

## Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress among Children during Venipuncture

<sup>1</sup>Mabrouka Attia Ali Nada, <sup>2</sup>Rahma Soliman Bahgat,  
<sup>3</sup>Rehab Hassan Kafil

<sup>1</sup> Assistant Professor of Pediatric Nursing / Menoufia University Hospital,  
Menoufia University, Egypt.

<sup>2</sup> Professor of Pediatric Nursing, Faculty of Nursing, Tanta University, Egypt

<sup>3</sup> Assistant Professor of Pediatric Nursing, Faculty of Nursing, Suez Canal University, Egypt,

**Abstract:** During hospitalization children suffer from emotional and psychological problems due to painful procedures. Purpose of the current study was to determine the effect of a distraction therapy method on pain, anxiety and behavioral distress level among children during venipuncture. **Research Design:** A quasi-experimental research design was used. The study Sampling included 100 children aged from 1to18years admitted at pediatric medical departments of Menoufia and Tanta University Hospitals. **Instruments:** Four instruments were used (socio demographic characteristics of studied children pain scale , monitoring vital signs and oxygen saturation ,children’s emotional manifestation scale behavioral responses for assessing anxiety and fear for children and observation scale of behavioral distress during painful procedures) **Results.** There were a statistically significant decrease in pain severity and anxiety level after implementing distraction therapy among children in the study group compared to children in the control group. **Conclusion:** The utilized distraction method reduced children's pain, anxiety and behavioral distress .Therefore, the clowning distraction method is recommended as an effective strategy for significantly reducing the influence of painful procedures among hospitalized children.

**Keywords:** Anxiety, behavioral distress, distraction method, pain, venipuncture

### Introduction:

Distraction therapy is a possible approach to help alleviate pain and anxiety in All techniques of distraction for children such as interactive music, finger puppet and clowns were proved to decrease levels of anxiety, pain and crying in children, play can also be

used to assist children to cope with pain, anxiety and fear. Separations from their parents, unfamiliar surroundings, uncomfortable therapies, and the results of those treatments can cause anxiety and panic in pediatric patients Topan and Sahin (2019)

***Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture***

Other than prescription medication, there are a number of methods to decrease pain and anxiety. There are several ways to reduce anxiety and pain other than premedication. Among them Laughter and humor were found to be useful in lowering pain and enhancing stress tolerance during unpleasant procedures. Utilizing distraction therapy as when children and adolescents are admitted to the hospital for acute or chronic conditions (such cancer), hospital clowns may have a positive impact on their psychological well-being Fusetti et al., (2022).

Additionally, compared to control groups receiving conventional treatment, it may be a helpful technique for managing symptom clusters (such as worry, stress, pain, and exhaustion) and improving the psychological adjustment of children and adolescents in hospitals. Numerous infrequent, typically small-scale investigations have demonstrated the effectiveness of medical and nursing clowning in lowering pain, anxiety, and stress. Lopes-Júnior (2020)

Distraction is a useful and easily accessible pain management strategy and low-resource health facilities Vagnoli and Dionigi (2019). Children admitted to a hospital for care undergo a distressing procedure, such as injections and peripheral intravenous (IV) catheter placements. The insertion of an IV catheter is one of the most common and painful invasive procedures in pediatric hospitals. These experiences can lead to needle phobias and an aversion to seeking appropriate care at hospitals in the

clowns' efforts, elevating health consumer satisfaction, and reducing aggressive tendencies future Efrat-Triester et al., (2021).

The use of distractions via medical clowns and soap bubbles was an effective nonpharmacological method of reducing anxiety and perceived pain in children undergoing invasive medical procedures. Therefore, nurses could use such techniques as powerful, noninvasive, and cost-effective complementary and alternative medicine tools in pediatric treatment. Pain and anxiety associated with health care can have long-term adverse effects on patient's well-being and care-seeking behavior Javed et al., (2021).

Painful memories from unsuccessful pain relief efforts in children cause immense voluntary reactions as crying, avoiding injections and psychological responses as tachycardia, vascular spasm in subsequent experiences. Most nurses thought that distraction is a safe and useful way to deal with pain. They also thought that distraction can be used to treat pain without the need for pharmaceutical drugs. Finally, most nurses thought that distraction is a crucial part of pain management Ibitoye et al., (2019).

