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Comparative Evaluation of Acupressure and Tell Show Do on dental anxiety and pain perception in children

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ABSTRACT: Importance: Acupressure, the Chinese medicine alternative for Acupuncture is a non-intrusive technique that can be used in children.
Objective: The objective of the study is to compare the effect of acupressure and Tell Show Do (TSD) on children undergoing treatment under Local Anesthesia (LA).
Design, Setting, Population: A total of 120 children aged between 6-12 years were included in the study who required dental procedures under LA administration and were divided into 3 groups of 40 each. It's a randomized, double blinded study.
Exposure:
Group I: Will be treated with TSD technique.
Group II: Will be treated with acupressure technique (EX-HN3).
Group III: Will be treated with both acupressure and TSD technique
Main Outcomes and Measures: The anxiety levels will be recorded using modified child dental anxiety scale (MCDAS), pulse oximetry before and after LA administration.
The pain levels will be recorded using Wong–Baker faces pain rating scale (WBFPRS) before and after LA administration.
Results: On intergroup comparison, it was observed that anxiety values were reduced significantly in group 3 when compared to group 1 and 2. The pain and anxiety levels were least in children who were treated byacupressure and TSD combined technique and highest in children who were treated under TSD technique alone.
Conclusion: Among all the 3 groups, combined Acupressure and TSD group can be used as an adjuvant to conventional LA techniques for reducing anxiety.
Keywords: Acupressure; Tell Show Do; MCDAS; WBFPRS

I. INTRODUCTION

The revised definition of pain given by International Association for the Study of Pain (IASP) is "an unpleasant sensory & emotional experience associated with, actual or potential tissue damage". It acknowledges that pain is not only the unpleasant response to noxious stimuli caused by tissue damage, but also an emotional and psychological response [1]. The realm of pediatric dental care, ensuring painless treatment holds much significance. Dental anxiety is characterized by a generalized apprehension towards any treatment, not tied to any specific stimulus. These psychological states have been described as vicious cycle given by van Wijk and Hoogstraten [2]. Trigger for this anxiety include needles, exposure to drills and even clinic setup [3].

Behaviour management in pediatric dentistry is a study to evaluate fear, anxiety and anger in children in clinical setup [4] which helps in effective communication with children and provides comfortable environment to optimize the team work [5].

Various behaviour management techniques, categorized into pharmacological and non-pharmacological methods, includes Tell-Show-Do (TSD), modelling, positive and negative reinforcement, distraction, voice control, restraining, Hand Over Mouth Exercise (HOME), physical immobilization and pharmacological interventions encompass premedication, conscious sedation and general anesthesia [6].

The TSD technique, introduced by Addles ton in 1959, is considered as a fundamental pillar in management of the child in pediatric field. It aims the child to adjust to the dental office, reducing the anxiety levels effectively. This technique is implemented by the dentist himself and widely accepted behavior management technique in pediatric dentistry.

In response to the challenges in managing anxiety in toddlers and young adults there has been a growing interest in alternative techniques. Acupuncture, derived from ancient Chinese medicine. The meridians are pathways through the body channels and connect different organs and

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systems, via which life energy or Qi (pronounced chee) is flowing. When Qi flow is obstructed or imbalanced, it causes anxiety and pain all over the place so acupressure intends to remove these blocks by pressing on particular factors along these meridians. It is thought that Qi, the vital life force responsible for health and wellness activates bodily functions so by balancing out your Qi through acupressure one can reduce symptoms of anxiety as well as pain [7].

Acupuncture carries some adverse effects if administered by poorly trained person. Besides, the use of needles in these procedures can induce anxiety in any age group. To alleviate these concerns, the acupressure technique becomes the alternative for acupuncture. It is less invasive, done by using fingers or specialized instruments only.

Research studies have proved the success of acupressure in reducing anxiety even in medical field. Which includes for example patient undergoing hemodialysis, selective surgical procedures, and endoscopic procedures. It had also shown effective results in reducing symptoms like nausea vomiting during pregnancy, managing spinal anesthesia, during laparoscopic cholecystectomy procedures, any facial or temporomandibular disorders [8].

The study aims to evaluate the effect of Tell-Show-Do technique and acupressure on dental anxiety and pain perception in children.

