

A Study to Assess the Effectiveness of Art Therapy on Stress among School-Age Children Attending Online Classes in a Selected Community Area of Bengaluru

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Abstract

The Covid-19 pandemic's rapid transition to online learning significantly increased stress among school-age children, affecting their academic performance and emotional well-being. This pre-experimental study aimed to assess the effectiveness of art therapy in reducing stress among 50 school-age children attending online classes in a selected community of Bengaluru. Data were collected using a structured socio-demographic questionnaire and a stress rating scale adapted for children. Baseline stress levels were found to be high (mean: 27.18 ± 7.31). After implementing seven days of structured art therapy interventions (30-40 minutes daily), post-test results showed a substantial stress reduction (mean: 13.16 ± 4.45). The statistical analysis using a paired t-test confirmed that this reduction was highly significant ($t=14.88$, $p<0.001$). No significant associations were found between pre-intervention stress levels and various socio-demographic variables. The findings clearly demonstrate that art therapy is an effective, feasible, and non-pharmacological intervention for reducing stress in children engaged in online learning, highlighting its significant potential for integration into school health programmes and community mental health initiatives.

Key words: Art therapy, Stress among school children, Non-pharmacological intervention

Stress among school-age children has become a critical public health issue, exacerbated by the shift to online learning during the Covid-19 pandemic. The loss of traditional classroom structures led to increased psychological distress. In India, this was amplified by technological disparities and limited support systems, resulting in significant academic and social stressors for children. Art therapy is a recognised, non-pharmacological intervention that uses creative expression to help children manage stress and enhance coping mechanisms. However, evidence of its effectiveness in community-based settings, specifically for pandemic-related stress in Indian children, remains limited. This study aimed to address this gap by systematically evaluating a structured art therapy programme's effectiveness in reducing perceived stress among school-age children attending online classes in an urban community of Bengaluru.

Need of the Study

The COVID-19 pandemic caused a global educational disruption, with India's extensive

school closures impacting over 320 million students. The necessary shift to online learning created unprecedented psychological challenges for children, including heightened academic anxiety, social isolation, and the erosion of routines.

Chronic childhood stress can adversely affect neurological development and emotional regulation, making early intervention crucial. Art therapy is an ideal community-based intervention: it is developmentally appropriate for non-verbal expression, cost-effective, and accessible. Neurobiological research indicates it promotes neural integration and regulates stress hormones like cortisol.

Despite its advantages, systematic evidence on art therapy's effectiveness for pandemic-related stress in Indian children is limited. This study was designed to provide empirical evidence to support the integration of art-based interventions as a viable public health strategy for future crises.

Review of Literature

Art therapy has demonstrated significant efficacy in managing stress and anxiety across diverse pediatric populations. Madden et al (2010) conducted a landmark study with paediatric brain

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tumor patients, revealing that structured creative art therapy sessions significantly improved quality of life scores and reduced observable anxiety levels during outpatient chemotherapy treatments. The intervention's success was largely attributed to its unique ability to provide a constructive emotional outlet and instil a sense of control and autonomy during stressful medical procedures.

Recent advancements in neuroimaging research have begun to provide concrete evidence for the underlying neurobiological mechanisms of art therapy. King et al (2019) utilised fMRI technology to demonstrate that participation in art therapy sessions produced measurable changes in brain network organisation and functional connectivity, particularly in regions robustly associated with emotional regulation, such as the prefrontal cortex and the default mode network.

Systematic reviews and meta-analyses consistently support the effectiveness of art therapy in school-age populations. Moula (2020) conducted a comprehensive meta-analysis of 15 school-based art therapy programmes for children aged 5-12 years, reporting statistically significant improvements in anxiety reduction and overall quality of life measures. In a similar vein, Abbing et al (2018) analysed 26 studies involving art therapy for anxiety management, concluding that structured, short-term interventions consistently produced clinically significant anxiety reduction across various age groups.

Pandemic-specific research further underscores art therapy's particular relevance during crisis periods. Reddy & Banerjee (2021) demonstrated significant stress reduction following a series of brief, guided art therapy interventions conducted online with Indian children during the Covid-19 lockdowns. Complementing these findings, Kaur et al (2022) reported positive outcomes using mandala-based art therapy with children in Punjab, noting improvements in mood and self-reported anxiety levels. These studies collectively provide compelling evidence for art therapy's cultural appropriateness and practical applicability within diverse Indian contexts.

Objectives

This study was undertaken with following objectives.

1. To assess the baseline stress levels among school-age children attending online classes in a selected community area of Bengaluru.
2. To evaluate the effectiveness of a structured art therapy intervention in reducing stress levels among the study participants.