The positive effects of healthcare clown intervention on children carrying out surgery" reported that a healthcare clown intervention has some positive effects on the behaviors and moods of hospitalized children which could further lead to more compliance and faster recover Markova et al., (2021). For successful behavioral control, distraction is a non-

***Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture***

pharmaceutical strategy that is safe, efficient, and reasonably priced. Currently, numerous studies in the dentistry and medical professions focus on the use of auditory distraction strategies, such as music and audio tale distraction. Gupta and Rajan (2021) and Jafarimofrad et al., (2022)

Therapeutic clowning effectively reduce pain and fear during venous blood sampling for children from 7 to 12 years of age , Nurses might be encouraged to receive training in the use of therapeutic humor based upon a standardized approach, as therapeutic clowns are a cheap, safe, and effective way to reduce children's pain and fear during venous blood drawing . In light of these findings, the methodology and advice on the use of amusing techniques like clowns and therapeutic clowning can be investigated in various nursing care applications Thi (2022).

Nurses play a key role in facilitating play and distraction therapy for children and young people in their care and both play therapy and distraction techniques are skills required as part of the future nurse proficiencies. Future nurses will require play therapy, diversion treatment and critical thinking abilities for the children and adolescents in their care NMC & Council (2018). Distraction is commonly used by both health professionals as nurses and family members to support a child experiencing pain or distress (Koller and Goldman 2012).

Nurses should be knowledgeable about developmentally appropriate ways to encourage play and distraction therapy

in a safe and supportive environment for children that supports the development of motor and verbal skills. Many hospitals employ play therapists who work with children to help them understand what procedures doctors and nurses and allied health professionals will perform, relieve anxiety, and help to make their time in hospital more enjoyable Stonehouse et al., (2018).

The use of play can allow for positive distraction from painful or anxiety-provoking procedures or interventions as injection, cannulation, blood sampling, lumbar puncture, commencing intravenous medication, being anaesthetized and nasogastric tube insertion NMC & Council (2018). Distraction is one of the psychological strategies commonly used by health professionals especially nurses to support a child or a young person experiencing pain or distress. The concept is based on the idea that by shifting a child's focus to something engaging and attractive or a coping mechanism that can be passive or active Koller and Goldman (2012).

**Purpose:**

To determine the effect of a distraction method on pain, anxiety and behavioral distress among children during venipuncture

**Research hypothesis:**

- Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress among Children during Venipuncture
- Children who receive the distraction method intervention(study group) are expected to have lower level of pain

*Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture*

than children who do not (control group) during venipuncture.

- Children who receive the distraction method intervention(study group) are expected to have lower level of anxiety than children who do not (control group) during venipuncture.
- Children who receive the distraction method intervention(study group) are expected to have fewer behavioral distress than children who do not (control group) during venipuncture.

**Research Design:**

A quasi-experimental research design (study and control) was used in the present study.

**Setting:**

The study was carried out at a pediatric inpatient department affiliated to both Menoufia and Tanta University Hospitals.

**Sampling:**

▪ **Sample size estimation**

Based on review of past literature (Kocherovetal.,2016),who found a statistically significant reduction in the anxiety score with clown therapy intervention compared to standard of care without clown intervention ( $5.5 \pm .3$  vs  $7.5 \pm 3$  respectively).The least sample size is calculated using statistics and sample size pro program version 6 is 100 subjects. The power of study is 80% and confidence level is 95%.

- **Sample size: 100 children's**

- Study Group (I): Fifty children who received distraction methods therapy in addition to routine hospital care.
- Control group (II): Fifty children who only received routine hospital care.

**Inclusion criteria: -**

- Children should range age from 3 years to 18 years old and should be free from associated congenital anomalies.
- Children should have intravenous cannulation.
- The sample size is calculated using Statistics and sample size pro program version 6 is 100 subjects, 50 intervention groups and 50 control group. The power of study is 80% and confidence level is 95%.

