

# Effectiveness of Art Therapy in Autism Spectrum Disorders Focusing on Sensory and Motor Aspects: Review of Literature

Lokeshwari Balaramamurugan<sup>1</sup>, Dr.N.Balakrishnan<sup>2</sup>

<sup>1</sup>M.SC Clinical Psychology, Annamalai University

<sup>2</sup>Assistant professor, Department of Psychology, Annamalai University, Annamalai nagar.

## Abstract:

**Background and Objective:** Autism Spectrum Disorder is a group of neurodevelopmental disorders characterized by impaired verbal and non-verbal communication in addition to repetitive stereotypical behaviour. The Art therapy intervention is a performance based intervention that is used as a treatment for vast categories of mental health problems. Autism spectrum disorder (ASD) refers any one of a group of disorders with an onset typically occurring during the preschool years and characterized by difficulties with social communication and social interaction and restricted and repetitive patterns in behaviours, interests, and activities. The Effectiveness of the art therapy is proved in treating vast categories of mental health problems. The Aim of this study is to review and summarize the Severity of Autism Spectrum Disorder and Effectiveness of Art therapy in reducing the Symptoms of Art therapy. **Methods:** An electronic search was made through published scholarly articles in Goggle scholar and Semantic Scholar. The Studies were filtered to last 15 years and with the following key words Art therapy, Autism spectrum disorder, Sensory and motor aspects 22 articles were sorted according to the selection criteria.

**Conclusions:** Art based therapies were widely used in the recent times. Art therapy can be used for the reduction of symptoms of ASD and develop sensory and motor aspects. Based on the results of the available literature, Art therapy interventions can be useful in reducing the symptoms of Autism spectrum disorder and in developing the sensory and motor aspects.

**Keywords:** Autism Spectrum Disorder, Art therapy, Sensory aspects and Motor aspect

## INTRODUCTION

Autism spectrum disorder (ASD) refers any one of a group of disorders with an onset typically occurring during the preschool years and characterized by difficulties with social communication and social interaction and restricted and repetitive patterns in behaviours, interests, and activities [1]. The term “spectrum” is used because of the heterogeneity in the presentation and severity of ASD symptoms, as well as in the skills and level of functioning of individuals who have ASD [2]. Autism is a neurodevelopmental disorder characterized by markedly impaired social interactions, verbal and nonverbal communication; narrow interests; and repetitive behaviour. Manifestations and features of the disorder appear before age 3 but vary greatly across children according to developmental level, language skills, and chronological age. They may include a lack of awareness of the feelings of others, impaired

ability to imitate, absence of social play, abnormal speech, abnormal nonverbal communication, and a preference for maintaining environmental sameness. Classified in *DSM-IV-TR* as a pervasive developmental disorder, autism has been subsumed into autism spectrum disorder in *DSM-5* and is no longer considered a distinct diagnosis. Also called autistic disorder; childhood autism; early infantile autism; infantile autism; Kanner's syndrome [3]. The etiology of ASD is likely to be multifactorial, with both genetic and non-genetic factors playing a role. ASD can be syndromic or non-syndromic. Syndromic ASD is often associated with chromosomal abnormalities or monogenic alterations like Rett's Syndrome [4]. Contrary to syndromic ASD, the etiology of non-syndromic ASD is still relatively undefined due to its genetic heterogeneity. A collaboration of de novo mutations and prenatal plus postnatal environmental factors are likely to play a role. There is correlation between the environmental factors during fetal development proving that environmental factors may have role in causing ASD [5]. Art therapy is a mental health profession that enriches the lives of individuals, families, and communities through active art-making, creative process, applied psychological theory, and human experience within a psychotherapeutic relationship [6]. Art therapy serves as the treatment of wide varieties of mental health problems. In recent days, Art therapy is considered to be a definite treatment for pervasive development disorder. Review of literature is the written overview of major writings, publications and other sources on a selected topic. It is the overview of previously published work related to a specific topic or research question. It is often written as the part of dissertation, thesis or research paper which provides context to our study. The present study was attempted to identify effectiveness of art therapy among the children with ASD and in the reduction of sensory and motor aspects.

