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Evaluate the Impact of Music Therapy on Stress and Anxiety among Hospitalized Children

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Abstract: Backgrounds: Hospitalization can negatively affect the emotional and psychological well-being of children, particularly those aged 6 to 12 years, leading to anxiety, fear, and behavioral changes. Music therapy is a non-pharmacological intervention that is increasingly applicable in reducing anxiety and facilitating relaxation among children in hospital**.** The aim of the study was to assess the effectiveness of music therapy in decreasing anxiety among the children in the hospital. **Methods:** A true experimental pre-test–post-test control group design was employed. A total of 300 children aged 6–12 years were randomly assigned to the experimental group (n=150) and the control group (n=150). The experimental group received three 30-minute sessions of music therapy over three consecutive days, while the control group received routine care. Anxiety levels were assessed using standardized tools, and the data were analyzed using descriptive and inferential statistics, including the paired t-test. **Results:** The findings showed a significant reduction in anxiety among children in the experimental group following the intervention. The proportion of children with low anxiety increased to 90.0%, while high anxiety reduced to 0.0%. The mean anxiety score significantly decreased from 56.10 to 32.05 ($t = 23.737$, $p < 0.001$). In contrast, the control group showed no significant change in anxiety levels. **Conclusion:** The study has identified music therapy as a very efficient tool in alleviating anxiety in children admitted to hospitals and it should be considered as an adjunctive tool in child care.

Key Words: Hospitalized Children, Non-Pharmacological Intervention, Music Therapy, Anxiety

INTRODUCTION

Hospitalization may interfere with the usual life of children and impact on their emotional and psychological state adversely. This is particularly vulnerable to children of school going age (612 years) because of the new environment exposure, family loss, medical procedures, and changes in routine. These can lead to anxiety, fear, sleeps and behaviour change. The coping mechanisms at this stage of development are at the early stages of development and this exposes them to vulnerability to stress [1,2,3]. In addition to this, the caregivers also experience stress and their anxiety may influence the emotional state of the child and vice versa since anxiety of caregivers may influence the hospital experience and compliance to treatment among their children [4].

Non-pharmacological interventions are becoming more and more popular as a way of eliminating stress and anxiety in hospitalized children since they are safe and simple to implement. Music therapy is one of these that have found extensive application in the pediatric care. It involves music hearing, live music or interactive music. Research has shown that music therapy can help in reducing anxiety, enhancing mood, normalizing vital signs and enhancing sleep in children [5,6,7]. It is especially suitable with children of the age group between 6 and 12 years old as it enables active participation, socialization and release of feelings.

Music therapy aids in reduce anxiety in a number of ways. First, it acts as a diversion and the child does not think about pain and fear in surgery or staying in a hospital [8,9]. Second, it enables children to show their feelings and communicate to the healthcare facilities and family members to decrease feeling isolated. Third, relaxation could be promoted with the help of music whose effect reduces physiological reactions of stress and improves sleep quality

[10,11]. Also, the intervention of the trained music therapists who can adjust the intervention to the level of development and the preferences of the child can enhance the success of the therapy [12].

According to the results of a study carried out on the hospitalized children between the ages of 6-12 years, music therapy can be employed in alleviating stress and anxiety. However, the outcomes may vary depending on the type of intervention and a clinical setting. Systematic reviews confirm the efficacy of music therapy in general, but mention differences in study procedures, types of interventions, and outcome measures. Numerous studies document improvement of anxiety and mood, although the results are not entirely consistent across all studies, with consistent findings in children, parents, and healthcare professionals [13,14].

The aim of the current research paper is to conduct a summary of the available literature on the efficacy of music therapy in the management of stress and anxiety in hospitalized children (6-12 years old). It considers different types of music interventions and different hospital situations, as well as indicates research gaps. In general, music therapy seems to be a valuable part of the holistic family-based strategy of stress minimization among hospitalized children.