**Instruments:**

Five instruments were used in the current study:

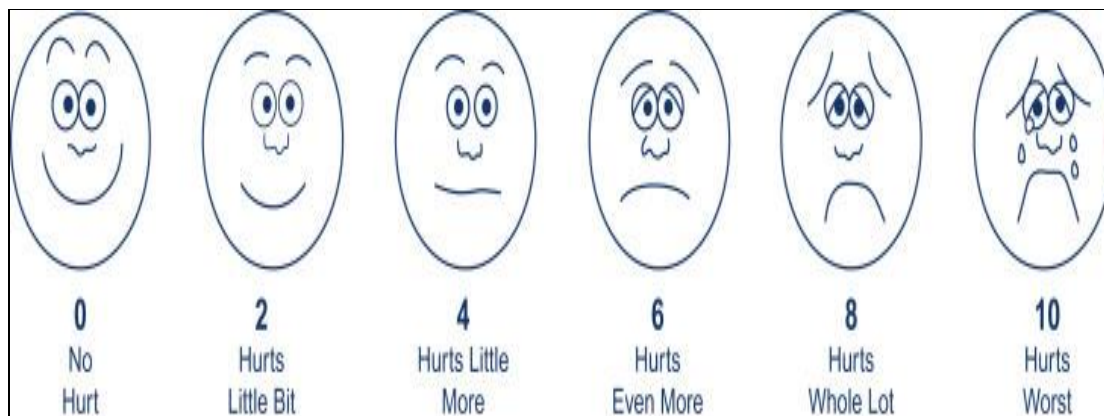
**Instrument one: Socio demographic Characteristics of studied children.**

It was developed by researcher and contained information such as age, sex and educational level of children, mother's education and diagnosis.

**Instrument two: The Wong-Baker FACES™ Pain Rating.**

It was developed by Hockenberry, (2005): It contained six faces representing different levels of pain starting at 0 for "no hurt" and ending at 10 for "hurts like the worst pain imaginable

**Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture**



**Scoring system** of pain was as follows: 0 No pain, 2 mild pain, 4-6 moderate pain, 8-10 severe pain

**Instrument three: Nonverbal Pain Scale (NVPS) .**

It was developed by Odhner et al., (2004) to assess nonverbal communication indicating pain in children or ICU patients. It has three dimensions: behavioral (facial expression, movement rate, muscle contraction), physiological (vital signs, heart rate, blood pressure and respiratory rate), and physiological (pupil dilation,, diaphoretic, flushing, or pallor).

**Scoring system** for each item was Yes=2 and No=0. Scores range from 0 to ten.

No pain (0), mild (1–3), moderate (4–6), and severe (7–10).

**Instrument four: Children’s Emotional Manifestation Scale (CEMS)**

Behavioral Responses Indicating Anxiety and fear for children .It was developed by William and Lopez (2005) It was used to assess emotional responses of children to pain

Scored	1	2	3	4	5
<b>Facial expression</b>					
<b>Vocalization</b>	No crying	Watery eyes	Whimpering	Crying	Hard crying or Non-stop Screaming
<b>Activity</b>	Calm	Annoyance	Irritable	Restlessness	Agitation
<b>Interaction</b>	Verbal interaction	Non-verbal response only	Avoid interaction	Mild verbal protest	Strong verbal protest
<b>Level of cooperation</b>	Active participation	Passive participation			

*Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture*

**Scoring system**

- **Facial expression** Score 1 smiles, score 2 relaxed face and makes eye contact, score 3 neutral facial expression, score 4 a worried facial expression with eyebrows lowered and mouth pursed and score 5 facial grimacing or twisted facial expression with cheeks raised.
- **Vocalization:** Score 1 not cry, score 2 watery eyes, score 3 whimpers, score 4 crying, score 5 hard crying with tears or screams non-stop
- **Activity:** Score 1 calm, score 2 Annoyance, score 3 irritable, score 4 restless, score 5 a agitation
- **Interaction:** Score 1 verbal interaction, score 2 no verbal interaction, score 3 avoids interaction, score 4 avoids interaction and verbally protests and score 5 strong verbal protest or complaint
- **Cooperation:** Score 1 complete cooperation, score 2 obeys instructions or only passively participates, score 3 mild resistance or withdraws from any procedure, score 4 extreme resistance to any procedure or strong avoidance of caregivers and score 5 behavior that disrupts the procedure

**Total Scoring system**

- Each category is scored on a 1–5 scale, resulting in a total score of 5–25.
- The score ranges from zero to 23.5 (each behavior is multiplied by a pre-assigned value based on the intensity of distress - cry and information seeking are weighted at 1.5; emotional support at 2; verbal

resistance and verbal pain at 2.5; and scream, restraint, and flail at 4.