### STUDIES RELATED TO ART THERAPY

**Laura A. Clapp, E. Taylor, S. Di Folco, V. Mackinnon (September 2019)** examined effectiveness of art therapy with paediatric populations affected by medical health conditions: a systematic review 12 studies with the combined sample of 722 children and young people aging from 2 to 19 years who have chronic disorders or hospitalized in which 404 children received art therapy and 318 subjects in comparison groups. The study concluded that Art therapy has a significant difference in the psychological wellbeing of the children with chronic illness or prolonged hospitalization which in turn improved their recovery.

**Jingxuan Hu, Jinhuan Zhang, Liyu Hu, Haibo Yu and Jinping Xu (2021)** studied art therapy as a complementary treatment for mental disorders. This study is about the effectiveness of art therapy for various mental health problems such as Depression, Anxiety, Schizophrenia, Dementia, Cognitive impairment and Autism spectrum disorder. 479 records about art therapy were identified, this study is aimed to focus on art therapy included painting and drawing as major media, the literatures were screened out deeper, and identified 413 (84%) literatures involved in painting and drawing. The research study concluded that art therapy is effective for all the type of mental disorders.

**Biyun Zhang, Jingyao Chen, Xiaoyan Huang and Wenhao Xu (2021)** studied Chinese Flower and Bird Painting as a New Form of Art Therapy for Depression. Total of 110 people affected by depression were selected in which 58 were males and 52 were females, EEG was done to observe the brain neurotransmission. Three stages of art therapy intervention for 24 weeks combined with breathing exercises and relaxation therapy was given to 56 people with mild and moderate depression according to

Hamilton rating scale for Depression (HAM-D). EEG and Psychometrics (HAM-D) is done after the therapy process which proves the significant improvement of the patients of experimental group. This study concludes that art therapy helps to alleviate the symptoms of depression.

**Dafna Regev\*** and **Liat Cohen-Yatziv (2018)** studied effectiveness of art therapy with adult clients. This paper analyse 27 latest art therapy studies and concludes the effectiveness of art therapy. This review study has been made by seven clinical categories such as cancer patients, person with medical illness, adult patients, post traumatic patients, prison inmates, elderly and people who face daily challenges (burnout and stress). It is concluded that the art therapy is effective to all the seven clinical categories.

**MojtabaGholamzade Khadar, Jalil Babapour, Hassan Sabourimoghaddam** studied Effect of art therapy based painting therapy in reducing symptoms of Oppositional Defiant Disorder (ODD). This research was done by selecting 30 elementary school children with the symptoms of ODD aging between 7 to 12 years. The children were selected on the basis of Child symptom inventory and by DSM IV criteria. 12 sessions of therapy was given as twice a week, each session lasted for 40 minutes. This is an experimental and a pre-test, post-test control group design method were applied. The data were analysed using descriptive statistics as well as ANCOVA. The finding showed that experimental group did have a significant decrease in the symptoms of odd while the control group showed no significant difference.

**Annemarie Abbing, Erik W. Baars, Leo de Sonnevile, Anne S. Ponstein and Hanna Swaab (2019)** studied the effectiveness of art therapy on anxiety for adult women in a randomized control trial. The aim of this research is to study the effectiveness of specific art therapy treatment, Anthroposophic art therapy technique to reduce the anxiety of adult women. Participants were women, aged 18-65 years, diagnosed with generalized anxiety disorder, social anxiety disorder or panic disorder, with moderate to severe anxiety symptoms. The trial was registered in the Dutch Trial Registration (NTR28143). It aims on quality of life and emotional regulation. 59 women were included of which 49 completed the trial and the pre-protocol and intension to treat analysis resulted that there is reduction in Anxiety level of the participants and there is evidence of increase in quality of life and emotional regulation. These improvements are seen after 3 months of follow up as 2 times a week and the research is concluded that there is improved acceptance of emotions and improved goal-oriented action are aspects of emotion regulation that are associated with the decrease in anxiety level.

