

Abstract

Objective: The comorbidity of substance abuse and mood and anxiety disorders have been proven in various studies and have led to a lot of clinical implications. This study aimed to compare the effectiveness of mindfulness-based relapse prevention and common treatment in substance abuse and symptoms of depression and anxiety among addicts. **Method:** This study was conducted within the framework of a quasi-experimental design with pretest-posttest control group and follow-up. Based on the Structured Clinical Interview and the acquisition of inclusion criteria, the number of sixty-three participants was selected via purposive sampling from among the men suffering from substance abuse, anxiety, and depression. Thereafter, the participants were divided into two groups, mindfulness-based relapse prevention group and conventional treatment group. Pennsylvania Alcohol Craving Scale, Beck Anxiety Inventory, and the Beck Depression Inventory were used for data collection. **Results:** The results showed that mindfulness-based relapse prevention interventions were effective in reducing cravings and symptoms of depression and anxiety. **Conclusion:** Due to the effectiveness of mindfulness-based relapse prevention interventions in the decrease of cravings and symptoms of depression and anxiety in addicts, these results can have good practical implications for clinicians working in addiction centers.

Keywords: mindfulness-based relapse prevention, substance abuse, addiction, depression, anxiety

On the effectiveness of Mindfulness-Based Relapse Prevention in Substance Abuse and the Severity of Comorbidity of Depression and Anxiety Symptoms among the Addicts of Therapeutic Community Centers

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Introduction

Addiction or drug dependence is defined as drug-related disorders in psychiatric categorization and is considered as the second most common psychiatric disorder (American Psychiatric Association, 2013; Sadock, & Sadock, 2016). According to the related literature, about 90 percent of people with substance-related disorders suffer from one or more psychiatric disorders, the most important of which are mood disorders, anxiety disorders, and antisocial personality disorder (Sadock, & Sadock, 2016). The comorbidity of substance abuse and mood and anxiety disorders has been proven in various studies and has brought many clinical implications, including poor treatment prognosis and high relapse (Kessler, Chiu, Demler, & Walters, 2005; Magidson et al., 2011; Dagher, & Green, 2015). Mood disorders and anxiety occur in substance abuse patients 7.7 times more than those in the general population (Goldner, Lusted, Roerecke, Rehm, & Fischer, 2014). This high comorbidity of mood and anxiety disorders with substance abuse deserve receiving more attention as ample evidence shows that depressed substance abusers have significantly discontinued their treatment more frequently than non-depressed substance abusers and relapse into drug use (Tate, Brown, Unrod, & Ramo, 2014; Dagher, & Green, 2015). In addition, studies have shown that negative emotions, such as depression and anxiety are among the most common antecedents of relapse, and should be directed by treatment (Baker, Piper, McCarthy, Majeskie, & Fiore, 2004). Therefore, there is an obvious need to develop effective interventions for this population in order to meet the specific therapeutic needs of addicts suffering from mood and anxiety disorders (Daughters et al., 2008).

There are several behavioral interventions that are used both for mood disorders and for drug abuse, and enjoy high experimental support (Brewer, Bowen, Smith, Marlatt, & Potenza, 2010). From among the approved behavioral interventions for depression, one can refer to cognitive behavioral therapy, behavioral activation, and Mindfulness-Based Cognitive Therapy (MBCT) (Feldman, 2007). Similarly, therapeutic interventions for drug abuse include cognitive behavioral therapy, relapse prevention, motivational interviewing, contingency management, and 12-step programs (Carroll & Onken, 2005; Marlat & Donovan, 2005). Despite extensive research into the treatment of these disorders in isolation, several studies have also evaluated the combined treatment of substance abuse and mood and anxiety disorders and reported satisfactory results (Quyen, & Brent, 2007; Brewer et al., 2010).

