

A Comparative Study the Effect of Painting and Storytelling on Children's Sleep with Autism

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ABSTRACT

Introduction: Sleep (resting) has a significant impact on life quality of autism patients. including mental and physical health. realizing this relationship, has a direct impact on clinical benefit, and applying different methods such as children's painting and storytelling, can be effective on sleep. Therefore, the aim of present study was to compare the effect of painting and storytelling on sleep quality in children with autism.

Methods: This study was a quasi-experimental interventional study, conducted in 2020. The researching samples consisted of 35 children with autism referred to the rehabilitation Medical Sciences center of Iran university (12 in storytelling group, and 11 in painting group and in control group). Data collection tools included demographic features questionnaire and CSHQ sleep habits questionnaire which were collected in two phases before and after the intervention. The intervention was performed at least 5 nights a week for one month. Data analysis was done using statistical tests level of 0.05.

Results: The mean age in storytelling, painting and control groups were 7.58 78 1.78, 6.36 75 1.75 and 6.58 78 1.78 respectively. The results indicate that the average sleep in the two groups of storytelling and painting showed a significant difference ($p < 0.05$). However, no significance difference was observed in average sleep for the two pre-test and post-test periods ($p > 0.05$) The sleep difference averages for the storytelling and painting groups were not so different ($t = 1.64$, $p = 0.116$)

Conclusion: Storytelling and painting were effective hospitalized children sleep improvement. None of Painting and storytelling are superior, both are equally effective. According to the results, it recommended to do more interventions, specially using painting and storytelling in children with autism, because it is inexpensive, effective and practical in managing sleep disorders.

KEYWORDS

Painting, Storytelling, Children's Sleep, Autism.

Introduction

The incidence amount of autism spectrum disorder has been reported in 2 to 5 cases per ten thousand live births [1]. Boys are 3 to 4 times more likely to be infected than girls [2]. Autism disorders begin in the early years of life and last lifetime in a person and are also associated with some degree of retardation [1, 3]. Sleep disorders in children with autism in 40-80% of cases, exist in all ages [4-8].

Sleep problems in autism disorders are the prominent features. Complex interactions between biological, psychological, social / environmental, family, and parenting ways might lead to sleep disorders.

Cortesi et al. Stated that parents of these children had been reported more impaired body movement behavior (anxiety and stereotyped behaviors) [8]. Medication is prescribed to improve their sleep, but there is little evidence of its effectiveness in treating these people. For example, melatonin had a good short-term effect, but there is no information for its long-term side effects [9, 10]. Numerous studies have shown the effect of art therapy on mental disorders.

Art is vital for children. This is a way in which a young child can interact with it and understand the environment [11]. Freilich concluded that art therapy could enhance the social, emotional, and academic adjustment of children with learning disabilities [12]. Storytelling- due to their great interest in stories, in mentally retarded children-, has been more interesting and enjoyable. And do not lead to educational stress and therapeutic environments and function concerns. Storytelling can teach children the social skills [13].

The results showed that implementation of role-playing in storytelling, promotes emotional, cognitive and children healthy with autism disorder [14]. The story will provide an educative context, especially for the students who need a rich situation to know the concepts of patient care [15]. Non-verbal communication with children is important. By comprehending children's drawings, we will get one step closer to know their surroundings. Recently, this communication channel with sick children has been neglected [16].

Painting is a reliable source of information that is used to analyze their thoughts and about anything that pertains to them [17]. The most satisfying and variant environment we can offer children, is painting which causes natural creativity and freedom to express ideas and feelings through color, design, shape and form [18].

The proper sleep patterns can heal sleep disorders. Accurate knowledge of sleep, effective factors on sleep, sleep problems and the treatments, can help heal the children's sleep efficiently [19]. Drawing pictures and storytelling are inexpensive and simple methods to use for families with the least level of literacy.

Therefore, considering the importance of autism and the significant role of anxiety in this disease and applying painting and storytelling as one of the most effective ways of this disease, so far, no related study was done in Iran, according to the authors' knowledge. Since home environment and

parental relationship are the main sources of kid's security, the aim of present study is determining the painting and storytelling impacts on the sleep of children with autism.

