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Original Article

The Effectiveness of Online Training on Cognitive-behavioral and Acceptance and Commitment Therapy to Reduce self-regulation, Aggressive Behavior, and Self-Harm Among Students

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ABSTRACT

Background: Teenagers nowadays face a variety of physical, psychological, and social issues. Psychotherapeutic interventions may respond to the crises created at this time. The aim of the present study was to compare the effectiveness of two types of online interventional therapy (cognitive-behavioral and emotion regulation therapy) on students' commitment to emotion-regulation and reduction of aggressive behavior and self-harm.

Methods: This pretest posttest experimental study was performed on 60 adolescent students with self-harm who referred to the emergency unit of Zahedan hospital from October 2021 to January 2021. Using simple random sampling, we selected 60 students in three groups (20 students treated with online training of cognitive-behavioral education, 20 students with online training of acceptance and commitment therapy, and 20 students formed the control group). Cognitive-behavioral therapy sessions were conducted in 12 one-hour sessions and acceptance and commitment-based therapy sessions were conducted in eight 90-minute sessions, twice a week. The instruments of the research were validated questionnaires including Emotion Cognitive Regulation Questionnaire (CERQ), Buss-Perry Aggression Questionnaire (AGQ), and Self-Harm Inventory Scale (SHI)

Results The results showed that Cognitive-behavioral Therapy had a significant effect on the students' self-regulation (P=0.01), Aggressive behavior (P=0.01), and Self-Harm (P=0.01). The results showed that acceptance and commitment therapy had a significant effect on the students' self-regulation (P=0.001), Aggressive behavior (P=0.001), and Self-harm (P=0.001).

Conclusion: The effectiveness of online training of acceptance and commitment therapy was higher than online training of cognitive-behavioral therapy in reducing self-harm among the students. Thus, in training programs for the teenagers, it is suggested that acceptance and commitment therapy should be used.

Keywords: Cognitive-behavioral therapy, Acceptance and commitment therapy, Emotion-regulation, Aggressive behavior, Self-harm, online learning

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Introduction

Adolescence is considered as one of the most critical stages of one's life (1). Due to rapid technological, cultural, and social changes nowadays, adolescents encounter many physical, psychological, and social problems, and dangerous behavior and social harm are mainly initiated in this period (2). Psychological distresses will appear in case adolescents are unable to overcome crises and challenges caused by such changes in this period (3). One of the issues in this period is high-risk behaviors such as self-harm. Self-harm is a deliberate, impulsive, and non-lethal act that causes harm to the body. It leads to topical and conscious destruction caused by inability in dealing with one's aggressive introvert impulses to punish oneself or others (4). In normal population, self-harm is 4 percent common, while in clinical samples it is reported 21 percent, and men are three times more prone to it (4, 5). According to studies, environmental features, growth cycle, social-economic situation, family features, same-age group effects, and communicational patters of the people themselves are among important factors affecting high-risk activities by youth (6).

Cognitive-behavioral therapy is considered as the interventions which can prevent self-harm. A number of scholars have enumerated the effect of cognitive-behavioral therapy on self-harm (6, 7). Rajabi et al. studied depression disorders in addiction and realized that in cognitive-behavioral therapies, not enough attention is paid to the attentional bias because it considers the content of thought, while metacognitive therapy mostly considers the process of thought (how to think) (8). Cognitive techniques focus on beliefs concerning materials and automatic thoughts dealing with cognitive processes. Metacognitive therapy emphasizes the role of beliefs in the processing style and attentional processes such as attentional bias, cognition control and unstable restriction in concentration processing leading to depression therapy (emotional disorders) by reducing thought rumination, and positive and negative metacognitive beliefs (7).

Such studies revealed that cognitive-behavioral therapy might positively affect excitement regulation. Gross introduced excitement regulation as a process by which people can realize what excitations they can have, and when and how they can express them (9). Excitement regulation is a process through which people can regulate their excitations for conscious or subconscious response (10). Excitation regulation designates an important part of one's life, and there is no surprise that excitation confusion and regulating it may lead to sadness and even psychological harm. In a study on experimental avoidance and excitation regulation, patiets suffered from excitation difficulties more than others did (9).

One of the behavioral disorders occurring in all humans, particularly children and adolescents, in different shapes is called aggression. It is among anti-social behaviors and a biased act intending to hurt a person or doing harm to something or system which makes others avoid or retaliate. The scholars have mentioned two kinds of aggression, open and communicative (11, 12). Aggression includes physical harm, objective and external aggression such as pushing, kicking and obscenity, and communicative aggression means hurting others through making disruption in relationships among people (13).

