31	22	16	17	18	19
ERQ (pre-treatment)	24	17	30	23	15	17	18	21
ERQ (mid-treatment)	27	14	32	18	18	13	23	16
ERQ (post-treatment)	32	9	35	16	19	10	28	13
Percent of recovery	33%	43%	13%	27%	19%	41%	56%	32%
Total percent of recovery (R)	30%							
Total percent of recovery (S)	36%							

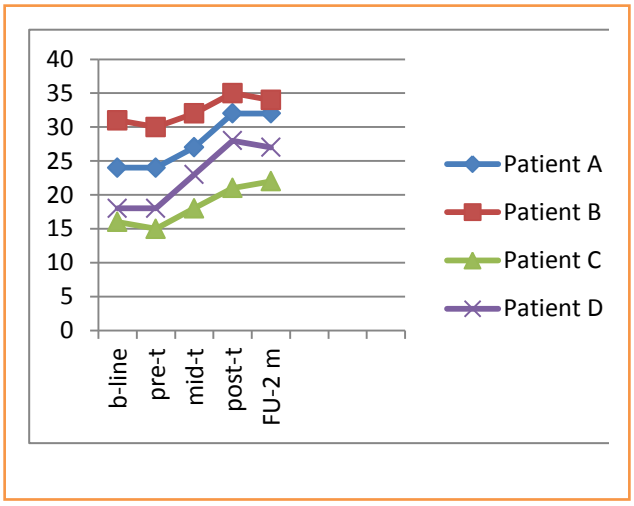

Fig. 4 Scores of patients in FFMQ

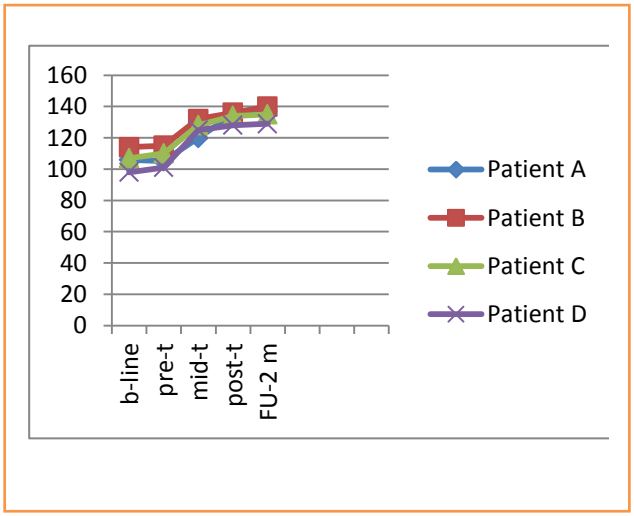

Fig. 5 Scores of patients in ERQ (reappraisal subscale

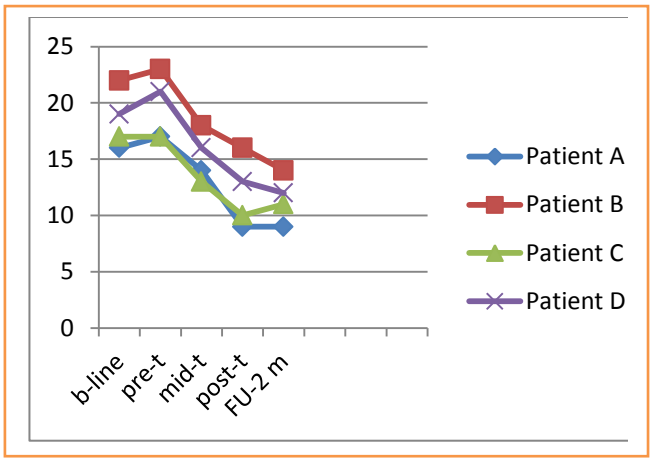

Fig.6 Scores of patients in ERQ (suppression subscale)

In current study, Hedges' g was utilized to calculate effect size estimates. Like Cohen's d, (25) Hedges' g is interpreted with conventions of Small = 0.20, Medium = 0.50, Large = 0.80.

