

Acceptance and Commitment: An Intervention for Improving Family Function and Emotional Problems in Informal Caregivers of People with Severe Traumatic Brain Injury: A Randomized Clinical Trial

Mahtab Hadavand, Zahra Zanjani, Abdollah Omid, Fatemeh Atoof¹, Esmail Fakharian²

Department of Clinical Psychology, School of Medicine, Kashan University of Medical Sciences, Kashan, Iran, ¹Department of Biostatistics and Epidemiology, Faculty of Health, Kashan University of Medical Sciences, Kashan, Iran, ²Trauma Research Center, Kashan University of Medical Sciences, Kashan, Iran

ORCID:

Mahtab Hadavand: <https://orcid.org/0000-0002-2603-2663>

Zahra Zanjani: <https://orcid.org/0000-0003-4450-9397>

Abdollah Omid: <https://orcid.org/0000-0001-5538-7693>

Fatemeh Atoof: <https://orcid.org/0000-0002-1103-7461>

Esmail Fakharian: <https://orcid.org/0000-0003-0115-8398>

Abstract

Background and Objectives: Traumatic brain injury (TBI) is one of the main causes of disability. Since individuals with TBI experience many problems in their daily life, they must be highly supported. Regarding the nature of their problems, their caregivers suffer from many psychological problems. The current study aimed to investigate the effect of group acceptance and commitment therapy (ACT) on the family function, experiential avoidance, and anxiety of the TBI patients' caregivers. **Methods:** The current study was a randomized clinical trial with waiting list and intervention groups. Forty caregivers of TBI patients who referred to Kashan's Shahid Beheshti Hospital, Iran, since 2017 until 2019 were randomly assigned to the experimental ($n = 20$) and the waiting list control ($n = 20$) groups. Both the groups completed a demographic information questionnaire, the Family Assessment Device, the Experiential Avoidance in Caregiving Questionnaire, and the anxiety subscale of the Depression, Anxiety, and Stress Scale in pretest, posttest, 3-month follow-up, and 6-month follow-up. **Results:** The results of repeated measures analysis of variance showed that ACT program can significantly decrease the anxiety, experiential avoidance, and most of the dimensions of the family functions ($P < 0.005$). **Conclusion:** ACT could be utilized to improve the family functions and reduce the experiential avoidance and the anxiety of the TBI patients' caregivers. This trial is registered with the Registry of Clinical Trials: "IRCT20190704044100N1."

Keywords: Acceptance and commitment therapy, caregivers, experiential avoidance and anxiety, family function, traumatic brain injury

INTRODUCTION

Traumatic brain injury (TBI) is one of the most common head injuries and usually resulted of intense accidents, causing many paralysis and death cases.^[1] An average of 1,000,000 individuals in the United States experience TBI yearly and suffer from its consequences. TBI imposes an approximate cost of 40 billion dollars on the health-care systems.^[2] According to the studies, Iran is one of the countries with the highest accident incidence rates, and the most damages caused by accident (31%) are related to head, neck, and

head injuries.^[3] Individuals with TBIs usually suffer from neurological problems, psychological disorders (e.g. anxiety

Address for correspondence: Dr. Zahra Zanjani,

Department of Clinical Psychology, School of Medicine, Kashan University of Medical Sciences, Kashan, Iran.
E-mail: z_zanjani2005@yahoo.com

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and depression), and skeletal muscles disorders, which may affect their lives for months or years.^[4] The disabling nature of TBI makes TBI individuals constantly in need of care and support. For this reason, they become more dependent on the family, and therefore, the family would be excessively pressured by challenges and stress.^[2] Therefore, this problem poses challenges for family members of people with TBI and can disturb the balance between family boundaries and roles.^[5] Although the many negative effects of TBI on family member, most studies have focused on the problems of TBI patients and few studies have investigated the problems and treatment of family members of TBI individuals.^[6] The stress caused by the trauma can severely affect the lives of the patients and their families and these negative psychological effects might worsen if the needs of these individuals take no notice.^[7]

It is found that heavy responsibilities of the patients cause the family problems increase and the caregivers do not pay enough attention to their own mental and physical health.^[8] Goldstein *et al.* reported the anxiety of the home caregivers of the patients to be 44%.^[9] According to studies, close and long interactions with individuals who suffer from physical or mental problems may lead to anxiety, reduced concentration, chronic fatigue, and sleep disorders.^[10] These could increase the risk of being diagnosed with other psychological disorders and might finally increase the occurrence of symptom relapses and pressure the patients and impose more problems on them.^[11]

