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The Effects of Art Therapy Techniques on Depression, Anxiety Levels and Quality of Life in the Adolescent with Type 1 Diabetes Mellitus: A Preliminary Study

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ABSTRACT

Objective: The incidence of Type 1 Diabetes Mellitus (DM), which is one of the most common chronic diseases of childhood, is increasing all over the world and brings a series of physical, emotional, and social problems. In this study, we aimed to observe the effects of active expressionist art therapy techniques on depression, anxiety, quality of life and diabetes management in adolescents with Type 1 DM.

Materials and Methods: This study included 21 volunteer adolescents with Type 1 DM between the ages of 13-18. All adolescents were evaluated by the Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI) and Quality of Life Scale for Children (PedsQL). Then, the program of art therapy techniques was carried out for 12 weeks for 90 minutes a day for every week. Pre-test scales were repeated after the application. HbA1c levels were compared before and after the art therapy techniques program without classification.

Results: In this study, 13 girls (61.9%), 8 boys (38.1%) were included. When the BDI, BAI and PedsQL scores were compared before and after the art therapy techniques in Type 1 DM adolescents, a statistically significant difference was found in all scales ($p=0.003$, $p<0.001$, $p<0.001$, $p=0.001$, respectively). There was no statistically significant difference in HbA1c averages before and after the application ($p=0.108$).

Conclusion: In this study, after the application of arts therapy techniques, there was a significant decrease in depression and anxiety levels. After the application, improvement in the quality of life scores was found. With this study, it was pointed out that art therapy techniques can be used for diabetic adolescents to self-expression, reduce negative thoughts, express emotions and increase self-esteem.

Keywords: Type 1 DM, art therapy, depression, anxiety, quality of life

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INTRODUCTION

With its invasive treatment along with long-term complications, DM is a life-long chronic disease that may affect the life quality of the patient with psychosocial problems due to frequent insulin injections, blood glucose follow-ups, regimes and obligatory physical exercises. Diabetes-dependent complications and intensive treatment sure may cause stress, anxiety, worries and fears accompanied by negative physical, cognitive and social effects (1).

Research revealed that adolescents with chronic diseases have a higher risk in psychosocial adaptation compared to that of healthy adolescents; they encounter much more emotional difficulties, such as depression, anxiety and negative sense of self (2). Depressive symptoms may affect the life quality and psychosocial functionality of adolescents thus makes their adaptation to a life difficult with their disease (3).

Adolescence is one of the most difficult period of life concerning managing and controlling DM. Among the reasons for not managing the DM properly are being dependent on their families, feeling detached from their friends, loss of self-confidence, negative effects of the disease on feeling normal, lack of physical activities, bad metabolic management and fear of feeling dependent and uncontrolled. Increasing anxiety about future and loss of motivation resulting in never-ending feeling of adaptation may cause burnout and depression (4).

Art activities have many positive effects on children and adolescents with chronic illnesses by supplying games, creating fields for cooperation to cope with health problems, making them feel physically strong and helping them have a good time (5). In a study conducted on children with chronic diseases revealed that following educational support through art, children have developed positive strategies to cope with their diseases and that they had a better life quality (6). In another study conducted on 22 asthmatic children, the researchers concluded that life quality of children have become better after art therapy along with less anxiety (7). In a study where art therapy was used to help children cope with anxiety and fear that they have developed during painful interventions and long term emotional distress, the researchers stated that art therapy has been a strong support for children (8).

A different study about the effects of art therapy on metabolic control concluded that poor metabolic control level was better after art therapy (9). Art therapy was evaluated for its effects on HbA1c levels of 13 children with Type 1 DM and background music was a potentially positive approach for better glucose levels and better glycemic control (10). When psychosocial support studies for diabetic children and adolescents in our country are considered, the number of studies is scarce (11).

In this study, in addition to medical and psychosocial therapies, we aimed to observe the effects of active expressionist art therapy techniques (music, painting, painting with music, clip-art and clay) on depression, anxiety symptoms and quality of life in adolescents with Type 1 DM along with their metabolic control.

