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Efficacy of Buzzy with Distraction Cards Versus The Traditional Method for Reducing Pain and Parent`s Satisfaction during Venipuncture in healthy Children

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Abstract*: The current study aimed to evaluate the efficacy of buzzy with distraction cards versus the traditional method for reducing pain and parent`s satisfaction during venipuncture in healthy children.*
Setting: *was conducted at Beni-Suef University Hospital.*
Research design: *A quasi-experimental design.*
Sample: *A Purposive sample of 120 children and their parents, divided into two identically groups: experimental group (No=60) were received pain distraction by the researchers and control group (No= 60) was received the routine nursing care.* ***Tools:*** *1) Tools were used to collect the data, 2) Numerical pain scale to assess pain severity level. 3) Hamilton Anxiety Rating Scale to assess anxiety level during venipuncture 4) Likert-Scale Rating to assess parents` satisfaction*
Results: *Study results display that distraction technique for children undergoing venipuncture had a positive effect for children were less pain intensity level and parents satisfaction.*
Conclusion *The results of the study recommends that the Buzzy device and distraction cards are efficiently reduced pain levels of children compared with the control group according to appropriate pain and anxiety assessment tool.*
Recommendation: *Reassure an educational training program should be conducted to a pediatric nurse about different methods of distraction that can play a vital role in supporting clinical practice.*

Keywords*: Children, Distraction, Pain scale, and Parents' satisfaction*

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I. Introduction

Pain is a sensual and unpleasant sensitive experience, which originates from real or potential tissue damage **(Smeltzer. et, al., 2010)**. Practical pain is a clinical manifestation of pain due to a diagnostic or therapeutic intervention **(Testa. et, al., 2014).** In specific, needle pain is amongst the most stressful for children **(Jeffs, et, al., 2011).** The simple insertion of a needle has been revealed to be one of the most frightening and worrying medical events for hospitalized children. It is well recognized that even minor and frequently performed procedures, such as peripheral intravenous (IV) cannulation, raise significant pain in children and increase fear and anxiety in children and their parents **(Canbulat, et al., 2014).**

Needle insertion procedures, such as venipuncture and intravenous cannula insertions, are considered as the most significant source of pain and distress in children in hospital settings. The intensity of pain and anxiety produced by these procedures can vary from mild to moderate for some, while for others, it may be severe. (**Ortiz et al, 2012** and **Ballard et al, 2018**) It is currently known that even such minor procedure, can result in several psychological, physiological and emotional penalties (**Brennan et al, 2007).** Among these, needle phobia is the most significant and predominant one with more than 60% of children reporting a dangerous fear of needles following a bad needle experience **(Taddio et al, 2012)**

In short term, the anxiety can generate serious physiological symptoms during needle insertion procedures, such as hypoxemia, vasovagal reactions, an increased heart rate and blood pressure (**Ballard et al, 2018**), tachycardia, and alteration in hormone levels **(Wright et al, 2009)**. Children with needle insertion phobia are also at the hazard of presenting fear of health care team and experience as well as higher levels of pain and fear throughout subsequent procedures **(Armfield and Milgrom, 2011)**. Long-term consequences include the avoidance behaviors for the healthcare system such as delays in care, non-compliance of immunization requirements and avoidance of treatment **(Noel et al, 2012)**.

Distraction methods are a procedure like refocus the child to take his attention from the unpleasant painful situation to another something attractive. The pain receptors are distrusted, as the child's attention is moved to others rather than painful procedure, ***(Bowden and Greenberg, 2013).*** Distraction methods evidence to work as the best on a mild degree of pain, mainly a chronic pain to the child. Patient children are well distracted when practicing common methods such as help child to talk, reading books, looking pictures, a video game play and cold device (buzzy). The distraction methods may also contain other methods as sounding music, enumeration things in the specific room, talking which are non-medical, games and dolls and blebs ***(Abdel-kader et al., 2015).*** The main objective from the distraction methods is to "return child focus from frightening, circumstances which increasing anxiety level for the child during management to non-frightening and preferably pleasant, objects or events ***(Christopher et al., 2015).***

There is significant evidence in the scientific literature concerning the efficacy of techniques both pharmacological and non-pharmacological, for the prevention of acute practical pain in children (**Susam**, **et al, 2018).** Based on those results, a method has been created, called Buzzy, which is composed of a bee-shaped device creating vibrations and cooling through freezable wings. The effect of buzzy is depended on the gate-control theory discovered by Melzack & Wall in 1965, which proposes that barriers are able to control the movement of pain information by means of the stimulation of nociceptive fibers. In this situation, the purpose of the cold is to close the transmission of pain signals and reduction of the pain information transmitted to the spinal cord (**Moadad et al, 2016 and Susam et al, 2018).**

On the other hand, a prolonged cold application can rouse the C nociceptive fibers and more blocks the A-delta pain transmission signal when practical close to the nociception source **(Baxter et al 2011).** The stimulation of C fibers by buzzy device also communicates slow pain and noxious thermal information to the brain in stimulating a supraspinal modulation which raises the body's overall pain threshold and therefore creates a generalized hypoalgesia at the insertion place (**Ballard et al, 2018)**.

