



“EFFECTIVENESS OF MANDALA COLOURING THERAPY VERSUS FREE DRAWING ON ANXIETY LEVEL AMONG HOSPITALIZED CHILDREN.”

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Abstract

Introduction:. Hospitalization can cause anxiety in children aged 6–12 years due to unfamiliar surroundings, separation from family, and fear of procedures, affecting their emotional well-being and treatment cooperation. Non-pharmacological interventions such as Mandala Colouring Therapy and Free Drawing promote relaxation, distraction, and emotional expression, making them useful approaches in paediatric nursing care.

Objectives:

1. To assess the anxiety level among hospitalized children at baseline.
2. To evaluate the effectiveness of mandala colouring therapy on anxiety level among hospitalized children.
3. To evaluate the effectiveness of free drawing on anxiety level among hospitalized children.
4. To compare the anxiety level in mandala colouring therapy group with free drawing group.
5. To find out the association of study findings with selected demographic variables.

Methodology: An experimental study with a two-parallel interventional arm design was conducted in selected paediatric wards to compare the effectiveness of these interventions. Seventy-two hospitalized children were selected using simple random sampling and randomly assigned to Mandala Colouring Therapy (n=36) and Free Drawing (n=36). Anxiety was assessed before and after intervention using the Hamilton Anxiety Rating Scale. Data were analysed using descriptive and inferential statistics.

Results: Pre-test findings showed high anxiety levels in both groups. The mean pre-test anxiety score was 36.55 ± 11.09 in the mandala group and 29.55 ± 11.12 in the free drawing group. Post-test results revealed significant reduction in anxiety, with mean scores of 2.22 ± 0.89 and 7.08 ± 2.92 respectively. Both interventions were effective; however, Mandala Colouring Therapy demonstrated greater reduction in anxiety. **Conclusion:** The study concludes that structured colouring activities can be recommended as a simple and effective nursing intervention to reduce anxiety among hospitalized children.

Keywords: Hospitalized children, Anxiety, Mandala Colouring Therapy, Free Drawing, Non-pharmacological intervention.

Introduction

Hospitalization can cause significant psychological distress in children, including anxiety, depression, and homesickness. A systematic review by Demetriou et al. (2024) reported high anxiety levels among hospitalized children, particularly those separated from parents or undergoing invasive procedures. Poor hospital adjustment can negatively affect emotional well-being and recovery.¹

A descriptive study conducted in four hospitals in Moradabad, Uttar Pradesh, assessed anxiety among 50 hospitalized children aged 6–12 years using the modified short State-Trait Anxiety Inventory for Children (STAIC). Severe anxiety was reported in 82% of children, highlighting the need for anxiety-reducing interventions such as play therapy, parental involvement, and child-friendly care.²

A meta-analysis covering 27 countries found that anxiety disorders affect approximately 30% of children and adolescents, while nearly 80% of affected youth do not receive appropriate treatment. Untreated anxiety may lead to depression, academic difficulties, and other adverse outcomes.³

Mandala Colouring Therapy involves colouring pre-designed, symmetrical circular patterns called mandalas. Rooted in Eastern spiritual traditions, it promotes mindfulness, relaxation, concentration, and emotional regulation, making it a useful therapeutic activity.⁴

Free Drawing is an expressive art activity that allows children to draw freely without predefined patterns or instructions. It encourages creativity, emotional expression, and self-awareness while helping reduce anxiety and promote psychological well-being.⁵

Background of the Study

Mandala Colouring Therapy (MCT) is a structured art-based intervention that promotes relaxation, mindfulness, and emotional regulation.^{6,7} Studies have reported reduced anxiety following MCT among various clinical populations.^{8,9} Other expressive art interventions, including free drawing, also support emotional expression and anxiety reduction.^{10,11} Hospitalization can cause anxiety in children due to unfamiliar surroundings, separation from parents, and fear of medical procedures.^{12,13} Mandala colouring encourages relaxation, whereas free drawing promotes creativity and emotional expression.^{14,15} Although art-based interventions have shown benefits, limited evidence is available comparing MCT and free drawing among hospitalized children in India. Previous research has not adequately addressed this comparison in paediatric inpatient settings.^{9,16} Both interventions are low-cost, accessible, and feasible for paediatric care.¹⁷ Therefore, the present study aims to compare the effectiveness of Mandala Colouring Therapy and Free Drawing in reducing anxiety among hospitalized children aged 6–12 years.

