Original Article

REDUCING PAIN AND ANXIETY IN CHILDREN: INSIGHTS INTO TRAUMATIC MEDICAL EXPERIENCES

Mahmoud Emad El-Masry

Assistant Professor of Pediatric Nursing, Pediatric Nursing Department, Faculty of Nursing, Cairo University, Egypt
DOI:https://doi.org/10.5281/zenodo.15387674

Abstract: Hospitalization for children disrupts their daily lives and exposes them to a challenging medical environment, leading to anxiety, distress, and potential long-term consequences. This study delves into the impact of pediatric hospitalization on children's well-being, considering their emotional, physical, and developmental aspects. An analysis of the literature reveals that hospitalization can hinder necessary medical procedures in the short term and deter future treatment compliance. Moreover, anxiety-inducing hospital experiences may impede children's growth and emotional development. The study explores how children's reactions to hospitalization are influenced by their age and prior experiences. It is crucial to recognize that hospital rules, routines, and medical interventions can significantly curtail the freedom and independence crucial to a child's development, causing discomfort and unease. This abstract highlight the multifaceted challenges children face during hospitalization, emphasizing the need for tailored support and care to mitigate its adverse effects on their well-being.

Keywords: Pediatric Hospitalization, Children's Well-being, Medical Procedures, Anxiety and Distress, Developmental Impact

1. Introduction

Hospitalization for children means leaving their home and their caregivers and siblings and an interruption of their daily activities and routines. Moreover, hospital wards are often associated with staying in a “cold and medical” setting, facing fear of medical examinations, nursing procedure, pain, uncertainty, and loss of control and safeness (Koukourikos, Tzeha, Pantelidou &Tsaloglidou, 2015)**.** El-mougi et al. (2020) found that the total number of registered ED visits during the study period (3months) at El-Behera hospitals (Damanhour Teaching hospital, Central Abo Hommos hospital and General Kafr El-Dawar hospital) was 130500 patients; the number of registered pediatric ED visits at this period was 29340 patients (22.5%).

Literature about hospitalization during childhood underscores how, in the short term, extreme distress may compromise the completion of a required medical procedure, while in the long term it may lead to difficulties in future intakes that discourage the use of medical treatments (Wilcox, 2018). Moreover, anxiety-provoking

Original Article

experiences (such as hospitalizations) can affect children physical growth, personality, or emotional development (Lerwick, 2016). Hospitalization can become a disquieting and traumatic experience for children. The way children react to such situation until reverting to a stable state depends on their age and experience (Burns-Nader & Hernandez-Reif, 2016). Wilcox (2018) stated that hospital rules and routines, undergone medical procedures such as bedrest, intravenous (IV) infusion, and other measures greatly disrupt the freedom and independence of children in their developing stages, to the extent that they feel uncomfortable with their condition.

Hospitalization and medical procedures can be very stressful for children of all ages. Preparing children ahead of time for the things they may experience in the hospital will reduce much of their fear, anxiety, and pain and will help them cope and trust you and the people they meet in the hospital (Ball, Bindler, Cowen & Shaw, 2017). Common medical procedures to assess and treat patients can cause significant pain and distress. Clinicians should have a basic approach for minimizing pain and distress in children, particularly for frequently used diagnostic and therapeutic procedures. The main areas of practice of a traumatic care are pain, medication, reflexology, massage and game (Karakaya & Cozen, 2016).

In treating children, nurses need to adhere to a nursing philosophy that focuses on family-centered and a traumatic care (Hockenberry, Wilson & Rodgers, 2016).A traumatic care is a therapeutic method that does not induce trauma in children and their families, in that the treatment strives to prevent trauma and maximize children's growth and development throughout their stay at the hospital (Hockenberry & Wilson, 2019). Research conducted by Huff et al. (2019) showed that providing atraumatic care to children under hospitalization can decrease the trauma felt by them and their parents. Hence, it can be inferred that how nurses handle children will largely influence their admission process, and thereby the proper intervention has to be determined in order to optimize the care of hospitalized children.

In general, the nurses already have adequate and considerable knowledge concerning a traumatic care, and most of them demonstrate attitude that endorses the implementation of a traumatic care. The nurse respondents were also capable of performing a traumatic care, although its realization has been suboptimal. This probably owes to a shortage of external supporting factors, such as facilities, infrastructure, etc., which are required in providing a traumatic care at the hospital in order to minimize the fear of hospitalized children (Mediani, Hendrawati & Shidqi, 2019).

Pediatric nurses make use of various techniques to prevent and reduce negative feelings in children and their families. One of them is the traumatic care technique. Its principles include reduction or minimization of physical stressors, prevention of separation of children from their parents, and support for the feeling of control. Using this technique facilitates children's adaptation to their illness and hospital and contributes to reduction of anxiety and procedures that cause pain (Birnie, Noel, Chambers, Uman & Parker, 2018). In addition, it provides support to and strengthens families and helps fulfill families' needs. Therefore, nurses working in pediatric wards should have knowledge of and implement the traumatic care technique. The use of a traumatic care in pediatric nursing and the effects of non-pharmacologic practices to reduce the pain of a hospital child, anxiety, fear and stress are presented in the literature (Mackey et al, 2019).