**Instrument five; Observation Scale of Behavioral Distress during painful procedures OSBD-R.**

It was developed by Elliot and Olson (1983) and adapted by William and Lopez (2005). It was used to assess Cry ,Scream ,Pain verbal ,Physical restraint ,Verbal resistance requests ,Termination, Flail ,Muscular rigidity ,Seeks emotional support ,Muscle tension ,Fear and anxiety verbal.

**Scoring system:**

The total scores range from 0 to 24. Each behavior is recorded once for occurrence , when absent take zero score and when present take two score. Higher scores indicate more distress. Total distress scores are computed by summing the weighted values of each behavior at each interval.

**Validity and reliability:**

The content and face validity of tools were tested through A jury of 5 experts professors of pediatric nursing to check completeness, coverage of the content and clarity of the items. The required modifications were done accordingly.

**Reliability:**

- The study tools were check to reliability by measuring their internal consistency using Cranach's alpha coefficient method. This turned to be for Wong-Baker Scale was ( $\alpha=0.90$ ;  $p < 0.001$ ), for NVPS was ( $\alpha=0.80$ ), for CEMS was ( $\alpha=0.96$ ) and the OSBD-R was ( $\alpha=0.72$ ).

*Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture*

- **Ethical approval** was obtained from the Ethics Committee of the Faculty of medicine. Ethical Number was 7/2023PEDI6.
- **A written consent** was obtained from each child's parent about their acceptance to participate in the current study. They were informed about the confidentiality of their data and they will be used to only for the purpose of the current study. The purpose and nature of the study were clarified to the children's parents. In addition, the child's parents were told that the acceptance to participate in the study is voluntary.
- **Pilot study:** A pilot study was performed on 10% (10 children) to check the clarity of instruments and to estimate the time required for completing each instrument

**Procedure:**

- An official letter was submitted from the Dean of the Faculty of Nursing to the director of Menoufia University Hospital including the purpose and methods of data collection
- The data was gathered for three months; from the beginning of July 2023 to the end of September 2023. The researchers met children's at the pediatric in-patient department Menoufia University Hospital. The researchers presented themselves to the children's parents and described the rationale and nature of the research during the meeting. About two children (one in the study and one in the control) were interviewed each day (one time/week). The needed time for completing each

instrument was about 20-30 minutes. Evaluation of child's reaction was recorded one time during child painful procedure.

- Colorful clown costume were prepared A colorful curly wig with bright yellow, blue, medical clowns, soap bubbles and cards colors were used. A clown face mask was selected carefully to be suitable for both sexes. Every youngster in the study group had the same costume. The clown's outfit was cleaned at the end of each shift to reduce the possibility of infection in the pediatric section .For the children in the control group, the same observer observed their behavioral reactions. Parents were with the child during the venipuncture procedure. For distraction therapy a clown accompanied each studied child and his parents to the procedure room in the study group.

**During the evaluation phase,**

The child's reaction to painful procedure was assessed with distraction therapy a during venipuncture using instruments one, two, three, four and was recorded by the researcher for study group but control group assessed during venipuncture by the researcher.

**Statistical design:**

Data analysis was carried out by using SPSS 20 statistical software. The qualitative variables were described using frequency and percentages. Quantitative variables were described using range and mean  $\pm$  standard deviation. Chi-square and Mcnemar tests were used. P-value  $<0.05$  was

***Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture***

considered significant and highly significant if P value <0.01.

**Results**

**Table 1:-** showed that 62 % of studied children aged less than 10 years in both study and control group, while 54 % and 74% of them were males in both study and control group respectively. Moreover, 40 % and 48% of studied children were preschoolers in both study and control groups. Also, 40 % of them were diagnosed with anemia.

**Table 2:-** revealed that children in the study group had less level of pain than children in the control group. Therefore, there were very highly statistical significant differences in pain levels among the study and control groups ( $p < .01$  for each).

**Table 3:-** clarified that 52% of studied children in the study and control groups reported no pain compared to 8 % in control group. Mild pain was expressed by 48% of studied children in the control group compared to 30% in the study group. Also, moderate pain was mentioned by 22% of studied children in the control group compared to 14% in the study group. Severe pain was expressed by 22% of the studied children in control group compared to 4% of in the study group. Therefore, there were very highly statistically significant difference ( $P = .007$ ).

