

A randomized trial to test the effectiveness of art therapy for children with asthma

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Background: Art therapy has been used to help children cope with chronic illness but has not been specifically tested with children who have asthma.

Objective: To test an art therapy intervention in a randomized controlled trial in children with asthma.

Methods: Twenty-two children with asthma were randomized to an active art therapy or wait-list control group. Those in the active art therapy group participated in 60-minute art therapy sessions once a week for 7 weeks. Sessions included specific art therapy tasks designed to encourage expression, discussion, and problem-solving in response to the emotional burden of chronic illness. Measures taken at baseline, immediately after, and 6 months after the final art therapy session included the Formal Elements Art Therapy Scale applied to the Person Picking an Apple from a Tree assessment, the parent and child versions of the Pediatric Quality of Life Asthma Module, and the Beck Youth Inventories. Those children assigned to the wait-list control group completed all evaluations at the same intervals as the children receiving art therapy but did not receive the art therapy interventions.

Results: Score changes from baseline to completion of art therapy indicated (1) improved problem-solving and affect drawing scores; (2) improved worry, communication, and total quality of life scores; and (3) improved Beck anxiety and self concept scores in the active group relative to the control group. At 6 months, the active group maintained some positive changes relative to the control group including (1) drawing affect scores, (2) the worry and quality of life scores, and (3) the Beck anxiety score. Frequency of asthma exacerbations before and after the 6-month study interval did not differ between the 2 groups.

Conclusion: This was the first randomized trial demonstrating that children with asthma receive benefit from art therapy that includes decreased anxiety and increased quality of life. (J Allergy Clin Immunol 2010;■■■:■■■-■■■.)

Key words: Children, asthma, art therapy

Asthma is a chronic inflammatory disorder of the airways that causes recurrent episodes of coughing, wheezing, chest tightness,

Abbreviations used

FEATS: Formal Elements of Art Therapy Scale

HRQOL: health-related quality of life

PedsQL: Pediatric Quality of Life

and dyspnea (difficulty breathing), affecting an estimated 9.3% of children under 18 years of age (<http://www.cdc.gov/asthma/>). The severity, acuteness, triggers, and symptoms of asthma vary considerably. Asthma episodes can develop quickly and are often the source of significant emotional distress for children with asthma and their families. Many children with severe asthma have restricted levels of activity and exposure to environments that threaten their disease. Further, the illness can interfere with a child's education, acceptance by peers, and participation in extracurricular activities.¹ Such restrictions in turn may limit childhood experiences important to the child's psychological development. The chronically ill child with many limitations may have difficulty developing a healthy self-concept.² Not surprisingly, children with asthma demonstrated increased rates of anxiety, depression, and behavior problems.³

Art therapy is a form of psychotherapy often used with chronically ill children. In art therapy, patients are encouraged by an art therapist to express their thoughts and feelings through art materials and interventions. Art therapy services have become more common in hospital settings and have been shown to help children cope with the psychological distress resulting from illness and hospitalization.⁴ Few art therapy interventions have been evaluated in controlled studies, and none have been tested with children who have asthma. This study used a randomized controlled trial to test whether art therapy can improve emotional health and quality of life for children with asthma.

METHODS

The 22 children 7 to 14 years old enrolled in this study had a diagnosis of persistent asthma requiring daily treatment. All participants were students in the Kunsberg School, a school for children located on the campus of National Jewish Health. Information about the study was provided to all students at Kunsberg School and their families; those interested in participating identified themselves to school personnel and were scheduled for a baseline interview, where further information about the study was provided. If the family chose to participate in the study, a parent or guardian provided informed consent, and each participating child provided assent. The study was approved by the Institutional Review Board of National Jewish Health.

Once consented, participants were randomized to treatment or wait-list control groups. The participants randomized to the active group met for a 1-hour art therapy session for 7 weeks. The sessions included an opening activity, discussion of the weekly topic and art intervention, art making, opportunity for the patients to share their feelings related to the art they created, and the closing activity. In each session, a new topic and art intervention related to chronic

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Disclosure of potential conflict of interest: The authors have declared that they have no conflict of interest.

