The Effect of Online Music Therapy and Online Painting Therapy on Depression in Students

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ABSTRACT

Background: The benefits of non-pharmaceutical approaches to lessen the symptoms of depression have received a lot of attention due to the possible negative effects of various anti-depressant drugs on patients, especially children and adolescents. The present study aimed to investigate the effect of Online Music Therapy and Online Painting Therapy on the students' depression.

Methods: The research method was experimental with a pre-test and post-test design. 45 students were selected using convenience sampling and randomly assigned to the intervention group with Online Music Therapy and Online Painting Therapy and the control group from September 2017 to October 2018. Beck Depression Questionnaire research tool was used. The intervention groups were treated with music and painting therapy, and then the test and follow-up were carried out. Painting therapy was performed by using painting tasks. Music therapy sessions were performed simultaneously with painting therapy. Statistical analysis was performed using SPSS software, version 23. A P-value less than 0.05 was considered to be statistically significant.

Results: In painting therapy, the mean±SD in the pre- and post-test for depression were 25.05±6.24 and 17.80±9.48, respectively; in music therapy, they were 22.95±4.67 and 18.55±5.36, respectively. Online music therapy and painting therapy were effective on depression in students(P=0.03). However, there was no significant difference in the stability of the effectiveness between music therapy and painting therapy.

Conclusion: The results of the present study indicate that online group music therapy and painting therapy can effectively reduce depression and improve the mental health.

Keywords: Online learning, Group music therapy; College students; Depression; Mental health, Painting therapy

Introduction

Depression— a prevalent, debilitating and often recurrent mental disorder of an episodic nature — is one of the most frequently measured constructs in the scientific literature (1). According to the report of the World Health Organization, depression is the fourth most common disease in the world, and according to the prediction of this organization, it will become the second cause of disability in the world by 2020 (2). Currently, 450 million people in the world suffer from mental and neurological disorders, 121 million of whom suffer from depression. According to the criteria of the fifth edition of the American Diagnostic and Statistical Manual of Psychological Disorders (DSM5), the symptoms of this disease include changes in appetite or weight, changes in sleep patterns, decreased energy, feelings of worthlessness or guilt, and plans and actions to commit suicide (3). The main sign of depressive disorder is a two-week period during which a person's mood is depressed or he loses interest and pleasure in almost all activities. In Khaleghi et al.'s study, the overall prevalence of mental disorders in Iran was 19.94%, and depression was reported to be the most common psychiatric disorder in Iran (4).

Art therapy has been claimed to be effective for curing depression (5). For one thing, it may provide a basis for a depressed person to express his/her depression safely (6). Art therapy is considered a suitable way by which a depressed person can release his/her aggression without having to engage in any verbal communication. Art therapy is also beneficial to strengthen the relationship between the client and treatment team (7).

Clients can get support in a number of ways using Internet-based interventions (IBIs), ranging from screening to structured evaluations and from supervised self-help to complex expert-system-based therapies. The degree of therapist engagement can range from complete lack of support or little or no therapist contact through phone or email to the level of involvement observed in traditional individual therapy. As a result, it could be feasible to shorten the therapist's engagement time without sacrificing effectiveness. Additionally, it could be able to contact individuals who would not typically receive care for their ailments via the Internet. These benefits demonstrate the widespread acceptance that Internet therapies have. To clearly comprehend their potential cost-benefit ratio, however, the efficacy of online therapies must still be assessed.

To the best of our knowledge, no research has been performed yet on the integrating effect of online music therapy and art therapy on depression in teenage students. Thus, the aim of this study was to determine the effects of Online Music therapy and Online Painting therapy on depression in students.

Methods

Study Design

The present pretest-posttest semi-experimental study was conducted on two intervention groups (online music therapy and Online painting therapy) and a control group (no intervention).