**Table 4:-** shows that children in the study group showed fewer elevations in pulse and respiratory rates than children in the control group. Also, there were fewer elevations in systolic and diastolic blood pressures than children in the control group

.Therefore, there were statistical and very highly statistical significant difference between control and study groups regarding pulse , respiration , systolic blood pressure and diastolic blood pressure with p value equal to .001\*, .002 ,.004\* and .014\* respectively.

**Table 5:-** clarifies that children in the study group had fewer behavioral responses indicating anxiety. Therefore, there were statistical and very highly statistical significant differences between children in the study and control  $P < .01$ .

**Table 6:-** illustrates that children in the intervention study group exhibited fewer behavioral distress during painful procedure than those children in the control group. Therefore, there were very highly statistically significant differences between children.

**Table 7** Shows that pain scores, (cems) behavioral responses indicating anxiety and behavioral distress decrease as the child gets older So, there is statistical significant positive correlation between age and pain score in children undergoing distraction therapy and Behavioral Responses Indicating Anxiety where p value equal .003 and .002 respectively. Also, there is statistical significant positive correlation between sex and pain score and between level of education and (CEMS) Behavioral Responses Indicating Anxiety for children group and Behavioral Distress undergoing distraction therapy which P value equal .012 and .000 respectively.



**Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture**

**Table (1): Characteristics of Children in the Study and Control Groups**

Characteristics of studied children	Study group (n=50)		Control Group (n=50)	
	N	%	N	%
<b>Child's age/ Years</b>				
< 10years	31	62.0	31	62.0
>10 Years	19	38.0	19	38.0
<b>Mean &amp; SD</b>	9.5800±3.52304		7.9600±4.15987	
<b>Child's sex</b>				
Male	27	54.0	37	74.0
Female	23	46.0	13	26.0
<b>Child education</b>				
Pre school	20	40.0	24	48.0
Primary school	18	36.0	16	32.0
Preparatory school	12	24.0	10	20.0
<b>Mother education</b>				
Primary school	12	24.0	10	20.0
High school	23	46.0	35	70.0
University	15	30.0	5	10.0
<b>Diagnosis of the children</b>				
Pneumonia	15		15.0%	
Anemia	40		40.0%	
Type one Diabetic	10		10.0%	
Renal failure	20		20.0%	
lupus	5		5.0%	
Thalassemia	10		10.0%	

**Table (2) Distribution of Children in the Study and Control Groups to Pain Levels Using  
The Wong-Baker FACES™ Pain Rating Scale .**

Pain Rating Scale Items	Control Group (n=50)		Study group (distraction therapy) (n=50)		X2	Sig
	No	%	No	%		
No Hurt	4	7.7	26	50.0	.376**	.00
Hurts little Bit	24	46.2	15	28.8		
Hurts little More	4	7.7	4	7.7		
Hurts Even More	7	13.5	3	5.8		
Hurts Whole lot	9	17.3	2	3.8		
Hurts Worst	2	3.8	0	0.0		
<b>M&amp;SD</b>	<b>2.9800±1.43555</b>		<b>1.8000±1.08797</b>			

**Table 3: Distribution of Children in the Study and Control Groups Using Pain Rating  
Scale .**

Pain Rating Scale	Control Group (n=50)		Study group (distraction therapy) (n=50)		X2	Sig
	No	%	No	%		
<b>No pain</b>	4	8.0	26	52.0	.376**	.007
<b>Mild pain</b>	24	48.0	15	30.0		
<b>Moderate pain</b>	11	22.0	7	14.0		
<b>Severe pain</b>	11	22.0	2	4.0		

**Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture**

**Table 4: Distribution of Children in the Study and Control Groups according to Vital Signs and Oxygen Saturation .**

Items	Control Group (n=50)		Study group (distraction therapy) (n=50)		T test	P value
	Mean	SD	Mean	SD		
Temperature	37.05	.047	37.05	.52	0.140	.887
Pulse	89.43	18.70	98.98	26.04	3.390	.001*
Respiration	29.83	4.78	28.21	2.43	1.010	.002*
Systolic blood pressure	109.67	12.62	105.75	16.86	2.544	.004*
Diastolic blood pressure	65.27	8.12	62.87	8.49	2.771	.014*
Oxygen Saturation	96.65	3.05	96.87	2.85	0.572	.568