Since ACT (Acceptance And Commitment Therapy) is a novel therapeutic approach and it applies acceptance, mental concentration, commitment, and behavioral change processes to build psychological flexibility, many psychological therapies have been applied particularly on reducing psychological problems which stress on excitations and cognitions (14). ACT is considered a third wave behavioral therapy. The main objective of this therapeutic method was building psychological flexibility that is the ability to practically select among different options that are more suitable, not just doing or forcing an act of avoiding thoughts, feeling, memories or disruptive tendencies (15). Face-to-face therapist-led Acceptance and Commitment Therapy (ACT) and Cognitive-behavioral

therapy are highly effective in self-regulation, aggressive behavior, and self-harm.

Despite the availability of some psychological interventions, the spread of diseases has caused serious restrictions in the provision of services and health care. Also, the government's policy to create a state of quarantine and social-physical distancing has often caused a series of negative emotions and closure of centers delivering mental health services (16). As a result, it seems necessary to use alternative solutions in order to provide mental health services. Today, with the advancement of information technology, communication boundaries and limitations for accessing mental health services have disappeared. Today, the cognitive-behavioral stress management program is available in the form of computer, telephone, internet-based and social (virtual) networks (17). However, the effectiveness of virtual and online methods as an alternative approach to providing face-to-face mental health services has become one of the main concerns of mental health professionals. Considering the existing contradiction regarding the effectiveness of online methods of providing cognitive-behavioral stress management programs on the one hand, and the necessity of providing mental health services to students during the epidemic period of the disease, the present research can provide the scientific findings needed to provide better services at the community level (18).

Overall, the results of the research indicate the effectiveness of cognitive-behavioral and acceptance and commitment therapy in reducing many behavioral and psycho-social problems. On the other hand, inadequate investigation of these interventions regarding the such variables as self-regulation, aggressive behavior, and self-harm among students in Iran is a research gap that will probably be filled with this study; Therefore, this study was carried out with the aim of investigating the effectiveness of online training of cognitive-behavioral and acceptance and commitment therapy on self-regulation, aggressive behavior, and self-harm among students.

Methods

Study Design

The present pre-test, post-test experimental study was conducted on 2 interventional groups (Cognitive-behavioral and Acceptance and commitment therapy) and a control group (no intervention). In this way, the researchers visited the school counseling center, and referred their cases to the emergency unit of a hospital in Zahedan after all the permissions were granted.

Participants

For this purpose, the second education region was selected among the schools of Zahedan, and the boys who declared self-harm in two high school were randomly selected. The students aged 12- 18 years who referred to the hospital with self-harm from October 2021 to January 2021 and those who were willing to participate and complete the informed consent form were included in this study; the students whose anger score was one standard deviation higher than the average, those who did not take part in more than 20 percent of the class or did not answer more than 20 percent of the questionnaire were excluded.

Intervention

The anger questionnaire was administered to the last year students of the selected high schools. The experimental group underwent online training of cognitive-behavioral therapy and ACT through Google Meet. Google Meet is one service for secure, high-quality video meetings and calls available for everyone, on any device. The third group was left intact as the control group; then, they filled out the questionnaires (Figure 1).

The Intervention Group 1: Online Cognitive-behavioral Therapy

It was treated a cognitive-behavioral therapy in twelve sessions based on Beiling et al.; as quoted by Tavafi et al., (19), there was a 1-hour session once a week. In the first three