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Study Design

In the present study, an experimental research design (two parallel interventional arm design) was adopted to assess the effectiveness of Mandala Colouring Therapy versus Free Drawing on anxiety among hospitalized children, enabling comparison between both intervention groups.

Methodology

Permission was obtained from the selected hospitals before conducting the study. A quantitative evaluative research approach with an experimental research design (two parallel interventional arm design) was adopted to assess the effectiveness of Mandala Colouring Therapy versus Free Drawing on anxiety levels among hospitalized children. The study was conducted in the paediatric wards of selected hospitals. The study population comprised hospitalized children aged 6–12 years. A total of 72 eligible children were selected using simple random sampling (lottery method). The participants were equally allocated into two groups: Mandala Colouring Therapy (n=36) and Free Drawing (n=36). Anxiety levels were assessed using the Hamilton Anxiety Rating Scale (HAM-A). The interventions were administered to the respective groups as per the study protocol. Data were collected before and after the interventions to assess changes in anxiety levels. The collected data were analysed using appropriate descriptive and inferential statistical methods.

Null Hypothesis (H_0):

There is no significant difference between mandala colouring therapy and free drawing on anxiety level among hospitalized children.

Alternative Hypothesis (H_1):

There is significant difference between mandala colouring therapy and free drawing on anxiety level among hospitalized children.

Description of the tool

Section A: The demographic data sheet was designed to collect demographic information about the participating hospitalized children aged 6–12 years. It consisted of seven items, including age, gender, educational status, duration of hospitalization, monthly family income, area of residence, and previous experience of hospitalization.

Section B: Assessment of Anxiety Level Using Original Hamilton Anxiety Rating Scale (HAM-A) – Public Domain Tool.

Table 1.1: Data interpretation and scoring –

Total score	Level of anxiety
< 17	Mild anxiety
18-14	Mild to moderate anxiety
25-30	Moderate to severe anxiety
Above 30	Very severe anxiety

Validity of tool :

The Demographic Variable data sheet was validated by **18 experts** in filled of nursing and paediatrics for content validation. Necessary modifications was made to the Demographic Variables Proforma based on expert suggestions. And Hamilton Anxiety Rating Scale (HAM-A) – Public Domain Tool.

Reliability of tool

Table 1.2: Present tool Reliability (Test–Retest Method)

Group	Pearson's Correlation (r)
Mandala (HAM-A)	0.918
Free Drawing (HAM-A)	0.845

The Pearson's correlation coefficient obtained through the Test–Retest method was 0.918 for the Mandala Colouring Therapy group and 0.845 for the Free Drawing group. The reliability coefficients (0.9572 and 0.9159

respectively) indicate that the tool was highly reliable for assessing anxiety among hospitalized children aged 6–12 years in the present study.

Ethical consideration:

1. Research proposal will be approved from institutional ethical committee.
2. Prior permission will be obtained from the concerned authority.
3. Informed written consent will be obtained from study subjects.
4. Confidentiality and anonymity of subjects will be maintained.
5. Participants will be protected from all type of harms.
6. Freedom to withdraw from the study at any point of time will be assured to study subjects.

Process of data collection

STEP-I:

The researcher obtained permission from the concerned authorities to conduct the study in the selected hospital.

STEP-II:

A total of 72 hospitalized school-age children were selected using a simple random sampling technique and allocated into Group A (Mandala Colouring Therapy) and Group B (Free Drawing).

STEP-III:

The researcher introduced herself to the children and their parents, explained the purpose and procedure of the study, and obtained written informed consent from the parents/guardians.

STEP-IV: Demographic data of the hospitalized children were collected using a structured demographic proforma.

STEP-V:

Pre-test anxiety levels of the children were assessed using the standardized Hamilton Anxiety Rating Scale (HAM-A).

STEP-VI:

Intervention I (Mandala Colouring Therapy) was administered to Group A for 20–30 minutes daily for 3 days in hybrid mode. Morning sessions were supervised by trained personnel, and evening sessions were carried out as self-practice under parental supervision.