1.1. Significance of the study:

Hospitalization was often confusing, complex and overwhelming for children and their families (BurnsNader & Hernandez-Reif, 2016). Thus, the nurse as one of the health care providers are constantly in touch with the child, in providing care for children with hospitalization should focus on atraumatic care, by intervening to minimize stressors, maximize the benefits for hospitalization.

Original Article

A traumatic helpful care to prevent psychological problems and optimize the growth and development of children in hospitalization (Santos, Silva, Depianti, Cursino, Ribeiro, 2016). There is a strong correlation between the use of a traumatic care with decreased fear levels in children who underwent hospitalization (Calisir & Karatas, 2019). The application of a traumatic care for the hospitalization of children has been widely studied. However, there is no study yet that focuses on a traumatic care technique on hospitalized children under going intravenous medication procedure. There is also limited supporting evidence regarding this approach. Therefore, the current study should investigate the impact of a traumatic care technique on hospitalized child undergoing intravenous medication.

1.2Aim of the study

The study aim was to evaluate the impact of a traumatic care technique on pain and fear among hospitalized children undergoing intravenous medication.

1.3 Research Hypotheses

The current study would be hypothesized the following:

1- Children who would receive a traumatic care technique would have lower pain intensity mean score than before.

2- Children who would receive a traumatic care technique would have lower fear mean score than before.

2. Subject and Methods

2.1 Research design

A quasi-experimental one-group design was used in this study. It is an empirical interventional study used to estimate the causal impact of an intervention on target population without random assignment (Donald, Campbell, Julian & Stanley, 2019).

2.2 Setting

The current study would be conducted in medicine units (two units) in the fifth and six floors (provide services for all medical problems) at El-Monira Pediatric Hospital, affiliated to Cairo University Hospitals. It is the largest hospital for children in Egypt, and it provides its services free of charge.

2.3 Sample

A non-probability purposive sample of 60 children in the study setting was included in the study sample. The inclusion criteria for children were 5-10 years old, both genders, newly admitted, had patent intravenous access, and undergoing intravenous antibiotic.

The children who had previously received similar a traumatic care technique undergoing intravenous antibiotic was excluded. Actually, there was about 200 children admitted with this age and treated with antibiotics in 2020/2021 The determination of the sample size was based upon this sample calculation formula: N = T2 x P (1-P) M2 N = required sample size T = significance T = 1.96 P = prevalence M2 = standard margined 0.5 N = 3.841x 0.0200(1-0.0200) 0.0025 N = 60

2.4 Data collection Tools

Three tools were used for data collection:

1. A structured interview questionnaire. It was constructed by the researchers. It included three parts: Part1: data about children such as age, gender, educational level, residence, Part II: data about child medical history such as duration of disease, frequency of antibiotic, length of hospital stay; part III: data about child fear of pain such as scared from persons at hospital, medication, equipment and feel of pain during injection of antibiotic.

Original Article

2. Wong-Baker FACES Pain Rating Scale from Hockenberry & Wilson (2019) used in children to rate pain severity; each face is for a person who feels happy because he has no pain (no hurt) or sad because he has some or a lot of pain. Face 0 is very happy because he doesn't hurt at all. Face 1 hurts just a little bit. Face 2 hurts a little more. Face 3 hurts even more. Face 4 hurts a whole lot. Face 5 hurts as much as you can imagine, although you don't have to be crying to feel this bad (score the chosen face from 0 to 5).
3. Children's Fear Scale (CFS) (Mc Murtry, Noel, Chambers & McGrath, 2011). Instructions on the CFS are as follows: These faces are showing different amounts of being scared. Face 0 is not scared at all, face 1is a little bit more scared, and face2 a bit more scared, face 3 the most scared and face 4 the most scared possible (score the chosen face from 0 to 4).

2.5 Tools validity and reliability:

A structured interview questionnaire was thoroughly reviewed by three experts in the field of pediatric medical nursing to test the content validity. A modification of the tool was done according to the experts' judgment on clarity of sentences, appropriateness of content and sequence of items. Intrarater reliability of the CFS; (r =) .76 appeared to be satisfactory for total score (Mc Murtry, Noel, Chambers & McGrath, 2011). As regards the internal reliability of the Wong-Baker FACES Pain Rating Scale, Inter-rater reliability was 0.92 (Soetenga, Frankb & Pellino, 1999).