Nursing and medical staff using distraction methods should be good expertise to define if the distraction procedure actually used is efficient at the treatment, child's present perception of pain. Regular evaluating must be done for any method will using, regarding the coping of child's, mainly during the venipuncture. It may be important to change methods, but simple language to decrease fear and anxiety. Pain assessment must be continued until ending the procedure ***(Finnley, 2013).*** Consent informs for the children and their parents essential prior to any procedure about, what will smell, feel, and hearing during the vein puncture. The nurse can be using children preceding background or usual sensations as a nurse guide as describing sharp and puncturing needles, ***(Dougal et al., 2014).*** To date, many pharmacological, physical, and psychological interventions have been appraised for pain management in children feeling needle-related procedures, such as distraction and topical anesthetic. Most of these interventions needed short training for the healthcare team and can be professed as being time - consuming and/or expensive causing barriers to application in the clinical settings and daily practice **(Fein, et al 2012).** However, an easy-to-use, rapid, noninvasive, safe, inexpensive, and reusable intervention could be a motivating alternative, mainly in acute settings, which are often eventful and where time to achieve a procedure is a subject. So, nurses play a critical role in the assessment, reducing and management of children's pain and anxiety, and the use of pharmacological and non-pharmacological interventions must be a vital part of nursing practice such as applied new methods that reduce and manage the pain and anxiety. The nurse can be a supporter children and educator parent and meeting their needs by performing measures to reduce and manage the pain and anxiety.

Significance of the study

In a multinational study, it is reported that procedural pain causes a notable impact on general health and has a significant issue for pediatric patients. In specific, needle insertion pain is amongst the most stressful for children. Studies have shown that a large number of children do not obtain adequate pain prevention during the procedures. Ignoring the prevention of needle pain can cause several physiological, emotional, and psychological consequences effects such as anxiety and phobias, and rise perceptions of pain in the future So, there is a very urgent need to focus on the importance of care and relief for procedural pain and anxiety, however, the opportunity of care is often missed (Ballard et al, 2018) & Birnie, et al., (2018)

In Egypt, application about care and relief for procedural pain and anxiety for children is very limited through the formal health care system. Both national and subnational surveys have stated that children and their parent need basic application and information on care and relief for procedural pain and anxiety because they often receive needle insertion for any reason without any measures because of other pharmacological and non-pharmacological interferences have also been evaluated for their efficacy on children's pain relieving and distress during needle-related procedures remains limited in clinical practice. In fact, these interventions may necessitate specific training for healthcare teams, preparation time, or excessive cost, which represent barriers to their application in the fast-paced environment of the ED and pediatric department setting **(Fein, et al 2012& Pretorius, et al. 2015).** Only study using simultaneously cold and vibration of the Buzzy device and distraction

cards the combination of cold, vibration and distraction cards could be different from the effect of either one alone.

Aim of the Study: The main aim of our study was to evaluate the efficacy of the buzzy device with distraction cards versus traditional method for pain relief and parents' satisfaction during venipuncture in children through:

- ❖ Compare the effects of the buzzy with distraction cards in reducing pain and anxiety during venipuncture in children compared to the traditional method (magic gloves).
- ❖ Evaluate the satisfaction of the parent/caregiver in relation to the buzzy with distraction cards and their willingness to use it again for future procedures.

Hypothesis:

It was hypothesized that; the buzzy device with distraction cards will have a positive effect on reducing pain and increasing parent`s satisfaction during venipuncture in children

Research design:

A quasi-experimental design was utilized to conduct this study

Setting:

The present study was conducted at two different settings, at the pediatric and emergency department (ED) in Beni-Suef University Hospital.

Subjects:

The purposive sample composed of (120) children and their parents, sampling was 120 children who need to venipuncture divided into two identically groups assigned randomly to the two groups (experimental and control) by using the mixing a coin. The experimental group included (60) and was established pain distraction (buzzy with distraction cards) by the researchers. On the other hand the control group was included the same number (60) and was established the traditional nursing care. Children and their parents should have participated voluntarily in the study, the studied children selected according to the following criteria:

Inclusion criteria

- Children aged between4 years old and 18 years old,
- Children presenting to the pediatric and ED and requiring venipuncture or intravenous cannula insertion
- Having the ability to communicate and nonverbal difficulties
- Accompanied by at least one parent/legal caregiver during the procedure that distracted the child with the distraction cards that can understand, read and speak.