\*Significant at  $\leq .05$

**Table (5): Distribution of Children according to Children's Behavioral Responses  
Indicating Anxiety scale**

(CEMS) Behavioral Responses Indicating Anxiety	(CEMS) Scale score	Control Group (n=50)		Study group (distraction therapy) (n=50)		X2	Sig
		No	%	N	%		
Facial expression	1	2	3.8	27	51.9	45.995 <sup>a</sup>	.000
	2	10	19.2	11	21.2		
	3	12	23.1	3	5.8		
	4	13	25.0	3	5.8		
	5	13	25.0	6	11.5		
M&SD	3.5000±1.19949		2000±1.39971				
Vocalization	No crying	4	7.7	38	73.1	51.388 <sup>a</sup>	.000
	Watery eyes	11	21.2	9	17.3		
	Whimpering	8	15.4	2	3.8		
	Crying	15	28.8	1	1.9		
	Hard crying or Non-stop Screaming	12	23.1	0	0		
M&SD	3.4000±1.29363		1.3200±.65278				
Activity	Calm	2	3.8	32	61.5	49.683 <sup>a</sup>	.000
	Annoyance	16	30.8	14	26.9		
	Irritable	7	13.5	2	3.8		
	Restlessness	14	26.9	2	3.8		
	Agitation	11	3.8	0	0.0		
M&SD	3.3200±1.25259		1.4800±.76238				
Interaction	Verbal interaction	0	0.0	33	63.5	23.008 <sup>a</sup>	.006
	Non-verbal response only	5	9.6	10	19.2		
	Avoid interaction	10	19.2	4	7.7		
	Mild verbal protest	18	34.6	1	1.9		
	Strong verbal protest	17	32.7	0.0	0.0		
M&SD	3.9400±.97750		1.4375±.74108				
5-Level of cooperation	Active participation	32	61.5	15	28.8	12.054 <sup>a</sup>	.001
	Passive participation	18	34.6	35	71.2		
M&SD	1.7000±.46291		1.3600±.48487				

*Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress among Children during Venipuncture*

**Table (6 ) Distribution of children in the Study and Control Groups according to Behavioral Distress during painful daily procedures**

Signs of Behavioral Distress		Control Group (n=50)		Study group (distraction therapy) (n=50)		X2	Sig
		N	%	N	%		
Cry	Absent	14	26.9	35	67.3	8.333a	.004
	Present	36	69.2	15	28.8		
Scream	Absent	21	40.4	30	57.7	38.437a	.000
	Present	29	59.6	20	38.5		
Pain verbal	Absent	22	42.3	33	63.3	7.260a	.007
	Present	28	57.7	17	32.7		
Physical restraint	Absent	10	19.2	40	76.9	28.125a	.000
	Present	40	76.8	10	19.1		
Verbal resistance requests	Absent	9	17.3	34	65.4	6.062a	.014
	Present	41	78.8	16	30.8		
Termination	Absent	19	36.5	36	69.2	1.188a	.012
	Present	31	59.5	14	26.9		
Flail	Absent	17	32.7	36	69.2	6.250a	.012
	Present	33	67.3	14	26.9		
Muscular rigidity	Absent	14	26.9	35	67.3	6.822a	.00
	Present	36	69.1	15	28.8		
Seeks emotional support	Absent	12	23.1	35	67.3	6.767a	.009
	Present	38	73.1	15	28.8		
Muscle tension	Absent	8	15.4	37	71.1	6.595a	.01
	Present	42	80.6	13	25.0		
Fear	Absent	5	9.6	39	75.0	10.891a	.001
	Present	45	91.4	11	25.0		
anxiety verbal	Absent	22	42.3	28	53.8	3.631a	.057
	Present	28	53.8	22	42.3		
<b>Correlation between total distraction intervention and total control study</b>							
<b>Total OSBD-R Observation Scale Mean &amp; SD</b>		<b>8.5400±3.94974</b>		<b>3.6400±1.92471</b>		<b>105.618a</b>	<b>.001</b>

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Table 7: Relation between studied children age, Pain score, (CEMS) Behavioral Responses Indicating Anxiety and Behavioral Distress .**