Participants

Inclusion criteria were all students between the age of 12 to 18 years who were referred to counseling centers in Zahedan city, Iran with symptoms of behavior disorders from 2017 September to October 2018, willingness to participate in the study, and completion of an informed consent. It was assured that all the subjects were not suffering from any other neurological problem and they were not taking any other psychological treatment since any other treatment might cause disturbance in the process of the study. The exclusion criterion was non-attendance in two consecutive sessions.

The Interventions

This intervention included developing and implementing two interventions and a control group. A professor of psychology with specialty in depression with 10 years of work experience in this field was responsible

for training in the intervention groups. The overall purpose of the intervention was to decreased depression. Online therapy was held on Google Meet which is a service for secure, high-quality video meetings and calls available for everyone, on any device.

Intervention Group 1: Online Music Therapy

Music therapy sessions were performed non-synchronous with art-therapy with Google Meet in ten sessions of one hour with an interval of one week. While the music tracks were being played, the therapist made sure there was no noise or stressor. The subjects were exposed to three music themes, i.e. exhilarating, sad, and strengthening. Exhilarating theme consisted of rhythmic music with rather fast beat in order to induce happiness without too much excitement. Sad theme was tragic and magnificent inducing sympathy and relief. Strengthening theme included heavy and hard beats stimulating positive and pleasant feelings and a sense of arousal and excitement. The music tracks were selected by a counselor with over 10-year experience of working with depressed adolescents (8, 9). The summary of online music therapy sessions is shown in Table 1:

Intervention Group 2: Online Painting Therapy

Art-therapy was performed by using painting tasks with Google Meet. Painting was considered because it provides a basis for the subjects to express their feelings without worrying about any sudden reaction by the audience. The tools provided for the subjects for painting consisted of crayons, colored pencils, water color, and papers. The subjects in the experimental group painted 1 hour in ten sessions. The sessions occurred through a secure, password protected, video conferencing platform, during which research assistants logged on remotely and joined students in their classroom, using the classrooms smart board. The classroom stayed on the videoconference call for the whole duration of the drawing activity. Teachers were present in the classroom

with the students during the sessions. Two undergraduate psychology students with previous experience led the mindfulness-based interventions in elementary schools as well as prior research experience related to art-based therapy (Table 2).

Control Group

In the control group, no intervention was carried but, they were subjected to one of the treatments according to their request at the end of the research.

Data Collection Tools

The participants' depression was evaluated at baseline, and after four weeks in the intervention and control groups.

Beck Depression Questionnaire: The Beck Depression Inventory (BDI) is a self-report inventory, one of the most widely used instruments for measuring the severity of depression. It is a 21-item inventory, the items of which are scored on a four-point scale from 0 to 3, resulting in a total BDI score of 0 to 63. The BDI scores are interpreted as follows: 0-10: no depression; 11-16: mild depression; 17-20: borderline depression; 21- 30: moderate depression; 31-40: severe depression; and 41-63: extreme depression. Also, the reliability of this questionnaire after one week has been reported 0.93 (Beck, Steer and Brown, 1996). Psychometric features of this questionnaire in the samples in Iran have also been studied on 94 people. Based on this Cronbach's alpha of this questionnaire (0.91), a test re-test reliability of 0.94 and reliability of 0.89 were obtained using the two halves method (10). Content validity of the BDI-II improved following item replacements and rewording to reflect DSM-IV criteria for major depressive disorders. Mean correlation coefficients of 0.72 and 0.60 have been found between clinical ratings of depression and the BDI for psychiatric and non-psychiatric populations. Construct validity is high for the medical symptoms measured by the questionnaire, $\alpha=0.92$ for psychiatric outpatients and 0.93 for college students (11).