Exclusion criteria

- Children with a neurocognitive disability that prevents them from asserting and participating in the study
- Children unable to self-report pain,
- Children free from medical health problems such as (a critical or chronic illness or poor health,
- a break or abrasion on the skin or a nerve damage or limited sensation where the needle-related procedure will be performed
- Children use of an analgesic within the last 6 hours.

Tools of data collection: - Three tools were developed for collecting data.

1- Structured Interview Schedule: It was developed by the research team after reviewing the related literature and was conducted to collect data related to the parents and children. This tool included three parts:

- ❖ Part A: Demographic characteristics of mothers, such as; age, order of children, educational level and residence,
- ❖ Part B: Demographic characteristics of children, such as age, sex, the reason for venipuncture, number of venipuncture and caregiver attending the procedure.

Tool II: Numerical rating scale (NRS); means (verbal rating scale (VRS); visual analogue scale. (VAS)**):** (for study and control group). Adopted from **Hockenberry & Wilson, (2015)** and **Song et al., (2016)** it was used to measure pain severity for children from 4 -18 years. It consisted of a line divided by numbered points ranged from (0-10) consisting of six cartoon faces that range from a neutral expression (0 very happy/no pain) to a screaming face (10 hurts more than. Children`s answers were sorted as follows: No pain (zero), mild pain (1-<4), moderate pain (4-<7) and severe pain (7 - 10). Alpha Cronbach test = 0.86.

Tool III: Hamilton Anxiety Rating Scale and Observational Scale of Behavioral Distress (OSBD) (for study and control group). Adopted from. **Jay & Elliott (1984), Cohen (2008)** and **Drendel et al., (2011)** the tool was encompassed two main parts:

Part (1): Psychological responses for children during venipuncture including restlessness, muscular rigidity, legs striking, weep, scream, cry, verbal pain, biting on lips, verbal fear, nervous behavior and refuse obeys, to evaluate level of fear and anxiety for children.

Part (2): Physiological response of the child immediately during the procedure of venipuncture including: increased pulse rate, increased respiratory rate, enuresis, sweating and flushed face. Testing reliability of the scale items using alpha Cronbach test = 0.83.

Scoring system: This scale formed of 11 variables. Each item is scored on a scale of 0 (not present) to 4 (severe): 0 = Not present, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Very severe. With a total score range of 0–44, where <17 indicates mild severity, 18–24 moderate severity, 25–30 severe and 31-44 very sever.

Tool IV: Parents` satisfaction (Likert-Scale Rating): Adapted from **Friedel et al.** ***(2014)*** it was used to assess parents' satisfaction regarding the cold device (Buzzy System), this scale formed of 4 variables:1, my child was comforted by the use of the buzzy system during the procedure; 2, it was a positive experience; 3, i think the buzzy system is easy to use; 4, i would like to use the buzzy system in the future for tests carried out on my son/daughter. Likert scale consists of 4 statements and was based on a five points 1=no, 2=probably not, 3=i don't know, 4=yes, 5=definitely.

Study instrument (Buzzy system): used in this study, associates three different components and modulations of pain:

- Distraction – reasoning method: distracting the child with (distraction cards)
- Vibration: a mechanical effect formed by applying a bee-shaped device a few centimeters from the needle entry point;
- Cryotherapy effect: by a changeable cold liquid device that the bee-shaped device.

Validity and reliability of study tools:

Content validity was ascertained by a group of experts (3) Pediatric Nursing, specialties. Their opinions were elicited regarding to the tools format layout, consistency, scoring system. Modifications for the tools were done according to the experts' judgment on clarity of sentences, appropriateness of content and sequence of items. The experts were agreed on the intervention, but recommended minor language skills changes that would make the information clearer. Reliability of all items of the tools was done. The reliability test of was established by using the Cronbach alpha to assess internal consistency construct validity. Cronbach alpha r= 0.86.

Ethical Considerations:

All children and their parents were informed about the aim of the study, its benefits, in order to obtain their acceptance to participate. The researchers informed them that the participation in the study is voluntary; they have the right to withdraw from the study at any time, without giving any reason and their responses would be held confidentially. Secrecy and privacy of all the data will be assured. Written or verbal consent will be obtained from those who welcome to participate in the study.

A pilot Study:

A pilot study was approved on 10% of the total sample (120) children and their parent to test the clearness and applicability of the study tools as well as approximation of the time needed to completion of each study tool. Those who contributed in the pilot study were later excluded in the study as there were no modifications on to the tools.

Procedure:

- After gaining official approval from the director of Beni- suef university hospital and agreement of the chairman of pediatric and ED department, data were collected through a period of nearly 6 months from the beginning of May 2018 to the end of November 2018.
- The aim of the study at first was simply explained to children and their parents under study.
- The researchers started to collect data from the children and their parent at the selected setting.