Each child was provided with an age-appropriate printed mandala design and allowed to choose preferred colouring materials. A calm environment was maintained, and children were encouraged to colour at their own pace without judgment.

STEP-VII:

Intervention II (Free Drawing) was administered to Group B for 20–30 minutes daily for 3 days in hybrid mode. Morning sessions were supervised by trained personnel, and evening sessions were carried out as self-practice under parental supervision. Each child was provided with plain paper and colouring materials and encouraged to draw freely without rules or patterns in a calm, non-judgmental environment.

STEP-VIII:

Post-test anxiety levels of the children were assessed using the Hamilton Anxiety Rating Scale (HAM-A) after completion of the intervention period.

STEP-IX:

Numbering and coding of samples were done for ease of statistical analysis, and a master sheet was prepared for data management. Anonymity and confidentiality were maintained throughout the study.

Description of intervention

Phase I: Mandala colouring therapy

Mandala Colouring Therapy (MCT) and Free Drawing were used as non-pharmacological interventions to reduce anxiety among hospitalized children aged 6–12 years.

Mandala Colouring Therapy is a structured art-based activity in which children colour pre-designed circular geometric patterns known as mandalas. These symmetrical and repetitive designs are believed to promote relaxation, improve concentration, enhance emotional balance, and reduce anxiety levels. In the present study, children in Group A were provided with age-appropriate printed mandala designs and colouring materials. The activity was conducted in a calm, quiet, and non-judgmental environment within the pediatric ward. Each child was allowed to colour freely according to their choice for 20–30 minutes daily for three consecutive days in hybrid mode, ensuring minimal disturbance to routine hospital care.

The mandala colouring pages used in this study consisted of simple to moderately detailed circular geometric patterns appropriate for children aged 6–12 years. The designs included symmetrical floral motifs and radial structured patterns that encouraged focused attention and creative expression. The images were printed as clear black-and-white line drawings on A4 size paper to facilitate easy colouring and visibility. The mandala colouring page used in this study was obtained from JustColor.net.⁵⁷ The website permits use of its materials for personal and non-commercial purposes. The selected mandala designs were used strictly for educational and research purposes as part of the intervention. The images were printed and provided to the children during the mandala colouring therapy sessions.

For the intervention, child-safe non-toxic wax crayons were provided to all participants. A standard 12-colour crayon set was used, ensuring that the materials were non-toxic, odour-free, smooth in texture, and safe for pediatric use. In some cases, colouring pencils were also made available for older children who preferred finer detailing. The use of certified non-toxic colouring materials ensured safety and suitability for hospitalized children throughout the intervention period.

Phase II: Free Drawing

Free Drawing is an unstructured expressive art activity that allows children to draw freely without predefined patterns, boundaries, or specific instructions. This activity encourages spontaneous expression of thoughts, feelings, and imagination, thereby promoting emotional release and psychological comfort. Unlike Mandala Colouring Therapy, Free Drawing does not involve structured designs, enabling children to explore their creativity independently and express personal experiences related to hospitalization.

In the present study, children in Group B were provided with plain A4 size white drawing sheets along with child-safe colouring materials. The materials included non-toxic wax crayons, a 12-colour crayon set, and colouring pencils where appropriate. All materials were certified safe, odour-free, and suitable for pediatric use. The intervention was conducted in a calm, quiet, and non-judgmental environment within the pediatric ward to ensure that children felt comfortable and emotionally secure. Both Mandala Colouring Therapy and Free Drawing were safe, cost-effective, non-invasive, and developmentally appropriate interventions for school-age children.

Organization of findings

The analysis and interpretation of the observations are given in the following section:

Section A: Distribution of Hospitalized Children with regards to demographic variables.

Section B: Assessment of level of pre-test and post-test Anxiety level among hospitalized children in Mandala Colouring Therapy and Free Drawing from selected hospitals.

Section C: Assessment of effectiveness of Mandala Colouring Therapy and Free Drawing on anxiety level among hospitalized level from selected hospitals.

Section D: Comparison of effectiveness of Mandala Colouring Therapy and Free Drawing on anxiety level among hospitalized level from selected hospitals

Section E: Association of pre-test Anxiety score among hospitalized children in Mandala Colouring Therapy and Free Drawing from selected hospitals with their demographic variables.