MATERIALS and METHODS

Study Group

This study was conducted between June 2017 and July 2018 at Erciyes University Medical School. This prospective cohort study was started with 36 participants between 13 and 18 years of age but continued with 21 adolescents with Type 1 DM. Adolescents (13 female and 8 male) with Type-1 DM were under follow-up and registered outpatients at the pediatric endocrinology clinic at least for two years. All participants were included in this study according to the simple random sampling methods. Adolescents were with psychiatric, metabolic, endocrinological or neurological diseases other than DM; adolescents with drug addiction history, physical and cognitive disabilities and those who did not want to participate in this study were excluded from this study. This study was approved by Ethical Council of Erciyes University School of Medicine (2017/158).

Following explanations and definitions by our committee, of the participants' parents in this study gave a written approval for their children's participation. In addition, all adolescents that were approved to participate in this study were subjected to Schedule for Affective Disorders and Schizophrenia for School-Aged Children, Present and Lifetime Version (K-SADS-PL) by the child and adolescent psychiatrist. Patients with no comorbid psychiatric disorders were included in this study. Moreover, this schedule was for both parents and adolescents. All adolescents and their parents were briefed about the purpose, content and group studies of this research.

The standardized art therapy techniques program was supervised and applied by a specialist of art therapy and creativity in a proper place in the hospital in 90-minute sessions every Saturday for 12 weeks.

Groups were assessed with Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI) and Quality of Life Scale for Children (PedsQL) before and after therapies by the child and adolescent psychiatrist. After the assessment, child and adolescent psychiatrist guided the children for psychiatric symptoms. In addition to this, HbA1c (metabolic parameters) levels were analyzed and evaluated before and after applications of art therapy techniques program.

Data Collection Tools

Clinical and Sociodemographic Information: The sociodemographic form was built up by researchers to obtain information

about some social and clinical features of our participants and their families, such as age, gender, education, social condition, economic condition, period of the disease, schooling, HbA1c levels before and after the application. The data were obtained from adolescents/parents, patient files and clinical records.

Schedule for Affective Disorders and Schizophrenia for School Aged Children, Present and Lifetime Version (K-SADS-PL):

This document (K-SADS-PL) was a semi-structured interview form developed by Kaufman et al. (12) in 1997 to investigate psychopathological features of children and adolescents in accordance with DSM-IV diagnostic criteria. K-SADS-PL provides us with information about the symptoms seen with diagnosed individuals. It does not evaluate the severity of symptoms. K-SADS-PL was applied using interviews with parents and the child and the evaluation is carried out over all data gathered from all groups (e.g., parents, child and school). This interview form was adapted to Turkish by Gökler et al. (13).

Beck Depression Inventory (BDI): The original form of BDI was developed by Beck et al. (14). The adaptation to Turkish was made by Hisli (15). BDI is a self-assessment inventory that requires the individual to answer all questions about how he/she felt during the previous week, including the inventory day. Each question is graded between 0 and 3.

Beck Anxiety Inventory (BAI): BAI was developed by Beck et al. (16). Turkish adaptation was made by Ulusoy et al. (17). BAI is a self-assessment inventory that evaluates anxiety level, symptom distribution and heaviness of symptoms. It is graded between 0 and 63.

Quality of Life Scale for Children (PedsQL): Scale named as PedsQL and was designed by Varni et al. (18) in 1999 to evaluate quality of life of children and adolescents between two and 18. PedsQL includes 23 questions about physical health, emotional, social and school functioning. Validity and reliability tests were performed by Memik et al. (19).

Design of Art Therapy Techniques Program

The program was developed by researchers in the form of 12-week therapy techniques (music, painting, musical painting, clip art and clay) based on various sources and considering the literature (20–22).

Materials

In this study, pencils, A3-A4 papers, pastel crayons, water paints, gloves, drums, tambourines, maracas, chestnut darbouka, flutes, tables, chairs, conservative music, newspapers, magazines, scissors, waste textile, wool, buttons, ribbons, glass beads, ropes, felt and masks were used.