Over the past two decades, the emergence of studies in the field of the interventions that have integrated mindfulness training has reached promising results for separate treatment of substance abuse and mood and anxiety disorders (Brewer et al., 2010). Mindfulness can be defined as an exercise that aims to purposefully focus attention on the current mental and emotional experiences

(such as breathing, voices, and bodily senses) coupled with the adoption of an acceptance attitude of moment-to-moment experiences (such as lack of judgment and non-extension of mental content) (Forsyth, & Eifert, 2016).

The mindfulness-based relapse prevention is mainly formed on the basis of the content and structure of mindfulness-based cognitive therapies (Segal, Williams, & Teasdale, 2002) and its foundations are based on meditative mindfulness exercises. In addition, it has integrated cognitive and behavioral techniques in order to provide a non-judgmental and client-based and target major risk factors and relapse prevention (Bowen, Chawla, & Witkiewitz, 2014). Empirical studies on mindfulness-based relapse prevention and its effectiveness in substance-related disorders have provided evidence that represents the effectiveness of mindfulness-based exercises in these disorders (e.g., Bowen, Witkiewitz, Chawla & Grow, 2011; Witkiewitz & Bowen, 2010; Witkiewitz, Bowen, Douglas, & Hsu, 2013; Bowen et al., 2014). There is a growing empirical support for mindfulness-based interventions in substance abuse disorders. The first evaluation in terms of mindfulness-based relapse prevention was conducted by Zgierska et al. (2008). The results of this study showed the presence of a significant reduction in the severity of symptoms of depression, anxiety, and stress in alcohol-dependent individuals following an 8-session program of meditative mindfulness. In a randomized clinical trial, Witkiewitz & Bowen (2010) showed that mindfulness-based relapse prevention leads to a significant reduction in the severity of craving and symptoms of depression in drug abusers. Vieten, Astin, Buscemi, & Galloway (2010) carried out an eight-session intervention of acceptance-based coping for relapse prevention program, which had been extracted from a series of mindfulness-based interventions, and reported a significant decrease in craving, negative affect, emotional reactions, perceived stress, as well as a significant increase in negative affects and psychological well-being. Bowen et al. (2009) compared the effectiveness of the mindfulness-based relapse prevention intervention with treatment as usual (TAU) at a free private clinic where a set of care services was provided for the patients suffering from substance abuse disorder. The results showed that the subjects in the experimental group consumed alcohol or other substances in a fewer number of days after the passage of a 2-month intervention and showed a significant decrease in craving and increase in acceptance. Brewer et al. carried out the first assessment of mindfulness-based training as a separate therapy compared with cognitive-behavioral therapy for substance abuse disorders by means of the protocol of mindfulness-based relapse prevention. In this study, there was a low degree of treatment completion in both groups (34% in the mindfulness group and 33% in the cognitive-behavioral therapy group), and those who had completed the treatment were highly satisfied with their treatment. During the intervention, the difference between the therapy groups was not significant in terms of substance abuse. However, after the interventions, the psychological and physiological reactive scales showed that the individuals

exposed to the mindfulness-based intervention showed a lower response to stress arousal than the cognitive behavioral group.

The high level of the comorbidity of substance abuse and mood and anxiety disorders, as well as the clinical implications of this type of comorbidity, including the poor prognostication of treatment outcomes and high relapse (Kessler et al., 2005; Magidson et al., 2011; Dagher & Green, 2015) inspired the current researchers to conduct this study. From among the other motives of this study, it is to refer to the potential applications of mindfulness in clinical research related to substance use abuse (Bowen et al., 2014; Brewer et al., 2011; Witkiewitz & Bowen, 2010; Witkiewitz et al., 2013).) and the need for further research to validate these findings (Black, 2012). The aim of this study was to investigate the effectiveness of mindfulness-based relapse prevention in substance abuse and the severity of comorbidity of depression and anxiety symptoms among the addicts of therapeutic community centers.

