Clinical and Experimental Health Sciences

Effect of watching cartoon during IV treatment on anxiety and fear levels in children: randomized controlled trial

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ABSTRACT

Objective: The study was conducted as a randomized controlled trial to determine the effect of watching cartoon during treatment on anxiety and fear in children.

Methods: The study was carried out in the pediatric service of a maternity and children diseases hospital between October-November 2019. A total of 92 children (43 in the cartoon group and 49 in the control group) were included in the study. The results of the study were obtained using Socio-Demographic Characteristics Form, Children's State Anxiety Scale, and Children's Fear Scale. The children in the cartoon group watched their favourite cartoon during treatment. No distracting method was applied to the children in the control group during their routine treatment. Anxiety and fear levels in children in the cartoon and control groups were evaluated before and during intravenous treatment. Gender variable was compared using the Chi-square test; whereas age, anxiety and fear variables were compared using the independent sample t test between groups and paired sample t test within group. Significance was evaluated at the level of $p< .05$.

Results: It was found that there was a statistically significant difference between anxiety mean scores of both groups during the IV treatment ($p= .001$). In all evaluations (children, parent and researcher), it was determined that mean scores of fear during the IV treatment were higher in children in the control group compared to children in the cartoon group ($p= .001$). Watching cartoon during IV treatment is effective on reducing anxiety and fear in children.

Conclusion: Fear and anxiety levels in children can be reduced through watching cartoon during medical procedures. ClinicalTrials.gov identifier: NCT04127097.

Keywords: Child, Anxiety, Fear, Treatment, Nursing, Distraction, Non-Pharmacologic

1. INTRODUCTION

One of the most common methods of parenteral application in children is intravenous (IV) drug application (1, 2). IV drug application is given as IV push/direct or IV infusion (3). Children may experience fear and anxiety during these applications. Unmanaged fear and anxiety during these applications may cause the child to refuse treatment and medical care and to have a negative attitude towards healthcare professionals (4, 5).

Non-pharmacological practices can decrease fear and anxiety during the treatment to be performed on children in the hospital (6, 7). Distraction methods are among non-pharmacological practices. Distraction method is an attempt to concentrate the child's attention to another stimulus. This method is widely used to reduce children's fear and anxiety. There are many methods used in hospital procedures to distraction. Kaleidescope, distraction cards, virtual reality glasses, music and balloon inflating are some of these methods (7, 8). Watching cartoon which is among distraction methods, distracts the child. Watching cartoon relieves the child emotionally against fear and anxiety (9, 10). There are studies in the literature stating that watching cartoons during treatment reduces anxiety and fear in children (8, 11-17). Healthcare professionals are responsible for reducing fear and anxiety as much as possible while maintaining patient safety. In order to continue the development of children receiving treatment in the hospital, it is necessary to reduce the stress caused by the diseases and the treatment. Nurses who provide health care have an important role in reducing the stress experienced by the children and the family. Pain reduction and the use of non-pharmacological methods are areas where nurses can demonstrate their independent roles (18, 19) With this study, the awareness of pediatric nurses on the use of cartoon watching method in reducing anxiety and fear caused by treatment in children will increase, and children will be provided with atraumatic care with the widespread use of cartoon watching method. The study was conducted to determine the effect of watching cartoon during IV treatment on anxiety and fear levels in children.

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Research hyposes:

Hypothesis 0 (H0): Watching cartoons in children during treatment has no effect on anxiety and fear.

Hypothesis 1 (H1): Watching cartoons in children during treatment has an effect on anxiety and fear.

Hypothesis 2 (H2): There is a difference in anxiety and fear mean scores between the group where children are shown cartoons during treatment and the control group.

2. METHODS

2.1.Objective

The study was conducted to determine the effect of watching cartoon during the IV treatment on anxiety and fear levels in children.

2.2. Study design

A randomized controlled trial.

2.3. Setting and Participants

The study was carried out in the pediatric service of a maternity and children diseases hospital between October-November 2019. The number of beds in the pediatric ward was 60. An average of 150 children per month were being treated in the hospital with the diagnosis of bronchitis. Since the reason for most of the children to be treated in the hospital is bronchitis, the study was conducted with children with this diagnosis.