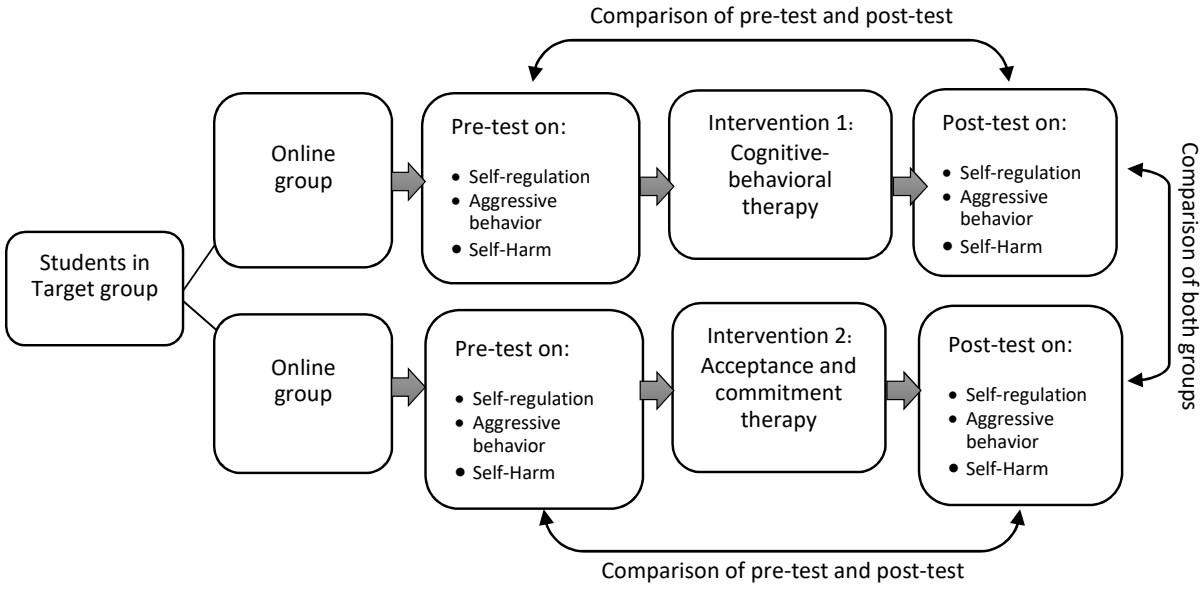

Figure 1: The intervention procedure for both control and intervention groups.

Table 1: Cognitive-behavioral therapy among students

Session	Outline	Duration
First session	• Ice breaking in the members • Familiarizing with the group leader • Explaining the training program and its reason • Determining and explaining the rules of the program	
Second session	• Teaching how to analyze an incident that provokes anger • Recognizing and discussing the signs of anger (physical, behavioral, emotional, and cognitive symptoms) and its aggravating factors • Explaining the importance of controlling emotions, explaining appropriate and inappropriate reactions to anger • Explaining the process of reviewing and summarizing with the help of participants	
Third session	• Introducing the anger control plans (including immediate strategies and preventive strategies) • Encouraging the members to use anger control strategies and personalizing anger • Designing control plans for each person, conducting a review process with participants and practicing calming techniques	
Fourth session	• Introducing the cycle of aggression and progressive relaxation of muscles, • Explaining the stages of the cycle of aggression and summarizing with the help of the participants	
Fifth session	• Training on the A-B-C-D pattern (including the anger-activating event or situation, belief system, consequences, challenging people), • Training on using the thought-stopping approach	
Sixth session	• Reviewing the contents of the previous sessions and more practice along with questions and answers and group discussion about the training provided	
Seventh &eighth session	• Discussing assertiveness, aggression, passivity and the principles • Talking about the steps of using conflict resolution patterns	
Ninth and tenth session	• Educating them in the field of anger and family, the impact of past learning on people's current behavior	

Eleventh & twelfth session	• Summarizing the topics mentioned in the field of anger control plans and therapeutic components of these plans • Evaluating the program and answering questions and providing feedback to the participants.	
The intervention group 2: ACT		
Session	**Outline**	**Duration**
First session	• Establishing a therapeutic relationship, signing a therapeutic contract, psychological training.	
Second session	• Discussing about experiences and their evaluation, efficiency as a measure, creation of creative frustration	
Third session	• Expressing control as a problem, introducing desire as another response, engaging in purposeful actions	
Fourth session	• Applying cognitive breakdown techniques, intervention in the functioning of problematic language chains, weakening of one's alliance with thoughts and emotions	
Fifth session	• Observing the self as context, weakening the self-concept and expressing the self as an observer, demonstrating the separation between the self, internal experiences, and behavior	
Sixth session	• Applying mental techniques, patterning of leaving the mind, training to see inner experiences as a proces	
Seventh session	• Introducing values, showing the dangers of focusing on results, discovering the practical values of life	
Eighth session	• Summarizing the sessions	

No intervention was performed for the control group.

sessions, the interventions aimed at cognitive reconstruction. They are mentioned in Table 1.