Methodology

Study Plan and the Participants

This study is a quasi-experimental intervention in which the research samples included 35 children with autism who have referred to rehabilitation centers of Iran University Medical Sciences. The study population all infected children that had been referred to the center. Sampling method was available in this study. Individuals who met the inclusion criteria were selected intervention and control groups until the quorum was reached. 12 persons in storytelling group and 11 people in painting group had proper cooperation. These people were children aged 4 to 10 years old with autism who referred to the center. Inclusion criteria contains the age between 4 to 10, not taking sedative at home, definitive diagnosis of autism for the child, family willingness to cooperate and children with autism level one. Exclusion criteria include not performing the intervention at least 5 nights a week and receiving sedatives.

Data Collection Tools

The parents were provided two questionnaires tools including CSHQ sleep habits questionnaire, demographic information form.

Demographic information questionnaire: This questionnaire was used to evaluate the descriptive part of the study, which included information such as: child age, child gender, child birth rank, place of residence, father and mother age, father and mother education.

Children's Sleep Habits Questionnaire (CSHQ): The CSHQ questionnaire consists of 8 main branches that is filled by asking parents and the how they evaluate their children's sleep during the last week. Parents have three options to choose from for each question:

Including: (5 – 7 nights in a week), (sometimes 2 – 4 nights in a week) and rarely (0 – 1 nights in a week). The 8 main branches are: 1- Resistance of sleep time 2- Delay of sleep onset time 3- Sleep duration 4- Sleep anxiety, 5- Frequent night awakenings 6- Parasomnia 7- Respiratory diseases at sleep 8- Daily drowsiness, Cronbach's alpha for the whole questionnaire was 0.08. The convergence validity ranged from 0.4 to 0.86 to the divergence validity ranged from 0.006 to 0.66. scoring based on the Likert scale is given as 1, 2 and 3 points, so that if a behavior has never happened or occurs once a week, one point; If a behavior occurs two to four times a week, a score of 2 and, if a behavior occurs five or more times a week, a score of 3 is given. Therefore, a higher score on this scale means more problems in this area. Of course, questions 1, 2, 3, 10, 11 and 26 have opposite scores [20].

Study Implementation Process

After receiving an introduction letter from Iran University of Medical Sciences, the researchers went to rehabilitation centers under the supervision of the university and performed sampling.

At the initial part of the study, the objectives of the study were explained to the parents of the children participating in the project. In addition, written consent was obtained from all individuals participating in the study. Then the pre-test of both groups was filled through the mentioned questionnaires. the intervention group was asked to start painting every night after dinner and before sleep rituals such as child brushing under the supervision of parents. Then he paints and remove the sheet from the notebook and stick it to the child's room wall next to his bed so that the child can look at it.

The intervention was done at least 5 nights a week for a month. Each week, the family took a photo of the painting on the wall and sent it to the researcher to make him sure about the process of intervention. In the storytelling group, if the family and the child want to do it, the story is read by parents to the child before going to bed every night. After one month, the questionnaire was filled by the parents.

Data Analysis

In the present study, for descriptive analysis, qualitative variables, number and percentage indices and for quantitative variables, mean and standard deviation have been reported. Also for inferential analysis of data from Kolmogorov-Smirnov statistical tests for checking the normality of the data, paired t-test and Wilcoxon to compare the pretest and posttest, the test of analysis of variance and Krus.

Kal-Wallis test was used to compare the three groups (storytelling, Drawing and control) and independent t-test and Mann-Whitney test were used to compare two by two sets of mean differences.

Furthermore, SPSS software version 26 and Graphpad Prism version 8.2 were used to analyze the collected data. Finally, the significance level of $P < 0.05$ is considered to test the hypotheses.

Ethical Approval

This study was conducted after receiving the ethics code 1399.940 IR.IUMS.REC 0 from the ethics committee of Iran University of Medical Sciences.

Results

35 kids with the average age of $1/8 + 6/86$ participated in this study that 21 persons (%60) were boys and 14 persons (%40) were girls. The average age in storytelling, painting and control group was $1/78 + 7/58 + 1/75 + 6/36 + 1/78 + 6/58$. The average age of mother in storytelling, painting and control group was $5/4 + 34/08 + 4/5 + 35/64 + 3/08 + 30/33$ and about fathers in storytelling, painting and control groups was $36/92, 39/45$, and $32/75$ respectively. the participant's information was reported in Table below.