Table 1: Summary of online music therapy sessions

Meeting	Actions considered for conducting music therapy intervention
First	• Introduction and getting to know the members of the group • Statement of group rules and goals • Brief discussion about depression, invitation to describe and express your definition of depression, • Explanations about music and its effects assignments: The group members write down their goals and expectations for participating in the meetings.
Second	• Listening to music and discussing about music artists and poems • Encouraging members to identify their inner uncomfortable feelings and writing them down • Encouraging members to sing to deal with sad negative feeling assignment: Identifying the situations that cause the most depression for them and preparing them; Poems and songs that make them feel relaxed by reading and listening to them
Third	• Reading the prepared poems in groups of two • Provide feedback to each other • Listening to an energetic pre-made song. • Assignment: listening to positive and energetic music after waking up in the morning and a specific time of 15 minutes during the day
Fourth	• Encouraging group members to identify their strengths and record them while playing music • Listening positively • Discussing with the members about these capabilities • Persuading mental size image of the situation of reluctance and trying to replace it with a pleasant state caused by energetic music instead. Feelings of apathy while listening to soothing music.
The fifth	• Considering the importance of this step again • Encouraging the group members to identify their strengths and record them while listening to positive music • Discussing with the members about these abilities • Mentally imagining the situation of reluctance and trying to replace it with a pleasant state, Energetic music instead of lethargic moods while listening to soothing music.
The sixth	• Encouraging the members to read poems in groups without using music • Persuading the members to read poems individually (with the use of a face mask if desired), and at the same time encouraging others • Encouraging the members to express strong feelings related to depression at the same time while listening to music. • Assignment: Identifying and recording depression-producing feelings and thoughts and putting them in order for implementation after the group meetings
The seventh	• Encouraging the members to listen to music with joyful and happy themes of Iranian music • Using relaxation technique with music • Encouraging breathing and relaxation exercises with verbal prompts with music • Assignment: Using the relaxation program along with listening to music.
Eighth	• Listening to music and at the same time encouraging the members to experience exciting feelings • Encouraging the members to emphasize the confirmation of their definite feelings and also encouraging them to sing the songs Acquaintance • Playing music with variable speed through recording and encouraging members to coordinate itself with the played pieces of music. • Task: Preparing songs that match their different emotional states.
Ninth	• Listening to music and at the same time encouraging the members to experience exciting feelings • Encouraging the members to emphasize the confirmation of their definite feelings and also encouraging them to sing the songs Acquaintance • Playing music with variable speed through recording and encouraging members to coordinate itself with the played pieces of music. • Task: Preparing songs that match their different emotional states.
The tenth	• Dealing with past assignments, summarizing meetings, homework: listening to music without words and at the same time, and encoding poems in case of depression symptoms

Table 2: Summary of online painting therapy sessions

Meeting	Actions considered for painting therapy intervention
First	• Familiarity with using self-introduction and starting with painting, a drop of ink drips on the paper; then, we fold the paper and the paper is opened again; the student is asked to draw and create an ink blot into an image.
Second	• From among the many random scribbles created on or from the image paper you like
Third	• Draw anything you would like to receive as a gift from someone.
Fourth	• Free theme painting within 15-20 minutes without analysis.
The fifth	• Draw all the members of your family.
The sixth	• Picture a depressed moment, the color you choose for how you feel at that moment; what color is it.
The seventh	• Show opposite emotions like love and hate or anger and peace in the form of a drawing.
Eighth	• Picture the place, person or people you would like to be around when you feel depressed.
Ninth	• The students are asked to draw a picture based on the imaginary journey that is described to them.
The tenth	• Again, the student is asked based on another imaginary journey that is defined for them. • Draw a picture.

Sample Size and Randomization

Based on the results reported by Sheibani Tazraji et al. (2010) (12), S1 of 3.39, S2 of 3.31, α of 0.05, β beta of 0.1, and d of 1, the sample size calculation formula for the comparison of the two means revealed that 45 students were needed for the study.

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

Students were divided into two groups by random allocation method. For random allocation, the variable blocks method was used, and the patients were divided into two groups: online music therapy and online painting therapy. In this way, first 6 possible states of blocks (BAAB, ABBA, BABA, AABB, ABAB, BBAA) were listed, and a number from 1 to 0 was assigned to each block. Then, a number between 1 and 0 was randomly selected and people were assigned to the test group (A) and placebo (B) based on the corresponding block and the selected number; this continued until the sample size was completed. They were included if they were in the second or higher college semesters, were not experiencing severe chronic physical or mental disorders, had no hearing problem, and were not drug abusers.