Section A

Table 1: Percentage wise distribution of Hospitalized Children according to their demographic characteristics.

n=72

Demographic Variables	Mandala Colouring Therapy(n=36)	Free Drawing(n=36)
Age(yrs)		
6-7 yrs	7(19.4%)	4(11.1%)
8-9 yrs	12(33.3%)	12(33.3%)
10-11 yrs	10(27.8%)	10(27.8%)
12 yrs	7(19.4%)	10(27.8%)
Gender		
Male	20(55.6%)	23(63.9%)
Female	16(44.4%)	13(36.1%)
Transgender	0(0%)	0(0%)
Educational Status		
1 st – 3 rd standard	5(13.9%)	30(83.3%)
4 th – 6 th standard	25(69.4%)	5(13.9%)
7 th standard	6(16.7%)	1(2.8%)
Duration of hospitalization		
2-4 days	20(55.6%)	19(52.8%)
5-8 days	12(33.3%)	16(44.4%)
≥8 days	4(11.1%)	1(2.8%)
Monthly family income(Rs)		
Below Rs 10000	5(13.9%)	0(0%)
Rs 10001-15000	8(22.2%)	3(8.3%)
Rs 15001-20000	4(11.1%)	10(27.8%)
>Rs 20000	19(52.8%)	23(63.9%)
Area of residence		
Urban Area	26(72.2%)	32(88.9%)
Rural Area	10(27.8%)	4(11.1%)
Previous experience of hospitalization		
Yes	22(61.1%)	19(52.8%)

No	14(38.9%)	17(47.2%)
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Section B

Table 2: Assessment of pre test post test level of anxiety among hospitalized children of Mandala colouring therapy and Free drawing from selected hospitals.

A. Assessment with level of pre test anxiety score

n=72

		Level of Pre Test Anxiety Score	
Level of Anxiety Score	Score Range	Mandala Colouring Therapy	Free Drawing
Mild Anxiety	≤17	3(8.33%)	6(16.67%)
Mild to Moderate Anxiety	18 to 24	0(0%)	5(13.89%)
Moderate to Severe Anxiety	25 to 30	3(8.33%)	6(16.67%)
Very Severe Anxiety	>30	30(83.33%)	19(52.78%)
Minimum score		3	6
Maximum score		47	47
Mean score		36.55±11.09	29.55±11.12
Mean % Anxiety score		65.27±19.81	52.77±19.87

Mean anxiety score in mandala colouring therapy was 36.55±11.09 and in free drawing it was 29.55±11.12.

B. Assessment with level of post test Anxiety score

n=72

		Level of Post Test Anxiety Score	
Level of Anxiety Score	Score Range	Mandala Colouring Therapy	Free Drawing
Mild Anxiety	≤17	36(100%)	36(100%)
Mild to Moderate Anxiety	18 to 24	0(0%)	0(0%)
Moderate to Severe Anxiety	25 to 30	0(0%)	0(0%)
Very Severe Anxiety	>30	0(0%)	0(0%)
Minimum score		0	2
Maximum score		4	13
Mean Anxiety score		2.22±0.89	7.08±2.92
Mean % Anxiety score		3.96±1.60	12.64±5.21

Mean anxiety score in mandala colouring therapy was 2.22±0.89 and in free drawing it was 7.08±2.92.

Table 3: Comparison of the effectiveness of the mandala colouring therapy and free drawing on anxiety level among hospitalized children from selected hospitals

n=72

Overall	Mean Difference	SD	t-value	p-value
Mandala Colouring Therapy	34.33	11.05	4.55	0.0001
Free Drawing	22.47	11.02		S,p<0.05

Mean difference was higher in the Mandala group it indicates that Mandala Colouring Therapy was more effective than free drawing in reducing anxiety among hospitalized children.

Discussion

The findings of the present study revealed that hospitalized children experienced high levels of anxiety at baseline in both intervention groups. In the Mandala Colouring Therapy group, 83.33% of children had very severe anxiety, while 16.67% had severe anxiety. In the Free Drawing group, 52.78% had very severe anxiety and 47.22% had severe anxiety. The mean pre-test anxiety score was 36.55 ± 11.09 in the Mandala Colouring Therapy group and 29.55 ± 11.12 in the Free Drawing group. These findings highlight the emotional distress experienced by children during hospitalization.