Table 5. Descriptive statistics and effect sizes for outcome variables at end of treatment and 2-month follow-up

Measure	N	Pre-Treatment	Post-Treatment	Follow-up	effect size Pre-Post	effect size Pre-Follow
		Mean (SD)	Mean (SD)	Mean (SD)	Hedges' g	Hedges' g
PSWQ	4	69.05 (7.6)	39.66 (9.50)	37.25 (4.57)	4.63	4.40
BAI	4	24.25 (5.90)	6.50 (1.29)	6.25 (0.96)	3.61	3.70
GAD-7	4	13.75 (3.59)	3 (1.15)	3.50 (1.29)	3.50	3.30
FFMQ	4	106.25 (6.55)	133.25 (3.59)	128 (2.58)	4.44	4.08
ERQ (R)	4	22.25 (6.75)	28.50 (6.95)	28.75 (5.38)	1.82	2.56
ERQ (S)		18.50 (2.65)	11.66 (3.79)	11.50 (2.08)		

Note: PSWQ = Penn State Worry Questionnaire; BAI= Beck Anxiety Inventory; GAD-7= Generalized Anxiety Disorder-7; FFMQ= Five

Facet Mindfulness Questionnaire; ERQ= Emotion Regulation Questionnaire (reappraisal and suppression subscale)

See Table 5. Findings reveal sizable gains by post-treatment for all measures (*g*'s = 0.79–4.44). Post-treatment gains in anxiety outcomes and model-related outcomes were maintained at two-month follow-up (*g*'s = 0.93–4.40).

Conclusion

The aim of the present study was to provide preliminary evidence for efficacy of Emotion Regulation Therapy (ERT) for GAD. Results from this study offer initial support for the efficacy of ERT in the treatment of GAD. The patients demonstrated distinct improvements in symptom severity (i.e., worry, anxiety and GAD criteria in GAD-7), and in model-related outcomes including, mindful attendance/ acceptance, and cognitive reappraisal. Patients maintained gains across the two-month follow-up period. In addition, ERT was very well tolerated by patients and all of patients completed sessions. These results are similar to the open trial by mennin et al. (24). Result of the study showed ERT lead to significant decrease in both clinician-assessed and self report measures of GAD severity, worry, trait anxious and in model-related outcome. Also, results of the present study is consistent with the study of berking et al. (2008). Based on their study, the skills of acceptance, tolerance, and active modification of negative emotions are important for mental health and treatment outcome (34).

By explaining the results it can be said ERT promote emotion regulation through mindful attending, allowance, distancing and reframing (or reappraisal) skills. In ERT, mindful attention is trained through mindful belly breathing, body and muscle awareness and mindful of emotion exercises. Furthermore, In first few sessions will be given a list of emotions to patient, because individuals with GAD experience emotion hyperarousal, also, they have poor understanding of emotional experience (21). Mindful attending increase a healthy awareness of the emotional process. By practicing mindfulness exercises, individuals encourage attention to immediate experience with curiosity, openness, and non-judgment, thereby allowing for increased recognition of experience in the present moment (35, 36). In addition, because worry itself serve an avoidant function, it may interfere with successful emotional processing and maintain threating meanings over long term (11), Through the practice of mindful attending, patients observe and experience their internal experiences as less negative, threating and defining and with more openness. Mindfulness may then also be helpful in improving emotion regulation by increasing awareness. Emotional awareness has been previously noted as an essential characteristic for effective emotion regulation (37). Kabat-Zinn and colleagues (38) found that a group intervention based on mindfulness meditation led to significant reductions in anxiety and depression among individual meeting criteria for GAD and panic disorder, which were maintained at 3-year follow-up consistent with this results. In the current study, in all scores of patient in PSWQ and BAI decreased, and FFMQ scores have improved. The second skill that be training in ERT is allowing and accepting emotion. Hayes (1994) suggests that acceptance involves "experiencing events fully and without defense, as they are" (39). Hayes, Strosahl and Wilson (1999), have proposed that much of human difficulty stem from attempts to control or diminish internal experience (40). Clients with GAD consistently report reactive, critical responses to their own thoughts, feelings, sensations, and memories. By accepting and exploring emotions, clients gain an ability to be present with emotions and learn how to determine their functional utility in guiding actions (21). Encouraging the clients to allowance and acceptance of emotional responses reduces reactive emotional responses and increases receptiveness to information conveyed by emotion (41). In other words, if experiential avoidance is a central problem in GAD (42), then experiential acceptance may be the solution. (41). Distancing is another skill that taught in ERT. GAD patient often have problem in distancing. Safran and Segal (1990) define decentering (or distancing) as the ability to observe one's thoughts and feelings as temporary, objective events in the mind, as opposed to reflections of the self that are necessarily true (43). Cognitive distancing helps

individuals disengage from intense emotions, negative thought and aversive sensations. Finally, GAD patients are trained that in response to self-critical thought is used from compassionate reappraisal (21). In the current study, the scores of patient in reappraisal subscale have improved and suppression scores decreased. These findings can be result from compassionate reappraisal and other skills.

Our study had some limitations. First, all patients in current study were male. Second, generalizability of the results in case studies was difficult. However, this study can be useful because of studies related to the efficacy of ERT in its beginnings. Recommending the future studies apply a randomized control design, with a larger sample size.

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