The inclusion criteria for children were determined as follows; aged between 4-10 years, expressing themselves verbally, having no visual, auditory or developmental problems, having no pain before IV treatment, having no chronic disease, being first exposure to hospitalization, locating IV catheter, having no problems in the IV catheter areas, being hospitalised due to the bronchitis, taking antibiotics containing ceftriaxone active substance (2x1 IV), taking 1/3 isodex 1000cc/24 h iv infusion therapy.

The sample size was calculated based on the study conducted by Al-Namankany, Petrie, & Ashley (2015) with children in order to determine the effect of video watching model on anxiety level during dental treatment (20). The effect size of the study which was conducted with a total of 80 children (40 in each group) was found to be d=1.482 at the level of α=0.05 and confidence interval of 95%. Accordingly, when taking possible data losses into consideration in the study process; it was decided to conduct the study by including a total of 100 children (50 in each group). 100 children in the sample were assigned to the cartoon and control groups randomly. Randomization was done by the closed envelope method (21). A total of 100 cards (50 in each group) with cartoon and control groups were placed in the sealed envelope. The children were asked to choose one of these envelopes. 4 children, who refused to have evaluation after the treatment, and 3 children, who refused to watch cartoon in the cartoon group and 1 child, who refused to have evaluation after the treatment, in the control group were not included in the evaluation. A total of 92 children (43 in the cartoon group, 49 in the control group) were included in the study. The randomization of the study is shown in CONSORT (Consolidated Standards of Reporting Trials) 2010 (Figure 1).

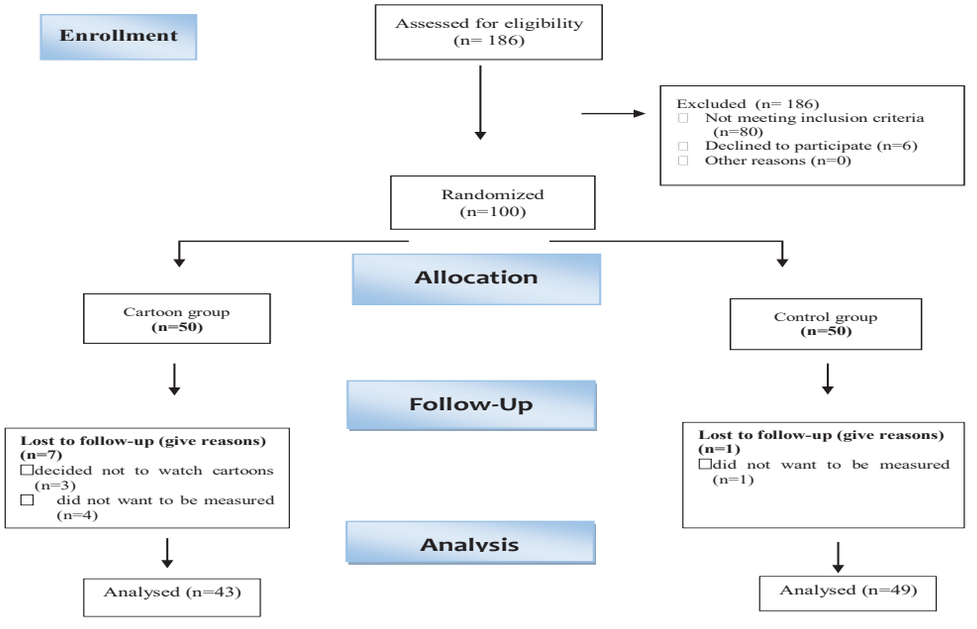

Figure 1. *CONSORT Flow Diagram*

As a result of the power analysis which was performed at the end of the study, the effect size was found to be d=3.762.

2.4. Data Collection Tools

Socio-Demographic Characteristics Form: Prepared by the researcher to obtain information about socio-demographic characteristics in children; the Socio-Demographic Characteristics Form consisted of two questions about the children's gender, age.

Children's State Anxiety Scale (CAS): The scale looks like a thermometer containing a bulb below and horizontal lines with intervals going upward. In the scale which is aimed at children aged four to ten years, the child is asked to mark what she/he feels "at the moment" in order to measure her/his state anxiety. Scoring may range from 0 to 10. (22, 23). Turkish validity and reliability of the scale were conducted by Özalp Gerçeker et al., (2018). The content validity index of the scale is 1.00 (23).