Aim of the Study

The study aimed to evaluate the image of music therapy in reducing stress and anxiety among hospitalized children from 6 to 12 years in selected hospital.

METHODS

A quantitative study was conducted using a true experimental pre-test–post-test control group design. The study was carried out in a selected hospital among hospitalized children aged 6–12 years. A total of 300 children were selected using a simple random sampling technique from the eligible population. After selection, the participants were randomly assigned into two groups: experimental (n = 150) and control (n = 150), ensuring each child had an equal chance of being placed in either group. This randomization helped maintain group comparability and reduce selection bias. The study included children aged 6–12 years who were experiencing stress during hospitalization, were willing to participate, and had consent from their caregivers. Children were excluded if they were uncooperative during data collection, had serious health conditions requiring intensive care, or had severe psychological or cognitive impairments.

Tools and Instruments

Structured and standardized instruments which included a demographic proforma to gather the baseline characteristics of the children, the Perceived Stress Scale (PSS) to evaluate the level of stress and standardized anxiety scale to gauge anxiety of the hospitalized children were used to collect the data.

Intervention

The experimental group received 30 minutes a day of music therapy, on the three days, in a relaxed and quiet environment to age-related music. The control group was provided with regular hospital services with no extra intervention during the study.

Data Collection Procedure

Data collection was done in three phases. To begin with, a pre-test was carried out to determine the level of stress and anxiety of both experimental and control groups prior to the process. The next phase was intervention that involved the application of music therapy on experimental group over three consecutive days after which the control group was left to receive normal care. Lastly, the post-test was done to both groups at the end of the intervention period to measure the change in the levels of stress and anxiety.

Ethical Considerations

The research was carried out under ethical approval of the Institutional Ethics Committee in the past (EC/NEW/INST/2024/TN/0479). The hospital authorities were also requested to allow the permission. A request was made to the parent/caregivers to give informed consent and the children assent. The privacy and anonymity of the participants were guaranteed and they were informed of the right to withdraw out of the study at any given time without any repercussions.

Data Analysis

The acquired data were discussed with the assistance of descriptive and inferential statistics. The data was summarized using descriptive statistics like frequency, percentage, mean and standard deviation. The inferential statistics applied included the paired t-test, which was used to determine the effectiveness of music therapy. A p-value below 0.05 was considered statistically significant.

RESULTS

The results indicate that the majority (67.3%) of participants in the experimental group were aged 6–7 years (38.7%), male (45.3%), and had mothers as their primary caregivers (88.0%). Most of the children were first-born (74.0%). Regarding parental education, 51.3% of fathers and 40.7% of mothers had education up to the secondary level. A large proportion of participants belonged to nuclear families (78.7%), had a monthly family income of ₹8000 (52.7%), and resided in semi-urban areas (90.0%). In terms of hobbies, the majority preferred watching television (47.3%) (Figure 1).

In the experimental group, moderate anxiety (92; 61.3%) and high anxiety (55; 36.7%) reduced to 15 (10.0%) and 0 (0.0%), while low anxiety increased from 3 (2.0%) to 135 (90.0%) post-test. In the control group, moderate anxiety slightly decreased from 131 (87.3%) to 124 (82.7%), low anxiety increased from 14 (9.3%) to 18 (12.0%), and high anxiety increased from 5 (3.4%) to 8 (5.3%). This implies that there is a significant decrease in anxiety in experiment group relative to a small change in the control group (Table 1).