Data Collection Tools

Cognitive Emotion Regulation Questionnaire (CERQ). The purpose of the questionnaire is to measure an individual's CER strategies while coping with negative and daunting life events. It was developed by Garnefski and Kraaij in (20). This questionnaire has 36 questions and 9 subscales. The items are rated on a five-point Likert scale, ranging from 1 (never) to 5 (always) (24). In this questionnaire, CER strategies are divided into two general groups: adaptive and maladaptive strategies. The subscales of position assessment, refocus on planning, vision development, positive refocus, and acceptance of the situation constitute the adaptive strategies, while the subscales of self-blame, blaming others, rumination, and catastrophic thinking make up the maladaptive strategies (21). For the measurement of reliability of this questionnaire, a Cronbach's alpha coefficient of 0.91 was obtained. Moreover, in Iranian culture, after examining the correlation between the total score of the questionnaire and the scores of the subscales, the validity of the test was reported to be in the range of 0.40-0.68 with an average of 0.56; also, a Cronbach's alpha of 0.82 was reported as its reliability for all scales (22). The Cronbach's alpha coefficients of 0.82 and 0.76 were obtained for this questionnaire in the studies conducted by Abdi (23) and Salehian and Qadiri (24), respectively.

AGQ

Aggression variable in AGQ questionnaire is a self-report paper pencil reporting introduced by Buss and Perry. It includes 29 questions; 14 questions belong to "anger", 8 to "offence", and the remaining 7 questions to" invidiousness". In this questionnaire, the answers are scored based on 4-point Likert

style, i.e. never, sometimes, often, and always, each having0,1,2,3 points, respectively. Apart from question 18 which has a negative factor and its numbering is reverse, the total score in this questionnaire is 0-9 and it is obtained by adding the scores. Those with scores lower than the mean are less aggressive and the more the score, the more their aggression level will be. Mehrabizadeh et al. applied Chronbach's alpha and split-half to determine the reliability of the questionnaire, and the coefficients .68 and .61were obtained.

Self-Harm Inventory (SHI)

This is a 22 item questionnaire (yes no answers) was introduces by Sansone et al., and investigates self-harm among respondents. Unlike other questionnaire in this area, SHI is the only scale used to diagnose BPD (Borderline Personality Disorder). In this questionnaire, deliberate self-harm behaviors are assessed. For example, drug or alcohol overdose, self-harm ting, physical harm to oneself, and loss of a job on purpose are the factors evaluated in this questionnaire. It is designed to be applied by psychiatrist population. Scoring is in the form of yes and no. Yes, goes to the cases in whom self-harm has occurred deliberately. Zero score equals no and 1 goes to yes. For investigating the validity of the questionnaire, 84 percent of BPD 2 respondents with a cutoff point of 5 or more were categorized in BPD (25). Subsequent research showed the convergent validity by self-report tools such as borderline personality, depression, and childhood harm record. In Mikaili et al.'s study, the Cronbach's alpha of this questionnaire was 0.74 (26).

Sample Size

Based on the study of Nasery et al. (27), the power of the test was calculated to be 80% of the sample size of 50; taking into account a drop of 20%, we selected 60 samples.

$$\iota = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^{2} (\delta_1^2 + \delta_2^2)}{(\mu_1 - \mu_2)^2}$$

Randomization

A thorough list of all adolescents and students who had committed self-harm was prepared; 60 students with a record of self-harm were selected randomly using a table of random numbers for random allocation. Through phone calls, they were informed and placed in three therapeutic groups of 20. Then, among the students whose anger score was one standard deviation higher than the average, 60 people were selected by simple random method and replaced in three groups of 20 people (two experimental groups and one control group).

Statistical Methods

For descriptive data analysis, mean, standard deviation, skewness-kurtosis, and minimum and maximum were reported. The statistical method used to compare the groups for primary and secondary outcomes was ANOVA test, using IBM SPSS V.23 software. A P-value less than 0.05 was considered to be statistically significant.

Results

Demographic information is supplied in Table 2.

No significant relationship was observed between demographic variables and other variables (P>0.05). The mean and standard deviation of the pre-test and post-test scores of self-regulation, aggressive behavior, and self-harm in the experimental and control groups are presented in Tables 3-5, respectively.

There was a statistically significant difference between the three groups in terms of the research variables. As a result, it can be stated that cognitive-behavioral therapy and acceptance and commitment therapy have a significant effect on self-regulation, aggressive behavior, and self-harm on students (Table 6).