Method

Population, sample, and sampling method

The present research falls within the category of applied research in terms of purpose and within the category of quasi-experimental/ pre-test-post-test-follow-up design in terms of the nature of data collection. The population of the study consisted of the self-introduced addicts that had been admitted to the community center of Ahvaz for treatment four months and had stayed there days and nights. Via purposive sampling method, 63 male addicts were selected from the population. These participants had been diagnosed with the comorbidity of a mood and anxiety disorder based on Beck Depression Test, Beck Anxiety Test, and clinical interview. Then, they were randomly assigned to the intervention group of mindfulness-based relapse prevention (32 patients) and Treatment As Usual (TAU) (31 patients). Due to the fact that patients were admitted for a limited period of four months in the therapeutic community center and also because of the possibility of the waiting list's relapse into substance use, the use of a waiting list without intervention was not feasible in the present study. Therefore, instead of the waiting list, TAU group was used as the control group. The criteria for the inclusion of participants into the study were drug dependence based on the fifth edition of the Practical and Statistical Manual of Mental Disorders, a minimum of 2-week residency at the therapeutic community center after the completion of the detoxification course, obtaining the score above 19 (moderate depression) in Beck depression test and Beck anxiety test, and the confirmation of the presence of symptoms of depression and anxiety based on the structured clinical interview for disorders axis I. The exit criteria were severe symptoms of abstinence, suffering from psychotic disorder or the diagnosis of depression with psychotic characteristics, and serious suicidal thoughts.

Instruments

1. Structured Clinical Interview for Axis I Disorders in DSM-V (SCID-I): This screening tool is used for the diagnosis of disorders based on the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (First, Spitzer, Williams, & Gibbon, 1997). This instrument contains two versions, i.e. the clinical version (SCID-I), which covers mostly the psychiatric diagnosis and has been designed to be used in clinical and clinical settings, and the other version is a fuller and longer research version (SCID-I / R) that covers all diagnoses, as well as their subtypes, and criteria for severity and duration of disorders. Bakhtiari (2000) reported the test-retest coefficient of this tool to be equal to 0.95 in an Iranian population (one-week interval). In the present study, the clinical version of this test was used to diagnose depression and anxiety disorders.

2. Beck Depression Inventory-II (BDI- II): This questionnaire (Beck, Steer, & Brown, 1996) is the revised version of the first edition and has been aligned with the criteria for depression in the fourth version of the Practical and Statistical Manual of Mental Disorders. It contains 21 items and each item is scored based on a Likert scale from 0 to 3. Fati, Birashk, Atef Vahid & Dobson (2005) administered this questionnaire on a sample of 94 Iranian people and reported the Cronbach's alpha coefficient of 0.91, split-half reliability coefficient of 0.89, and retest reliability coefficient of 0.94 (a one-week interval). Kaviani (2008) has reported its internal consistency to be 0.91.

3. Beck Anxiety Inventory (BAI): This questionnaire was developed by Beck, Epstein, Brown & Stear in 1988, and consists of 21 items, which, indeed, measure 21 anxiety symptoms, and each item is scored based on a Likert scale from 0 to 3. The range of the scale's score is between 0 and 63 where a higher score represents the presence of higher anxiety. Each item is representative of one of the symptoms of anxiety. In fact, the individuals who are clinically anxious or who are in an anxiety-producing situation experience some of these symptoms. Beck et al. (1988) reported the internal consistency of this scale to be 0.92, its re-test reliability (one-week interval) to be of 0.75, and the correlation between its items to range from 0.20 to 0.76. Kaviani & Mousavi (2008) have obtained the Cronbach's alpha coefficient of 0.92 and the retest reliability coefficient of 0.83 for this scale.