The caregivers of TBI patients encounter intense emotional experiences^[12] and sometimes they tend to use maladaptive strategies such as suppressing, controlling, or avoiding the emotional experience.^[13] Moreover, the studies have shown that when facing with highly intense emotional situations, a majority of the individuals prefer to use avoidance strategies instead of accepting and solving the problem.^[14] According to some theoretical approaches, avoiding of aversive psychological experiences are an important factor in the development and maintenance of many psychological disorders such as anxiety and depression and some research confirmed it.^[15,16] Experiential avoidance is defined as the attempts to escape the negatively appraised thoughts, emotions, memories, and physical sensations. Although this strategy is effective in the short term, it disrupts person's life in the long run.^[17]

In 1950, the psychological problems of the caregivers were noticed.^[18] Sousa reported that family members of TBI experience many psychological problems.^[19] According to the fact that the caregivers of TBI patients are intensely under psychological pressure, it is necessary to pay attention to their problems and treatment, especially about Iranian families that are less supported by the officials than those in Western countries.^[20]

Acceptance and commitment therapy (ACT) is one of the psychological treatments that emphasizes the enhancement of quality of life and living a value-driven life.^[21] In this approach, it is assumed that instead of making direct efforts to reduce the aversive emotions or thoughts, the individuals need to

concentrate on increasing their behavioral efficacy despite experiencing the irritating thoughts and feelings.^[22]

Currently, a great body of research has supported the effectiveness of this treatment in a wide range of clinical and nonclinical problems.^[23-30] However, no investigation has examined the effectiveness of ACT on TBI patients' caregivers. Therefore, the current study aims to investigate the effectiveness of ACT on family functions, anxiety, and experiential avoidance in TBI patients' caregivers.

METHODS

Trial design

This study was a part of a large parallel-group randomized clinical trial with intervention and waiting list control groups.

Participants and randomization

The population included all of the caregivers of inpatient and outpatient individuals with TBI in Kashan who referred to Kashan's Shahid Beheshti Hospital (Kashan's Trauma Research Center) since 2017 until 2019. Among 92 individuals who were primarily assessed using the anxiety disorders interview schedule (ADIS-IV), 40 individuals were eligible to participate the study according to the inclusion criteria. They were randomly assigned to the waiting list control ($n = 20$) and the ACT ($n = 20$) groups [Figure 1]. Randomization was performed using the random numbers generated by the website <http://www.randomizer.org/>.

Patient selection

The inclusion criteria were having a family member with TBI, being the caregiver of the TBI patient for at least 3 months in a row, being aged between 25 and 50, having at

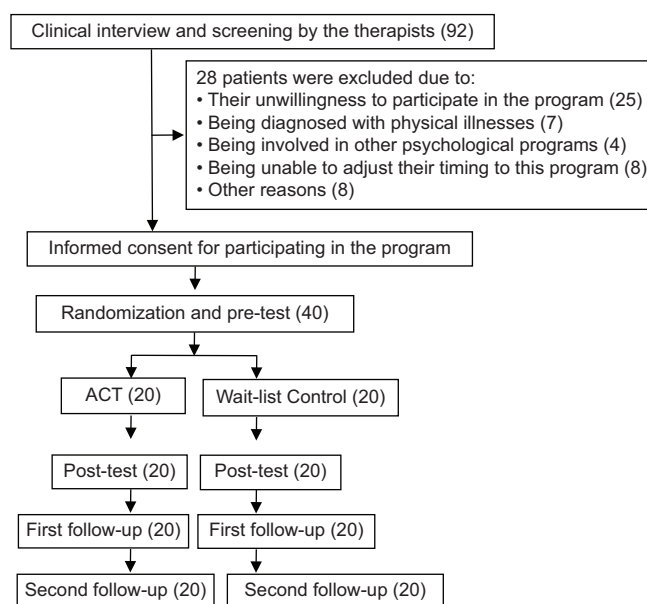


Figure 1: CONSORT diagram of the progress through the phases of a parallel randomized trial of two groups (enrolment, intervention allocation, follow-up, and data analysis), CONSORT: Consolidated Standards of Reporting Trials

least a secondary school diploma, not being diagnosed with chronic physical conditions (MS, cancer) or severe mental disorders (e.g. psychotic disorders), and having informed consent. The exclusion criteria were absent in the ACT sessions (more than twice), being diagnosed with severe physical or mental illnesses during the study, and the necessity for receiving medication.