The post-test score in the two intervention groups was effective in three indicators, self-regulation, aggressive behavior, and self-harm, and this shows that the first and second methods had a positive effect. Based on the comparison of pre-test and post-test scores, no difference was observed in the control group (P=0.09)

Table 2: Demographic information of the participants

Variables	Grouping	Control Frequency	%	Intervention 1 Frequency	%	Intervention 2 Frequency	%	P value
Age of participants	13-15	8	40	8	20	12	30	0.924
	16-18	12	60	9	22.5	11	27.5	
Gender of participants	Male	10	50	11	27.5	10	25	0.861
	Female	10	50	9	22.5	10	25	
Marital status of parents	Married	12	60	9	22.5	9	22.5	0.650
	Single	8	40	10	25	12	30	
Parents' age	Less than 30 years	0	0	8	20	6	15	0.355
	30 to 40 years	5	25	8	20	7	17.5	
	More than 40 years	15	75	6	15	5	12.5	
Father's education	Diploma	9	45	5	12.5	7	17.5	0.550
	Bachelor	6	30	8	20	7	17.5	
	Masters	5	25	6	15	6	15	
	PHD	0	0	1	1	0	0	
Mother's education	Diploma	11	55	6	15	6	15	0.171
	Bachelor	7	35	6	15	8	20	
	Masters	2	10	7	17.5	6	15	
	PHD	0	0	1	1	0	0	0.181

Table 3: Mean and standard deviation of pre-test-post-test scores of self-regulations in the experimental and control groups

	Group	Pretest		Posttest		P value
		Mean	SD	Mean	SD	
Self-regulation	Control	62.42	6.01	65.50	6.57	0.09
	Cognitive-behavioral Therapy	63.35	6.24	80.0	7.01	0.01
	Acceptance and commitment therapy	62.77	5.59	86.0	6.01	0.001

Table 4: Mean and standard deviation of pre-test-post-test scores of aggressive behaviors in the experimental and control groups

	Group	Pretest		Posttest		P value
		Mean	SD	Mean	SD	
Aggressive behavior	Control	45.40	3.99	48.75	3.94	0.08
	Cognitive-behavioral Therapy	49.13	3.11	39.41	4.13	0.01
	Acceptance and commitment therapy	48.11	3.14	30.40	4.22	0.001

Table 5: Mean and standard deviation of pre-test-post-test scores of self-harm in the experimental and control groups

	Group	Pretest		Posttest		P value
		Mean	SD	Mean	SD	
Self-Harm	Control	33.65	3.43	32.40	3.20	0.09
	Cognitive-behavioral Therapy	33.44	2.89	13.65	1.38	0.01
	Acceptance and commitment therapy	32.45	2.88	10.44	1.45	0.001

Table 6: Comparison of mean happiness score between the control and intervention groups (N=60)

Group	Number	Before	After	Difference	Within group
		Mean±SD	Mean±SD	Mean±SD	
Control	20	58.16±3.91	58.55±4.26	0.73±2.12	P=0.78
Intervention	40	55.18±4.41	78.18±1.01	26.50±7.81	P<0.001
Between groups	60	P=0.08	P<0.001	P<0.001	

Discussion

The present study investigated the effect of online cognitive-behavioral and acceptance and commitment-based therapies on reducing emotion regulation, aggressive behavior and self-harm among students. The results revealed that emotion regulation was different among control, acceptance and commitment-based therapy, and cognitive-behavioral therapy; the effectiveness of online training of acceptance and commitment therapy was higher than online training of cognitive-behavioral therapy in reducing self-harm among the students.

The results on the difference of effectiveness of cognitive-behavioral and acceptance and commitment based therapies are in line with those of Tavafi Hatami et al. (19), Harris (28), Hernández-López (29), Craske et al. (30). In cognitive-behavioral therapy, a number of methods applied by the therapist are as follows but not limited to them; confronting illogical beliefs, self-consciousness raising, cognitive show, hindering thought, teaching communicative skills, teaching social skills and book therapy and paying attention to the past (dreams) can help to explain personal problems, but all these measures often help very little to overcome such problems. In contrast, the aim of cognitive-behavioral therapy is the rapid improvement in feelings and status and rapid changes in self-harming behaviors in which they might be involved. In fact, cognitive-behavioral therapy focusses more than traditional methods in the present and future. Based on ACT, the first four processes are acceptance, failure, grounds dealing with the present, acceptance processes, and consciousness mind of ACT and the last processes are each as a ground, dealing with the present time, values and commitment action of change processes, and ACT commitment(31).