4- Penn Alcohol Craving Scale (PACS): This Scale (Flannery, Volpicelli, & Pettinati, 1999) is a self-report five-point tool that measures craving for alcohol drinking and can be also used to measure craving for the consumption of drugs and substances. It evaluates the frequency, severity, duration, and overall rate of craving for a particular substance during the pervious week. Flannery et al. (1999) have reported a high degree of predictive validity and internal consistency for this scale. In the present study, the coefficient of retest reliability was obtained equal to 0.82 in a one-week interval and its internal consistency was obtained equal to 0.84.

Procedure

The experimental design used in this study consisted of the implementation of an eight-session intervention of Mindfulness-based Relapse Prevention Program that was performed in weekly 90-minute sessions by a Ph.D. student of psychology at Shahid Chamran University of Ahvaz. Mindfulness-based relapse prevention was in accordance with the protocol designed by Bowen et al., (2009, 2011), which was adapted for use in this study. After the conduct of the structured clinical interview and the confirmation of the required conditions for the conduct of the research, the intended sample was selected and the selected participants were randomly assigned to two groups (experimental and control). The questionnaires were then filled out by the participants. The experimental group underwent a two-month intervention of Mindfulness-based Relapse Prevention after the pretest, while the control group received a usual and common intervention in the center (treatment as usual). Treatment as usual (TAU) included psychosocial training, slip prevention strategies, assertiveness, goal setting, and interpersonal skills training. At the end of the intervention, the groups were subjected to the posttest. For the follow-up, the subjects were re-evaluated two months after the treatment. The research was carried out with informed written consent obtained from the participants, confidentiality of the data, no conflict of interests in clinical research, and the observance of other points.

Results

The descriptive statistics of the studied variables by groups and type of test are presented in Table 1.

Table 1: Descriptive statistics of the studied variables by groups and type of test

<i>Variables</i>	<i>Descriptive Indicators</i>	<i>Mindfulness-Based Relapse Prevention</i>			<i>Conventional treatment</i>		
		<i>Pretest</i>	<i>Posttest</i>	<i>Follow-up</i>	<i>Pretest</i>	<i>Posttest</i>	<i>Follow-up</i>
Craving	Mean	28.41	10.16	1.49	27.18	19.87	21.03
	Standard deviation	2.30	2.60	2.17	1.72	2.20	3.16
Depression	Mean	29.41	14.63	15.18	29.12	25.68	28.75
	Standard deviation	2.52	2.47	2.16	2.98	2.31	3.02
Anxiety	Mean	24.68	14.53	14.91	25.04	22.81	24.98
	Standard deviation	2.04	2.21	2.81	2.63	2.72	2.16

Before analyzing multivariate covariance, its assumptions were first examined. To this end, four underlying assumptions of covariance analysis including homogeneity of variances, regression slope homogeneity, linearity and multiple synergies were investigated. By default, the homogeneity of variances among variables was investigated through the Loon test. The results of the Lone test indicated that this default was established in the craving variable ($F=1.38$, $P>0.05$), depression ($F=1.62$, $P>0.05$), and anxiety ($F=1.02$, $P>0.05$).

Testing the results of the box test also showed that homogeneity assumption of the variance-covariance matrix ($P > 0.05$, $F_{1,57}$). The results of homogeneity of regression slopes were also observed ($P > 0.05$, $P = 1.26$). Correlation coefficients between pre-test and post-test of craving scales were 0.41, depression was 0.43, and anxiety was 0.39. Given the correlations obtained, the linearization assumption was confirmed. Correlation coefficients between auxiliary variables (pre-tests) were less than 0.90 in all variables ($r < 0.90$). Regarding the correlation values obtained, it was almost avoided by the assumption of multiple coherent between random variables. Therefore, it can be ensured that the data of this research have the underlying assumptions of covariance analysis. The results of multivariate covariance analysis on the mean post-test scores of dependent variables with pre-test control in the experimental and control groups showed that Wilkes Lambda value was significant ($F = 35.1$, $P < 0.001$). Accordingly, it can be stated that there is a significant difference between two groups in at least one of the dependent variables. To study patterns of difference, single-variable covariance analysis was performed as follows.