- The researcher started the study by visiting the sitting of the study 2 days/week (Mondays & Tuesdays) during the morning period in the previously mentioned setting from 9.00 a.m. to 2.00 p.m.
- All engaged children and their parents were informed that participation is voluntary and have the right of accepting or refusing participation in the study. Each child and their parent were randomly allocated to the line of application and surrounding conditions should be similar in all patients.
- The first method of data collected from engaged children and their parent through interviewing questionnaire. The researcher introduced herself to the participant children and their parent and obtained her approval to participate in the study. The researcher collected socio-demographic data related to the parent's age, order of children, educational level and residence. And data related to the children as age, sex, reason for venipuncture, number of venipuncture and caregiver attending the procedure. Otherwise, time 10–15 minutes for anxiety scale, about 5 minutes for pain scale assessment and 10-15 minutes for parent`s satisfying scale. The researcher inquired questions in a simple Arabic language and noted the answers in the structure interview tool. Interview consumed about 10 -15 minutes for each.
- Each child was interviewed individually to determine his level of pain and anxiety during venipuncture. The explanation for the children in both groups was done. The children and their parent were randomly assigned to two groups and the parents were asked to help the researcher to complete the procedure. Group (A).Experimental group about a new method of reducing pain and anxiety during venipuncture (buzzy device and distraction cards). In the experimental group, children were involved in distraction techniques using the buzzy device and distraction cards during venipuncture. While the researchers placed the buzzy device with the frozen wings on children's skin, parents were asked to interact with their children through the use of the distraction cards, which are a small number of images showing various acts usual in school, countryside or outdoors, and which could be overturned through by the child. Parents continuously invited their child questions about the images, maintaining a communicating dialog during the whole venipuncture. Distraction cards were only used in the experimental group.
- The researcher placed the buzzy by any attaching it to the arm or manually holding it in place, as close as possible above the needle insertion site (about 5-10 cm above the insertion site). Immediately before the first venipuncture attempt, the researchers applied the device 5 to 10 cm proximal to the dorsum of the hand site. If the IV insertion was not successful at the first attempt, the child was excluded from the experimental group. Children were requested to focus on the sensations of the "BUZZY" rather than look at the needle insertion procedure. A 30 to 60 s rest is selected between the fixing of the device before the procedure. The device has to be kept in place during the procedure. Before starting the venipuncture, the researcher asked the child or his parent to keep the device from venipuncture location. The buzzy device remained on till the end of the procedure from (the time of placement of tourniquet to the placement of the bandage or securing the venous line)). (Finally, the researchers subjectively and objectively assessed pain and anxiety using the appropriate pain and anxiety assessment tool; it was taken from 3 to 5 minutes. The researchers noted the physiologic measurements of the children during the needle puncture. In order to evaluate the parents' level of satisfaction with the distraction device method of pain control in the child and their desire to use it again in future, with the appropriate parent`s satisfaction assessment tool. The buzzy component contains 20 g of ice and can be removed and kept in the freezer between procedures. Each pair of wings can stay frozen for about 10 min at room temperature and could be used up to 10 times.
- The control group in the study setting, the "magic glove technique" is traditionally used. The children in the control group were permitted to keep their family nearby. The routine venipuncture practice was applied and the level of pain resulting from the applied procedure in each child was evaluated by appropriate pain and anxiety assessment tool. Before starting the venipuncture, the researcher gently rubbed the area in which the needle was positioned in order to free it from the pain. The child, imagining that the researcher is placing the glove and feeling the influence of the massage on his site of venipuncture and his body, would feel certain numbness in the same area where the sensitivity is lowered. The researcher who did the venipuncture was the same during the whole data gathering process. Whether in the control or the experimental group, none of the children established pharmacological pain therapies.

Statistical Design

Data collected were organized, and scored, tabulated, and analyzed by computer using the "Statistical Package for the Social Science" (SPSS windows), version 19. Numerical data were expressed as mean ± SD, and range. Qualitative data were expressed as frequency and percentage. Using Chi-square (X^2) test, relations between different numerical variables were tested using Pearson correlation, when P value less was than 0.05, it was considered significant, and less than 0.001, was considered as highly significant.