The results of this research showed that in aggressive behavior dimensions, the difference among the control group, acceptance and commitment based therapy group, and cognitive-behavioral therapy group was significant and there was also a significant difference between the effect of cognitive-behavioral therapy and acceptance and commitment-based therapy regarding aggressive behavior among students (32). The results showed that the difference of the effects of cognitive-behavioral therapy and acceptance and commitment-based therapy regarding the students' aggressive behavior was in line with the studies done by Rajabi et al. (8) and Koohneshin et al. (33).

Cognitive-behavioral therapy encompasses therapeutic methods based on principles emanated from psychological, emotional, and human behavior models. This method includes several therapeutic approaches for emotional disorders. Cognitive-behavioral therapy is applied for a wide range of disorders such as anxiety, fears, depression, addiction, obsessive compulsive behavior, post-traumatic stress disorder, and bipolar disorder. In addition, cognitive-behavioral therapy is effective in cases who suffer from inability to control anger or inferiority complex and even physical problems such as fatigue and chronic pains (7).

The results of the difference of the effects of cognitive-behavioral and acceptance and commitment-based therapies regarding self-harm are in line with those of the studies done by Lubell et al. (34), Atadokht et al. (35), Afshari and Delpazir (36), Matejevic et al. (37), and Gregory et al. (38). When ACT is conceptualized with the self and it is a threat to psychological flexibility, it tries to improve with another type of experience. One of these

is the meaning and the sense of oneself as a ground in which internal events occur such as thoughts, feelings, memories, and physical feelings (31). Azimi et al.'s study was conducted with the aim of effective cognitive-behavioral therapy (face-to-face and online implementation) on the emotional regulation strategies of people with comorbid insomnia and depression. The results of the study showed that the face-to-face implementation of the treatment protocol was more effective in reducing catastrophizing scores, increasing the ability to understand others' points of view, and refocusing on planning than the implementation method using the Internet (39). However, Raisi et al.'s study with the aim of comparing the effectiveness of online SMS cognitive behavioral therapy and telephone cognitive behavioral therapy on persistent depression showed that there was no significant difference between the two intervention methods in terms of effectiveness. Both methods of cognitive therapy, telephone and online SMS, were effective in reducing depression symptoms (40). This is a supreme sense of oneself in human beings and is obtained through breaking process and conscious mind. The main advantage of this sense of oneself is the ground in which there is no threatening conscious content. In other words, it supports itself as a ground of acceptance.

One of the advantages of remote psychotherapy is that it can be effective for different populations and different environments; in terms of quality, it is comparable to face-to-face care, which has led to continuity of treatment and accessibility and significant reduction of treatment costs.

Limitation and Suggestions

Among the limitations of the present study, we can point out the slow speed of the Internet and the lack of mastery of some patients in the use of video communication software programs, which caused frequent disconnections and prolonged sessions. Due to the problems of accessing the patients, the results have not been evaluated in the follow-up phase. Therefore, deciding on the stability of the results will be accompanied by considerations.

In the framework of the findings of the present research, one of the suggestions is to add psychological interventions based on virtual space in order to improve the quality of life based on health in students.

Conclusion

Based on the results obtained from descriptive variables, it is concluded that the effectiveness of online training of acceptance and commitment therapy was higher than online training of cognitive-behavioral therapy in reducing self-harm among the students. Consequently, the online training of acceptance and commitment therapy and online training of cognitive-behavioral therapy have a significant effect on curing emotion regulation and reducing aggressive behavior and self-harm among the students and it can be applied as therapeutically effective programs by the psychologists and counselors.

Authors Contribution

MS, GhSm, MsM, devised the study concept, designed the study; supervised the intervention data collection, and analysis; participated in the coordination of the study, and critically revised the manuscript. MS, GhSm collected data, ran the study intervention, participated in the study concept, performed the analyses and revised the manuscript. MS, GhSm, MsM contributed to the design and analysis of the study, and drafted the manuscript.

Conflict of Interest: None declared.

Ethical Consideration

The present study was carried out with the approved code of 9676112 from the University of Zahedan. After the interventions, we provided the opportunity for the participants in the control group to select voluntarily one of the trainings of interventional methods.