Procedure

After screening the individuals and randomly assign them to the waiting list control and intervention groups, the participants of both the groups completed three questionnaires including the Family Assessment Device (FAD), the Experiential Avoidance in Caregiving Questionnaire (EACQ), and the anxiety subscale of the Depression, Anxiety, and Stress Scale (DASS). The questionnaires also were completed at the end of the program, a 3-month follow-up and a 6-month follow-up by all of the participants and under the supervision of a trained psychologist who was not aware of the allocation of the participants in waiting list control and experimental groups.

Ethics

To remark the ethical aim, the participants were aware of their whole independence during the plan and their aware consent was received in written form before beginning the study. The questionnaires were completed anonymously by the participants (participant was given encode). This investigation was approved by the Ethics Committee of Kashan University of Medical Sciences "IR.KAUMS.MEDNT.REC.1397.76."

Therapist

The therapist was a M.Sc. of clinical psychologist, who had been supervised and trained in the ACT. The therapist received weekly supervision from two clinical psychologist with Ph.D. degree. All of the sessions were audio-recorded and were reviewed weekly by the supervisors who assessed the internal consistency of the intervention.

Intervention

The intervention group received 10 weekly sessions of ACT that last 1 h each session and run in group format.^[31] Treatment was provided to participants at no cost. Each group was composed of five to seven participants.

Waiting list control group

The waiting list control group received their routine care and was contacted by the research team to complete questionnaires at the end of the program, a 3-month follow-up and a 6-month follow-up. After that, they were offered the opportunity to use the ACT intervention following the 6-month follow-up assessment. No placebo was used in this study.

Measures

The anxiety disorders interview schedule for diagnostic and statistical manual-IV

The Anxiety Disorders Interview Schedule-IV (ADIS-IV) is a semi-structured clinical interview for the diagnoses of anxiety disorders which assesses mood disorders, somatoform

disorders, psychotic disorders and substance use disorders and is utilized for differentiating between the clinical and sub-clinical diagnoses. This scale was developed by Brown *et al.* in 1994.^[32] The clinician severity rating (CSR) of ADIS-IV is scored between 0 (no symptom) to 8 (severely disruptive). In consequential research where ADIS-IV is used, the CSR is utilized as an index for examining the recovery after completing the therapeutic programs and follow-up assessments.^[32] The content validity of the Persian version of this scale including the test-retest reliability coefficient has been confirmed to be 0.83.^[33]

The depression, anxiety, and stress scale

This scale was developed by Lovibond and Lovibond.^[34] The short version of DASS includes 21 items by which the psychological structures of anxiety, depression and stress are examined. According to Lovibond and Lovibond, the internal consistency coefficients (Cronbach's alpha) for depression, anxiety, and stress are 0.91, 0.81, and 0.89 respectively.^[34] The 21-item form of DASS has been validated for the Iranian population by Sahebi *et al.* The test-retest validity coefficient for stress, depression, anxiety, and the total scale is calculated to be 0.80, 0.81, 0.78, and 0.82, respectively.^[35]

Family assessment device

FAD is a 60-item questionnaire developed in 1983 by Epstein, Baldwin, and Bishop.^[36] This scale can determine the structural, professional, and interactive characteristics of the family and also six dimensions of the family function. Moreover, FAD assesses the ability of the family in coping with the family responsibilities on a 4-point Likert scale: (from strongly agree = 1 to strongly disagree = 4) 36). The validity of FAD was reported in numerous studies.^[37] The general validity of the scale was suitable.^[38]

Experiential avoidance in caregiving questionnaire

This 15-item scale was designed by Losada *et al.* in 2014 and consists of three subscales including active avoidant behaviors, intolerance of negative thoughts and emotions toward the relatives, and apprehension concerning negative internal experiences related to caregiving. The internal consistency (Cronbach's alpha) of the total scale was 0.70. The reported Cronbach's alpha for the subscales is as follows: 0.63 for active avoidant behaviors, 0.71 for intolerance of negative thoughts and emotions toward the relatives, and 0.60 for apprehension concerning negative internal experiences related to caregiving.^[39] The internal consistency (Cronbach's alpha) of the Persian version EACQ in this study was suitable ($\alpha = 0.85$).

