

Effect of Acupressure to Reduce the Dental Anxiety in 8-12 Year Children: Randomized Control Trial

Dr. Suryakant Kumar, Reader of Department of Pedodontics and Preventive Dentistry, SDKS Dental College and Hospital, Nagpur, Maharashtra.

Dr. Durga Bhattad, Post Graduate Student of Department of Pedodontics and Preventive Dentistry, SDKS Dental College and Hospital, Nagpur, Maharashtra.

Dr. Arunkumar Sajjanar, Prof. & Head of Department of Pedodontics and Preventive Dentistry, SDKS Dental College and Hospital, Nagpur, Maharashtra.

Dr. Milind Wasnik, Senior lecturer of Department of Pedodontics and Preventive Dentistry, SDKS Dental College and Hospital, Nagpur, Maharashtra.

Dr. Nilesh Rojekar, Post Graduate Student of Department of Pedodontics and Preventive Dentistry, SDKS Dental College and Hospital, Nagpur, Maharashtra.

Dr. Harshita Shukla, Post Graduate Student of Department of Pedodontics and Preventive Dentistry, SDKS Dental College and Hospital, Nagpur, Maharashtra.

Dr. Dishika Bhagwani, Post Graduate Student of Department of Pedodontics and Preventive Dentistry, SDKS Dental College and Hospital, Nagpur, Maharashtra.

Corresponding Author: Dr. Nilesh Rojekar, Post Graduate Student of Department of Pedodontics and Preventive Dentistry, SDKS Dental College and Hospital, Nagpur, Maharashtra, India.

Email id- rojekarnilesh010@gmail.com

Introduction: Anxiety is a common problem in pediatric dentistry, and it is important to explore alternative methods to reduce it. More severe caries experience and dental avoidance patterns have been found in highly anxious children

Aim: To evaluate the effect of acupressure on dental anxiety and pain in children.

Methods: Children between 8-12 years, who required inferior nerve block for dental treatment, were randomly assigned to the following groups: (Group 1) control; (Group 2) yin Tang acupressure; and (Group 3) Shen men . Anxiety was recorded for all the children using the Venham Picture test and pain perception was assessed by Wong-Baker FACES pain rating scale. The Frankel scale for objective measure and pulse rate for physiologic parameter was recorded. The scores were tabulated, compared, and analyzed statistically.

Results: The acupressure significantly reduced the pain perceived, as measured by Wong-Baker FACES pain rating scale ($P < 0.001$). There was statistically significant difference in dental anxiety among the groups.

Conclusion: Acupressure could play a promising role in adjunct with conventional treatment modalities because it is easy to apply, safe and non-invasive.

Keywords: Acupressure, dental anxiety, local anesthesia.

INTRODUCTION:

Anxiety is one of the most common problems encountered in the dental operator and is a source of challenge for the Pediatric Dentist. In children, anxiety compromises oral health, due to avoidance of personnel dental care; it also significantly impacts dentists during the provision of appropriate treatment. To overcome this, both non-pharmacological and pharmacological methods are routinely used in dental settings.(1) There have been many studies on pharmacologic management techniques than on nonpharmacologic techniques. As there is controversy for pharmacologic management then nonpharmacologic technique worth exploring(2)

Traditional Chinese acupuncture has a history of more than 2500 years but is one of the most well-known complementary and alternative therapies.(3) The basic health concept in traditional Chinese medicine consists of the body's vital energy (Qi), circulating unidirectionally through a complex network of channels (meridians) just beneath the skin, but also moving within blood vessels. It permeates organs and tissues, and is behind all physiological processes. Health is the harmonious, uninterrupted flow of Qi, and disease ensues when there is disruption of Qi flow. Factors that can affect Qi flow include emotional states such as anxiety, stress, anger, fear or grief, poor nutrition, weather conditions, hereditary factors, infections and trauma. By inserting needles, the acupuncturist tries to recover the equilibrium (the equal and dynamic opposite qualities of Yin and Yang) between physical, emotional and spiritual aspects of the individual, and to improve energy flow and energy quality.(4) Acupuncture works by stimulating the body at certain points. During therapy, thin steel needles are inserted into the areas of interest and then manipulated gently by hand or with light electrical stimulation. These points can also be pressed (acupressure) or warmed (moxibustion) Acupuncture mainly acts by stimulating the nervous system, changing the way the nervous system processes pain signals and releasing natural painkillers, such as serotonin and endorphins in the nervous system.(3) Acupuncture should be considered as an extra tool in the toolbox acupuncture can be used effectively include: Dental pain Dental

anxiety and gag reflex. Temporomandibular joint (TMJ) pain or temporomandibular disorder (TMD).