References

1 Merchant G, editor Teenage girls and internet chatrooms. Conférence présentée au séminaire Media and Literacy, Sheffield; 2002.
2 Widyanto L, Griffiths M. 'Internet addiction': a critical review. International Journal of mental health and Addiction. 2006;4(1):31-51.doi: 10.1007/s11469-006-9009-9.
3 Keles B, McCrae N, Grealish A. A systematic review: the influence of social media on depression, anxiety and psychological distress in adolescents. International Journal of Adolescence and Youth. 2020;25(1):79-93. doi:10.1080/02673843.2019.1590851.
4 Clarke S, Allerhand LA, Berk MS. Recent advances in understanding and managing self-harm in adolescents. F1000Research. 2019;8.
5 Kothgassner OD, Goreis A, Robinson K, Huscsava MM, Schmahl C, Plener PL. Efficacy of dialectical behavior therapy for adolescent self-harm and suicidal ideation: a systematic review and meta-analysis. Psychological Medicine. 2021;51(7):1057-67. doi:10.1017/S0033291721001355.
6 Rahman F, Webb RT, Wittkowski A. Risk factors for self-harm repetition in adolescents: a systematic review. Clinical psychology review. 2021;88:102048.
7 An H, He R-H, Zheng Y-R, Tao R. Cognitive-behavioral therapy. Substance and non-substance addiction. 2017:321-9. doi: 10.1007/978-981-10-5562-1_16.
8 Rajabi G, Mohammadi FM, Amanallahifar A, Sudani M. Self-criticism, internal religious orientation, depression, and feeling of loneliness with mediation of silencing the self among students involved in romantic relationships: A path analysis model. Journal of fundamentals of mental health. 2015;17(6).
9 Gross JJ. Emotion regulation: conceptual and empirical foundations. 2014.
10 Mauss IB, Tamir M. Emotion goals: How their content, structure, and operation shape emotion regulation: The Guilford Press; 2014.
11 Khodabakhshi Koolaee A, Vazifehdar R, Bahari F. Impact of painting therapy on aggression and anxiety of children with cancer. Caspian Journal of Pediatrics. 2016;2(2):135-41.
12 Henwood KS, Chou S, Browne KD. A systematic review and meta-analysis on the effectiveness of CBT informed anger management. Aggression and violent behavior. 2015;25:280-92.doi: 10.1016/j.avb.2015.09.011.
13 Lischinsky JE, Lin D. Neural mechanisms of aggression across species. Nature neuroscience. 2020;23(11):1317-28.
14 Bahramiabdolmalaki S, Homayouni A, Aliyali M. Effectiveness of Acceptance and Commitment Therapy on Resilience, Psychological Well-Being, and Life Expectancy in Asthmatic Patients. Tolooebehdasht. 2021;20(1):55-68.
15 Lee EB, An W, Levin ME, Twohig MP. An initial meta-analysis of Acceptance and Commitment Therapy for treating substance use disorders. Drug and alcohol dependence. 2015;155:1-7.doi: 10.1016/j.drugalcdep.2015.08.004.
16 Lindner P. Better, virtually: the past, present, and future of virtual reality cognitive behavior therapy. International Journal of Cognitive Therapy. 2021;14(1):23-46.
17 Donker T, Cornelisz I, Van Klaveren C, Van Straten A, Carlbring P, Cuijpers P, et al. Effectiveness of self-guided app-based virtual reality cognitive behavior therapy for acrophobia: a randomized clinical trial. JAMA psychiatry. 2019;76(7):682-90.
18 Zhong D, Chen L, Feng Y, Song R, Huang L, Liu J, et al. Effects of virtual reality cognitive training in individuals with mild cognitive impairment: a systematic review and meta-analysis. International Journal of Geriatric Psychiatry. 2021;36(12):1829-47.doi: 10.1002/gps.5603.
19 Tavafi M, Hatami M, Ahadi H, Sarafizadeh S. Compare the effectiveness of emotional regulation group intervention and cognitive behavioral therapy on emotion