Data analysis

To assess potential differences between the two groups at baseline, independent *t*-tests were conducted to compare the groups on all continuous variables. Chi-square test was used for categorical variables and repeated measures analysis of variance was used to evaluate the effects of the group ACT intervention. All analyses were conducted using

SPSS (version 25) for Windows (International Business Machines Corporation (IBM)), New York, United States).

RESULTS

The mean age of participants was 32.70 (standard deviation = 3.24) and 100% of the participants in the control group and 80% in the ACT group were female. Groups had no significant difference in terms of their demographic characteristics [Table 1].

Before applying the repeated measures ANOVA, the required preassumptions such as M Box’s test, Mauchly’s test of sphericity, and Levene’s test were considered. According to the results of Levene’s test, the necessary pre-assumptions for applying the repeated measures ANOVA for the dependent variables in all the three variables of the control and ACT groups were confirmed ($P > 0.05$). The Box’s M test results were not significant for any of the variables; therefore, the homogeneity of variance–covariance was confirmed between the groups ($P > 0.001$). Mauchly’s test of sphericity for the

equality of variance–covariance was not confirmed for any of the variables ($P < 0.05$); therefore, to analyze the obtained data, the Greenhouse–Geisser tests were applied.

The results showed that groups had no significant difference in the baseline in terms of family function, anxiety, and experiential avoidance, but they indicated a significant difference on posttest and first and second follow-up ($P < 0.05$). The ACT group had a downward trend from the pretest to posttest. However, there was a slight increase in the follow-up time. The results indicated that although groups didn’t have difference in baseline anxiety, they had a significant difference in the later stages [Tables 2 and 3]. As shown in Table 3, the highest score of anxiety was for the second follow-up of the control group and the lowest scores belonged to the posttest assessments of the ACT group.

The results of the repeated measures ANOVA for all of the variables of the study are shown in Table 4. These results demonstrated that group effect was significant in all components of family functions except the components of roles and behavioral control ($P > 0.05$). Furthermore, the analysis of experiential avoidance scores revealed a significant time \times group for the first and third factors ($P < 0.05$). The results of analysis of the anxiety scores also indicated a significant effect of group, time, and time \times group. Therefore, ACT has significantly affected the severity of anxiety levels ($P < 0.05$).

Table 1: Comparison of demographic characteristics between the study groups				
Variable	Groups	Control, n (%)	ACT, n (%)	P
Sex	Male	0	2 (10)	0.147
	Female	20 (100)	18 (90)	
Marriage	Single	5 (25)	2 (10)	0.212
	Married	15 (75)	18 (90)	
	Divorced	0	0	
Education	High school	10 (50)	8 (40)	0.733
	Diploma	6 (30)	6 (30)	
	Associate degree and above	4 (20)	6 (30)	
Occupational status	Employed	3 (15)	3 (15)	0.667
	Unemployed	4 (20)	2 (10)	
	Homemaker	13 (65)	15 (70)	
Financial situation (monthly income)	>\$751	7 (35)	5 (25)	0.644
	\$301-\$750	8 (40)	10 (50)	
	\$101-\$300	4 (20)	5 (25)	
	<\$100	1 (5)	0	
Relative	Father	0	2 (10)	0.323
	Mother	2 (10)	1 (5)	
	Sister	3 (15)	1 (5)	
	Brother	3 (15)	1 (5)	
	Wife	12 (60)	15 (75)	
Access to alternative caregiver	Yes	13 (65)	8 (40)	0.205
	No	7 (35)	12 (60)	
Caregiver’s physical or mental illness	Yes	4 (20)	3 (15)	0.677
	No	16 (80)	17 (85)	
Duration of care (months), mean (SD)		5.25 (1.25)	4.55 (1.09)	0.068
Age (years), mean (SD)		32.70 (7.29)	32.30 (7.80)	0.868