Mandala Colouring Therapy demonstrated a significant reduction in anxiety among hospitalized children. The mean anxiety score decreased from 36.55 ± 11.09 in the pre-test to 2.22 ± 0.89 in the post-test, with a mean reduction of 34.33. The calculated paired 't' value was 18.64, which was statistically significant at $p < 0.05$. These findings indicate that Mandala Colouring Therapy was effective in reducing anxiety among hospitalized children.

Similarly, Free Drawing was found to be effective in reducing anxiety. The mean anxiety score decreased from 29.55 ± 11.12 in the pre-test to 7.08 ± 2.92 in the post-test, with a mean reduction of 22.47. The calculated paired 't' value was 12.22, which was statistically significant at $p < 0.05$. This suggests that Free Drawing can serve as a useful non-pharmacological intervention for managing anxiety among hospitalized children.

A comparison of the post-test anxiety scores revealed that the Mandala Colouring Therapy group had a lower mean score (2.22 ± 0.89) than the Free Drawing group (7.08 ± 2.92). The difference between the groups was reported to be statistically significant at $p < 0.05$, indicating a greater reduction in anxiety in the Mandala Colouring Therapy group compared with the Free Drawing group.

The greater reduction in anxiety observed with Mandala Colouring Therapy may be associated with its structured patterns, repetitive colouring activity, and sustained attention. These features may promote relaxation, concentration, and emotional regulation. In contrast, Free Drawing allows children to express their thoughts and feelings freely, which may help reduce emotional tension and psychological stress.

The findings suggest that both Mandala Colouring Therapy and Free Drawing are potentially useful, child-friendly, non-pharmacological approaches for reducing anxiety during hospitalization. These activities are relatively simple to administer and may be incorporated into routine pediatric nursing care, depending on the child's age, interests, and clinical condition.

In conclusion, the present study demonstrated a reduction in anxiety scores following both interventions, with a greater observed reduction in the Mandala Colouring Therapy group. Therefore, Mandala Colouring Therapy may be considered a useful complementary intervention for promoting emotional comfort among hospitalized children. Further studies with larger samples and appropriate statistical comparisons between groups are recommended to strengthen these findings.

Conclusion

During this study, it was observed that hospitalized children were anxious due to hospitalization and showed interest and cooperation during art-based activities. The present study assessed the effectiveness of Mandala Colouring Therapy versus Free Drawing in reducing anxiety among hospitalized children aged 6–12 years. The

results of the study revealed that the pre-test anxiety scores in both groups were high, which were significantly reduced in the post-test after the intervention.

Based on the statistical findings, it was evident that both Mandala Colouring Therapy and Free Drawing were effective in reducing anxiety among hospitalized children. However, Mandala Colouring Therapy showed greater reduction in anxiety scores compared to Free Drawing. The study also revealed that selected demographic variables such as age and duration of hospitalization were associated with anxiety levels, whereas gender and previous hospitalization were not associated. The study helps to reduce anxiety among hospitalized children and provides a simple and effective non-pharmacological method to manage anxiety. Therefore, Mandala Colouring Therapy is an important, safe, and cost-effective intervention that can be easily implemented in hospital settings to reduce anxiety among hospitalized children.

Limitations of present study

1. The study was done in only one hospital, so the findings cannot be applied to all hospitalized children.
2. The number of children included in the study was small, which may limit generalization of the results.
3. The intervention was given only for three days, so the long-term effects were not assessed.
4. The study included only children aged 6–12 years; therefore, the results cannot be applied to other age groups.

Recommendations

On the basis of the finding of the study, it is recommended that the following studies can be conducted.

1. The researcher recommends that paediatric nurses and nursing students be trained to use art-based interventions such as Mandala Colouring Therapy and Free Drawing in paediatric wards.
2. Further studies can be conducted on a larger sample and in different hospital settings to enhance the generalizability of the findings.
3. Future research can be carried out to assess the long-term effects of Mandala Colouring Therapy on anxiety among hospitalized children.
4. Future studies can be conducted to compare Mandala Colouring Therapy with other non-pharmacological interventions such as play therapy, music therapy, or storytelling for reducing anxiety among hospitalized children.
5. Further research can be carried out to assess the effectiveness of Mandala Colouring Therapy among different age groups and children with chronic illnesses.

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