In general, 45 students were randomly placed in three subgroups and randomly assigned to the intervention and control groups.

Statistical Methods

The data were analyzed using descriptive and analytical statistical tests in IBM SPSS version 23.0. Normality of the data was confirmed using Kolmogorov-Smirnov Test. After the end of the training sessions, all the participants did a post-test. Scheffe's Test was used to compare the research variables in the studied groups immediately after intervention and follow-up time. To understand whether there were statistically significant (P<0.05) differences within the groups before and after the intervention, we used independent t-test.

Results

Demographic information is shown in Table 3.

Comparison of depression scores across the experimental and control groups is presented in Table 4.

According to the obtained results, it was shown that in the intervention groups, there was a significant change in the scores in the dependent variables in the post-test as affected by the interventions compared to the control group. To check and compare the effectiveness of the interventions in the

Table 3: Demographic information of the participants

Variables	Grouping	Control		Intervention		P value
		Frequency	%	Frequency	%	
Age	13-15	7	46.6	15	50	0.845
	16-18	8	53.4	15	50	
Gender	Male	6	40	13	43.4	0.751
	Female	9	60	17	56.6	
Marital status of parents	Married	10	66.6	18	60	0.345
	Single	5	33.4	12	40	
Parents' age	Less than 30 years	0	0	1	33.3	0.232
	30 to 40 years	5	33.4	14	46.6	
	More than 40 years	10	66.6	16	53.3	
Father's education	Diploma	7	46.7	17	56.6	0.123
	Bachelor	4	26.6	10	33.4	
	Masters	4	26.6	3	10	
	PHD	0	0	0	0	
Mother's education	Diploma	8	53.4	20	66.6	0.110
	Bachelor	5	33.4	6	20	
	Masters	2	13.3	4	13.4	

Table 4: Comparison of depression scores across the experimental and control groups

Components	Groups	Within-group				
		T	Average			P value
			Pre-test	Post-test	Follow up	
Depression	Control	0.991	22.05± 6.94	22.77± 6.94	21.95±5.96	0.19
	Online painting therapy	0.871	25.05± 8.49	17.80± 9.48	23.45±5.88	0.03
	Online music therapy	0.891	22.95±4.67	18.55±5.36	22.00±5.61	0.03
	Between-group	---	P=0.15	P=0.16	P=0.10	---

Table 5: Scheffe's test to compare the research variables in the studied groups immediately after the intervention and follow-up time

Variable	Groups		After intervention		P value	Follow-up		P value
			Mean difference	Standard error		Mean difference	Standard error	
Depression	Music	Painting	_3.42	0.97	0.03	1.02	0.59	0.07
		Music	_7.94	0.89	0.13	4.68	1.24	0.03
		Control	-3.33	0.95	0.03	3.45	1.11	0.02
	Painting	Control	_5.40	0.95	P=0.01	3.52	0.92	0.03

continuation of the results, we performed a post-hoc test to compare research variables in the studied groups (Table 5).

As the results show, in the post-test, there was a significant difference between the effectiveness of the interventions using painting therapy and music therapy. Also, there was a significant effect on depression variables between the two intervention groups of painting therapy and music therapy. As the results show, continuation of the effectiveness of interventions on depression was significant; At While there is no significant difference in the stability of effectiveness between music therapy and painting therapy.