Children's Fear Scale (CFS): The scale developed by McMurtry et al (2011) (24). CFS is a scale making an evaluation between 0-4 and consisting of five facial expressions ranging from neutral expression (0= no anxiety) to scared face (4= severe anxiety). The scale, which can be used to evaluate pain and anxiety levels before and during the procedure and can also be used by families and researchers to evaluate children, is aimed at children aged five to ten years. Turkish validity and reliability of the scale were conducted by Özalp Gerçeker et al. (2018). The content validity index of the scale is 0.89 (23).

2.5. Procedure

The children and parents were showed anxiety and fear scales and were also told how to complete them. The children marked their fear and anxiety levels before the IV treatment on the scales. The parent and researcher (the same researcher) evaluated the level of fear in children before the IV treatment. The children in the groups were determined according to randomisation. The children in the cartoon group watched their favourite cartoon two minutes before the IV treatment until the end of the IV treatment. At the end of the IV treatment, children were asked to mark their fear and anxiety states on the scale. Also the parents and the researcher evaluated children's fear. Only children who had just started intravenous therapy/received the first dose of their treatment were included in the study. These children were not included in the study while receiving their further treatment.

2.6. Statistical analysis

The data were analysed using the IBM SPSS Statistics 22 (SPSS Inc., Chicago, IL, USA) program. Gender variable was compared using the Chi-square test; whereas age, anxiety and fear variables were compared using the paired sample t test. Significance was evaluated at the level of p< .05.

2.7. Ethical considerations

Before starting the study, an ethics committee approval dated 05.07.2019 and numbered 13365 was obtained from the University Scientific Researches and Publications Ethics Committee. After receiving permissions; the children and their parent were informed about the study before starting the study. Written consents were obtained from the parents via the "Informed Consent Form". In addition, they were informed that they could withdraw from the study anytime, without specifying their reason. This study was registered with ClinicalTrials.gov.: NCT04127097.

3. RESULTS

It was determined that there was no statistically significant difference between children in the cartoon and control groups in terms of age, gender, anxiety and fear mean scores (p> .05) (Table 1).

Table 1. *Comparison of socio-demographic characteristics, pre-treatment anxiety and fear scores in children by groups (N = 92)*

	Cartoon Group (n=43)		Control Group (n=49)			
	n	%	n	%	X^2	p
Gender						
Girl	18	41.9	19	38.8	0.008	0.763
Boy	25	58.1	30	61.2		
	X± SD		X± SD		t	p
Age	7.06±1.95		6.73±1.42		0.946	0.346
CAS	2.89±1.57		2.77±1.19		0.414	0.680
CFS						
Child	1.81±1.09		1.67±1.31		0.552	0.582
Parent	1.79±1.08		1.53±1.10		1.140	0.257
Researcher	1.81±1.07		1.51±1.10		1.335	0.185

t: independent sample t test X^2: chi-square test p>0.05
CAS: Children's State Anxiety Scale CFS: Children's Fear Scale SD: Standart Deviation

Table 2. *Comparison of mean anxiety and fear scores during treatment in children by groups (N = 92)*

	Cartoon Group (n=43)	Control Group (n=49)	t	p
	X± SD	X± SD		
CAS	1.34±1.00	7.10±1.92	17.560	.001
CFS				
Child	0.79±0.94	3.61±1.59	10.167	.001
Parent	0.74±0.92	4.26±1.59	12.728	.001
Researcher	0.76±0.99	4.22±1.47	13.304	.001

t: independent sample t test p<0.001
CAS: Children's State Anxiety Scale CFS: Children's Fear Scale SD: Standart Deviation

Table 2 shows a comparison of anxiety and fear mean scores in children in the cartoon and control groups during the IV treatment. It was found that there was a statistically significant difference between anxiety mean scores of both groups during the IV treatment (p= .001). In all evaluations (children, parent and researcher), it was determined that mean scores of fear

during the IV treatment were higher in children in the control group compared to children in the cartoon group (p= .001).

Table 3 shows a comparison of anxiety and fear mean scores before and during treatment within group. It was determined that the anxiety scores of the children in the control group during the IV treatment were statistically significantly higher than before the IV treatment (p=. 000). It was determined that the anxiety scores of the children in the experimental group during the IV treatment were statistically significantly lower than before the IV treatment (p=. 000). In all evaluations (children, parent and researcher), it was determined that the fear score of the children in the control group during the treatment was statistically significantly higher than before the treatment (p=. 000). In all evaluations (children, parent and researcher), it was determined that the fear score of the children in the experimental group during the treatment was statistically significantly lower than before the treatment (p=. 000).