Content of Art Therapy Techniques Program

In the First Week, art warm-up techniques were used to introduce and adapt the group members to each other (20). Following this, coping with instructions, the group members were requested to focus on their emotions and draw a picture to express their feelings. In the Second Week, the group members worked with musical instruments to have better relationships with each other. They were requested to form groups to find a common rhythm through "Choose a musical instrument for you". How can you

make sounds with them, and how can you make us listen to it?" instruction (21). In the Third Week, they were requested to paint pictures while listening to music. They were also requested to move their bodies along with the rhythm to understand their feelings out and reflect these feelings into their paintings. After that, they were asked to tell how they felt during and after the activity (22). During the Fourth Week, they were requested to express their feelings through their paintings while listening to instrumental music (22). Instruction of the Fifth Week was to make a mask for them to wear during group studies and introduce themselves through their masks (21). The Sixth Week was the time for a clay workshop. Group members were requested to sculpt things from clay to express their feelings about their disease (20, 21). In the Seventh Week, each member became peers with another member of the group they knew the least in a circle and they painted pictures together while listening to music (21). Participants did a clip-art session by cutting and pasting photos and pictures from magazines to express their feelings of fear, anger and anxiety best on a board in the Eight Week (22). Participants were encouraged to express their anxieties with one sentence in the Ninth Week and this was repeated a few times in the circle (23). They also used their brushes to write meaningless sentences from top to bottom on papers and color them before oral statements. In the Tenth Week, the whole group was instructed to use place, time and material in common and paint pictures together prior to sharing their experiences for feedback of the process (21). The Eleventh Week was about physical activities, such as rhythmic walking with music and creating the rhythm together with other members of the group after a touch game; they were also supposed to create music with simple musical instruments they can find in groups of three as group presentations on the stage (21). In the Final Week, participants sat in a circle to tell their experiences about the previous 11 weeks. Following a general evaluation of the process, they were requested to paint or draw pictures and write sentences to share them with other members about their 11-week journey. After this feedback session, the post-test was administered (23, 24).

Statistical Analysis

During statistical analysis, SPSS 21.00 (SPSS Inc., Chicago, IL, USA) tool was used to evaluate frequency analyses of demographic data along with number, distribution and percentage calculations. Mean values, standard deviations and percentages of the data were presented in this study. Kolmogorov-Smirnov test was used to detect the normality of data distribution. Student's t-test was utilized for pretest-posttest design and comparisons of the art therapy program. The data that were obtained before and after the therapy were evaluated using "Paired t-test". The statistical significance limit of this study was $p < 0.05$.

RESULTS

The participants of this study were 21 adolescents with Type 1 DM, 13 female (61.9%) and eight male (31.8%) with an average age of 15.14 ± 1.76 years. When the education level of our participants was considered, eight of them (38.1%) were secondary school students while 13 of them (61.9%) were high school students. The period of illness for the group was between two and 15 years, with an average of 5.71 ± 4.10 years (Table 1).

Table 1. Sociodemographic features of diabetic adolescents

Sociodemographic features	n	%
Age		
Min.–Max.		13–18
Mean±SD		15.14±1.76
Gender		
Female	13	61.9
Male	8	38.1
Education		
Secondary school	8	38.1
High school	13	61
Period of illness		
Min.–Max.		2–15
Mean±SD		5.71±4.10

Min.: Minimum; Max.: Maximum; SD: Standard deviation

Table 2. Comparison of BDI and BAI points before and after art therapy techniques

	Before art therapy techniques (n=21) Mean±SD	After art therapy techniques (n=21) Mean±SD	p
BDI	16.90±7.77	9.85±4.39	p=0.003
BAI	16.04±8.14	10.09±5.96	p<0.001

BDI; Beck depression inventory; BAI; Beck anxiety inventory; SD: Standard deviation

When we compare the BDI results of the study group before and after Art Therapy Techniques, there was a decline with BDI levels after the therapy and this difference was statistically significant ($p=0.003$) (Table 2).

According to the BAI results of the study group before and after Art Therapy Techniques, there was a decline with BAI levels after the therapy, and this difference was statistically significant ($p < 0.001$) (Table 2).

When we compare the PedsQL results of the study group before and after Art Therapy Techniques, there was a decline with PedsQL levels after the therapy and this difference was statistically significant ($p < 0.001$, $p < 0.001$, $p = 0.001$) (Table 3).

Considering the HbA1c levels of the patients, the good metabolic control (HbA1c lower than 7.5%) was 19% (n:4) lower than desired. After three months of art therapy, there was no statistically significant change in HbA1c levels ($p=0.108$) (Table 4).

CONCLUSION

The findings obtained in this study suggest that applying art therapy techniques on Type1 diabetic adolescents may have a significant effect on decreasing their level of anxiety and depression and improve in the quality of life scores. Meanwhile, it has no significant effect on blood HbA1c levels of our participants.