Tables 1.Frequency distribution of demographic variables in the three groups studied

control		control		painting	storytelling	level	Variable
(60) 21	(50) 6	(72.73) 8	(58.33) 7	boy	Gender		
(40) 14	(50) 6	(27.27) 3	(41.67) 5	girl			
(40) 14	(66.67) 8	(36.36) 4	(16.67) 2	1st	Child in family		
(31.43) 11	(33.33) 4	(18.18) 2	(41.67) 5	2nd			
(25.71) 9	0	(36.36) 4	(41.67) 5	3rd			
(2.86) 1	0	(9.09) 1	0	4th			
(85.71) 30	(83.33) 10	(100) 11	(75) 9	city	Location		
(14.29) 5	(16.67) 2	0	(25) 3	village			

The results of comparing the sleep average in the two pre-test and post-test periods, comparing the sleep average in three groups of storytelling, painting and control group for each period and comparing the sleep average between the pre-test and post-test period in each group have been reported in table (2). The results showed that the sleep average in two groups of storytelling and painting have a significant difference, despite of for the control group wasn't a significant difference in sleep average for the two pre-test and post-test periods. figure (1).

Table 2.Comparison of the sleep average for separate groups in two periods wasn't a significant difference in sleep average for the two pre-test and post-test periods. figure (1)

Variable	Group	Before		After		T and P-Value	T and P-Value
		Mean	SD	Mean	SD		
Sleep	Storytelling	61.73	13.43	49.55	4.97	T = 3.63, P* <0.001	T = 3.32 P* = 0.002
	Painting	52.83	25.43	46.50	22.23	T = 4.2, P* <0.001	
	Control	58.42	5.485	60.42	6.667	T = -1.24, P = 0.24	
		F = 0.81		F = 3.31			

P = 0.45		P* = 0.04	
F = ANOVA or Kruskal - Wallis		T = Paired T-Test or Wilcoxon	
		P = Pvalue	

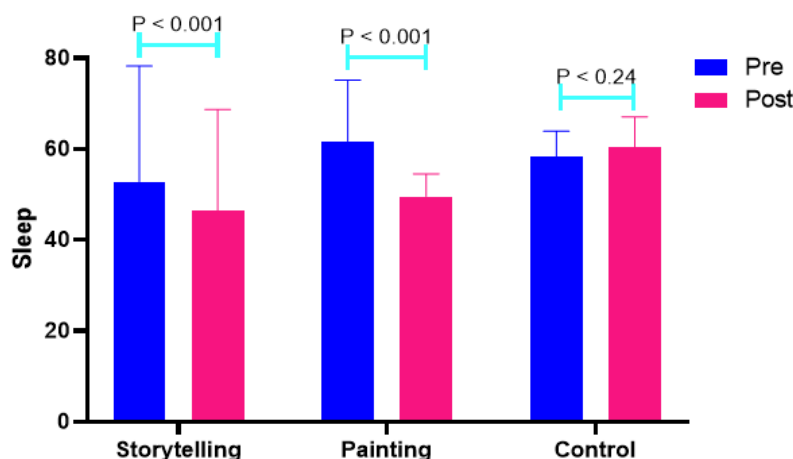


Figure 1. Comparison of average sleep in pre-test and post-test periods by groups the two-by-two comparison results of the mean differences, (post-test minus pre-test) are reported in Table (3). According to the results of this table, the sleep average differences for storytelling group are significantly higher than the control group, so that the average differences are reported as -8/3. Also, the sleep average differences for the painting group were significantly higher than the control group, so that the average differences were reported to be -14.2. Further results indicate that the sleep mean differences for the storytelling and painting groups are not significantly different. In other words, the storytelling and painting groups have reduced the sleep average equally and have shown the same effect in reducing the sleep average

Table 3. Two by two comparison of the means difference

Variable	Group (I)		Group (J)		Difference (I-J)		T and P-Value	Effect size
	Mean	SD	Mean	SD	Mean	SD		
Sleep	Storytelling		Control		8.3-	2.2	-3.8	-0.61
	-6.3	5.2	2.0	5.6			0.001	
	Painting		Control		-14.2	3.6	-3.92	-0.63
	-12.2	11.1	2.0	5.6			0.001	
	Storytelling		Painting		5.85	3.6	1.64	0.32
	-6.3	5.2	-12.2	11.1			0.116	

Discussion and Conclusion

This study was done to determine the comparative research the painting and storytelling effects on children's sleep with autism. In general, there was not statistically significant difference between two intervention groups in terms of variables. Therefore, it can be concluded that the results of sleep comparison between intervention groups were probably due to intervention factors.

According to the results in the present study, the average score of sleep disorders in children with autism in the painting group in the post-intervention stages in compared to the pre-intervention stages was decreased. It indicates the sleep improvement in this group after the intervention. The benefits of art therapy are vast. by helping people improve their mental, emotional and even physical condition. It can promote life.