SD: Standard deviation, ACT: Acceptance and commitment therapy

DISCUSSION

The current study aimed to assess the effectiveness of the group ACT on the family functions, anxiety, and experiential avoidance of the TBI patients’ caregivers. In general, the results of this study indicated that ACT can significantly improve the anxiety, experiential avoidance, and most of the dimensions of the family functions. The findings of this study were in line with a number of studies which had demonstrated that other kinds of psychotherapies could significantly reduce anxiety, experiential avoidance and the family functions of the TBI patients’ caregivers.^[27-29]

TBI patients’ families, due to their problems with the TBI patients, keep experiencing disturbance and unbalance in their family functions. By centralizing the families on clarifying and reaffirming the values, identifying the challenging situations and urging the families, ACT plays a remarkable role in making effective changes to improve the family functions.^[40] One of the therapeutic principles in ACT is focusing on the diffusion of the tension provoking situations. By this technique, TBI patients’ caregivers learn observe situations without judgment instead of engaging in emotional states experienced this situations and the psychological problems related to it.^[41] Therefore, this principle could improve the efficacy and functioning of the families and individuals.^[26]

The possible explanations for the mechanisms through which ACT has reduced experiential avoidance, could be offered by mentioning that the ACT theoreticians believe that the

Table 2: The mean, standard deviation and comparison of the family function subscales in two groups according to the assessment stages

Family function subscales	Time	ACT		Control		P
		Mean	SD	Mean	SD	
Problem-solving	Pretest	2.308	0.423	2.300	0.376	0.948
	Posttest	1.758	0.499	2.433	0.413	<0.001
	First follow-up	1.808	0.496	2.466	0.399	<0.001
	Second follow-up	1.841	0.505	2.508	0.387	<0.001
Communication	Pretest	2.771	0.341	2.628	0.344	0.196
	Posttest	2.342	0.410	2.807	0.325	<0.001
	First follow-up	2.392	0.416	2.857	0.324	<0.001
	Second follow-up	2.428	0.439	2.928	0.335	<0.001
Roles	Pretest	2.327	0.384	2.183	0.255	0.170
	Posttest	2.050	0.366	2.283	0.261	0.026
	First follow-up	2.072	0.326	2.266	0.260	0.044
	Second follow-up	1.915	0.372	2.167	0.245	0.016
Affective responsiveness	Pretest	2.028	0.339	2.021	0.407	0.952
	Posttest	1.735	0.246	2.214	0.418	<0.001
	First follow-up	1.764	0.242	2.285	0.406	<0.001
	Second follow-up	1.785	0.251	2.292	0.405	<0.001
Affective involvement	Pretest	2.856	0.410	2.806	0.396	0.697
	Posttest	2.525	0.515	3.000	0.425	0.003
	First follow-up	2.575	0.521	3.037	0.438	0.004
	Second follow-up	2.643	0.522	3.112	0.456	0.005
Behavioral control	Pretest	1.525	0.217	1.545	0.179	0.753
	Posttest	1.365	0.285	1.585	0.273	0.017
	First follow-up	1.815	0.414	1.820	0.325	0.966
	Second follow-up	1.940	0.423	1.965	0.493	0.864
General family functioning	Pretest	2.757	0.375	2.819	0.258	0.550
	Posttest	2.403	0.321	2.903	0.254	<0.001
	First follow-up	2.507	0.318	2.976	0.231	<0.001
	Second follow-up	2.519	0.331	3.003	0.246	<0.001

SD: Standard deviation, ACT: Acceptance and commitment therapy

Table 3: The mean, standard deviation and comparison of the experiential avoidance and anxiety for the acceptance and commitment therapy and control group according to the assessment stages

	Time	ACT		Control		P
		Mean	SD	Mean	SD	
Experiential avoidance factors						
Active avoidant behaviors	Pretest	18.050	4.559	18.300	4.130	0.857
	Posttest	12.850	4.637	20.650	4.579	<0.001
	First follow-up	13.100	4.529	21.250	4.598	0.001
	Second follow-up	13.700	4.964	21.050	4.536	0.002
Intolerance of negative thoughts and emotions	Pretest	14.850	4.392	14.650	1.814	0.064
	Posttest	9.200	3.473	15.050	2.187	0.004
	First follow-up	9.550	3.720	15.000	2.176	0.002
	Second follow-up	9.450	3.845	15.100	2.023	0.007
Apprehension concerning negative internal experiences related to caregiving	Pretest	16.350	5.214	16.950	3.136	0.662
	Posttest	11.700	3.785	17.100	2.468	0.002
	First follow-up	12.200	3.664	17.150	3.703	0.004
	Second follow-up	12.900	4.115	17.500	3.720	0.012
Anxiety	Pretest	24.700	3.510	24.200	4.149	0.683
	Posttest	17.700	2.992	27.100	4.024	<0.001
	First follow-up	18.800	2.783	27.600	3.871	<0.001
	Second follow-up	19.500	2.819	28.200	3.833	<0.001