II. Results

Table (1): Distribution of the studied children regards to socio- demographic data **(n=120)**

Socio-demographic characteristics	Experimental group (60)		Control group (60)		X^2	P value
Age/years	No	%	No	%		
4-<8	25	41.7	38	63.3		
8-<13	20	28.3	16	33.3	**2.72**	>0.05
13-<18	15	25.0	6	10.0		
Mean ± SD						
Sex						
Male	22	36.7	28	46.7	**1.96**	>0.05
Female	38	63.3	32	53.3		
Reason for venipuncture						
Routine blood check	16	26.7	20	33.3	**2.41**	>0.05
IV cannula	44	73.3	40	66.7		
Caregiver attending the procedure						
Mother	45	75.0	42	70.0	**1.57**	>0.05
Father	15	25.0	18	30.0		

Table (1) illustrated that the age of children ranged from 4 years to 18 years, the major ranged from 4 < 8 where 44.7% of the experimental group and the control group. As regards gender, for both the experimental and control groups, it was found that 63.3% and 53.3% were females, compared to 36.7% and 46.7% being males respectively. Regarding the reason for venipuncture 73.3% and 66.7% of children were for IV cannula in both groups. Concerning Caregiver attending the procedure, for both groups, it was found that 75% and 70% were mothers with a non-significance difference (P>0.05) between the two groups.

Table (2) Characteristics of the parents of Studied groups children of buzzy intervention (n=120)

Socio-demographic characteristics	Experimental group		Control group		X^2	P value
	No	%	No	%		
Age/years						
20-<30	19	31.7	17	28.3		
30-<40	31	51.6	28	46.7	**2.14**	>0.05
40-<50	10	16.7	15	25.0		
Mean ± SD	32.06 ± 2.60		31.08 ± 2.64			
Order of children						
First	16	26.7	12	20.0		
Second	28	46.7	26	43.3	**1.98**	>0.05
Third	10	16.7	14	23.3		
The last	6	10.0	8	13.3		
Parents' educational level						
Illiterate	8	13.3	14	23.3		
Primary	10	16.7	8	13.3	**2.07**	>0.05
Secondary	30	50.0	22	36.7		
University	12	20.0	16	26.7		
Residence						
Urban	32	53.3	22	36.7	**1.67**	>0.05
Rural	28	46.7	38	63.3		

Table (2) illustrated that the mean age of parents was 32.06 ± 2.60 years in the experimental group compared to 31.08 ± 2.64 years in the control group. Less than half (46.7%, 43.3%) of children were second order. Regarding parents' educational level 50% & 36.7% of parents in experimental and control groups had secondary education respectively and more than half 63.3% of mothers live in rural area in control group while more than half 53.3% of parents live in urban area in experimental group with non-significance difference (P>0.05) between the two groups.

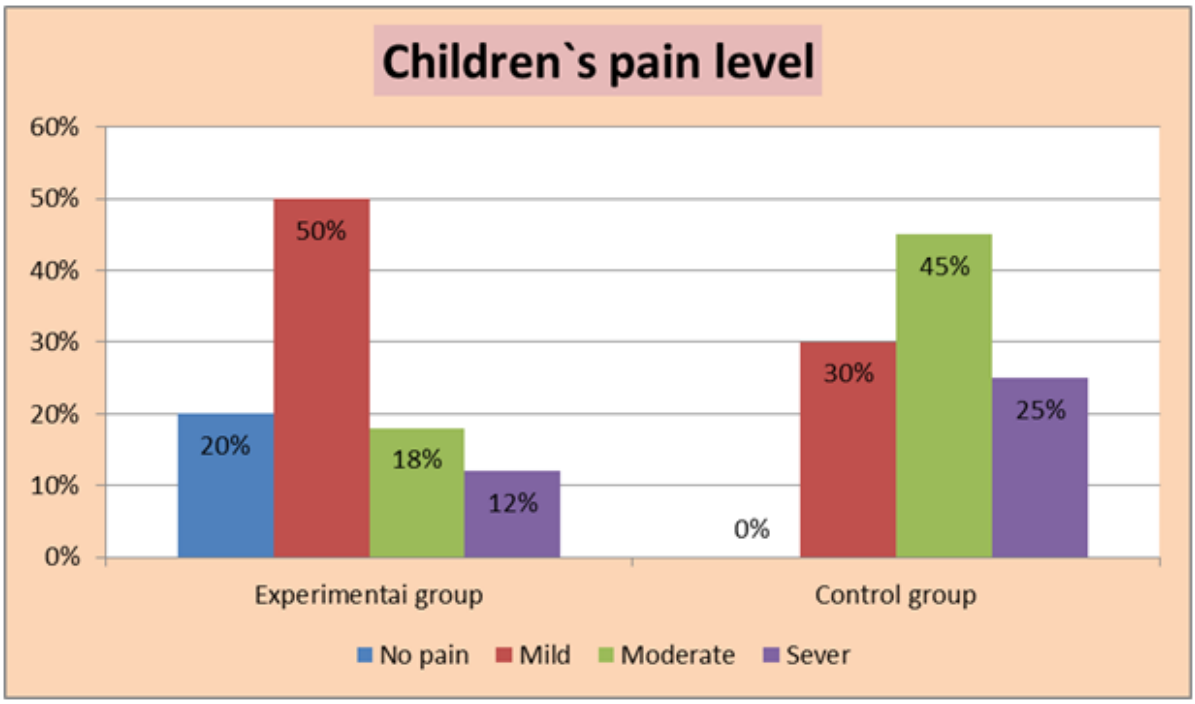

Fig. (1): Presentation of Pain Levels among the Studied groups` children of buzzy intervention (n=120)

Fig. (1): Reveals studied children`s pain levels in both groups. Concerning pain level, significant improvement was indicated in the experimental group (20% &12% no pain and severe pain sensation respectively) compared by the control group (0% & 25% no pain and severe pain sensation respectively).