2.6 Ethical consideration

A primary and final approval was obtained from research ethics committee at Faculty of Nursing, in Cairo University. All children's mother who were participate in the study would be informed about the aim, procedure, benefits, and nature of the study and a formal written consent were obtained by the researchers from them. The researchers were emphasized that participation in the study was voluntary, and participant can refuse to participate in the study without any reason and obtained data would be only used for the research purpose. The anonymity and confidentiality issues of information were assured and the mothers had the right to withdraw from the study at any time during the study without any effect on the care provided to their children.

2.7Procedure

Upon obtaining official permissions, the researchers were met with the children and their mothers for clear and simple explanation of the aim and procedures of the study. After obtaining the consent from child mother, the researchers were interviewed each child individually in the presence of his/her mothers to complete the structured interview questionnaire from the child's record and mothers. The researchers Instructed child how to use Wong-Baker faces pain rating scale to rate pain severity. Then a traumatic care was implemented individually. A traumatic care technique was developed by the researchers after extensive review of related literature (Hockenberry & Wilson, 2019).

The researchers would follow the following a traumatic care technique: (1) Technique before intravenous medication injection: explain the steps of a procedure to the child; receive sensory information about what they might feel (e.g., cold, wet); see the medical supplies that would be used; offer realistic choices roles related to the procedure helps children to feel more in control; and use colored label syringe for antibiotics medications. (2) Technique during intravenous medication injection: place child in comfort position (sitting upright); the mother secure, comforting, or 'hugging' holds serve to assist, rather than restrain the child; encourage mother to support child with distraction and soothing words while assisting with comfort positioning; use blow bubbles as a distraction method for each child.

Original Article

(3) Techniques after intravenous medication injection; the mother hold and comfort child; the mother cuddle and soothe the child; distract with toy or get the child to play; let child to express feelings and be comforted; praise child regardless of response.

Each child was asked to have a look at these faces (tool II) and chose the one that shows how much pain the child feels before, during, and immediately after intravenous medication injection. The researchers were recorded the child's fear (tool III) and chose the one that shows how much child fear before, during, and immediately after intravenous medication injection. A traumatic care technique was done at the morning hospital shift for four consecutive days. Then the researchers will assess the structured interview questionnaire (tool 1, part III) data about child fear of pain at fourth day.

2.8 Statistical analysis

The collected data was scored, tabulated, and analyzed by computer using statistical package for the social sciences (SPSS) program, version 21. Descriptive as well as parametric inferential statistics were utilized to analyze data pertinent to the study (frequency, percentage, mean, standard deviation, paired t-test (fisher), two related sample test and Chi-square test were used). Level of significance will be accepted at $p< 0.05$.

3. Results:

Table (1) revealed that more than two fifth (41.7%)of children their age were between 5 to 8 years old and 38.3% of children their age equal and more than 10 years, with mean age 8.49±2.97 years. More than half (60%) of children were female. Regarding education level more than two thirds (71.7%) of children were in primary school and more than half (51.7 %) of them were from rural.

Table 1. Percentage distribution about children characteristics (n=60)

Age (years)	**No**	**%**
5 > 8	25	41.7
8 > 10 years	12	20
10 ≤ more	23	38.3
X±SD	8. 49±2.97	
Gender		
Male	24	40
Female	36	60
Education level		
Nursery	17	38.3
Primary school	43	71.7
Residence		
Rural	31	51.7
Urban	29	48.3

Original Article

Table (2) highlighted that majority (88.3%) of children their duration of disease was more than 90 days, with mean 58.90±68.26 days. More than two thirds (70%) of children their length of hospital stay was more than 10 days and their mean 10.63±8.10 days. As regard to frequency of antibiotic, more than half (55%) of children took three times per day followed by one third (33.3%) of children took once per day.

Table 2. Percentage distribution about child medical history (n=60)

Duration of disease (days)	**No**	**%**
> 90 days	53	88.3
90 > than 180	3	5
180 ≤ more	4	6.7
X±SD	58. 90±68.26	
Length of hospital stay (days)		
> 10 days	42	70
10 > 20 days	9	15
20≤ more	9	15
X±SD	10. 63±8.10	
Frequency of antibiotic (day)		
Once	20	33.3
Twice	4	6.7
Three	33	55
Four	3	5

Table (3) proved that majority (90%) of children were scared from medication time in the1st day before a traumatic care technique while most of children (95%) weren't scared from medication time in the 4th day after a traumatic care technique, there was a high statistically significant difference ($x^2 = 89.56$, p =.001)

Clearly the majority (91.7%) of children were scared from medication equipment especially syringe (43. 6%) in the1st day before a traumatic care technique while most (95%) of children weren't scared from medication equipment in the 4th day after a traumatic care intervention, there was a high statistically significant difference ($x^2 = 92.89$, p = .001). The majority (91.7%) of children were scared from persons at hospital especially doctors (56.4%) in the1st day before a traumatic care technique while most (95%) of children weren't scared from persons at hospital in the 4th day after a traumatic care technique, there was a high statistically significant difference ($x^2 = 95.67$, p = .001). More than two thirds (70%) of children were feel pain during injection of antibiotic medication in the1st day before a traumatic care technique while most (96.7%) of children weren't feel pain during injection of antibiotic medication in the 4th day after a traumatic care technique, there was a high statistically significant difference ($x^2 = 60.14$, p = .001