SD: Standard deviation, ACT: Acceptance and commitment therapy

Table 4: The results of the repeated measures ANOVA for examining the effectiveness of acceptance and commitment therapy on the family function, experiential avoidance and anxiety of the traumatic brain injury patients' caregivers

Variables	Time			Group			Time × group		
	F	P	ηp2	F	P	ηp2	F	P	ηp2
Family functions									
Problem solving	15.811	<0.001	0.294	13.857	<0.001	0.26	50.586	<0.001	0.571
Communication	10.793	<0.001	0.221	8.062	0.007	0.175	93.956	<0.001	0.712
Roles	15.063	<0.001	0.284	10.61	0.002	0.21	31.695	<0.001	0.455
Affective responsiveness	1.751	0.192	0.044	13.086	0.001	0.256	34.452	<0.001	0.476
Affective involvement	4.644	0.022	0.109	5.755	0.021	0.132	31.350	<0.001	0.452
Behavioral control	27.482	<0.001	0.420	0.753	0.391	0.019	0.14	0.711	0.004
General family functioning	8.448	0.001	0.182	18.981	<0.001	0.333	28.067	<0.001	0.182
Experiential avoidance									
Active avoidant behaviors	3.029	0.054	0.74	8.856	0.005	0.189	21.544	<0.001	0.362
Intolerance of negative thoughts and emotions	5.423	0.003	0.125	9.062	0.005	0.193	2.844	0.10	0.070
Apprehension concerning negative internal experiences related to caregiving	6.862	0.001	0.153	6.193	0.017	0.14	6.843	0.013	0.153
Anxiety	12.694	<0.001	0.25	40.783	<0.001	0.518	72.329	<0.001	0.656

experienced distress by the individuals roots in their cognitive inflexibility which has been generated by the cognitive fusion and experiential avoidance. According to what was mentioned, the tendency to avoid the distressing situations is a cause of the formation and maintenance of the psychological problems.^[42] By changing the relationship between the disturbing thoughts and feelings, ACT paves the way for the individuals to revise their reactions after understanding the harmless nature of this relationship.^[43] Instead of instructing the individuals to use more strategies for altering or reducing the unwanted thoughts and feelings, ACT prepares them to skillfully become aware of their negative thoughts and feelings, and to observe them as they are.^[44]

The other finding of the current research was that ACT led to reductions in anxiety levels of the TBI caregivers. It seems that ACT through broadening the capacity of the individual's psychological acceptance of the mental experiences, encourages the individuals to make more efforts and decrease their anxiety levels, and this, is a step toward enhancements in mental health. To clarify the findings of this study, it could be mentioned that in this treatment, instead of emphasizing the importance of exposure, what has been highlighted is the tendency of the individuals to accept their internal experiences as they are. They are also taught to only experience their anxiety-provoking thoughts and avoid fighting or struggling with them; and instead get involved in the activities that contain their life values. After experiencing the therapeutic effects of ACT and by separating themselves from the tense struggles and the unpleasant inner circumstances, the clients can finally experience being in the present moment. This ability can get them independent from their displeasing reactions, memories, and thoughts.^[45]

CONCLUSION

ACT can be a suitable option for increasing family function and decreasing the psychological problems caused by the

trauma of the TBI patients in their caregivers. However, it seems that more sessions are needed to reduce the impairments in two of the components of the family functions (roles and behavioral control).