II. MATERIAL AND METHODS:

1. Study Design:

A randomized, double-blinded clinical study conducted in the Department of Pediatric and Preventive dentistry, from December 2023 to March 2024. The study was conducted after obtaining approval from Institutional Review Board on Ethical. Ethical Committee reference number is (749/SSCDS/IRB-E/2021-22) and Central Trial Registry India (CTRI) no. (CTRI/2023/12/060663). For the study parent / guardian of the children were given a complete oral explanation about the acupressure technique i.e. yin Tang point pressed with thumb for 1min (60 times) and TSD technique which were used during administration of local anestheisa (LA) and a written informed consent was obtained.

2. Sample Size

Sample size was obtained by using this formula

$$N = \frac{2x(Z_{\alpha/2}+Z_{1-\beta})^2 x \sigma^2 k}{\delta^2 k-1} \quad X$$

A sample of 130 children of age 6-12 years were 10 were excluded, 120 met the inclusion criteria were divided into 3 groups (group 1, group 2, group 3) 40 in each group using simple randomization method.

This group allocation was done by the central OP chair person who was not the part of the study. The patient and the statistician were blinded in the study.

1. InclusionCriteria:

Children with dental procedures who require LA administration.
Children without any special healthcare needs.
Children who do not have a history of previous dental visit.

2. Exclusion criteria:

Children with dental procedures who does not require LA administration.
Differently able children.
Children who have a history of previous dental visit.

3.Intervention

Children allotted to the groups were allowed to sit where anxiety levels were recorded using MCDAS (modified child dental anxietyscale), pulse oximetry before and after local anesthesia administration, pain levels were recorded using WBFPRS (Wong–Baker faces pain rating scale) before and after local anesthesia administration (figure 1, 2). All the children in group 1 were treated under conventional TSD technique infiltration or block as per requirement of the treatment. For the children in the group 2, were treated with acupressure point i.e yin Tang acupoint was gently pressed with thumb finger for 1min i.e 60 times and LA was administered (figure 3, 4).

For the children in the group 3, were treated with both acupressure and TSD technique and LA administered.

Once anesthesia was given, required extraction and pulp therapies were carried out.

The required sample size was achieved by the month of March (2024).

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Fig 1: Recording pulse rate

Fig 2: RecordingWBFPRS and MCDAS

Fig: 3 Acupressure technique (EX-HN3)

Fig: 4Administration of Local Anesthesia after Acupressure technique.

III. RESULTS

Statistical Analysis

The data was analyzed with Statistical Package for Social Sciences (SPSS)version 20.0 was used for statistical analysis. Confidence interval was set at 95%. P value < 0.05 was considered statistically significant. Frequency andpercentages were reported for discrete data. One way ANOVA was used for intergroup comparison. Tukey's test was used for posthoc analysis.

In table 1: Group 1 consisted of 15 boys and 25 girls with a percentage distribution of 37.5 and 62.5 respectively. Group2 consisted of 24 boys and 16 girls with a percentage distribution of 60 and 40 respectively. Group 3 consisted of 20 boys and 20 girls with a percentage distribution of 50 and 50 respectively.

In table 2: Intra group comparison showed a statistically significant difference (P < 0.005) among scores of group 2 and group 3. No statistically significant difference was seen in group 1

In table 3: Inter group comparison showed a statistical significant difference (P < 0.005) after pulse rate in group 1 group 2 and group 3 is 102.65 ,92.83 ,95.3 respectively showing significant difference in group 2 and group 3 [a>(b,c)].

MCDAS scale after in group 1 group 2 and group 3 is 2.53, 1.53, 1.58 respectively showing significant difference in group 2 and group 3 [a>(b,c)].

WBFPRS scale after in group 1 group 2 and group 3 is 3.15, 1.65, 1.45 respectively showing significant difference in group 2 and group 3 [a>(b,c)].

IV. DISCUSSION

Pediatric dentists use a wide array of behaviour management techniques to reduce

anxiety in children undergoing any dental procedures. These include non-aversive methods like relaxation, distraction (audio, visual, audio and visual) systemic desensitization, modeling, hypnosis [6].