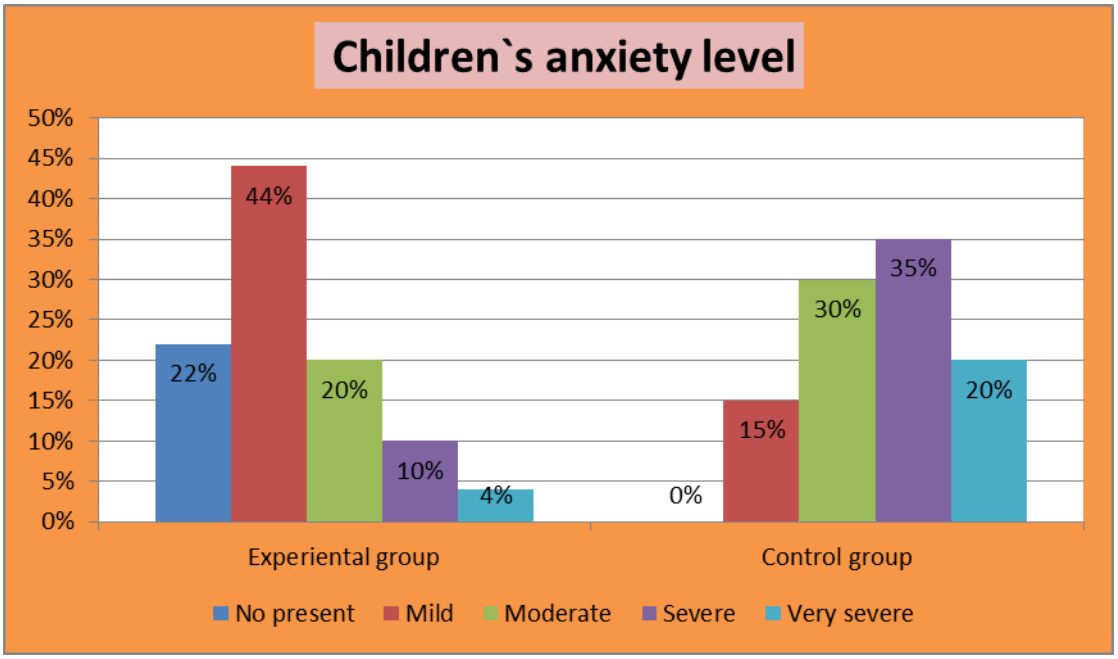

Fig. (2): Presentation of Anxiety Levels among the Studied groups` children of buzzy intervention (n=120)

Fig. (2): Reveals studied children`s anxiety levels in both groups. Concerning pain level, significant improvement was indicated in the experimental group (22% &4% no present and very severe anxiety sensation respectively) compared by the control group (0% & 20% no present and very severe anxiety sensation respectively).

Table (3): Distribution of studied sample regards their psychological response of buzzy intervention.

Psychological responses	**Experimental** group		Control group		P value
	N	%	N	%	
Crying	8	13.3	36	60.0	<0.001
Screaming	12	20.0	43	71.7	<0.001
Restlessness,	31	51.7	40	66.7	<0.05
Verbal resistance,	10	16.7	30	50.0	<0.001
Refuse obeys	14	23.3	38	63.3	<0.001
Legs striking	4	6.7	39	65.0	<0.001
Verbal pain,	15	25.0	29	48.3	<0.05
Verbal fear,	15	25.0	32	53.3	<0.05
Muscular rigidity	10	16.7	45	**75.0**	<0.001
Biting on Lips	16	26.7	36	60.0	<0.001

Statistically significant difference=<0.05
Highly statistically significant difference=<0.001

Table (3) clarified a highly statistically difference for studied groups for psychological response during venipuncture procedure, regarding to restlessness, muscular rigidity, legs striking, weep, scream, cry, verbal pain, biting on lips, verbal fear, nervous behavior and refuse obeys, were less in the experimental group compared to thecontrol group. At p- value 0.001.

Table (4): Distribution of studied sample children of buzzy intervention regards their physiological response (n=120).