Table 3. Comparison between child fear of pain 1st day before and 4th day after a traumatic care technique

	A traumatic care technique		

Original Article

Items	1st day (before)		4th day (after)			
	No	%	No	%	x^2	P
Scared from medication time						
No	6	10	57	95	89.56	.001
Yes	54	90	3	5		
Scared from medication equipment						
No	5	8.3	57	95	92.89	.001
Yes	55	91.7	3	5		
If yes: which equipment						
Syringe	24	43. 6	2	66.7		
Needle	4	7.3	0	0		
Canula	16	29.1	1	33.3	2.33	.506
IV	11	20	0	0		
Scared from at persons hospital						
No	5	8.3	57	95	95.67	.001
Yes	55	91.7	3	5		
If yes: whose persons						
Doctors	31	56.4	2	66.7		
Nurses	24	43. 6	1	33.3	.764	.571
feel pain during administration of antibiotic medication						
No	18	30	58	96.7	60.14	.001
Yes	42	70	2	3.3		

Table (4) clarified that at the first day the highest percentage (86.7%, 58.3%, and 86. 6% respectively) of children reported pain intensity as hurts a whole lot before medication injection, and hurts as much as you can imagine during and after medication injection. At the second day the highest percentage (73.3%, 40%, and 55% respectively) of children reported pain intensity as hurts a whole lot before medication injection, and hurts even more during and after medication injection

At the third day the highest percentage (63.3%, 70%, and 66.7% respectively) of children reported pain intensity as hurts a whole lot before medication injection, and hurts even more during and after medication injection. At the fourth day the highest percentage (73.3%, 55%, 41.7%, and 41.7 % respectively) of children reported pain intensity as hurts even more before medication injection, hurts even more and hurts a little more during and after medication injection.

Original Article

1st, 2nd, 3rd, and 4th day (n=60)

A traumatic care technique		No hurt		Hurts just a little bit		Hurts a little more		Hurts even more		Hurts a whole lot		Hurts as much as you can imagine	
		No	%	No	%	No	%	No	%	No	%	No	%
Before	Day 1	0	0	0	0	0	0	3	5	52	86.7	5	8.3
	Day 2	0	0	0	0	0	0	7	11.7	44	73.3	9	15
	Day 3	0	0	0	0	0	0	16	26.7	38	63.3	6	10
	Day 4	0	0	0	0	3	5	44	73.3	13	21.7	0	0
During	Day 1	0	0	0	0	0	0	3	5	22	36.7	35	58.3
	Day 2	0	0	0	0	0	0	24	40	21	35	15	25
	Day 3	0	0	0	0	11	18.3	42	70	6	10	1	1.7
	Day 4	0	0	0	0	25	41.7	33	55	2	3.3	0	0
After	Day 1	0	0	0	0	0	0	4	6.7	4	6.7	52	86. 6
	Day 2	0	0	0	0	0	0	33	55	20	33.3	7	11.7
	Day 3	0	0	0	0	15	25	40	66.7	5	8.3	0	0
	Day 4	0	0	11	18.3	25	41.7	24	40	0	0	0	0

Table 4. Percentage distribution of Pain intensity before, during, and after a traumatic care technique at

Table (5) demonstrated that at the first day the mean scores of pain intensity before, during, and after a traumatic care technique were (4.00±.318, 4.60±.527, and 4.93±.445 respectively) and the differences was highly statistically significance (F = 69.60, P = .001). At the second day the mean scores of pain intensity before, during, and after a traumatic care technique were (4.00±.487, 3.88±.783, and 3.60±.693 respectively) and the differences was highly statistically significance (F = 5.71, P = .004).

At the third day the mean scores of pain intensity before, during, and after a traumatic care technique were (3.75±.473, 3.03±.519, and 2.91±.497 respectively) and the differences was highly statistically significance (F = 49.40, P = .001). At the fourth day the mean scores of pain intensity before, during, and after a traumatic care technique were (3.08±.423, 2.70±.530, and 2.55±.534 respectively) and the differences was highly statistically significance (F = 18.24, P = .001).

Table 5. Mean scores of pain intensity before, during, and after a traumatic care technique at 1st, 2nd, 3rd, and 4th day (n=60)

Days	A traumatic care technique			F	P
	Before	During	After		
	Mean ± SD	Mean ± SD	Mean ± SD		
Day 1	4.00±.318	4.60±.527	4.93±.445	69.60	.001
Day 2	4.00±.487	3.88±.783	3.60±.693	5.71	.004

Day 3	3.75±.473	3.03±.519	2.91±.497	49.40	.001
Day 4	3.08±.423	2.70±.530	2.55±.534	18.24	.001

Table (6) showed that at the first day the highest percentage (78.4%, 51.6%, and 45% respectively) of children reported fear as the most scared before, during and after medication injection. At the second day the highest percentage (70%, 68.3%, and 56.6% respectively) of children reported fear as the most scared before medication injection and a bit more scared during and after medication injection.