3. To determine associations between pre-intervention stress levels and selected socio-demographic variables.

Methodology

Research design

A quantitative pre-experimental design utilising a one-group pre-test post-test approach was employed to evaluate the intervention's effectiveness.

Setting

The study was conducted in a selected residential community area of Bengaluru, (Karnataka). Data collection was conducted from 13 May 2022 to 30 June 2022.

Ethical considerations

The study received ethical approval. Informed consent and child assent were obtained, and all procedures adhered to the ethical principles of the Declaration of Helsinki.

Population and sampling

The study population comprised school-age children (6-12 years) attending online classes in the selected community area. A convenience sampling method was used to recruit 50 participants who met the inclusion criteria.

Inclusion and exclusion criteria

Children aged 6-12 years, regularly attending online classes (minimum 5 days per week), having parental consent, able to hold and manipulate basic art materials, and residing within the selected community area were included.

Children with pre-existing diagnosed psychological disorders/ severe cognitive impairments affecting comprehension of instructions, having physical disabilities preventing manipulation of art materials or currently participating in other structured stress management interventions were excluded.

Variables

Independent variable: The intervention delivered seven consecutive days of 30-40 minutes art therapy sessions using drawing and colouring to provide a non-judgmental outlet for emotional expression and stress processing.

Dependent variable: Stress levels as measured by the adapted stress rating scale.

Data Collection Tools

Section A: A socio-demographic questionnaire collected data on age, gender, family type,

academic class, family income, daily online class duration, and the primary device used for classes.

Section B: A stress assessment tool was adapted from the Modified Perceived Stress Scale. It integrated visual elements from the Wong Baker Faces Scale to create a 10-item, 5-point Likert scale (scores 0-40) for children. Stress was categorised as mild (0-13), moderate (14-26), or high (27-40).

Validity and Reliability: Content validity was established through a rigorous review by an expert panel (5 experts in paediatric nursing and psychology). The tool demonstrated exceptionally high internal consistency for this sample, with a Cronbach's alpha coefficient of 0.974.

Data Collection Procedure

Pre-test stress assessment was conducted using the validated tool in a quiet, comfortable setting. The art therapy intervention was implemented daily for seven consecutive days; each session lasted 30-40 minutes and included a mix of free drawing, guided imagery drawing, and structured colouring activities.

Children were provided with age-appropriate art materials and consistently encouraged to express themselves creatively without fear of judgement. Post-test assessment was conducted on 7 day immediately following the final intervention session using the same scale.

Data Analysis

Data were analysed using SPSS version 26.0. Descriptive statistics summarised demographic and stress data. A paired t-test compared pre-/ post-intervention scores, and a chi-square test examined associations with demographics. Statistical significance was set at $p < 0.05$.

Results

The frequency and percentage distribution of socio-demographic variables, distribution of pre- and post-test stress scores, classification of stress levels, effectiveness of art therapy on stress, effect of art therapy on stress levels, and association between pre-test stress level and socio-demographic variables are presented in Tables 1-5 and Fig 1.

Table 1: Frequency and percentage distribution of socio-demographic variables (Sample size: n=50)

Demographic variable	Frequency (f)	Percentage (%)
<i>1. Age (in years)</i>		
≤7 years	7	14

Demographic variable	Frequency (f)	Percentage (%)
8-9 years	32	64
≥9 years	11	22
<i>2. Gender</i>		
Male	30	60
Female	20	40
<i>3. Type of family</i>		
Joint	11	22%
Nuclear	39	78%
<i>4. Class of study</i>		
≤ 2nd standard	6	12%
3rd - 5th standard	32	64%
≥ 6th standard	12	24%
<i>5. Monthly family income (₹)</i>		
<15,000	5	10%
15,001 - 25,000	12	24%
25,001 - 35,000	21	42%
>35,000	12	24%
<i>6. Hours of online classes/day</i>		
<1 hour	4	8%
1-2 hours	22	44%
2-3 hours	21	42%
>3 hours	3	6%
<i>7. Device used</i>		
Mobile Phone	2	4%
Tablet	14	28%
Laptop	24	48%
PC	10	20%

Table 2: Distribution of pre-test and post-test stress scores (Sample size: n=50)

Assessment	Mean	Median	Mode	SD	Range
Pre-test	27.18	26	33	7.31	12-39
Post-test	13.16	12	12	4.45	6-25

Table 3: Classification of stress levels, pre- and post-test (Sample size: n=50)

Level of stress	Pre-test f (%)	Post-test f (%)
Mild (0-13)	7 (14%)	36 (72%)
Moderate (14-26)	22 (44%)	14 (28%)
High (27-40)	21 (42%)	0 (0%)

Table 4: Effectiveness of art therapy on stress (paired t-test) (Sample size: n=50)