The research of Naseri and et al was conducted to investigate the effectiveness of painting therapy on self-esteem and self-efficacy for homeless children aged between 5 to 12 years in Karaj. The results revealed that painting therapy as a psychological intervention might be an appropriate technique to increase self-esteem and self-efficacy of the children who are under supervision in supporting centers.

The research of Gholamzade Khadar and et al.'s was aimed at the effects of painting therapy in reductions symptoms of separation anxiety disorder (SAD) in primary school boys, indicated that the intervention group had a significant reduction in SAD symptoms while the control group did not show a significant difference [21]. These studies were in line with our study. Another study was conducted about the effectiveness of art therapy based on painting therapy for decreasing anxiety in children with stuttering, as a quasi-experimental (pre-test-post-test with a control group). The results showed that art therapy based on painting therapy, is an effective way to reduce anxiety in children [22, 23].

that is consistent with the present study and the therapists can use painting along with other treatments to improve children's sleep. In the study by Rezaei et al., The effects of painting therapy were checked on reducing anxiety, and primary aggression in male students having externalized Disorders. The results showed that painting therapy is effective in improving behavioral problems such as externalizing disorders for primary school students [22].

Therefore, painting therapy can be used to reduce children's behavioral problems as one of the healing interventions. Despite the fact that present study was not a painting therapy and of course children paint by their parents before going to bed as they wish and draw their own mental images from the beginning, but it has improved their sleep. The process of drawing, painting, or building is a complex process in which children gather several factors of their experience to create a new and meaningful combination. In selecting process, by interpreting and modifying these elements, children have given us more than just a picture or a sculpture. They have given us a part of themselves: how they think, feel and see [21]. Greenberg points that connecting to one's emotions, by exploring and reflecting on them, is the key for healing [24]. The results of the study by Xie Jing et al, inconsistent with the present study. In this study, the effect of painting on

quality of life was investigated and the results showed that painting did not have a significant effect.

One of the reasons for the difference between this project and the present study is the difference in sample size and the target group in which people with schizophrenia in a piece of research and people with autism in present study. Storytelling is another common relaxing program for children while they sleep. According to the results of the present study, the mean score of sleep disorders in children with autism in the storytelling group decreased in the post-intervention stages compared to the pre-intervention stage and showed an improvement in sleep condition in this group after the intervention. The study by Nasiri et al. as conducted to investigate the effectiveness of storytelling on social interactions of boys with autism.

The results manifested that storytelling significantly increased social interaction skill of children having autism. The results showed the applicability of storytelling and its structure in improving social interactions in children with autism [25]. A study by Ajrloo et al. showed the effects of story therapy on reducing anxiety and improving sleep habits in children with cancer undergoing chemotherapy. The results showed that story therapy reduced anxiety symptoms and improved sleep habits in children with cancer undergoing chemotherapy. Therefore, we can use story therapy as an effective technique along with other psychological therapies to treat anxiety and poor sleep habits in children, especially the sick ones [20].

In a study by Yuniartini et al. (2012), the effects of storytelling- therapy before going to bed have been emphasised to improve sleep quality of hospitalized preschool children [26]. Storytelling stimulates the upper brainstem and activates the cerebral cortex through reducing the stimulation of the reticular activating system (RAS), which regulates consciousness. Decreased RAS stimulation will lead to the secretion of serotonin by bulbar synchronizing region cells causing sleep. Storytelling by their parents makes children feel more comfortable and relaxed. Children feel they're at home and, listening to stories can reduce anxiety, and this is one of their habits [27]. Storytelling is a recommended activity, that increases sleep duration time in children [28]. In addition to praying and brushing, it is considered as a positive routine compared to bedtime programs, such as watching TV, playing with toys, and playing high-level activities [29].

This study proved that painting and storytelling help children's sleep. The present study supports the fact that storytelling and painting help parents to communicate their children and be beside them. The obvious limitations of this study was lack of enough accessing to a number of participants and following the procedure correctly by parents uncertainly.

Conclusion

Storytelling and painting are effective to improve sleep disorders of hospitalized children. Painting and storytelling are not superior, both are equally effective. According to the results, it is recommended to do more interventions, especially using painting and storytelling in children with autism, because it is cheap, effective and practical in managing sleep disorders.

Conflict of Interest

The authors did not express any interest conflicts.

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