Limitations

The limitations of this study included using self-report scales, and the fact that only female participants were recruited. Therefore, the results should be generalized cautiously. The small sample size was another limitation of the present study.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Hampton T. Traumatic brain injury a growing problem among troops serving in today's wars. *JAMA* 2011;306:477-9.
- Hassan ST, Khaw WF, Rosna AR, Husna J. Traumatic brain injury: Caregivers' problems and needs. *JNMA J Nepal Med Assoc* 2011;51:53-5.
- Ebrahimi FH, Moshiri E, Zand S. An investigation on quality of emergency care of head injury patients in emergency ward, Vali-e-Asr Hospital, Arak 2005. *J Arak University of Med Sci Winter* 2017;10:1-11.
- Masel BE, DeWitt DS. Traumatic brain injury: A disease process, not an event. *J Neurotrauma* 2010;27:1529-40.
- Roick C, Heider D, Toumi M, Angermeyer MC. The impact of caregivers' characteristics, patients' conditions and regional differences on family burden in schizophrenia: A longitudinal analysis. *Acta Psychiatr Scand* 2006;114:363-74.

6. Cole WR, Paulos SK, Cole CA, Tankard C. A review of family intervention guidelines for pediatric acquired brain injuries. *Dev Disabil Res Rev* 2009;15:159-66.
7. Ahmadiye A, Al davoud SA. Family Participation in Treatment and Rehabilitation of Chronic Mental Patients Iran, Tehran. *Pardis*: ISBN 9789647403306; 2008.
8. Semenova V, Stadlander L. Death anxiety, depression, and coping in family caregivers. *J Soc Behav Health Sci* 2016;10:5.
9. Goldstein TR, Miklowitz DJ, Richards JA. Expressed emotion attitudes and individual psychopathology among the relatives of bipolar patients. *Fam Process* 2002;41:645-57.
10. Kia S, ZarehHarafte Z. The effectiveness of stress management training on cognitive-behavioral disorders and quality of life for female heads of households. *Sociol Educ J* 2018;8:94-110.
11. Sheikholeslami F, Khalatbary J, Ghorbanshiroudi S. Effectiveness of stress coping skills training with psycho-educational approach among caregivers' of schizophrenic patients on family function and psychological wellbeing. *J Holist Nurs Midwifery* 2015;26:46-54.
12. Elvira de la Morena MJ, Cruzado JA. Caregivers of patients with disorders of consciousness: Coping and prolonged grief. *Acta Neurol Scand* 2013;127:413-8.
13. Zimmermann P, Iwanski A. Emotion regulation from early adolescence to emerging adulthood and middle adulthood: Age differences, gender differences, and emotion-specific developmental variations. *Int J Behav Dev* 2014;38:182-94.
14. Sheppes G, Levin Z. Emotion regulation choice: Selecting between cognitive regulation strategies to control emotion. *Front Hum Neurosci* 2013;7:179.
15. Hayes S, Strosahl K, Wilson K. *Acceptance and Commitment Therapy: An Experiential Approach to Behavior Change*. New York: Guilford Press; 1999.
16. Lee JK, Orsillo SM, Roemer L, Allen LB. Distress and avoidance in generalized anxiety disorder: Exploring the relationships with intolerance of uncertainty and worry. *Cogn Behav Ther* 2010;39:126-36.
17. Hayes SC, Wilson KG, Gifford EV, Follette VM, Strosahl K. Experimental avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *J Consult Clin Psychol* 1996;64:1152-68.
18. Sheppes G, Scheibe S, Suri G, Radu P, Blechert J, Gross JJ. Emotion regulation choice: A conceptual framework and supporting evidence. *J Exp Psychol Gen* 2014;143:163-81.
19. Sousa RM. *Traumatic brain injury-Theoretical Foundations of Nursing Interventions*. Neuroscience Nursing: Essentials for clinical practice. Atheneu: São Paulo. 2006. p. 209-31.
20. Magliano L, Fadden G, Economou M, Held T, Xavier M, Guarneri M, *et al.* Family burden and coping strategies in schizophrenia: 1-year follow-up data from the BIOMED I study. *Soc Psychiatry Psychiatr Epidemiol* 2000;35:109-15.
21. Riebschleger J, Scheid J, Luz C, Mickus M, Liszewski C, Eaton M. How are the experiences and needs of families of individuals with mental illness reflected in medical education guidelines? *Acad Psychiatry* 2008;32:119-26.