At the third day the highest percentage (53.3%, 61.7%, and 58.3% respectively) of children reported fear as a bit more scared before and during medication injection and a little bit more scared after medication injection. At the fourth day the highest percentage (63.3%, 76.7%, and 86.7% respectively) of children reported fear as a bit more scared before medication injection, and a little bit more scared during and after medication injection.

Table 6. Percentage distribution of children's fear before, during, and after a traumatic care technique at 1st, 2nd, 3rd, and 4th day (n=60)

A traumatic care technique		**Not scared at all**		**a little bit more scared**		**a bit more scared**		**the most scared**		**the most scared possible**	
		No	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
Before	**Day 1**	0	0	0	0	9	15	47	78.4	4	6. 6
	Day 2	0	0	3	5	15	25	42	70	0	0
	Day 3	0	0	3	5	32	53.3	25	41.7	0	0
	Day 4	0	0	8	13.3	38	63.3	14	23.4	0	0
During	**Day 1**	0	0	0	0	19	31.7	31	51. 6	10	16.7
	Day 2	0	0	5	8.3	41	68.3	10	16.7	4	6.7
	Day 3	0	0	15	25	37	61.7	7	11. 6	1	1.7
	Day 4	0	0	46	76.7	14	23.3	0	0	0	0
After	**Day 1**	0	0	0	0	21	35	27	45	12	20
	Day 2	0	0	15	25	34	56. 6	10	16.7	1	1.7
	Day 3	0	0	35	58.3	24	40	1	1.7	0	0
	Day 4	0	0	52	86.7	8	13.3	0	0	0	0

Table (7) highlighted that at the first day the mean scores of children's fear before, during, and after a traumatic care technique were (3.88±.415, 3.88±.715, and 3.83±.717 respectively) and there was no statistically significant difference (F = .125, P = .882). At the second day the mean scores of children's fear before, during, and after a traumatic care technique were (3.68±.624, 3.16±.615, and 2.95±.699 respectively) and the differences was highly statistically significance (F = 20.32, P = .001).

At the third day the mean scores of children's fear before, during, and after a traumatic care technique were (3.32±.575, 2.76±.571, and 2.50±.539 respectively) and the differences was highly statistically significance (F = 31.06, P = .001). At the fourth day the mean scores of children's fear before, during, and after a traumatic care

Original Article

technique were (2.90±.458, 2.31±.468, and 2.17±.385 respectively) and the differences was highly statistically significance (F = 39.31, P = .001).

Table 7. Mean scores of children's fear before, during, and after a traumatic care technique at 1st, 2nd, 3rd, and 4th day (n=60)

Days	A traumatic care technique			F	P
	Before	During	After		
	Mean ± SD	Mean ± SD	Mean ± SD		
Day 1	3.88±.415	3.88±.715	3.83±.717	.125	.882
Day 2	3.68±.624	3.16±.615	2.95±.699	20.32	.001
Day 3	3.32±.575	2.76±.571	2.50±.539	31.06	.001
Day 4	2.90±.458	2.31±.468	2.17±.385	39.31	.001

It was obvious from table (8) that there were no statistically significant relation between child's age, sex, education, residence and pain intensity before, during, and after a traumatic care technique at 4th day. Also there were no statistically significant relations between length of hospital stay, duration of disease, frequency of antibiotic and pain intensity before, during, and after a traumatic care technique at 4th day.

Table 8. Correlation between children characteristics, child medical history, and pain intensity before, during, and after a traumatic care technique at 4th day

Correlation items	A traumatic care technique		
	Be fore	During	After

Original Article

	r	P	r	P	r	P
Age	-.131-	.365	-.181-	.209	-.251-	.078
Sex	-.089-	.538	-.161-	.263	-.213-	.138
Education	-.030-	.837	-.108-	.455	.002	.991
Residence	-.026-	.856	.092	.524	.106	.463
Length of hospital stay	.239	.095	.088	.543	-.179-	.212
Duration of disease	.173	.231	-.022-	.878	.064	.660
Frequency of antibiotic	-.031-	.832	.113	.435	.119	.409

Clearly, table (9) revealed that there was statistically significant relation between child's sex and children's fear after a traumatic care technique at 4th day (r=-.302-, p=.037) while there were no statistically significant relation between child's age, education, residence and children's fear before, during, and after traumatic care technique at 4th day.

Also table (9) revealed that there was statistically significant relation between length of hospital stay and children's fear before traumatic care technique at 4th day(r=.419, p=.003) while there were no statistically significant relation between duration of disease, frequency of antibiotic and children's fear before, during, and after traumatic care technique at 4th day.