Table 2: Single-variable covariance analysis results to examine patterns of difference in post-test

<i>Variables</i>	<i>Sum of squares</i>	<i>df</i>	<i>F statistics</i>	<i>Sig.</i>	<i>Effect size</i>
Craving	588.31	1	139.81	0.001	0.77
Depression	697.53	1	142.16	0.001	0.81
Anxiety	420.79	1	89.93	0.001	0.72

As can be seen in Table 2, the results are significant for all variables ($P < 0.001$).

To evaluate for survival difference multivariate analysis of covariance on mean of follow-up scores of the dependent variables with pre-test control was significant. Wilkes Lambda value was significant ($P < 0.001$, $F = 79.68$). To study patterns of difference, one-variable covariance analysis was used as follows.

Table 3: Single-variable covariance analysis results to examine patterns of difference in follow-up scores

<i>Variables</i>	<i>Sum of square</i>	<i>df</i>	<i>F statistics</i>	<i>Sig.</i>	<i>Size effect</i>
Craving	723.62	1	121.71	0.001	0.73
Depression	523.61	1	105.62	0.001	0.80
Anxiety	263.75	1	86.09	0.001	0.69

As can be seen in Table 3, the results are significant for all variables ($P < 0.001$). In other words the effectiveness of the treatment has been stable.

Discussion and Conclusion

A large number of studies have proved a high degree of comorbidity of substance abuse and mood and anxiety disorders. When different classes of abnormalities occur at such a high rate, the selection of an appropriate therapeutic approach can be challenging (Chu, Colognori, Weissman, & Bannon, 2009). Clinical studies also indicate that the disorders that interfere with each other and lead to each other's persistence create a difficult situation for determining the initial diagnosis and selection of treatment protocols for a

clinical specialist. Adapting an approach is a flexible way to adapt behavioral and cognitive interventions in order to target a range of symptoms in different diagnostic fields. In addition, the multicultural competence of these adapted interventions should also be a key component and specialists should pay particular attention to it (Staley, & Lawyer, 2010). Mindfulness, also known as meditation, is a valuable skill that has existed and been taught for thousands of years among many cultures and religions in the world, such as Islam (Enayat Khan, 2002), Buddha (Rahula, 1974), and Christianity (Merton, 1960) (cited in McKay, Wood, & Brantley, 2007). Recently, mindfulness-based techniques have been integrated with other types of psychotherapy (such as mindfulness-based cognitive therapy, Segal, Williams, & Teasdale, 2002; mindfulness-based relapse prevention, Bowen et al., 2009; Dialectical-Behavior Therapy (DBT), Linehan, 1993; Acceptance and Commitment Therapy (ACT), Hayes, Strosahl, & Wilson, 2012), and have brought satisfactory results. In this regard, the aim of the present study was to investigate the effectiveness of mindfulness-based relapse prevention in substance abuse and severity of depression and anxiety symptoms among addicts. The results of this study showed that mindfulness-based relapse prevention leads to a decrease in craving for the return into drug use and a significant reduction in the severity of depression and anxiety symptoms. Although both groups showed a significant increase in depression and anxiety and craving, the results indicated the higher effectiveness of mindfulness-based relapse prevention and this effectiveness stayed at play even after a two-month follow-up, while the results of the treatment as usual (TAU) showed some rates of relapse. The clinical improvement observed in this study is in the same direction with the results of research conducted by Zgierska et al. (2008), Bowen et al. (2009; 2011; 2014), Brewer et al. (2010), Vieten et al. (2010), Witkiewitz et al. (2010, 2013). Indeed, these findings provide another empirical support for the current research findings. It appears that exercises pertaining to mindfulness-based relapse prevention may target the common underlying mechanisms of depression, anxiety, and drug abuse, and, thus, a useful treatment for these disorders may be provided. The exercises of this intervention may help those who receive the dual diagnosis of such disorders to tolerate adverse and negative emotional withdrawal and reduce avoidance, and discard such maladaptive behaviors as rumination. In addition, such exercises may lessen the interactions between these processes; in this way, their increasing effects on depression, anxiety, and substance abuse may be weakened (Brewer et al., 2010). In mindfulness exercises, clients are trained to develop informed attention about how to change their experiences at any moment in their lives/ In order for clients to be able to find a complete awareness of their experiences at the current moment, they should turn to non-judgmental mindfulness about the self, the situation, or other people. This practice, which is called acceptance in mindfulness-based therapeutic approaches (such as Dialectical-Behavior Therapy (DBT), Linehan, 1993; Acceptance and Commitment Therapy (ACT),