Physiological response	**Experimental** group		Control group		P value
	N	%	N	%	
Tachycardia	**20**	**33.3**	**30**	**50.0**	<0.001
Rapid respiration	**15**	**25.0**	**37**	**61.7**	<0.001
Sweating	**16**	**26.7**	**45**	**75.0**	<0.001
Flushing	**12**	**20.0**	**34**	**56.7**	<0.001
Enuresis	**14**	**23.3**	**35**	**58.3**	<0.001

Highly statistically significant difference=<0.001

Table (4) revealed a highly statistically difference for, studied sample during venipuncture procedure regarding physiological response, related to increased pulse rate, flushed face, increased respiratory rate, sweating & enuresis were less in the experimental group than in control group

Table (5): Comparison of the mean scores regarding psychological and physiological responses for the studied sample of buzzy intervention (120).

Items	**Experimental group (N=60) Mean± SD**	**Control group (N=60) Mean± SD**	t	P-value
Psychological response	3.23± 0.61	8.09±0.73	26.10	0.001
Physiological response	1.62±0.80	3.74±1.05	12.92	0.001

Statistically significant difference=<0.05
Highly statistically significant difference=<0.001

Table (5) Shows that the mean score level of Psychological response of children was 3.23± 0.61for the Buzzy group compared to 8.09±0.73 of the control group. While the mean score level of Physiological response of the children was 1.62±0.80 among the experimental group compared to 3.74±1.05 of the control group. The table revealed that were a highly statistically significant difference between the studied groups of children regarding psychological and physiological response during vein puncture as t = 26.10, 12.92 at P<0.001.

Table (6): Description of the Results of Parents' Satisfaction (experimental group) Questionnaire for the Buzzy System.

Parents' satisfaction n(60)	No n (%)	Possibly not n (%)	t Don't know n (%)	Yes n (%)	Certainly n (%)
My child was comforted by the use of the Buzzy System during the procedure	0	5 (8.3)	10 (16.7)	25 (41.7)	20 (33.3)
It was a positive experience	0	6 (10.0)	8 (13.3)	22 (36.7)	24 (40.0)
I think the Buzzy System is easy to use	0	0	4 (6.7)	10 (16.7)	46 (76.7)
I would like to use the Buzzy System in the future for tests done on my son/daughter	0	0	6 (10.0)	14 (23.3)	40 (66.7)

Table (6): 66.7% of parents said they would reuse the buzzy device in a future venipuncture, while 76.7% of parents said it was certainly easily used. No negative opinions were expressed for any of the questions regarding the buzzy device.

III. Discussion

Venipuncture is the most painful and frequently done invasive procedures by nurses. It can be categorized as a minor invasive procedure but for children, it is accompanied by pain, fear, and anxiety. For this reason, an effort should be made to evaluate, manage acute pain, improve children outcomes, and shorten hospitalization of children Kiran, et al (2013.(

Application of a buzzy over the insertion location is one method of the cutaneous stimulation that considered as non-pharmacological pain management method which used by the researchers in this study to evaluate the efficacy of an ice pack and vibration application(buzzy device) previous to venipuncture on pain level among children.

Regarding socio-demographic characteristics for children, the current study revealed that the major ranged from 4 < 8 were 41.7% and 63.3% of the study and control group. Females were more than males. Susam, et al, (2018) pointed out that, those females more than males in his study. Findings of this present study revealed that no statistically significant difference between the study and the control groups of the children and their parent in relation to their socio-demographic characteristic (table1, 2). Findings of the present study were in the line of that obtained by Alalo et al, (2016) in their study which conducted to evaluate Pain Intensity after an Ice Pack Application Prior to Venipuncture among School-age Children. Children pain can result from painful invasive events such as venipuncture. Furthermore, Susam et al, (2018) mentioned the two groups did not show statistically significant differences before the procedure when compared for age, gender, the number of venipuncture, if it was their first venipuncture, caregiver attending the procedure, the reason for venipuncture. Pharmacological management of pain evidence to be not effective, so unrelieved pain may contribute to complications of disease and slowness in recovery. Different devices for reducing pain are the preparation of children before, during and after venipuncture for helping children to cope with their pain Marwah, et al (2012). Staff nurses in pediatric and emergency department should evaluate the comfortable level of parents and for the child before prior- any procedure, and talk with the child about the chosen person for engaging in care and practice for promoting child comfort Mohammed et al, (2017). The study was aimed to evaluate the efficacy of the cold device (buzzy) versus the traditional method for pain relief and parents' satisfaction during venipuncture in children.