A few aversive techniques, as voice control, HOME, the use of restraints are used on selective children where non-aversive techniques have failed, in cases of highly uncooperative children. Among these papoose board and HOME are more effective. Attitude among parents and dental professional towards these methods have changed, and gained preference for non-aversive techniques [9].

Non-aversive techniques also include acupressure a Chinese medicine use for reducing anxiety and pain in adults as well as children.

A study conducted by Gabriela Gil-Abando [10] on dental anxiety and physiological parameters relation and the changes in blood pressure (BP) and heart rate (HR) over time during non-inversive treatments. The study concluded that significant but weak connection between the level's dental anxiety and HR.

In the present study WBFP rating scale is used to assess the pain levels in children. It was used in other study conducted by Adeolu Adeboye [11] that evaluate the functional pain score on comparing to traditional pain scores in children, and proven to be the most reliable marker of pain assessment.

The pain and anxiety levels were found to be decreased in children who were treated under acupressure group as compared to the control group. Similar findings were observed in the study conducted by Priyanka Avisa [7] Maria Eliza et al [12] in a pilot study, evaluate the effect of acupressure on anxiety in children undergoing restorative procedures, concluded children received acupressure reduce the anxiety had lower heart rate after restorative procedure.

Manishi Sisodia [13] in the study use 3-point acupressure therapy in reducing anxiety in children undergoing any form of dental procedures and concluded acupressure a simple, non-invasive, economical therapy in decreasing anxiety in children. Similar study done by Dr. Suryakant Kumar [8] concluded acupressure plays a promising role in conventional treatment, easy to apply, safe and non-invasive. In the above mention studies, acupressure technique used as an effective method in reducing anxiety during dental procedures in children as compared to control group.

In the present study, the pain and anxiety levels were reduced in children who got their treatment done under acupressure technique when compared to control group. Similar findings were noticed in studies done by M,Pushpasanthy et al [14] evaluate the effect of acupressure device (Aculief) and study done by Sandhyarani B [15] using low-level laser on acupoint LI4 , in eliminating pain while administration of LA , concluded that acupressure is effective in reducing pain during LA administration. The device is simple, safe, non-inversive and easy to apply.

Lubna Fathima [16] done a study on controlling post-operative dental extraction pain, concluded auricular acupoint (Shenmen point) is effective in reducing post operative pain and Ayushi et [17] evaluated extra one (EX -HN1) acupoint, effective in reducing pain children 5- to 10-year-old undergoing treatment under Inferior Alveolar Nerve Block (IANB) for extractions.

Similar results were seen in adults undergoing metal try-in in fixed prosthodontics in eliminating the use of LA during procedure in the study done by Noha Taymour [18].

In the above mentions studies acupressure technique used as an effective method in reducing pain and anxiety during any dental procedures in children and adults as compared to control groups.

In the present study, the pain and anxiety levels were less in children who were treated using acupressure and TSD combined group as calculated from WEFPRS and MCDAS scale when compared to group 2 i.e only acupressure and control group.

The reason for the least pain and anxiety scores in group 3 during LA administration could be the fact that acupoints relieve blockage in "Qi "and stimulate the natural circulation of energy all through the body. The stimulation of acupoint Yin Tang, which is located between the eyebrows, when pressed with thumb or index finger provides analgesic and anti-anxiety effects in the body. Other anxiety reducing acupoints are those located between thumb and index finger, the meeting point of neck and shoulder, on the top of head and between the big toe and second toe. These acupoints can also be activated by various tools such as hand rollers or magnetic rollers stimulator.

The effect of Acupressure and TSD combine studies on dental anxiety and pain perception in children has not been reported till date.

V. LIMITATIONS

Gender and age did influence the effect of acupressure, 6 years old children have less pressure tolerance than compared to 12 years old children, girls have less tolerance for pressure when compared to boys of same age group.

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VI. CONCLUSION

Based on the present study, the following conclusions were drawn. Among the various techniques Acupressure and TSD group combined wasfoundtobemosteffective.

The pain and anxiety levels were least in children who were treated usingacupressure and tell show do combined technique and highest in children who were treated under only tell show do technique.