The mean anxiety score in the experimental group lowered to 32.05 (post-test) and 56.10 (pre-test) with a mean

Table 1: Comparison of Pre-test and Post-test Level of Anxiety – Experimental and Control Groups (N = 300)

Level of Anxiety	Experimental Pre-test f (%)	Experimental Post-test f (%)	Control Pre-test f (%)	Control Post-test f (%)
Low	3 (2.0%)	135 (90.0%)	14 (9.3%)	18 (12.0%)
Moderate	92 (61.3%)	15 (10.0%)	131 (87.3%)	124 (82.7%)
High	55 (36.7%)	0 (0.0%)	5 (3.4%)	8 (5.3%)
Total	150 (100%)	150 (100%)	150 (100%)	150 (100%)

Table 2: Comparison of Pre-test and Post-test Mean Anxiety Scores–Experimental and Control Groups (N = 300)

Group	Test	Mean	Mean Difference	Standard Deviation	Paired 't' value	p-value	Significance
Experimental	Pre-test	56.10	24.053	11.880	23.737	0.000*	Significant
	Post-test	32.05		8.161			
Control	Pre-test	48.15	-0.0400	9.37	-0.054	0.957	Not Significant
	Post-test	48.19		10.32			

Table 3: Association of Demographic Variables with Post-test Anxiety–Experimental Group (N = 150)

S. No	Demographic Variable	Category	Frequency (f)	χ^2, df, p-value, Sig
1	Age (years)	6–7 years	58	χ^2=30.503, df=2, p=0.000, NS
		8–9 years	39	
		10–11 years	53	
2	Sex	Male	68	χ^2=13.821, df=1, p=0.000, NS
		Female	82	
3	Primary Caretaker	Mother	132	χ^2=122.22, df=1, p=0.000, NS
		Father	18	
4	Order of Birth	First child	111	χ^2=47.436, df=1, p=0.000, NS
		Second child	39	
5	Father's Education	Secondary	77	χ^2=17.580, df=1, p=0.000, NS
		Graduate & above	73	
6	Mother's Education	Illiterate	14	χ^2=16.667, df=2, p=0.000, NS
		Secondary	61	
		Graduate & above	75	
7	Type of Family	Nuclear	118	χ^2=61.458, df=1, p=0.000, NS
		Joint	32	
8	Monthly Family Income	₹8,000	79	χ^2=18.545, df=1, p=0.000, NS
		₹10,000	71	
9	Place of Residence	Semi-urban	146	χ^2=36.986, df=1, p=0.000, NS
		Urban	4	
10	Hobbies	Playing games	34	χ^2=72.619, df=3, p=0.000, NS
		Watching TV	71	
		Reading books	17	
		Riding bicycle	28	

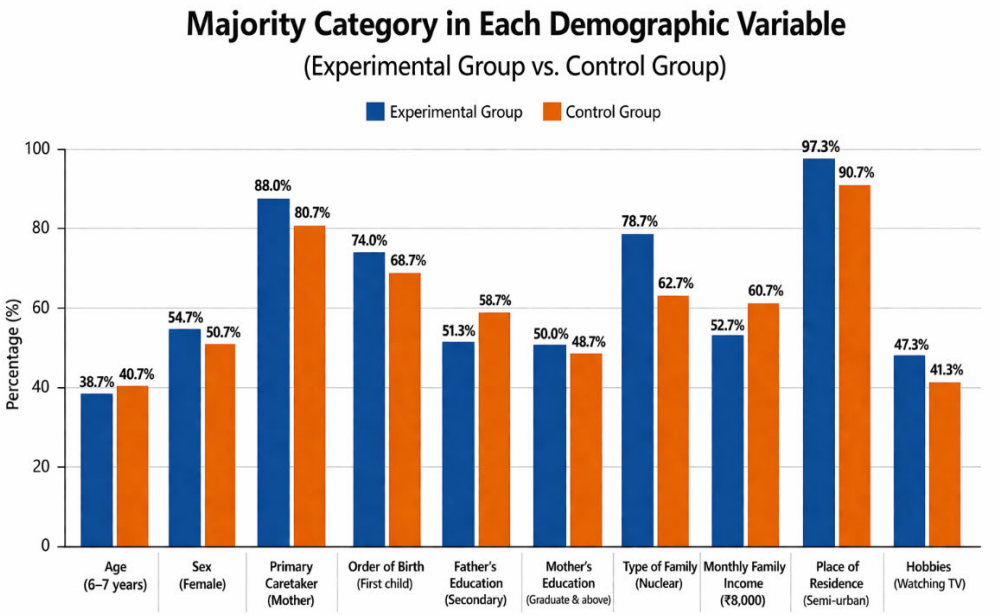

Figure 1: Demographic Variables of the Participants

difference of 24.053 and standard deviations of 11.880 (pre-test) and 8.161 (post-test). The paired t value (t = 23.737, p = 0.000) shows statistically highly significant decrease in anxiety.