regulation of overweight people. Thoughts and Behavior in Clinical Psychology. 2020;15(55):27-36.
20 Garnefski N, Kraaij V. The cognitive emotion regulation questionnaire. European journal of psychological assessment. 2007;23(3):141-9.doi: 10.1027/1015-5759.23.3.141.
21 Heydari S, Lajmiri S, Azadyekta M, Barzegar M, Arshadi M. Reliability and validity of Perth Alexithymia Questionnaire (PAQ) by using the classic theory and its relation with cognitive emotion regulation. Rooyesh-e-Ravanshenasi Journal (RRJ). 2020;9(2):73-80.
22 Soltaninejad M, Arabzadeh A. Investigating the relationship between performance in Stroop test with emotional regulation and academic achievement of students in Mashhad. Journal of New Advances in Psychology, Training and Education. 2019;2(21):83-92.
23 Abdisa E, Fekadu G, Girma S, Shibiru T, Tilahun T, Mohamed H, et al. Self-stigma and medication adherence among patients with mental illness treated at Jimma University Medical Center, Southwest Ethiopia. International journal of mental health systems. 2020;14(1):1-13.
24 Salehian MH, Qadiri S. Anticipation of Emotion Regulation and Psychological Well-being on Athletic Performance of Professional and Semi-professional Athletes. Sport Psychology Studies (ie, mutaleat ravanshenasi varzeshi). 2019;8(29):151-70.
25 Sansone RA, Wiederman MW, Sansone LA. The self-harm inventory (SHI): Development of a scale for identifying self-destructive behaviors and borderline personality disorder. Journal of clinical psychology. 1998;54(7):973-83.
26 Mikaeli N, Narimani M. The Role Of Negative Emotion, Alexithymia, And Interpersonal Factors In Predicting Self-Harm Behavior In Adolescents: A Correlational Study. 2019.
27 Naseryfadafan M, Noohi S. Effectiveness of anger management intervention with cognitive-behavioral approach and gradual muscle relaxation on the quality of marital relationship and moral anxiety of married males substance abusers with a three month follow-up. Journal of Applied Psychology. 2018;12(1):63-82.
28 Harris E, Samuel V. Acceptance and commitment therapy: A systematic literature review of prevention and intervention programs for mental health difficulties in children and young people. Journal of Cognitive Psychotherapy. 2020;34(4):280-305.
29 Hernández-López M, Luciano MC, Bricker JB, Roales-Nieto JG, Montesinos F. Acceptance and commitment therapy for smoking cessation: a preliminary study of its effectiveness in comparison with cognitive behavioral therapy. Psychology of Addictive Behaviors. 2009;23(4):723.
30 Craske MG, Niles AN, Burklund LJ, Wolitzky-Taylor KB, Vilardaga JCP, Arch JJ, et al. Randomized controlled trial of cognitive behavioral therapy and acceptance and commitment therapy for social phobia: outcomes and moderators. Journal of consulting and clinical psychology. 2014;82(6):1034.
31 Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: Model, processes and outcomes. Behaviour research and therapy. 2006;44(1):1-25.
32 Sato K, Wakabayashi T, Kiyoshi-Teo H, Fukahori H. Factors associated with nurses' reporting of patients' aggressive behavior: a cross-sectional survey. International journal of nursing studies. 2013;50(10):1368-76.
33 Koohneshin Taromi F, Afsharinia K, Kakabraee K. Comparison of the Effectiveness of Acceptance and Commitment-Based Therapy (ACT) and Meta-Diagnostic Therapy in Reducing Emotional Problems and Increasing Life Satisfaction in Nurses. Psychological Methods and Models. 2021;12(43):55-69.
34 Lubell KM, Vetter JB. Suicide and youth

violence prevention: The promise of an integrated approach. Aggression and violent behavior. 2006;11(2):167-75.
35 Atadokht A, Masoumeh GB, Mikaeli N, Samadifard HR. Effect of Emotion-focused Cognitive Behavioral Therapy on Social Adjustment and Experiential Avoidance in Iranian Disabled Veterans. Military Caring Sciences Journal. 2019;6(3):176-86.doi: 10.29252/mcs.6.3.3.
36 Afshari A, Delpazir Z. Compare the style of parenting, addiction to the Internet and social adjustment in normal students and self-mutilated students. Journal of Educational Psychology. 2016;7(3):51-63.
37 Matejevic M, Jovanovic D, Lazarevic V. Functionality of family relationships and parenting style in families of adolescents with substance abuse problems. Procedia-Social and Behavioral Sciences. 2014;128:281-7.
38 Gregory WE, Glazer JV, Berenson KR. Self-compassion, self-injury, and pain. Cognitive Therapy and Research. 2017;41:777-86.
39 Azimi M, Moradi A, Hasani J. Effectiveness of cognitive behavioral therapy (Face to face and Internet-based) on Emotional Regulation Strategies of individuals with Comorbidity of insomnia and depression. rph. 2017;11(1):49-61.doi: 10.29252/rph.11.1.49.
40 Raisi M, Asgharnejad farid A, Jahan F, Moazedian A. Comparison The Effectiveness of Online Text Messenger-Based Cognitive-Behavioral Therapy and Telephone-Based Cognitive-Behavioral Therapy on Persistent Depression Desorder. Rooyesh-e-Ravanshenasi Journal(RRJ). 2021;10(5):139-50.