The acupressure therapy significantly reduce anxiety in children undergoing dental procedure under LA anesthesia, regardless of type of dental treatment, as compared with non-acupressure group.

Acupressure therapy can be acceptable choice for the children undergoing dental procedures in reducing anxiety.

Table 1: shows the distribution of subjects based on gender.

Group	Gender	Frequency	Percent
1	Male	15	37.5
	Female	25	62.5
	Total	40	100.0
2	Male	24	60.0
	Female	16	40.0
	Total	40	100.0
3	Male	20	50.0
	Female	20	50.0
	Total	40	100.0

***No significant difference is seen based on gender**

Table 2 shows the comparison of study variables between two-time intervals (paired t test) (intra group comparison)

Group	Variable	Before		After		Paired Differences		p value
		Mean	SD	Mean	SD	Mean	SD	
1	PULSE	101.55	10.92	102.65	10.76	-1.10	10.21	.500
	MCDAS SCALE	2.45	0.68	2.53	0.72	-0.07	1.02	.645
	WBFPRS	3.25	1.41	3.15	1.56	0.10	2.12	.767
2	PULSE	98.30	14.13	92.83	10.46	5.47	11.15	.004*
	MCDAS SCALE	2.43	0.98	1.53	0.60	0.90	0.96	.000*
	WBFPRS	3.50	1.91	1.65	1.49	1.85	2.05	.000*
3	PULSE	101.90	11.99	95.30	9.33	6.60	11.17	.001*
	MCDAS SCALE	2.55	1.01	1.58	0.68	0.98	1.10	.000*
	WBFPRS	3.30	2.24	1.45	1.63	1.85	2.62	.000*

***Significant difference is noted in Group 2 and Group 3**

Table 3 shows the comparison of study variables between three study groups (one way ANOVA and Tukey's test) (Inter group comparison)

Variable	Group	N	Mean	SD	P value	Posthoc analysis
AGE	1	40	8.93	2.177	.908	
	2	40	8.85	1.889		
	3	40	9.05	2.087		
	Total	120	8.94	2.039		
BEFORE PULSE	1	40	101.55	10.924	.363	
	2	40	98.30	14.128		
	3	40	101.90	11.987		
	Total	120	100.58	12.420		
AFTER PULSE	1 (a)	40	102.65	10.764	.000*	a>(b,c)
	2 (b)	40	92.83	10.458		
	3 (c)	40	95.30	9.329		
	Total	120	96.93	10.950		
MCDAS SCALE BEFORE	1	40	2.45	.677	.807	
	2	40	2.43	.984		
	3	40	2.55	1.011		
	Total	120	2.48	.898		
MCDAS SCALE AFTER	1 (a)	40	2.53	.716	.000*	a>(b,c)
	2 (b)	40	1.53	.599		
	3 (c)	40	1.58	.675		
	Total	120	1.88	.805		
WBFPRS BEFORE	1	40	3.25	1.410	.822	
	2	40	3.50	1.908		
	3	40	3.30	2.244		
	Total	120	3.35	1.873		
WBFPRS AFTER	1 (a)	40	3.15	1.562	.000*	a>(b,c)
	2 (b)	40	1.65	1.494		
	3 (c)	40	1.45	1.632		
	Total	120	2.08	1.728		

More significant difference is seen in Group 3 than compare to Group 1 and Group 2.

REFERENCES

[1]. Eiji Sakamoto, Takeshi Yokoyama. Pain and anxiety in dentistry and oral and maxillofacial surgery focusing on the relation between pain and anxiety. Ann.Med. 2018;1(1):1002.

[2]. Ulla Wide, Magnus Hakeberg. Treatment of dental anxiety and phobia—diagnostic criteria and conceptual Model of behavioural treatment. Dent.J. 2021 Dec 17;9(12):153.

[3]. Floor Oosterink, Ad de Jongh, Irene Aartman. What are people afraid of during dental treatment? Anxiety-provoking capacity of 67 stimuli characteristic of the dental setting. Eur J Oral Sci. 2008 Feb;116(1):44-51.

[4]. Burns LE, Worsley JL. Behaviour therapy in the 1970s: a collection of original papers; In Great Britain by John Wright &

Sons, Stonebridge press, Bristol 1970 :1-11.