**Kristina Geue, Heide Goetze, Marianne Buttstaedt, Evelyn Kleinert, Diana Richter, Susanne Singer (2010)** studied art therapy intervention for cancer patients. The intention and goal of this article is to determine whether art therapy may decrease psychological distress and increase coping ability of the cancer patients. HDRS is used to measure psychological distress. This study consists of total 48 participants in which 18 belong to experimental group. The results are as follows, there is a significant decrease in the psychological distress of the experimental group, there is no significant or notable difference in the depression and coping abilities of the experimental group. The study is concluded that art therapy can make an important contribution in the aftercare recovery of cancer patients and this study also lime lighted the need for psycho-oncological after care for cancer patients.

### **Studies related to Autism Spectrum Disorder (ASD)**

**Rajalakshmi Ramu and Radhakrishnan (2022)** conducted nursing professional's understanding and screening practices in the identification of children with autism spectrum disorder: a scoping review. Early identification and intervention of childhood autism spectrum disorder is recognised to have a valuable impact on a child's life. Nurses who are adequately prepared with the necessary screening practices to do early intervention. The scoping review approach was adopted for the present study utilized by reviewing electronic databases from inception to 2021 Data accomplished by searching 160 related studies from above said database and found only 10 full- text studies based on the research question. Data concluded that effective training programmes and continuing nursing education would hasten the early identification and intervention process in the arena.

**Holly Hodges, Casey Fealko, and Neelkamal Soares (Feb 2020)** researched on Autism spectrum disorder: definition, epidemiology, causes, and clinical evaluation. Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social communication and the presence of restricted interests and repetitive behaviours. This study explains about the classification of ASD as In DSM-5, the concept of a "spectrum" ASD diagnosis was created, combining the DSM-IV's separate pervasive developmental disorder (PDD) diagnoses: autistic disorder, Asperger's disorder, childhood disintegrative disorder, and pervasive developmental disorder not otherwise specified (PDD-NOS), into one. The prevalence of ASD is presented as 1 of 59 US children and this study also extended the causes of ASD as biological, genetic and neurological factors. This study suggested 5 different measuring tools to measure ASD, they are Modified checklist for autism in toddlers- revised or follow-up (M-CHART r/f); Survey of well-being of young children; Social Communication Questionnaire (SCQ); Social Responsiveness Scale (SRS); Autism Spectrum Screening Questionnaire (ASSQ).

**Bir Singh Chavan and Priti Arun (2022)** conducted a Survey of autism spectrum disorder in Chandigarh, India. This study was a two-stage survey of representative child population of Chandigarh using stratified random sampling technique covering 8820 children between the ages 1.5 and 10 years. Data accomplished by administering Chandigarh autism screening instrument (CASI), detailed assessment was done using Autism diagnostic Interview-Revised and Childhood Autism Rating Scale-2. Data concluded that the prevalence of ASD was found to be 2.25 per 1000 children in Chandigarh, no children below the cut-off on the screening instrument was diagnosed as ASD, and it suggests that the prevalence of ASD in India is lower than western countries.

**Khadija Saleemet al., (2021)** examined Diagnostic evaluation of Autism Spectrum Disorders, A health professional survey. Descriptive cross sectional survey design was conducted from October 2017 till March 2018 to find out the diagnostic practices of ASD among different health professionals. Data was collected from 126 health care professionals Data was accomplished by yoga or control group. The participants in the yoga group received an 8 week (24 session) yoga training program (YTP). Data was accomplished by administering ATEC. Data was concluded with this study provides support for the implementation of a yoga training program and identifies specific procedural enhancements to reduce the severity of symptoms in children with Autism.