Received for publication November 3, 2009; revised January 27, 2010; accepted for publication March 15, 2010.

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0091-6749/\$36.00

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doi:10.1016/j.jaci.2010.03.019

TABLE I. Quality of life scores (higher scores represent higher quality of life)

TABLE 2. Summary of the scores (higher scores represent higher quality) of the					
Score	Active		Control		P value
	Mean	SD	Mean	SD	
Immediate					
Parent total	6.167	17.492	−13.091	20.335	.0250*
Child total	9.727	13.705	−13.364	23.479	.0123*
Parent communication	14.583	135.45	22.727	89.061	.5673
Parent worry	47.917	86.902	−13.182	76.723	.0144*
Parent treatment	64.583	260.154	31.818	209.789	.5555
Parent severity	12.501	226.008	−32.27	245.320	.1101
Child communication	15.909	109.700	−9.545	96.707	.3151
Child worry	54.545	96.059	−45.909	113.067	.0142*
Child treatment	70.455	231.791	22.727	202.007	.3271
Child severity	13.636	190.841	−33.636	202.597	.5580
Six months					
Parent total	4.500	16.043	−3.800	5.146	.256
Child total	10.556	15.765	1.375	10.623	.177
Parent communication	22.500	121.020	10.000	113.162	.593
Parent worry	58.333	108.362	−40.909	86.799	.024*
Parent treatment	52.500	260.462	40.000	136.524	.895
Parent severity	82.500	149.560	−45.000	230.278	.162
Child communication	80.556	55.590	59.900	113.662	.618
Child worry	79.545	82.778	−25.000	118.849	.0279*
Child treatment	108.333	225.000	30.000	288.145	.516
Child severity	19.440	225.616	−130.00	150.831	.116

*Significant difference ($P < .05$).

illness were presented (see this article's [Appendix E1](#) in the Online Repository at www.jacionline.org).

Asthma is managed in a 3-nurse clinic within the Kunsberg School, and during school hours, all medications are administered by the nurses. Children experiencing asthma exacerbations that cannot be managed by the school nurses are seen on campus in the National Jewish Pediatric Outpatient Clinic. Medical charts and nursing records were examined for asthma exacerbations, defined as any event requiring a physician's consultation, during the period of 6 months before and 6 months after the study.

Instruments and measures

All participants in the active art therapy group completed questionnaires and the art assessment before the first therapy session, after the last one, and 6 months after the seventh session. Those children assigned to the wait-list control group completed all evaluations at the same intervals as the children receiving art therapy but did not receive the art therapy interventions. Measures included the following:

1. The Pediatric Quality of Life (PedsQL)—Asthma Module—Child Report and the PedsQL—Asthma Module—Parent Report for Children⁵ were included to evaluate the impact of asthma on the quality of life of the child and their parent. These assessments used a health-related quality of life (HRQOL) modular approach to measuring quality of life in children and adolescents. The pediatric HRQOL self-report was completed by children in the active art therapy group, and the parent-reported HRQOL was completed by parents of children in the active art therapy group. These questionnaires both include 28 questions using a Likert scale (1-5 from never to almost always) and yield 5 scores (communication, worry, treatment, severity, and total).
2. The Beck Youth Inventories—Second Edition⁶ is an assessment for children and adolescents that measures self-reported adaptive and maladaptive behaviors and emotions of children. The Beck Youth Inventories—Second Edition includes 100 questions with 5 components (disruptive behavior, anger, depression, anxiety, and self-concept).
3. The Draw a Person Picking an Apple from a Tree evaluation⁷ is an art therapy drawing evaluation from the Formal Elements of Art Therapy Scale (FEATS).⁷ In this evaluation, the children were asked to draw a

picture of a person picking an apple from an apple tree. The FEATS scoring system rates 14 variables (promotion of color, color fit, implied energy, space, integration, logic, problem-solving, realism, developmental level, details of objects, line quality, person, rotation, preservation) in each drawing on a scale from 0 to 5, with each providing an evaluation of the child's coping abilities and resourcefulness.⁷ All scoring was completed by a second art therapist blind to treatment condition.