Items	Pain score undergoing distraction therapy (n=50)		(CEMS) Behavioral Responses Indicating Anxiety for children group undergoing distraction therapy (n=50)		Behavioral Distress undergoing distraction therapy (n=50)	
	P	Sig	P	Sig	P	Sig
Age	-.411-***	.003	-.421-***	.002	-.194-	.176

## **Discussion**

Distraction intervention therapy, which includes therapeutic clowning, finger puppet plays, and music interventions, was employed as a nonpharmacological intervention method to treat children's pain, anxiety, and tension in the hospital. This is the first study to investigate the effect of distraction therapy approaches in everyday care during painful procedures such as injections, IV cannula insertion, and blood sample on pain, anxiety, and stress in the paediatric department at Menoufia University Hospital.

The current study's findings revealed that there was a statistical significant differences between mean scores of the Wong-Baker Facial Pain Rating Scale among the study intervention group and control group, This finding came in agreement with Mahmoud et al., (2023) in study of Effect of Buzzy and Watching Cartoons on Venipuncture Pain among Children Undergoing Phlebotomy showed that mean scores of the Wong-Baker Facial Pain Rating Scale were significantly decreased in the study group than in the control group with highly statically significance differences with ( $p < 0.001$ ).

In the same line Kurudirek and Arıkan (2020) in their study about Effects of therapeutic clowning on pain and anxiety during intrathecal chemotherapy in Turkey. Whom found that, therapeutic clown intervention effectively relieves the pain of children who underwent intrathecal chemotherapy and aged from 7 to 12

years. From the researchers point of view these results were due to the positive effect of distraction techniques on relieving pain in children as mentioned by Short et al., (2017) that, distraction as a non-pharmacological method of pain management is used because it is simple, saves time, enhance interaction, and promote child's sense of control over anxiety and pain.

This study used Children's Emotional Manifestation Scale (CEMS) Behavioral Responses Indicating Anxiety and (VAS), Table 3. The procedural child, anxiety levels reported by the observer showed a significant difference between study group and control group where ( $p < 0.05$ ). The anxiety levels in the Level of cooperation were highly significantly improved where ( $p < 0.000$ ). These results were congruent with Javed et al., (2021) in their study entitled " Medical Clowning: A cost-effective way to reduce stress among children undergoing invasive procedures. Whom found that distraction via medical clowning can mitigate fears and anxiety in children. Also, Kurudirek and Arıkan (2020) reported that distraction via medical clowning can reduce fears and anxiety in children.

In this study children in the intervention study group exhibited better behavioral distress compliance to daily care than those children in the control group with a statistically significant difference with (P-value = 0.000). These results were the same as

***Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress  
among Children during Venipuncture***

those of Javed et al., (2021) whom found, significant reductions in measured distress and perceived pain for children younger than age 10 using similar scales ( $p < .001$  using an independent sample t-test). As stated by Gomberg et al., (2020) that, the use of therapeutic distraction methods easy to use, low cost and practical method to provide better communication and cooperation, can be used as a complementary therapy in all nursing areas, especially in the field of pediatric nursing.

According to the current study's findings, the mean total scores of the Wong-Baker Faces Pain Rating Scale were significantly lower in study groups than in the control group, as were anxiety and distress scores, indicating that medical clowning and distraction therapy were effective non-pharmacological methods. Therapeutic clowning is a cost-effective and practical way to improve communication. It can be utilized as a supplemental therapy in several nursing fields, particularly pediatrics. Nurses could be encouraged to be trained in the use of therapeutic humor using a standardized methodology, as well as given advice on how to employ amusing tactics like clowns.

**Conclusion:**

The current study concludes that; Distraction therapy methods had a positive pain, anxiety and stress relieve effect and had highly significant difference on children's during daily painful procedure.

**Recommendation**

- 1) Distraction methods therapy (clown, distraction should be used for relief pain, anxiety and stress of children during painful medical procedure.
- 2) Therapeutic distraction methods should be easy-to-use, low-cost and practical method to provide better communication and cooperation with the family and the child, can be used as a complementary therapy for pain management in all nursing areas, especially in the field of pediatrics'. Nurses could be encouraged to receive trained on the application distraction based upon a standardized approach and offered guidance on how to apply entertaining methods such as clowns.

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*Effect of a Distraction Method on Pain, Anxiety and Behavioral Distress among Children during Venipuncture*

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among Children during Venipuncture*

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