Hayes, Strosahl, & Wilson, 2012) refers to the toleration of a phenomenon without any judgment about it and or an attempt to change it. Through this process, clients learn how to first endure their own disturbing emotions and, ultimately, control them. Addicts are tempted and return to drug use again when they are entangled in the ups and downs of emotions. It seems that mindfulness-based exercises play the same role that emotion regulation plays and they somehow teach addicts how to regulate and manage their disturbing emotions.

Since negative emotions such as depression and anxiety are among the most common antecedents of relapse, it is important to target them in further research (Baker et al., 2004). In particular, the exercises pertaining to mindfulness-based relapse prevention are designed to provide clients with alternative methods so that these methods can be linked with their experiences, especially those related to negative emotions (depression and anxiety) that are unpleasant or challenging. Mindfulness-based relapse prevention may help clients change their reaction to negative emotions without the need for responding immediately to drug craving to relieve the negative state. In addition, the decrease in the severity of craving in the present study may be attributable to increased awareness about the physical sensations, thoughts, and emotions that are associated with craving. The clients are encouraged to react to negative emotions and not to react to negative emotions through repeated exposures. Such frequent exposures to driver stimuli during which individuals learn to show no response to emotional states tend to become habituated over time and, therefore, lessen the severity of the craving response (Marks, 1997; Bowen et al., 2014).

The present research had some limitations. For example, the research was conducted on the resident and self-reported samples in a therapeutic community center by means of self-report questionnaires and a short-term follow-up time. Certainly, the generalizability of the results requires the conduct of further research in this area. It is hereby recommended that subsequent studies implement this intervention on a larger sample and the clinical addicts referring to addiction treatment clinics. It is also suggested that long-term follow-up studies be conducted in this area. Long-term follow-up evaluations can help addicts understand the long-term effects of this therapy on addiction craving and depression.

Reference

- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders (5th ed)*. Washington, DC: Author.
- Bakhtiari, M. (2000). Psychological Disorders in Patients with Deformity Disorder. Master's thesis for clinical psychology. Iran University of Medical Sciences, Tehran Psychiatric Institute.
- Baker, T.B.; Piper, M.E.; McCarthy, D.E.; Majeskie, M.R.; & Fiore, M.C. (2004). Addiction motivation reformulated: An affective processing model of negative reinforcement. *Psychological Review*, 111, 33–51.