Table 3. Quality of Life Scale for Children (PedsQL) points

	Before art therapy techniques (n=21) Mean±SD	After art therapy techniques (n=21) Mean±SD	p
TPI	29.47±11.41	17.90±10.18	p<0.001
TPPH	8.52±5.33	5.47±5.64	p<0.001
TPPSH	20.90±7.30	12.57±5.92	p=0.001

TPI: Total Points of the inventory; TPPH: Total points of physical health; TPPSH: Total points of psycho-social health SD: Standard deviation

Table 4. HbA1c levels

	Before art therapy techniques (n=21) Mean±SD	After art therapy techniques (n=21) Mean±SD	p
HbA1c	9.51±2.70	8.92±1.86	p=0.108

Art therapy is defined as using various artistic materials to trigger positive developments in the lives of individuals, lessen their physical and psychological problems, lessen conflicts, solve problems and help them cope with stress (25). Art therapy session keep patients away from their illnesses for a while by doing creative activities. They feel how normal they could be with their personal powers and abilities in their creativity in a short time. Art helps individuals to find solutions for physical and emotional problems through creativity. Art enables us to find the pathway to express our feelings in public (26).

Art therapy is considered less threatening by adolescents compared to many traditional therapeutic methods; therefore, researchers have shown that art therapy is widely used (22). In a study, art therapy techniques applied on the student getting ready for university entrance exams and have a positive effect on decreasing anxiety and depression symptom levels but has no effect on stress levels (22). Art activities have many positive effects on children and adolescents with chronic illnesses by supplying games, creating fields for cooperation for coping with health problems, feeling physically strong and having good time (27).

The positive effects of art therapy to decrease depression and anxiety symptoms of children and adolescents with chronic diseases were reported in many studies (8, 9, 28). In a study on children with chronic cancer, the findings showed that art therapy had a strong psychological support effect on overcoming and depression developed after the diagnosis until post-hospitalization rehabilitation period (28). In another study, it was emphasized that art therapy reduces anxiety levels of hospitalized children and can be added to the routine treatments of hospitalized children (8). Also, painting was used as a projective method to help children with various diseases to overcome their psychological problems before and after hospitalization and they had less psychological symptoms (29). In the study conducted on 22 asthmatic children, the findings showed that art therapy helps children to have better life quality and less anxiety (7).

Artistic activities and art therapies are widely supported by governments to maintain psychological support for various patient groups

while it is now becoming a trend for our institution in Turkey. It was concluded in some studies on Interdisciplinary Support Program that the children with chronic illnesses aged between 11 and 14 included in the program (e.g., art training, especially painting, music, drama and poetry) had better life qualities and had more compatible overcome styles against stress (30).

After applying art therapy techniques, positive development was reported in adolescents with chronic disease and significant differences in HbA1c levels were detected. In a study on 13 Type 1 diabetic children who were aged 7–16, children were exposed to background music during glucose follow-up system session for five days; it was concluded that background music is a good potential approach for better glycemic control and better glucose levels (10). When metabolic control and art therapy studies are considered, there was a significant decline after art therapy in HbA1c levels of 29 diabetic adolescents participated in another study (9). Apart from other studies, this study revealed no significant changes in HbA1c levels. This may be because of that the study group was formed up of adolescents with difficulty in managing their disease and in adaptation and factors that affect the HbA1c levels, such as age, gender, economical status and education. In addition, our study had some limitations. A small sample size was used in this study. Post-test depression and anxiety levels in this study were not supported by clinical interview. Furthermore, additional glycemic parameter assessments except HbA1c levels may be added to glycemic control evaluations.

In summary, Art Therapy Techniques Program is a significant means of support for diabetic children and adolescents to gain back their psychological health, cope with difficulties of illness, express them freely, bring back self-confidence and self-reliance along with self-energy. In addition to psychosocial support and complementary treatments in diabetic adolescents, art therapy will highly likely to bring positive results. Emerging from this point of view, art therapy may be an alternative action to provide psychosocial support to diabetic adolescents. This preliminary study would open the path for further studies.

Ethics Committee Approval: This study was approved by Ethical Council of Erciyes University Faculty of Medicine (date: 17.03.2017, number: 2017/158).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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Conflict of Interest: The authors have no conflict of interest to declare.

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