Chronic muscle pain or spasm Atypical facial pain Headache (tension headache, migraine) Xerostomia (dry mouth) Nerve pain (neuralgia, especially trigeminal neuralgia, neuropathic pain, nerve injury) Paresthesia or anesthesia of the oral and paraoral structures.(3) Acupuncture may cause some adverse effects if not performed by well-trained person. Moreover, using needle in acupuncture application still causes phobia during dental treatment. In order to avoid using the needle in acupuncture; acupressure technique was developed, using the fingers or hard pointed ball-shaped head instrument to stimulate certain related points. Acupressure has same effect like acupuncture and also easy in doing does not required special training.

The aim of this is to determine the effect of acupressure on reducing anxiety in children under- going inferior alveolar nerve block.

METHODS

Study Sample

The study sample consisted of children 8 to 12 years of age, randomly divided into the following 3 groups:

Children visiting the Department of Pedodontics and Preventive Dentistry, Swargiya Dadasaheb Dental College and Hospital, Nagpur, Maharashtra, India were selected, based on the following inclusion criteria: age range of eight to 12 years old; children who required inferior alveolar nerve block were selected and randomly allocated into three group

- Group 1: children who were prepared for dental treatment without applying acupressure
- Group 2: children who were prepared for dental treatment by applying acupressure on shen men point
- Group 3: children who were prepared for dental treatment by applying acupressure on ying tang point

Child Consent was taken from patients and parents before initiation of treatment along with brief medical and dental history of patient. Two anxiolytic acupoints selected in the present study one was Yin Tang point, located midway between the medial ends of the two

eyebrows, documented to induce sedation and change sympatoparasympathetic nerve balance. Another anxiolytic point selected was the Shen Men, located on the ear situated at the apex of the triangular fossa, which was documented to induce relaxation.(1) Acupressure is non invasive technique in which pressure is applied on the acupoint for stimulation. Direct Figure pressure or acupressure beads can be used to apply acupressure in this study adhesive acupressure beads (vaccaria seed) were used. Children were randomly allotted to any one of the three group required inferior alveolar nerve block for extraction. Venhams picture test, pulse rate and frankle anxiety score was measure 20 min (time frame 1) before proceeding for treatment and then acupressure beads was applied on selective acupressure and left adhere in that place.

Immediately after giving inferior alveolar nerve block again Venhams picture test, pulse rate and frankle anxiety score was measure (time frame 2) and then proceeding for extraction. After completion of intended treatment again block Venhams picture test, pulse rate and frankle anxiety score was measure (time frame 3). The Venham picture test was selected as a self-report measure of anxiety in the present study, because of its proven reliability and validity where pulse rate was consider as secondary outcome.

RESULTS: Table 1: Intergroup and intragroup comparison of Venhams Anxiety Scale score in three groups

Outcome measures		Group 1	Group 2	Group 3	p-value
Venhams Anxiety Scale Score Mean±SD (95% CI)	Time Frame 1	2.36±1.41	2.32±0.98	2.84±0.80	0.046,S
	Time Frame 2	1.16±1.06	1.40±0.91	2.04±0.61	0.002,S
	Time Frame 3	0.72±0.73	1.04±0.97	2±0.64	0.0001,S
Intergroup comparison (p-value)		Time Frame 1	Time Frame 2	Time Frame 3	
	Group 1 Vs Group 2	0.99,NS	0.001,S	0.0001,S	
	Group 1 Vs Group 3	0.04,S	0.001,S	0.0001,S	
	Group 2 Vs Group 3	0.22,NS	0.033,S	0.0001,S	
Intragroup comparison (p-value)		Group 1	Group 2	Group 3	
	Time Frame 1 Vs Time Frame 2	0.0001,S	0.0001,S	0.0001,S	
	Time Frame 2 Vs Time Frame 3	0.0001,S	0.0001,S	0.0001,S	