- Beck, A.T.; Epstein, N.; Brown, G.; & Steer, R.A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, 56, 893–7.
- Beck, A.T.; Steer, R.A.; & Brown, G.K. (1996). *Beck Depression Inventory–II*. San Antonio: Psychological Corporation.
- Black, D.S. (2012). Mindfulness and Substance Use Intervention. *Substance Use & Misuse*, 47, 199–201.
- Bowen, S.; Chawla, N.; & Witkiewitz, K. (2014). *Mindfulness-based relapse prevention for addictive behaviors*. In: Baer, R. A. (Ed). *Mindfulness-Based Treatment Approaches: Clinician's Guide to Evidence Base and Applications*, 2nd ed. Academic Press.
- Bowen, S.; Chawla, N.; Collins, S.E.; Witkiewitz, K.; Hsu, S.; Grow, J.; et al. (2009). Mindfulness-based relapse prevention for substance use disorders: A pilot efficacy trial. *Substance Abuse*, 30, 295–305.
- Bowen, S.; Witkiewitz, K.; Chawla, N.; & Grow, J. (2011). Integrating Mindfulness Meditation and Cognitive Behavioral Traditions for the Long Term Treatment of Addictive Behaviors. *Journal of clinical outcomes management*, 18(10), 473-9.
- Brewer, J.A.; Bowen, S.; Smith, J.T.; Marlatt, G.A.; & Potenza, M.N. (2010). Mindfulness based treatments for co-occurring depression and substance use disorders: what can we learn from the brain? *Addiction*, 105, 1698-706.
- Brewer, J.A.; Sinha, R.; Chen, J.A.; Michalsen, R.N.; Babuscio, T.A.; Nich, C.; et al. (2009). Mindfulness training and stress reactivity in substance abuse: Results from a randomized, controlled stage I pilot study. *Substance Abuse*, 30(4), 306-17.
- Carroll, K.M.; & Onken L.S. (2005). Behavioral therapies for drug abuse. *American Journal of Psychiatry*, 162, 1452–60.
- Chu, B.C.; Colognori, D.; Weissman, A.S.; & Bannon, K. (2009). An initial description and pilot of group behavioral activation therapy for anxious and depressed youth. *Cognitive and Behavioral Practice*, 16, 408-19.
- Dagher, R.K.; & Green, K.M. (2015). Does depression and substance abuse co-morbidity affect socioeconomic status? Evidence from a prospective study of urban African Americans. *Psychiatry Research*, 225, 115-21.
- Daughters, S.B.; Braun, A.R.; Sargeant, M.N.; Reynolds, E.K.; Hopko, D.R.; Blanco, C.; Lejuez, C.W. (2008). Effectiveness of a brief behavioral treatment for inner-city illicit drug users with elevated depressive symptoms: the life enhancement treatment for substance use (LETS Act!). *Journal of clinical Psychiatry*, 69(1), 122-9.
- Fata, L.; Birashk, B.; Atef Vahid, M.; and Dobson, K.(2005). Structural Meaning / Schemas and Cognitive Processing of Emotional Information: Comparing Two Conceptual Frameworks. *Iranian Journal of Psychiatry and Clinical Psychology*, 11 (3), 26-312.
- Feldman, G. (2007). Cognitive and behavioral therapies for depression: overview, new directions, and practical recommendations for dissemination. *The Psychiatric clinics of North America*, 30(1), 39-50. DOI: 10.1016/j.psc.2006.12.001.
- First, M.B.; Spitzer, R.L.; Gibbon, M.; & Williams, J.B.W. (1997). *Structured Clinical Interview for DSM–IV Axis I Disorders*. Washington, DC: American Psychiatric Press.
- Flannery, B.A.; Volpicelli, J.R.; & Pettinati, H.M. (1999). Psychometric properties of the Penn Alcohol Craving Scale. *Alcoholism: Clinical and Experimental Research*, 23, 1289–95.