Table 9. Correlation between children characteristics, child medical history, and children's fear before, during, and after a traumatic care technique at 4th day

Correlation items	**A traumatic care technique**					
	Before		**During**		**After**	
	r	**P**	**r**	**P**	**r**	**P**
Age	-.090-	.545	-.053-	.718	-.117-	.429
Sex	-.048-	.745	-.015-	.917	-.302-*	.037
Education	-.055-	.711	-.265-	.069	.000	1.000
Residence	.178	.226	.119	.422	.019	.900
Length of hospital stay	.419**	.003	.281	.053	.111	.451
Duration of disease	.080	.590	.125	.395	.210	.153
Frequency of antibiotic	.047	.750	.152	.303	.019	.901

4. Discussion

Hospitalization for children has an impact on physical and psychological problems for children. Many interventions can be done to reduce stressors for children or parents in nursing using the philosophy of a traumatic care (Feny, Alfia & Kadrianti, 2020). A traumatic care is a therapeutic care service provided by nurses using

Original Article

interventions that can eliminate and minimize the experience of psychological and physical distress in children and families during the healthcare process (Handayani & Daulima, 2020). The results of the current study revealed that more than two fifth of children **t**heir age were between 5 to 8 years old and 38.3% of them their age equal and more than 10 years, More than half of children were female and more than two thirds of them were in primary school . The results of current study is goes in line with the study results done by Koçzkan and Polat (2020) who found that the majority of children was females and minority was male, with ages ranging from 9 years to 11 years . The education of all children was elementary school.

According to the present study results, the majority of children their duration of disease was more than 90 days, more than two thirds of children their length of hospital stay was more than 10 days and their mean 10.63+8.10 days. But these results are contradicted with Zengin, Yayan and Düken (2021).Who stated that the duration of hospitalization for each participant ranged from 4 days to 22 days with mean 4.80±1.871 days.

As regard to frequency of antibiotic, the current results showed that more than half of children took three times per day followed by one third of them took once per day. Common medical procedures frequently used daily to treat patients can cause significant pain and distress, particularly in children examples include intravenous (IV) cannulation, medication and blood draws as reported in a literature review (Ilmiasih & Ningsih, 2022).

Concerning the effect of a traumatic care technique on children fears during hospital stay, the present study results highlighted that the majority of children were scared from medication time, medication equipment like syringe and persons at hospital especially from doctors in the1st day before a traumatic care technique while most of children weren't scared from medication time in the 4th day after a traumatic care technique. In agreement with this study done by Usman (2020) who mentioned that the hospitalization stressors make children feel scared and anxious when undergoing hospitalization are the installation of the IV line, IV medication. More over Research conducted by Pulungan (2018) regarding the effect of the application of a traumatic care on the anxiety response of children undergoing hospitalization concluded that the intervention group had a higher average score of anxiety before the application of a traumatic care than the control group, while the average score of anxiety after the application of a traumatic care in the intervention group was lower than the control group. From the researchers' point of view, the implementation of a traumatic care technique make child feels comfort and safe.

The results of the current study illustrated that more two thirds of children were feel pain during administration of antibiotic medication in the1st day before a traumatic care technique while most of them weren't feel pain during administration of antibiotic medication in the 4th day after a traumatic care technique. This result goes on line with the research conducted by Feny, Alfia and Kadrianti (2020) stated that the application of a traumatic care to children with hospitalization can reduce the trauma and pain felt by children.

Regarding to the effect of a traumatic care technique on intensity of pain, the results of present study revealed that highest percentage of children reported pain intensity as hurts a whole lot and hurt as much as you can imagine before, during and after medication injection at 1st day, while hurt even more and a little more bit during and after medication injection at 2nd, 3rd, 4th days of a traumatic care technique. This result is supported by Hussein (2015) who reported that participants in both experiments had a significantly higher pain tolerance and reported less pain with the active distraction compared with passive or no distraction before and during IV medication.

In relation to mean scores of pain based on WBFS scale, the current results demonstrated a highly statistically significance differences before, during and after a traumatic care technique, it was increased at first day then decreased at 2nd ,3rd and 4th day. This results agreement with Koçzkan and Polat (2020) who reported in their study that participants in both experiments had a statistically significance differences mean score of pain with a traumatic care implementation before and during medical procedure.

According to the present study results, that highest percentage of children reported fear as the most scared before, during and after medication injection at 1st day while a bit more scared and little bit more scare before during and after medication injection at 2nd, 3rd, 4th days of a traumatic care technique. This result similar to the study done by Ozkan, Aslan & Inci (2021) who 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. It was determined that watching cartoon during the IV treatment reduced fear and anxiety in children. The researchers' point of view, using a traumatic care technique during medication injection as colored label syringe for antibiotic medication, blow bubbles as distraction methods reduce hospitalized children fear and anxiety.