	1 Vs Time Frame 3				
	Time Frame 2 Vs Time Frame 3	0.0001,S	0.0001,S	0.0001,S	

Mean Venhams anxiety score in the patients of group 1 at time frame 1 was 2.36 ± 1.41 , in group 2 it was 2.32 ± 0.98 and in group 3 it was 2.84 ± 0.80 , at time frame 2 in group 1 it was 1.16 ± 1.06 , in group 2 it was 1.40 ± 0.91 and in group 3 it was 2.04 ± 0.61 , at time frame 3 in group 1 it was 0.72 ± 0.73 , in group 2 it was 1.04 ± 0.97 and in group 3 it was 2 ± 0.64 . Intragroup comparison reveals no significant difference between group 1 and 2 at time frame 1 ($p=0.99$), group 2 and 3 ($p=0.22$) and significant difference between group 1 and group 3 ($p=0.04$). At time frame 2 significant difference was found between group 1 and 2 ($p=0.001$), group 1 and 3 ($p=0.001$) and between group 2 and 3 ($p=0.033$). At time frame 2 significant difference was found between group 1 and 2 ($p=0.0001$), group 1 and 3 ($p=0.0001$) and between group 2 and 3 ($p=0.0001$).

With intragroup comparison in group 1, 2 and 3 statistically significant difference was found between time frame 1 and time frame 2 ($p=0.0001$), time frame 1 and time frame 3 ($p=0.0001$) and between time frame 2 and time frame 3 ($p=0.0001$).

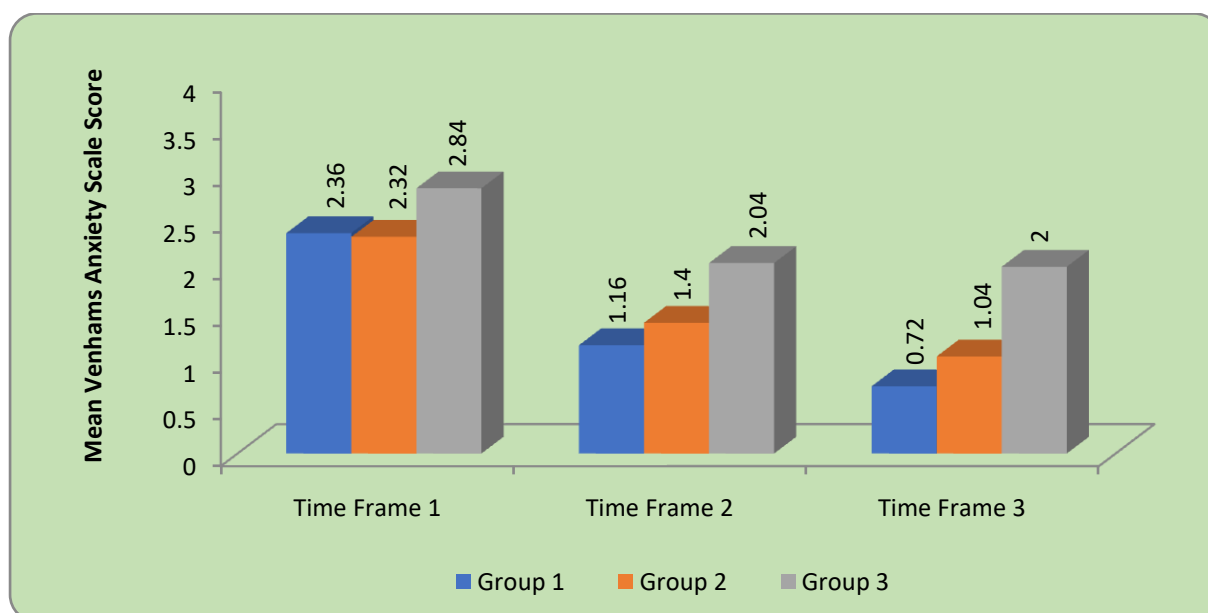


Table 2: Intergroup and intragroup comparison of Pulse Rate score in three groups

Outcome measures		Group 1	Group 2	Group 3	p-value
------------------	--	---------	---------	---------	---------

Pulse Rate Mean \pm SD (95% CI)	Time Frame 1	97 \pm 7.12	89.21 \pm 1.51	94.23 \pm 1.62	0.0001,S
	Time Frame 2	90.23 \pm 1.56	91.12 \pm 2.91	97.15 \pm 1.53	0.0001,S
	Time Frame 3	88.23 \pm 1.96	93.21 \pm 1.56	99.21 \pm 1.56	0.0001,S
Intergroup comparison (p-value)		Time Frame 1	Time Frame 2	Time Frame 3	
	Group 1 Vs Group 2	0.0001,S	0.56,NS	0.006,S	
	Group 1 Vs Group 3	0.056,NS	0.002,S	0.0001,S	
	Group 2 Vs Group 3	0.0001,S	0.003,S	0.076,NS	
Intragroup comparison (p-value)		Group 1	Group 2	Group 3	
	Time Frame 1 Vs Time Frame 2	0.0001,S	0.0001,S	0.19,NS	
	Time Frame 1 Vs Time Frame 3	0.0001,S	0.0001,S	0.001,S	
	Time Frame 2 Vs Time Frame 3	0.0001,S	0.0001,S	0.002,S	