- Forsyth, J.P.; & Eifert, G.H. (2016). *The Mindfulness and Acceptance Workbook for Anxiety: A Guide to Breaking Free from Anxiety, Phobias, and Worry Using Acceptance and Commitment Therapy*, 2nd ed. New Harbinger Publications.
- Goldner, E.M.; Lusted, A.L.; Roerecke, M.; Rehm, J.; & Fischer, B. (2014). Prevalence of Axis-I psychiatric (with focus on depression and anxiety) disorder and symptomatology among non-medical prescription opioid users in substance use treatment: Systematic review and meta-analyses. *Addictive Behaviors*, 39(3), 520-31.
- Hayes, S.C.; Strosahl, K.D.; & Wilson, K.G. (2012). *Acceptance and commitment therapy: The process and practice of mindful change* (2nd ed.). New York, NY: Guilford.
- Kaviani, H.; Mousavi, A. (2008). Psychometric properties of Beck anxiety questionnaire on Iranian age and sex. *Journal of Faculty of Medicine, Tehran University of Medical Sciences*, 66 (2), 40-136.
- Kaviani, H. (2008). Reliability and validity of the hospital scale of anxiety and depression, general health questionnaire, checklist for checking demographic characteristics and Beck Depression Index in clinical population compared with healthy group. Research Report, Tehran University of Medical Sciences, Roozbeh Hospital.
- Kessler, R.C.; Chiu, W.T.; Demler, O.; & Walters, E.E. (2005). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry*, 62, 617-27.
- Linehan, M.M. (1993). *Cognitive- behavioral treatment of borderline personality disorder*. New York: Guilford Press.
- Magidson, J.F.; Gorka, S.M.; MacPherson, L.M.; Hopko, D.R.; Blanco, C.; Lejuez, C.W.; Daughters, S.B. (2011). Examining the effect of the Life Enhancement Treatment for Substance Use (LETS ACT) on residential substance abuse treatment retention. *Addictive Behaviors*, 36(6), 615-23. DOI: 10.1016/j.addbeh.2011.01.016.
- Marks I. (1997). Behavior therapy for obsessive-compulsive disorder: a decade of progress. *Canadian Journal of Psychiatry*, 42, 1021–7.
- Marlatt G.A.; & Donovan D.M. (2005). *Relapse Prevention: Maintenance Strategies in the Treatment of Addictive Behaviors*, 2nd ed. New York: Guilford Press.
- McKay, M.; Wood, J.; & Brantley, J. (2007). *The dialectical behavior therapy skills workbook: practical DBT exercises for learning mindfulness, interpersonal effectiveness, emotion regulation & distress tolerance*. New York: Guilford Press.
- Quyen, Q.T.; & Brent M. (2007). Treatments for patients with dual diagnosis: a review. *Alcohol clinical and experimental Research*, 31, 513–36.
- Sadock B.J.; & Sadock, V.A. (2016). *Kaplan and Sadock's comprehensive textbook of psychiatry* (10th ed., Vol. 1). Philadelphia: Lippincott/Williams & Wilkins.
- Segal, Z.; Williams, J.M.G.; & Teasdale, J.D. (2002). *Mindfulness Based Cognitive Therapy for Depression: A New Approach to Preventing Relapse*. New York: Guilford Press.
- Staley, C.S.; & Lawyer, S.R. (2010). Behavioral Activation and CBT as an Intervention for Coexistent Major Depression and Social Phobia for a Biracial Client with Diabetes. *Clinical Case Studies*, 9, 63–73.
- Tate, S.R.; Brown, S.A.; Unrod, M.; & Ramo, D.E. (2004). Context of relapse for substance- dependent adults with and without comorbid psychiatric disorders. *Addictive Behaviors*, 29, 1707–24.

- Vieten C.; Astin J.A.; Buscemi R.; & Galloway G.P. (2010). Development of an acceptance-based coping intervention for alcohol dependence relapse prevention. *Substance abuse*, 31, 108–16.
- Witkiewitz, K.; & Bowen, S. (2010). Depression, craving, and substance use following a randomized trial of mindfulness-based relapse prevention. *Journal of Consulting and Clinical Psychology*, 78, 362–74.
- Witkiewitz, K.; Bowen, S.; Douglas, H.; & Hsu, S. (2013). Mindfulness-based relapse prevention for substance craving. *Addictive Behaviors*, 38, 1563–71.
- Zgierska, A.; Rabago, D.; Zuelsdorff, M.; Coe, C.; Miller, M.; & Fleming, M. (2008). Mindfulness meditation for alcohol relapse prevention: A feasibility pilot study. *Journal of Addiction Medicine*, 2(3), 165–73.