As of results of the study was show that the distraction technique is efficient in reducing pain with children. Some previous researches discussing pain control for venipuncture, immunization and dressing changes for burning children have recorded that distraction technique not effective on reducing pain. While were distraction technique using could reduce the response of the children undergoing venipuncture procedure Morgese, (2013). Regarding the level of pain sensation and anxiety expression (fig 1, 2) the present study finding showed that significant improvement was indicated in the experimental group) compared by the control group. This result is in similar with the finding of the study by Mohammed et al, (2017) stated that there was a highly statistically difference compared the experimental and controlled groups after distraction on the level of pain intensity. Moreover this result is unsupported by Susam et al, (2018) who stated that, pain was significantly lower in the experimental group than in the control group (Student's t test=-2.16;df=62; p=.039) in his study about efficacy of the buzzy system for pain relief during venipuncture in children: a randomized controlled trial . Additionally, this finding goes online with Bandura, (2012), who added that parental anxiety could impact children's level of anxiety. In the face of threat and uncertainty, children often look to parents for emotional support for guidance in understanding what is happening. Furthermore, Tork, (2017) and Susam et al, (2018) mentioned that the distraction cards method through Buzzy, distraction cards and balloon inflating are effectively decreased pain levels of children compared with the control group according to appropriate tools

According to the psychological signs of children during venipuncture were restlessness, muscular rigidity, legs striking, weep, scream, cry, and verbal pain, biting on lips, verbal fear, nervous behavior and refuse obeys (table 3). The current study displayed that, the psychological signs were less in the experimental group compared to control group and clarified a highly statistically difference for studied groups for a psychological response during venipuncture procedure. This finding supported by Mohammed et al, (2017) & Alalo et al, (2016) who mentioned that there was a highly statistically difference between two children of the engaged sample regarding psychological response. Furthermore, El-Sharkawy et al, (2001) mentioned that children undergoing venipuncture procedures and prepared by therapeutic play, would affect a child reaction more strongly, and their fear was less compared to children among the control group. The result simply to the child preparation prior venipuncture procedure could decrease the fear and stress.

Concerning to children physiological response (table 4), the present study specific that there was a highly statistically difference between experimental and controlled groups as their physiological responses for children, were a flushed face, tachycardia, rapid respiratory rate, sweating, flushing, and enuresis. This finding agreed with Mohammed et al, (2017) stated that, there was a highly statistically difference between experimental and controlled groups as their physiological responses for cancer children, were a flushed face, increased the pulse rate, increased respiratory rate, sweating, elevation in body temperature and enuresis. This result is in similar with the result of the study by El-Sharkawoy et al, (2001), in which the control group had the highest physiological response compared to the experimental group in relation to the flushed face, increased heart rate, and increased respiratory rate. Furthermore in agreement with Phippen and Wells, (2014) and Kuntz, (2012), in which the painful condition may result in a change of vital signs and other signals of distress such as flushed face and sweating.

At the same time, the physiological responses as fear and anxiety were mostly noticeable; which in the children was the alteration in circulation that is the action of the heart is strengthened and maybe pallor face. In agreement with the present study findings, Goldenberg, (2013) have notified that preparation distraction technique for children prior exposure to venipuncture actions had a positive result on physiological responses and psychological responses for children. Children are often exposed for many painful events in pediatric departments, allowing distraction technique before and during procedures had multiple benefits; distraction method is cheap and easily available, requiring few number of staff training and being known by the children and their families, with no risk to outcomes Mohammed et al, (2017). Distraction technique has the possibility to enhance the child's participation, and positively efficiency their cope in another experience. Distraction technique for children undergoing venipuncture enhances to promoting parental cooperation in management Abdel-kader et al., (2015).

Regarding parents' satisfaction questionnaire for the buzzy device (table 6), the current study revealed that no negative opinions were expressed for any of the questions regarding the buzzy device. More than three-quarters of parents said it was certainly easily used. This result is in parallel with the finding of the study by Susam et al, (2018) mentioned that caregivers were satisfied with the buzzy system and 71.9% of parents said they would reuse the buzzy system in a future venipuncture, while 46.9% of parents said it was definitely a positive experience. Finally, this study proves that non- pharmacological devices of pain management comprise cutaneous stimulation have been found to be effective, had a positive outcome for children on reducing the pain strength level, safe and simple adjunctive devices for the control and relief of school-age children pain prior to vein-puncture.

IV. Conclusion

Pain is a common part of all children lives and for the pain assessment and regular evaluating is the vital aspect to the impact of pain management. The results of the study suggest that the Buzzy device and distraction cards are efficiently reduced pain levels of children undergoing venipuncture compared with the control group and had an positive outcome for children on reducing the pain strength level.

V. Recommendations

-An educational training program should be conducted to a pediatric nurse about several methods of distraction.
-Distraction techniques of pain for children undergoing venipuncture procedure are very important for reducing pain strength level.
-Non-pharmacological management should be integrated into routine nursing care with pharmacological management.

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