Discussion

Online Music therapy and Painting therapy were effective on depression in students. In this regard, Rahmani et al revealed that depression among adolescents can be alleviated by incorporation of art and music therapies

(13). Also, Kievisiene showed that art and music therapies were effective opportunities for breast cancer patients to reduce negative emotional state and improve the quality of life and seemed to be promising nonmedicated treatment options in breast oncology (14). Another research that examined the impact of art on breast cancer patients' emotional symptoms revealed a considerable reduction in depression and anxiety symptoms in the intervention group. Results also showed that the art therapy group's quality of life had improved (15). Another study on the long-term impact of art therapy on a considerable decrease of sadness and anxiety symptoms as well as reduced general health symptoms also demonstrated the impact of art therapy on psychological health (16). Non-pharmaceutical therapies can be used in the current investigation to lessen the negative impacts of depression. Of course, the current study did not examine how medication treatments and art and music therapy affected the severity of depression. The patients in the music-therapy group, however, showed fewer depressive symptoms than the subjects in the psychotherapy group, according to a research by Castillo-Pérez et al. (2010) (17). However, the authors hypothesized that non-pharmaceutical therapies would be more effective for people who were depressed. General objectives in music and medicine can be summed up as follows: reduction of anxiety, tension, and discomfort; reduction of sadness and hopelessness; and improvement of immunological response (18). Music therapy has also proved to be a supplemental, evidence-based treatment in psychology settings due to the effects on managing psychological and certain physiological states; it generally seeks to enhance relaxation and tranquility (19). Research shows that the thalamus receives musical stimuli and transmits these signals to the brain through the nervous system, and as an automatic function, it affects the brain in general, especially intelligence, memory, and imagination. In addition, the pineal gland or pituitary gland receives commands from the thalamus and responds to musical stimuli, rhythm and weight of music, and causes secretions that guide various parts of the human body towards normal functioning. When musical stimuli reach the brain, the pituitary gland gives a positive response or, in other words, a calming response (9). Also, painting and visualizing is a reflection of a person's inner thoughts and dissatisfaction with the surrounding environment, with the use of which the teenagers can convey these feelings and release them safely. On the other hand, art therapy can improve emotional perception and anger management by learning correct coping responses, problem solving techniques and skills, increasing the sense of belonging and providing non-invasive ways to communicate complex emotions (14).

The results of the present study showed that there was no difference in the stability of effectiveness between music therapy and painting therapy. In this regard, one of the studies reported no statistically significant differences between the groups (20). Also, Naseri et al. showed that there was no significant difference in the influence of Music Therapy and Writing on academic performance and emotional performance (21). Given this finding, it can be said that both interventions might have worked in the same way for people, and both music and art bring comfort to the same extent. Numerous RCTs have demonstrated that music and art therapy interventions reduce psychological discomfort, but they performed quite differently.

Art and music therapies have long made use of computer-assisted technologies, Internet platforms, and telemedicine. Over the past three decades, as more and more art therapists have integrated computer technology into their clinical work through media such as, but not limited to, digital photography, animation, collage making, and art-making apps, the practice of "digital art therapy," which includes the application of computer-generated content and use of digital media, has grown (19, 22). Beardall et al., (22); Blanc, (23); LaGasse & Hickle, (24); Pilgrim et al., (25); Sajnani et al., (26); and Vega & Keith, (19) revealed that many of the music therapy educators who were

surveyed had received queries about online learning, suggesting a growing interest in the adaption of music therapy in online and distance settings. This initial survey research provided a snapshot of the state of online learning in music therapy and confirmed that, as of their publication date, no training program was offered fully online.

Limitation and Suggestion

One of the limitations of this study was the students' lack of willingness to participate in the study. We suggest that the factors affecting depression should be investigated in future studies.

Conclusion

Online Music therapy and Online Painting therapy reduced depression in students. To increase the generalizability of the results, it is suggested that future researchers should pay attention to these limitations. In addition, according to the obtained results, it is suggested that both of these treatment methods, especially with more emphasis on painting therapy and music therapy interventions, as one of the effective treatments for improving depression in students with depression, should be used therapeutically.

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Author 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, performed 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 data,

and drafted the manuscript.

Ethical Consideration

After obtaining the approval of the ethics committee of Islamic Azad University, Zahedan branch (decree code 9677456), we enrolled the students in the research after they gave their informed consent. Questionnaires were completed anonymously, and confidentiality of information was respected. When the study was completed, the control group could participate in a group of therapeutic methods at their own discretion.

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