As regard to mean scores of fear based on fear scale, the current results indicated a highly statistically significance differences before, during and after a traumatic care technique, it was increased at first day then decreased at 2nd ,3rd and 4th day. This results agreement with research conducted by Kose & Arıkan (2020). Regarding the effect of the application of a traumatic care on the fear response of children undergoing hospitalization concluded that the intervention group had a higher average score of fear before the application of a traumatic care (39.82) than the control group (37.24), while the average score of fear after the application of a traumatic care in the intervention group was lower (29.59) than the control group (39.71), this proves that he application of a traumatic care can reduce fear in children who are hospitalized.

The findings found that there was no statistically significant relation between child's age, sex, education, residence, length of hospital stay, duration of disease, frequency of antibiotic and pain intensity before, during, and after a traumatic care technique at 4th day. Which are consistent with previous study by Ozkan, Aslan &Inci (2021) there is no influence of gender on perception of pain but there was an inverse relation of behavior pain response with age of the child.

Children who had history of previous hospitalization had an increased perception of pain and distress during the current hospitalization. Pain and distress is also directly proportional to time duration of administration of intravenous injection and number of intravenous injection per day. The findings revealed that there was positive significant relation between child's sex, length of hospital stay, and children's fear after a traumatic care technique at 4th day. This result contradicted with study done by Kose & Arıkan (2020). who showed 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 ($p>.05$)

It was determined that technique of a traumatic care before, during and after the IV medication reduced fear and pain intensity in children.

5. Conclusion:

Implementing a traumatic care technique has a positive impact on children during hospitalization. It was found to be an effective method in reducing the pain intensity and fear of children during and after intravenous medication (IV) medication injection at clinical setting. In addition, a traumatic care can be used safely and does not adversely affect the success of the IV medication.

6. Recommendation:

The present study recommended that

1- The nurses should follow the practice of at traumatic care technique during Intravenous medication in order to reduce pain and fear related to intravenous injection at hospital.

2- A traumatic care technique should be implemented during any painful procedure such as blood sample and IM injection.

3- Pain and fear assessment and its management through distraction technique should be implemented in all pediatric units.
4- Design education program about a traumatic care for parents to be involved in their child care in order to reduce pain and fear during hospital stay.
5- Further studies on larger sample size and different settings are needed to generalize the results.

Acknowledgments
The authors thank the head of the pediatric medicine department, the members of health care team, mothers and their children genuine cooperation and arrangements to deliver the research methodology as designed.

References

Ball, J., Bindler, R., Cowen K, & Shaw, M. (2017). Principles of Pediatric Nursing. 7th ed. New Jersey: Pearson Education, Inc; pp1122.

Birnie, K.A., Noel, M., Chambers, C.T., Uman, L.S., & Parker, J.A. (2018). Psychological interventions for needlerelated procedural pain and distress in children and adolescents. *Cochrane Database Syst Rev,* 10: CD005179. Retrieved from: https://www.ncbi.nlm.nih. gov/pmc/artic les/PMC65 17234/

Burns-Nader, S., & Hernandez-Reif, M. (2016). Facilitating play for hospitalized children through child life services. *Children's Health Care;* 45:1–21. Doi: 10.1080/02739615.2014.948161.

Çalişir, H., & Karataş, P. (2019). The A traumatic care approach in pediatric nursing: non-pharmacological applications in reducing pain, stress, and anxiety. *KoçÜniversitesiHemşirelikteEğitimVeAraştirmaDergisi*, 16(3), 234-245. Retrieved from: http: //dx.doi.org/10.5222/HEAD.2019.234

Donald, T., Campbell., Julian, C., & Stanley (2019). Experimental and Quasi-Experimental Designs for Research 1st Edition ISBN-13: 978-0395307878.

El-mougi., T.M., Yousef, M.S, El-gazzar, E.H., Asoda, F.M., Awad, A.K. (2020). Profile of patients visiting the pediatric emergency service in el-behera hospitals. *Al-Azhar Journal of Ped. 23* (49),11891210.DOI: 10.21608/AZJP.2020.128353

Feny, Alfia, & Kadrianti, E. (2020). The relationship between atraumatic care implementation and anxiety in children undergoing hospitalization at the Makassar City Hospital. *Scientific Journal of Health Diagnosis*, 15, 212–215.

Handayani, A., & Daulima, N.H.C. (2020). Parental presence in the implementation of a traumatic care during children's hospitalization. *Pediatric Reports,* 12, 11–14. Retrieved from: https://doi.org/10.4081/pr.2020.8693.

Hockenberry, M. J., & Wilson, D. (2019).Wong's nursing care of infants and children (11th ed.). St. Louis: Elsevier Mosby.

Original Article

Hockenberry, M.J., Wilson, D., & Rodgers, C. C. (2016). Wong's essentials of pediatric nursing (10thed.). St. Louis: Elsevier.