Statistical analysis

All statistical analyses were performed with JMP (SAS Institute, Inc). Scores presented here represent the baseline score subtracted from the immediate or 6-month scores. An ANOVA with the Dunnett test compared scores between the intervention and control groups.

RESULTS

Score changes immediately after art therapy indicated a reduction of parent-reported and child-reported worry scores from the PedsQL questionnaires ([Table I](#)); a reduction in the anxiety score and an increase in the self-concept score from the child-reported Beck Inventories ([Table II](#)); and improvements in the color, logic, and details scores from the FEATS ([Table III](#)) in the intervention group compared with the control group. Six months after completion of the therapy, improved parent-reported and child-reported worry and total scores from the PedsQL questionnaires ([Table I](#)), a lower anxiety score from the Beck Inventories ([Table II](#)), and higher color and detail scores from the FEATS persisted ([Table III](#)) remained in the intervention group. During the 6 months before study participation, 3 children in the art therapy group and 4 in the control group experienced exacerbations requiring that they be seen by a physician in the outpatient clinic. For the period of 6 months after study completion, 2 children in each group experienced an exacerbation. No emergency department visits or hospitalizations occurred in either group during either interval.

TABLE II. Beck Inventories scores (higher scores represent greater problems except for self-concept)

Score	Active		Control		P value
	Mean	SD	Mean	SD	
Immediate					
Disruptive behavior	-2.182	7.85898	-6.0000	7.72010	.2639
Anger	-10.091	14.0389	2.300	9.6615	.1531
Depression	-10.909	12.9031	1.300	19.7093	.2102
Anxiety	-15.600	10.8341	5.300	9.7872	.0388*
Self-concept	12.091	5.6649	-3.545	13.5600	.0222*
Six months					
Disruptive behavior	-5.000	6.185	-7.900	8.825	.790
Anger	-10.889	12.762	-9.200	15.325	.398
Depression	-11.556	13.164	-7.600	18.664	.299
Anxiety	-14.000	14.304	0.545	19.387	.030*
Self-concept	3.800	13.382	-4.100	7.666	.127

*Significant difference ($P < .05$).

DISCUSSION

Results from this study establish for the first time in a randomized clinical trial that a program of art therapy lowers anxiety and improves quality of life and self-concept in children with asthma. These results were striking, and benefits from the art therapy persisted even 6 months after treatment. The use of art therapy for children with severe, chronic asthma is clearly of benefit.

The impact of asthma is not only physical but also has a considerable effect on a child's psychological development. When chronically ill children are frequently absent from school and other activities, they often miss opportunities to grow educationally and socially. Because the presence of a chronic illness can inhibit healthy social and psychological development, it is not unexpected that many children with asthma tend to be anxious and have low self-esteem. One of the greatest fears among children with severe asthma is not being able to breathe, which in turn can contribute to ongoing psychological distress. For many children, simply thinking about past asthma attacks can bring on feelings of anxiety. In turn, heightened levels of anxiety may contribute to precipitating an exacerbation or worsening an ongoing mild episode. Children with asthma who perceive their asthma as dangerous and life-threatening have increased depression rates.⁸ Further, adolescents who demonstrate feelings of depression are more likely to be nonadherent with medications.⁹ In addition, depression has been linked to increased risk of death in children with severe asthma.¹⁰ For some children with asthma, feelings of low self-esteem, anxiety, and depression may be as challenging to manage as their medical symptoms. Improved emotional regulation is vital in controlling and minimizing asthma episodes. Because emotions can play a significant role in maintaining asthma control, it is important for children with asthma to learn self-management skills and coping techniques to help regulate their feelings of depression and anxiety.