The mean score of anxiety in the control group was almost the same in the pre-test (48.15) and the post-test (48.19) with a mean difference of insignificant -0.0400 with standard deviations of 9.37 and 10.32 respectively. The t-value (t = -0.054, p = 0.957) shows that there is no statistically significant difference (Table 2).

According to the Table 3, all the chosen demographic variables, such as age, sex, primary caretaker, order of birth, parental education, family type, monthly income, residence, and hobbies did not statistically correlate with the level of post-test anxiety in the experimental group ($p>0.05$). This shows that such demographic factors did not have any effect on the post-test anxiety outcomes (Table 3).

DISCUSSION

The findings suggest that the intervention had a significant and statistically significant effect on anxiety reduction of the participants in the experimental group. This can be seen through a significant change in the categories with moderate (61.3%) and high anxiety (36.7%) to low anxiety 90.0 percent and the total absence of high anxiety. Moreover, the anxiety score also reduced significantly (56.10 to 32.05, t = 23.737 $p<0.001$) which proved a strong intervention effect [15,16)].

Conversely, the control group did not exhibit any significant results in the change of the anxiety levels, with the mean scores being nearly identical (48.15 to 48.19; t = -0.054, $p>0.05$) which confirms the earlier results that anxiety usually does not decrease without the active intervention [17,18].

In addition, there was no strong correlation between the levels of anxiety after the test and the demographic data (age, sex, parental education, or socioeconomic status), which means that the intervention was efficient in various groups. Comparable evidence has been observed in randomized controlled trials of non-pharmacological interventions [19,20,21].

The fact that the paired t-test at the level of great significance was significant in the experimental group and the non-significant values were observed in the control group are the methodological reasons that prove that there is a causal effect between the intervention and the reduction of anxiety, and that the same effect could be traced to the intervention per se, respectively [22,23].

Whereas there are slight differences in studies because of variations in sample attributes, measurement instruments and intervention regimes, the compelling evidence when viewed across studies is that there is a significant reduction in anxiety with interventions that are targeted with or without the variation in the demographic background [24,25].

CONCLUSION

The current research found that the intervention was effective in alleviating stress and anxiety in hospitalized children. Mean stress and anxiety scores in the experimental group were significantly reduced after the intervention but did not show significant improvement in the control group. The similarity between the two groups in demographic features provided a valid basis for comparison. In general, the results justify the utility of the intervention as a supportive measure in pediatrics.

Recommendations

The study findings suggest that the intervention should be included in the regular nursing practice to assist in alleviating stress and anxiety in children who are hospitalized. Healthcare professionals and nurses need to be trained on how to apply this intervention. Further research is needed to use a bigger sample and across various hospitals to enhance the external validity of the findings. It is also recommended that long term follow up studies should be done to assess the long term effectiveness of the intervention. Moreover, the same interventions can be implemented to other age groups and clinical environments to improve the work with pediatric patients.

Limitations

The research had some limitations which must be taken into consideration when interpreting the findings. It was also small in sample size and was restricted to only one hospital, which limits the generalization of the findings. The intervention and follow-up time was limited and thus it was not easy to determine long term outcomes. It is likely that the accuracy of the responses was affected by the use of a self-reported and observational tools. In addition, the research was limited to children between the age of 6 and 12 years and as such the results cannot be used to represent other age groups.

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