Tablo 3. *Comparison of mean anxiety and fear scores before and during treatment in children by within groups (N = 92)*

	Cartoon Group (n=43)			Control Group (n=49)		
	X± SD	t	p		t	p
CAS						
Before	2.89±1.57	8.600	.000	2.77±1.19	17.439	.000
During	1.34±1.00			7.10±1.92		
CFS						
Child						
Before	1.81±1.09	9.072	.000	1.67±1.31	10.728	.000
During	0.79±0.94			3.61±1.59		
Parent						
Before	1.79±1.08	9.096	.000	1.53±1.10	17.482	.000
During	0.74±0.92			4.26±1.59		
Researcher						
Before	1.81±1.07	8.738	.000	1.51±1.10	16.994	.000
During	0.76±0.99			4.22±1.47		

t: Paired sample t test p<0.001

CAS: Children's State Anxiety Scale CFS: Children's Fear Scale SD: Standart Deviation

4. DISCUSSION

Hospital environment is among places where children are taken frequently apply for health check-up or during diseases as from birth. Children may have to get hospitalised or go through medical procedures, treatments and operations. As a result of these, children may develop fear and anxiety toward diseases, hospital, treatments or procedures (12,25-29). In the study, it was determined that the children experienced fear and anxiety before the treatment (Tablo 1).

Children's anxiety and fear toward medical interventions, staff and hospital environment can be reduced by using the watching video method, which is among distraction methods (16, 30). In the study by Lee et al. (2012), it was reported that making paediatric surgical patients watch animation cartoon was an effective method for relieving preoperative anxiety (11). In their study, Mifflin, Hackmann, & Chorney, (2012), reported that watching videos during inhale induction was an effective method for reducing anxiety in children who underwent ambulatory surgery (12). In their study, Mitrakul et al., (2015) evaluated the effect of visual – auditory glasses on pain and anxiety levels in children aged 5 to 8 years during restorative treatment. In the study, they determined that visual – auditory glasses through which children watched cartoon, reduced their anxiety levels (13). In their study, Nuvvula et al., (2015) examined the effect of 3D glasses on anxiety levels in children who received local analgesia for dental treatment and determined that the video glasses reduced children's anxiety (14). In the study by Al-Khotani, Bello, & Christidis, (2016), it was reported that watching cartoon during dental treatment reduced children's fear and anxiety (15). In their study, Ghadimi et al. (2018), examined the effect of visual distraction method on children's anxiety levels during dental treatment. In the study, they determined that cartoon reduced anxiety levels during the treatment (6). In their study, Çelikol, Tural-Büyük, & Yıldızlar (2019) investigated children's pain, fear and anxiety levels during invasive procedures. In the study, it was reported that children who were made listen to music or watch cartoon during blood collection procedure, had reduced fear and anxiety levels (16). In the study, it was found that there was a statistically significant decrease in the anxiety and fear levels of the children in the cartoon group when the between groups and within group were evaluated (Tablo 2, Tablo 3). It was determined that watching cartoon during the IV treatment reduced fear and anxiety in children.

The main limitation of the study was that randomization was performed without blindness. The blindness could not be made between the children, parent and observer who evaluated the fear of the children. The researcher had to see which children were in the experimental group because they evaluated the children's fears during the IV treatment and the cartoon was watched during the IV treatment.

5. CONCLUSION

In this study which was conducted as a randomized controlled trial to determine the effect of watching cartoon during the IV treatment on anxiety and fear levels in children aged 4 to 10 years, it was found that watching cartoon during the IV treatment reduced children's fear and anxiety levels. Watching cartoon could be used as a non-pharmacological methods to alleviate fear and anxiety during IV treatments, which is one of the most common procedures of hospitalization. Watching cartoon can be used actively in hospitals and can facilitate medical procedures that cannot be performed due to fear.

It can be recommended to conduct studies to compare the watching cartoon, which is among distraction methods, with other non-pharmacological methods in different medical interventions and different age groups.

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Conflict of interest

There is no conflict of interest.

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