Art therapy is 1 effective tool that can be used to help children cope with troubling feelings and to master a difficult experience.¹¹ Art therapy can be particularly effective with children because they often do not have the adult capabilities to articulate verbally their emotions, perceptions, or beliefs, and they often can more comfortably convey ideas in ways other than talking.⁴ In 1 uncontrolled study, drawings were observed to be a valuable clinical tool in helping children with asthma express their feelings about their illness that could not otherwise be verbalized.¹² When physically ill

TABLE III. Change in drawing scores (higher scores represent more positive content)

	Active		Control		
Score	Mean	SD	Mean	SD	P value
Immediate					
Prominence of color	0.833	1.404	−0.318	1.124	.041*
Color fit	0.364	0.552	−0.046	0.789	.176
Implied energy	0.455	1.150	0.182	1.055	.569
Space	1.000	1.204	0.818	1.401	.748
Integration	0.364	0.869	0.046	0.879	.403
Logic	0.273	0.344	−0.136	0.505	.040*
Problem-solving	−0.364	0.977	−0.727	1.618	.532
Realism	−0.046	0.789	0.136	0.595	.549
Develop level	−0.046	0.151	−0.046	0.350	1.000
Details objects	1.500	1.379	0.136	0.951	.015*
Line quality	0.182	0.337	0.182	0.603	1.000
Person	0.501	0.548	−0.346	0.850	.546
Rotation	−0.227	0.410	0.091	0.736	.229
Preservation	0.000	0.000	−0.046	0.151	.341
Total	2.773	7.132	1.091	6.220	.562
Six months					
Prom color	0.136	1.583	−1.727	1.191	.006*
Color fit	0.200	1.289	0.000	1.269	.678
Implied energy	−0.850	1.334	−0.500	0.913	.504
Space	−0.250	1.620	0.200	1.033	.470
Integration	0.250	1.458	−0.100	1.126	.556
Logic	0.200	0.350	−0.200	0.633	.102
Problem-solving	0.600	2.799	−0.750	2.312	.255
Realism	−0.350	1.001	−0.200	0.823	.719
Develop level	0.350	−0.580	0.050	0.438	.100
Details objects	1.182	1.309	−0.546	1.557	.011*
Line quality	0.300	−0.483	0.200	0.753	.097
Person	−0.300	0.715	0.100	1.445	.448
Rotation	−0.200	0.633	−0.050	0.927	.678
Preservation	−0.500	0.158	−0.500	0.369	1.000
Total	0.050	9.932	−3.150	5.452	.387

*Significant difference ($P < .05$).

children engage in the creation of art, their experiences and feelings can be expressed and understood. By creating art about their illness, trauma, or medical procedures, children are able to establish some distance between themselves and their medical concerns. By processing their emotions through art, children often come to understand that their problems are separate from themselves and that the children have an identity outside of their illness.⁴ Art helps children come to terms with their asthma, learn to cope and adapt to their situation, and move forward in their lives.¹³

In summary, this randomized, controlled study using art therapy with children with asthma provides encouraging initial data about how the emotional health of chronically ill children may be improved by using art therapy interventions. More specifically, this study demonstrates the positive impact of using art therapy for reduction of anxiety in children with asthma. This study, with a limited number of participants, was not designed to address specifically the question of whether art therapy affected medical outcomes. Significant asthma exacerbations were infrequent in the art therapy or control groups before or after the study interval, likely because of the regular nursing care provided to patients in the Kunsberg School. Nonetheless, 1 important extension of this research will be to determine whether art therapy in conjunction with routine outpatient asthma medical care can help enhance patient and family self-management capacity and

thereby reduce the frequency and severity of asthma exacerbations and the need for urgent care visits or hospitalization. Additional investigation may examine the time frame of art therapy in relation to medical treatment, especially the impact of a shorter course of art therapy on children during hospitalization.

Clinical implications: Art therapy for children with asthma can help reduce anxiety and increase quality of life.

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APPENDIX E1**ART THERAPY SESSION CONTENT**

To begin the first art therapy session, the opening activity, “The Jewels Within,” was introduced with the metaphorical explanation that we all have “jewels” inside, and our jewels are the good feelings we have about ourselves. For this activity, the group was presented with a tray of colored glass jewels used for craft projects. The patients were encouraged to think about 3 of their characteristics that made them proud, and to pick 3 jewels to represent these characteristics. The children were given a satin bag in which to keep their jewels, and added to it 3 more jewels every week during this repeated opening activity.