**Meng-Chuan Lai et al., (2017)** conducted Quantifying and exploring camouflaging in men and women with autism. Undoubtedly, one of the most frequently studied conditions in the field of mental health today is the autism spectrum disorders (ASD). One of the most controversial topics with respect to this population is the prevalence of this spectrum of disorders. Autobiographical descriptions and clinician observations suggest that some individuals with autism, particularly females, 'camouflage' their social communication difficulties, which may require considerable cognitive effort and lead to increased stress, anxiety and depression. Using data from 60 age- and IQ-matched men and women with autism (without intellectual disability), we operationalized camouflaging in adults with autism for the first time as the quantitative discrepancy between the person's "external" behavioural presentation in social-interpersonal contexts. Data was accomplished by administering (Autism Diagnostic Observation Schedule) and the person's "internal status (dispositional traits measured by the Autism Spectrum Quotient and social cognitive capability measured by the "Reading the Mind in the Eyes Test). We found that the operationalized camouflaging measure was not significantly correlated with age or IQ. On average, women with autism had higher camouflaging scores than men with autism (Cohen's  $d=0.98$ ), with substantial variability in both groups. Data concluded that greater camouflaging was associated with more depressive symptoms in men and better signal-detection sensitivity in women with autism. The neuroanatomical association with camouflaging score was largely sex/gender-dependent and significant only in women: from reverse inference, the most correlated cognitive terms were about emotion and memory. The underlying constructs, measurement, mechanisms, consequences and heterogeneity of camouflaging in autism warrant further investigation.

**Yuko Yoshimura et al., (2019)** investigated Early intervention and perspectives for children with Autism Spectrum disorders in Japan. Data accomplished by administering the differences of development between before and after the Early Start Denver Model intervention using the Kyoto Scale of Psychological Development, the Vineland Adaptive Behaviour Scales-Second Edition, the Autism Diagnostic Observation Schedule-2. Data concluded the differences in brain responses evoked by human voices between typically developing children and children with ASD, the relationship between language development and brain activity in young children, and the different developmental patterns of auditory response to voice between typically developing children and children with ASD. In the future, we would like to evaluate the effects of ESDM intervention in terms of behavioural indicators and in terms of physiological indicators in Japan.

**Emilio Salgueiro et al., (2012)** conducted a study on Effects of a dolphin interaction program on Children with autism spectrum disorders - an exploratory research. Data were collected with ten children, registered in December 2002 as ASD at The Regional Education Authority of the Algarve (South-Ern Portugal). The age of these children at the time of their first evaluation ranged. From 3 years and 6 months to 13 years and 6 months. Mean age was 6 years and 9 months. Data was accomplished by administering CARS. This scale (Childhood Autism Rating Scale, PEP-R- This psycho-educational developmental test. For ASD children, ATEC-This tool (Autism Treatment Evaluation Checklist. A custom-designed developmental protocol to evaluate the child's capacity for a "Theory of Mind (TOM). A custom-designed Interaction Evaluation Grid'. Data was concluded with The ATEC, TOM Tasks and CARS results Show no benefits of the dolphin interaction program. Interestingly, the PEP-R suggests some statistically Significant effects on Overall development score', as well as on their 'Fine motor development, Cognitive Performance' and

'Cognitive verbal development. Also, a significant evolution in behavioural complexity was shown by the IEG.

**Satabdi Chakraborty et al., (2015)** Conducted Assessment of Severity of Autism Using the Indian Scale for Assessment of Autism. Indian children with ICD 10 diagnoses of Autistic disorder (AD, n = 50), Intellectual Disability (ID, n = 50). Attention Deficit Hyperactivity Disorder (ADHD, n = 26), other psychiatric disorders (PD-N-25) and control children without psychiatric disorders (n 65) 29 were Evaluated using the ISAA, DD-CGAS and the CARS (total n-216) The study evaluated the ISAA in relation to the Childhood Autism Rating Scale (CARS) and the Developmental Disability- Children Global Assessment Scale (DD-CGAS). The Indian Scale for Assessment of Autism (ISAA) was developed to assess the severity of autism among Indian cases Data concluded that Total ISAA scores were significantly higher among children diagnosed with autistic Disorder compared to four other diagnostic groups. Total ISAA scores were significantly correlated with CARS scores And DD-CGAS scores. Groups sub- divided on the basis of recommended ISAA cutoff points of severity showed significant Differences in CARS scores. Conclusion: The ISAA can thus be used to assess severity of AD among Indian children.