Variable	Mean	SD	Mean difference	t-value	p value
Pre-test	27.18	7.31	14.02	14.88	<0.001*
Post-test	13.16	4.45	-	-	-

*Significant at $p < 0.05$

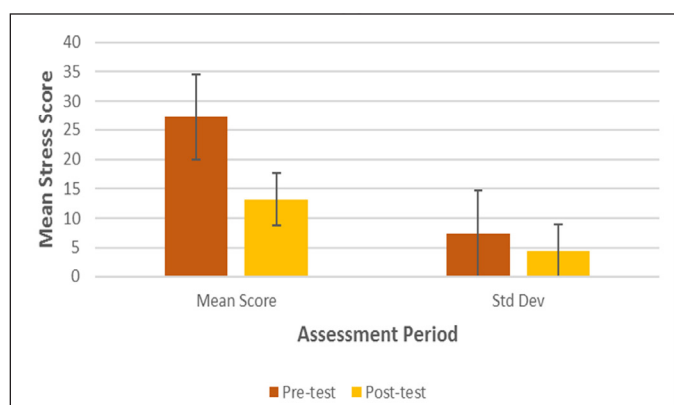


Fig 1: Effect of art therapy on stress levels.

Table 5: Association between pre-test stress level and socio-demographic variables (Chi-square test) (Sample size: n=50)

Demographic variable	χ^2 value	Df	p-value	Significance
Age (in years)	3.13	4	0.536	Not Significant
Gender	1.12	2	0.571	Not significant
Type of family	1.50	2	0.472	Not significant
Class of study	3.96	4	0.411	Not significant
Monthly family income	4.51	6	0.607	Not significant
Hours of online classes/day	3.07	6	0.801	Not significant
Device used	11.56	6	0.073	Not significant

Discussion

The study revealed a significant stress reduction following a seven-day art therapy intervention. The pre-test means stress score of 27.18 (SD±7.31), indicating moderate-to-high stress, decreased substantially to 13.16 (SD±4.45) post-intervention. This represents a clinically significant shift to the mild stress category for most participants, with a mean difference of 14.02 points. The 51.6 percent reduction demonstrates substantial effectiveness, a finding highly statistically significant ($p < 0.001$) and aligned with international research.

The intervention's effectiveness is attributed to key mechanisms. Art therapy provides a safe, non-verbal medium for emotional expression, allowing children to externalise anxiety-provoking feelings, a process theorised to reduce internal psychological tension and promote emotional regulation. Additionally, engaging in the creative

process activates neural reward pathways, promoting a state of relaxation and focused calm, or 'flow'.

A noteworthy finding was the absence of significant associations between demographic variables and baseline stress, suggesting that online learning stressors affected children universally across socioeconomic backgrounds. This contrasts with pre-pandemic research, highlighting the unique, pervasive nature of the Covid-19 crisis. The substantial results from a brief seven-day intervention support art therapy's efficiency as a crisis intervention tool. These findings are strengthened by consistency with recent Indian studies, providing strong evidence for the intervention's cultural appropriateness and effectiveness.

Study limitation: A study limitation is the pre-experimental design without a control group; future research employing a randomised controlled trial (RCT) would strengthen conclusions.

Recommendations

Policy integration: Develop guidelines to incorporate art therapy into school health curricula and emergency response protocols.

Professional training: Integrate art therapy modules into nursing education and offer workshops for healthcare workers and educators.

Community implementation: Establish sustainable art therapy programmes via local health centres or NGOs for stressed children.

Research advancement: Conduct rigorous RCTs with larger samples and longer follow-ups to confirm long-term efficacy and optimal dosage.

Comparative studies: Benchmark art therapy against other interventions (e.g., yoga, mindfulness) to guide resource allocation.

Nursing Implications

Practice: Community health nurses should integrate basic art therapy into pediatric care, school health programmes, and family counselling as an evidence-based tool for stress reduction.

Education: Nursing curricula must incorporate fundamental art therapy principles to equip future nurses with the skills to apply these low-risk interventions in diverse settings.

Research: Nurse researchers should lead longitudinal studies to examine art therapy's long-term effects, optimal dosage, and mechanisms of action in specific pediatric groups.

Administration: Nursing leaders must advocate for policies that integrate creative therapies

into public health systems, ensuring dedicated resources, space, and staff training.

Conclusion

This study demonstrates that a seven-day art therapy programme significantly reduced stress in school-age children during online learning. Pre-test scores dropped from a high-moderate level (27.18) to a mild level (13.16), a statistically significant mean difference of 14.02 points ($p < 0.001$). This effectiveness across demographics confirms broad applicability.

The findings provide compelling evidence for art therapy as a practical, non-pharmacological intervention. Its cost-effectiveness and minimal resource requirements support its integration into school health and community programmes to safeguard children's psychological well-being during current and future public health challenges.

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