The topic of the first session was, “Who am I?” The group members introduced themselves and were asked to talk about how they felt about themselves in relation to their illness. The members were encouraged to draw a picture expressing their feelings further about who they were and to share with the group.

At the end of the session, the group gathered for a closing activity called “Transformation.” To begin this activity, the group members were given a clear piece of cord and were asked to pick 2 beads to put on the cord. It was explained to them that the beads signified their involvement and importance in the art therapy group. This became the weekly closing activity, allowing the children to add 2 beads to their cord each week.

In the second session, “Feelings Related to Illness,” the art therapist explained that most children experience many feelings about having a chronic illness. The group members were asked to think about and write down their feelings about their asthma. The art intervention was then presented to the group, and the children were given 2 papier-mâché masks to paint, 1 to represent how they felt when sick and 1 to show how they felt when they were healthy. The group members shared their feelings about their masks and were encouraged to think about how to transition emotionally from feeling sick to feeling better.

The third art therapy session was titled “Healthy Expressions of Anger.” The group discussed how being sick made them feel mad or angry, discussed positive ways to express angry feelings, and learned to channel their feelings by using clay. The group was encouraged to think about any angry feelings they might have about their asthma and made clay volcanoes to express how they felt. The group then shared their art process with each other and talked further about positive ways to express anger.

Session 4 was “Transforming the Anger.” In this session, the group discussed ways they could transform their feelings about their asthma, including angry feelings. The children were asked to use paint colors that made them feel good and happy to help transform their “angry volcanoes” into “calm mountains.” The group then placed their colorful mountains on a painting of a calm blue sea and talked about ways they could help replace angry feelings by engaging in calming activities and by imagining the colors they used to transform their volcanoes.

In the fifth session, “Pain Management, Painting and Imagery,” the patients were asked to think about what it felt like for them when they were in pain or were having an asthma attack and what helped them to feel better. After this discussion, the group members were given palettes of soothing hues of paints and were asked to pretend that they were younger and were just discovering how to use paint. They were encouraged not make any particular image, just to use the colors together, fill the paper with color, and paint in silence for 5 minutes. This exercise was repeated 6 times using different selections of colors. After the paints were cleaned up, the group members were asked to think about how they felt doing this exercise and what colors helped them feel the best. Further discussion focused on how certain colors can help soothe people and make them feel better. The children were asked to imagine their favorite soothing color covering them like a blanket and helping them feel good, and were reminded that this was an image that they could use in the future when feeling ill.

Session 6 was, “What Makes Me Feel Good?” The group talked about examples of how negative emotions and stress can sometimes affect the severity of an asthma attack, and discussed that it is helpful to focus on thoughts that made them feel good inside. The children learned how to counter negative thoughts with positive affirmations and practiced using them in the group setting. They then decorated paper stars, butterflies, and kites and wrote affirmative statements about the images.

In the final session, the group began with the opening activity that included choosing 3 jewels. They talked about the 3 pieces of art work from the last 7 weeks that made them most proud and added the jewels to their satin bags. The group was encouraged to continue this practice of acknowledging their accomplishments at home and were given an extra bag of crystals to add to their first bag when they did something that made them feel proud.

For the main activity in the last session, “Taking Care of Myself,” the children discussed self-care and the importance of taking medications and seeing their doctors when they felt sick and for regular check-ups. They were asked to use markers to draw a picture of themselves taking their medications. The group also reviewed the different topics and art interventions from the previous sessions.

At the end of the final session, the group gathered for the closing activity. The group members put their last 2 beads on the cord that they had been given in the first art therapy session. In addition, the children were given a charm of their choice to add to the cord. Once the beads and the charm were complete, it was revealed that what they had made was actually a sun catcher. The children were asked to hold their sun catcher up to the window to see that the beads they had put on the cord now changed color and turned bright when exposed to the sun. The group was encouraged to think of how, like the beads, they were able to transform themselves, and think and feel differently about their asthma.