Huff, L., Hamlin, A., Wolski, D., McClure, T., Eliades, A. B., Weaver, L., & Shelestak, D.(2019). Atraumatic care: EMLA cream and application of heat to facilitate peripheral venous cannulation in children. *Comprehensive Child and Adolescent Nursing*, 32(2), 65–76. Doi: 10.1080/01460860902737418.

Hussein, A. H. (2015**).** Effect of active and passive distraction on decreasing pain associated with painful medical procedures among school aged children. *World Journal of Nursing Sciences,* 1(2), 13-23. DOI: 10.5829/idosi.wjns.2015.1.2.93202.

Ilmiasih, R. & Ningsih, N.S. (2022) Application of a traumatic care philosophy to children in hospitals a literature review doctoral program, Faculty of Nursing, Airlangga University Faculty of Nursing, Muhammadiyah Malang University. Retrieved from: https://doi.org/10.1101/2022.07.12.22277517.

Karakaya, A., & Cozen, D. (2016). The effect of distraction on pain level felt by school-age children during venipuncture procedure-randomized controlled Trial. *Pain Management Nursing*, *17*(1), 47-53. Doi: 10.1016/j.pmn.2015.08.005.

Koçzkan, T., & Polat, F. (2020). The effect of virtual reality and kaleidoscope on pain and anxiety levels during venipuncture in Children. *Journal of Perianesthesia Nursing*, 35(2), 206–211.retrieved from: https://doi.org/10.1016/j.jopan.2019.08.010.

Koukourikos, K., Tzeha, L., Pantelidou, P., & Tsaloglidou, A. (2015). The importance of play during hospitalization of children. *Materia Socio-Medica,* 27, 438–41.Doi: 10.5455/msm.2015.27.438-441.

Kose, S., &Arıkan, D. (2020). The effects of cartoon assisted endoscopy preparation package on children's fear and anxiety levels and parental satisfaction in Turkey. *Journal of Pediatric Nursing*, 53, e72–e79. Retrieved from: https://doi.org/10.1016/j.pedn.2020.02.010

Lerwick, J.L. (2016). Minimizing pediatric healthcare-induced anxiety and trauma. *World Journal of Clinical Pediatrics*, *8*(5), 143–50. Doi: 10.5409/wjcp.v5. i2.143 Frontiers.

Mackey, L.M., Blake, C., & Casey M-B, et al. (2019). The impact of health literacy on health outcomes in individuals with chronic pain: a cross-sectional study. *Physiotherapy,* 105(3),346-353.

Mc Murtry, C.M., Noel, M., Chambers, C.T., & McGrath, P.J (2011). Children's fear during procedural pain: preliminary in investigation of the children's fear scale. *Healthy Psychology*, 30(6):780-8. doi: 10.1037/a0024817.

Mediani, S.H., Hendrawati S., & Shidqi, N. (2019).The knowledge and attitude of nurses in the implementation of a traumatic care in hospitalized children in Indonesia. *Journal of Nursing and Health Science (IOSR-JNHS)*, 8(1), 51-56.

Original Article

Ozkan T, Aslan S, & Inci R. (2021). Effect of watching cartoon during IV treatment on anxiety and fear levels in children: randomized controlled trial. *Clinical and Experimental Health Sciences*, 11, 466-470. DOI: 10.33808/ clinexphealthsci.733524.

Pulungan, Z.S.A. (2018). Atraumatic care with spark manakara in infusion effectively reduces anxiety levels for pre-school children. *Journal of Health, Education and Literacy (J-Healt),* 1(1), 24-32. Retrieved from: https://doi.org/10.31605/j-health.v1i1.149

Santos, P. M., Silva, L. F., Depianti, J. R. B., Cursino, E. G., Ribeiro, C. A. (2016). Nursing care through the perception of hospitalized children. *Revista Brasileira de Enfermagem,* 69 (4), 646- 653.

Soetenga, D., Frank, J., & Pellino, T.A. (1999). Assessment of the validity and reliability of the University of Wisconsin Children's Hospital Pain scale for Preverbal and Nonverbal Children. *Pediatric Nursing*, 25(6):670-6.

Usman, L. (2020). Implementation of atraumatic care in hospitals. *Jamba Health and Sport Journal,* 2(1), 7–11. Retrieved from: https://doi.org/10.37311/jhsj.v2i1.4559.

Wilcox, L.N. (2018). Exploring Coping Skills of Hospitalized Children: A Children's Book Proposal. Retrieved from: https://pdfs.semanticscholar.org/e3a4/ d3b7d6d96564d496305 aac9d09ea 6 2440c59.pdf (accessed August 20, 2019).

Zengin, M., Yayan, E.H., & Düken, M.E. (2021). The effects of a therapeutic play/play therapy program on the fear and anxiety levels of hospitalized children after liver transplantation. *Journal of Perianesthesia Nursing,* 36(1), 8185.retrieved from: https://doi.org/10.1016/j.jopan.2020.07.006.