[5]. Beau D.Meyer, Marlee Hansen, Kristin Sweeney, Jodee McDaniel, Janice Townsend. Calibrating Pediatric Dental Faculty: Caries Management in Primary Teeth. Pediatr Dent. 2022 Mar 15;44(2):95-8.

[6]. J.F.Roberts, M.E.J.Curzon, G.Koch, L.C.Martens. Review:Behaviour management techniques in paediatric dentistry.Eur Arch Paediatr Dent. 2010 Aug;11:166-74.

[7]. Priyanka Avisa, RekhalakshmiKamatham, KalasandhyaVanjari, Sivakumar Nuvvula. Effectiveness of acupressure on dental anxiety in children. Pediatr Dent. 2018 May 15;40(3):177-83.

[8]. Suryankanth Kumar, Durga Bhattad, Arunkumar Sajjanar, Milind Wasnik, Nilesh Rojekar, Harshita Shukla et al. Effect of acupressure to reduce the dental anxiety in 8-12 year children: randomized control trial. Ann Rom Soc Cell Biol Title. 2021 May 7:3141-9.

[9]. Scott Lawrence, Dennis McTigue, Stephen Wilson, John Odom, William Waggoner, Henry Fields. Parental attitudes toward behavior management techniques used in pediatric dentistry. Pediatr Dent. 1991 May 1;13(3):151-5.

[10]. Gabriela Gil-Abando, Paula Medina, Carolina Signorini, Elisabeth Casanas, Natalia Navasrrete, Marta Munoz-Corcuera. Assessment of Clinical Parameters of Dental Anxiety during Noninvasive Treatments in Dentistry. Int. J. Environ. Res. Public Health. 2022; 19: 1-11.

[11]. Adeolu Adeboye, Rachel Hart, Sri Senapathi, Naaila Ali, Lee Holman, Harris Thomas. Assessment of functional pain score by comparing to traditional pain scores. Cureus. 2021 Aug;13(8).

[12]. Maria Soares, Alessandra Araujo, Isabela Pinto, Luiza Barbosa, Maria Borsatto, Rodrigo Galo. Effect of acupressure on dental anxiety in children: a pilot study for a randomized clinical trial. J Acupunct Meridian Stud. 2022 Oct 31;15:307-13.

[13]. Manishi Sisodia, Harsimran Kaur, Nishita Garg, Rishika Choudhary, Ramakrishna Yeluri. The Effect of Three-point Acupressure Therapy on Anxiety Levels in Children Undergoing Dental Procedures. Int J Clin Pediatr Dent 2024. 2024 Apr 22;17(2):136-42.

[14]. M.Pushpasanthy, Rena Ephraim, Ambili Ayilliath, K.B.Dhanya. Effectiveness of Aculief acupressure device on pain perception during local anesthesia in children: A double-blinded study. J Indian Soc Pedod Prev Dent. 2023 Oct 1;41(4):309-15.

[15]. Sandhyarani B, Ramoli Pawar, Anil Patil, Mital Kevadia. Effect of low-level laser on LI4 acupoint in pain reduction during local anesthesia in children. Int J Clin Pediatr Dent. 2021 Jul;14(4):462.

[16]. Lubna Fathima, Sindhu R, PrabuD, Raj Mohan, Nimmy P. Effectiveness of auricular acupressure to control the post-operative dental extraction pain: a hospital based interventional study: A hospital based study for effectiveness of auricular acupressure in controlling post-extraction pain. Int J Clin Pediatr Dent. 2022 Jul 11;3(2):29-33.

[17]. Ayushi Gurharikar, Devendar Nagpal, Prabhat Yadav, Purva Chaudhari, Kavita Hotwani, Ganandeep Lamba. Effect of Acupressure on Pain during Inferior Alveolar Nerve Block Injection in Children Aged 5-10 Years Old-An ExperimentalStudy. J Acupunct Meridian Stud. 2023 Aug 31;16(4):127-32.

[18]. Noha Taymour, Amal Nawasrah, Mai EI Zayat, Shimaa Rifaat. Evaluation of acupressure effect on reducing the need for dental injection in fixed prosthodontics. J Dent Health Oral Disord Ther. 2019;10(5):268-70.