22. Hayes SC, Strosahl KD, Wilson KG. *Acceptance and Commitment Therapy*. American Psychological Association Washington: DC; 2009.
23. Coyne LW, McHugh L, Martinez ER. Acceptance and commitment therapy (ACT): Advances and applications with children, adolescents, and families. *Child Adolesc Psychiatr Clin N Am* 2011;20:379-99.
24. Hayes SC, Strosahl KD. *A Practical Guide to Acceptance and Commitment Therapy*. New York: Springer Science+ Business Media; 2005.
25. Hayes SC, Strosahl KD, Wilson KG. *Acceptance and Commitment Therapy: The Process and Practice of Mindful*. New York: Guilford Press; 2011.
26. Blackledge JT, Hayes SC. Using acceptance and commitment training in the support of parents of children diagnosed with autism. *Child Fam Behav Ther* 2006;28:1-18.
27. Zettle RD. Acceptance and commitment therapy (ACT) versus. Systematic desensitization in treatment of mathematics anxiety. *Psychol Rec* 2003;53:197-215.
28. Moghbel Esfahani S, Haghayegh SA. The effectiveness of acceptance and commitment therapy on resilience, meaning in life, and family function in family caregivers of patients with schizophrenia. *Horiz Med Sci* 2019;25:298-311.
29. Feeney J. *Physical Disability and Psychological Distress in Multiple Sclerosis: The Role of Illness Representations and Experiential Avoidance*. Cardiff, Wales: Cardiff University; 2012.
30. Michielin P, Cenedese C, Cristofoli M, Zaros N. Usefulness and effectiveness of group cognitive-behavioral psychotherapy and mutual support group therapy for depressed caregivers of psychiatric patients. *G Ital Med Lav Ergon* 2007;29:B18-25.
31. Harris R. *ACT Made Simple: An Easy-to-Read Primer on Acceptance and Commitment Therapy*. Oakland, California: New Harbinger Publications; 2019.
32. Brown TA, Barlow DH, DiNardo PA. *Anxiety Disorders Interview Schedule Adult Version: Client Interview Schedule*. New York: Graywind Publications Incorporated; 1994.
33. Amini H, Sharifi V, Asaadi S.M, Mohammadi M.R, Kaviani H, Semnani, *et al.* Validity of the Iranian version of the structured clinical interview for DSM-IV [SCID-I. the diagnosis of psychiatric disorders]. *Payesh-Health Monitor* 2008;7:49-57.
34. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories. *Behav Res Ther* 1995;33:335-43.
35. Sahebi A, Asghari MJ, and Salari RS. Validation of depression anxiety and stress scale (DASS-21) for an Iranian population. *J of Iranian Psychologists* 2005;1.4:36-54.
36. Epstein NB, Baldwin LM, Bishop DS. The McMaster family assessment device. *J Marital Fam Ther* 1983;9:171-80.
37. Zarei H, Younesi J. The effectiveness of cognitive techniques on improvement of family function in mal adjusted couples. *J Daneshvar Raftar* 2009;29:35-52.
38. Kabacoff RI, Miller IW, Bishop DS, Epstein NB, Keitner GI. A psychometric study of the McMaster family assessment device in psychiatric, medical, and nonclinical samples. *J Fam Psychol* 1990;3:431.
39. Losada A, Márquez-González M, Romero-Moreno R, López J. Development and validation of the experiential avoidance in caregiving questionnaire (EACQ). *Aging Ment Health* 2014;18:897-904.
40. Jansen JE, Morris EM. Acceptance and commitment therapy for posttraumatic stress disorder in early psychosis: A case series. *Cogn Behav Pract* 2017;24:187-99.
41. Hayes SC, Masuda A, Bissett R, Luoma J, Guerrero LF. DBT, FAP, and ACT: How empirically oriented are the new behavior therapy technologies? *Behav Ther* 2004;35:35-54.
42. Twohig MP. *Acceptance and Commitment Therapy: Introduction*. Amsterdam: Elsevier; 2012.
43. Harris R. Embracing your demons: An overview of acceptance and commitment therapy. *Psychother Aust*. 2006;12:70-6.
44. Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: Model, processes and outcomes. *Behav Res Ther* 2006;44:1-25.
45. Zamani E, Moatamedy A, Bakhtiari M. The effectiveness of acceptance and commitment group therapy on anxiety in multiple sclerosis. *Q J Health Psychol* 2017;5:152-67.