#### **Studies related to effectiveness of art therapy on ASD**

**K. Moghaddam, A. Ravarian, Farhoud Saeid Ershadi, A. Gorji, Saleh Mirzaaghaei, T. Lith(2020)** Studied a Landscape of Art Therapy and Psychodrama in Children and Adults with Autism Spectrum Disorders in Iran. 12 children who has autism for more than 3 years has been selected as the subject. 4 sessions of Art therapy (Painting medium) and Psychodrama therapy was given. The study is concluded that In Iran, this approach is very new and can be applied besides the other therapeutic approaches for ASD, and the art therapy and techniques of psychodrama should be designed in which the sensory integration occurs for clients with ASD. This study explains the improvement of ASD children in social interaction and sensory integration, better adaptation to the environment and better neuropsychological function and learning after art therapy and psychodrama treatment.

**Allison Bernier, Karen Ratcliff, Claudia Hilton, Patricia Fingerhut, and Chi-Ying Li (2022)** studied Art Interventions for Children with Autism Spectrum Disorder: A Scoping Review. The objective of this study is to provide occupational therapists evidence of the benefit of creative arts interventions for children with ASD by evaluating treatment efficacy and connecting the evidence with the Occupational Therapy Practice Framework: Domain and Process. For this study the 18 articles from 6 different databases as CINAHL, Cochrane, PubMed, Ovid, Psyc-Info, and Scopus from 2000 to 2020, from which 15 articles were considered for scoping review. The study is concluded and provides evidence for the efficacy of creative arts interventions to enhance occupation-based outcomes for children with ASD.

**Celine Schweizer MA et al., (2014)** has conducted the study of Art therapy with children with Autism Spectrum Disorders: A review of clinical case descriptions on 'what works'. For this study a systematic review was undertaken covering the period 1985–2012. Eighteen descriptive case-studies were found and analysed according to the Context Outcomes Art Therapy (COAT) model. The target group of this study is up-to 18 years. The results indicate that art therapy may add to a more flexible and relaxed attitude, a better self-image, and improved communicative and learning skills in children with ASD. Art therapy might be able to contribute in mitigating two main problem areas: social communicative problems, and

restricted and repetitive behaviour patterns. Typical art therapeutic elements such as sensory experiences with sight and touch may improve social behaviour, flexibility and attention-abilities of autistic children. This study concludes that the art therapy is effective in improving various skills of children diagnosed with ASD.

**Miranda D'Amico et al., (2017)** has studied on the Effectiveness of Art Therapy for Teaching Social Skills to Children with Autism Spectrum Disorder. This is a Quasi-experimental study in a therapeutic setting. In a therapeutic setting the social problems faced by the ASD children was discussed and then a group setting was designed to enhance the social interaction with the peers facing same or similar problems. Techniques of art therapy is provided in the group therapeutic setting. The research study is concluded and the findings revealed that art therapy enhanced the ability of children with ASD to engage and assert themselves in their social interactions, while reducing hyperactivity and inattention.

**Elisandra Lopes (2021)** has conducted the research on Effectiveness of Art Therapy with Children with Both Attention-deficit/hyperactivity and Autism Spectrum Disorder. The population focus of this research is pre-school and grade schooling children from 4 years to 12 years. This research reviews current art therapy methods and studies. This study demonstrates that art therapy can be used as an intervention tool for treatment with this population to promote positive social skill and increase academic achievement and expression of emotions.

**Kathleen Marie Epp (2008)** has studied the Outcome-Based Evaluation of a Social Skills Program Using Art Therapy and Group Therapy for Children on the Autism Spectrum Disorder. This study has examined the effectiveness of a social skills therapy program for school-age children of age from 11 to 18. The program used art therapy and cognitive-behavioural techniques in a group therapy format to broaden and deepen the state-of-the-art techniques used in helping children with social developmental disorders to improve their social skills. Pre-test and post-test instruments were distributed to parents and teachers in October and May of the 2004—2005 school year. Scores revealed a significant improvement in assertion scores, coupled with decreased internalizing behaviours, hyperactivity scores, and problem behaviour scores in the students.

#### **CONCLUSION:**

There is a large amount of literature available in the internet providing clear understanding about Autism Spectrum Disorder and Art therapy. The closely related articles were sorted and studied to conclude that the Art therapy is effective for treating and reducing the symptoms of Autism Spectrum Disorder and improving the sensory and motor aspects.

#### **FINANCIAL SUPPORT AND SPONSERSHIP:**

NIL

#### **CONFLICTS OF INTEREST:**

There are no conflicts of interest

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