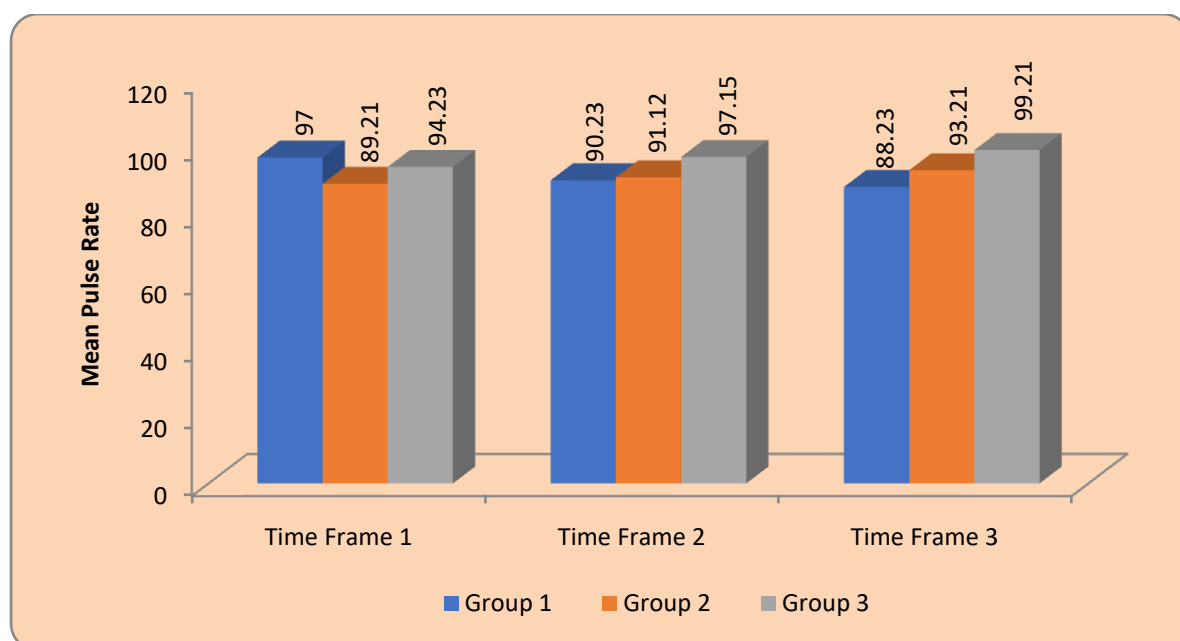


Table 3: Intergroup and intragroup comparison of Frankl Rating score in three groups

Outcome measures		Group 1	Group 2	Group 3	p-value
------------------	--	---------	---------	---------	---------

Frankl Rating Mean \pm SD (95% CI)	Time Frame 1	3,3(2-3)	4,4(3-4)	4,4(2-4)	0.0001,S
	Time Frame 2	4,4(2-4)	3,3(1-3)	4,4(2-4)	0.0001,S
	Time Frame 3	4,4(2-4)	3,3(1-3)	4,4(2-4)	0.0001,S
Intergroup comparison (p-value)		Time Frame 1	Time Frame 2	Time Frame 3	
	Group 1 Vs Group 2	0.0001,S	0.56,NS	0.006,S	
	Group 1 Vs Group 3	0.056,NS	0.002,S	0.0001,S	
	Group 2 Vs Group 3	0.21,NS	0.54,NS	0.053,NS	
Intragroup comparison (p-value)		Group 1	Group 2	Group 3	
	Time Frame 1 Vs Time Frame 2	0.0001,S	0.0001,S	0.19,NS	
	Time Frame 1 Vs Time Frame 3	0.0001,S	0.051,NS	0.21,NS	
	Time Frame 2 Vs Time Frame 3	0.0001,S	0.0001,S	0.001,S	

Statistical analysis was done by using descriptive and inferential statistics using chi square test, one way ANOVA and Multiple comparison: Tukey Test and software used in the analysis were SPSS 24.0 version and Graph Pad Prism 7.0 version and $p < 0.05$ is considered as level of significance.

DISCUSSION

In this study it was found that acupressure is effective to reduce dental anxiety in children. Acupressure does not require extensive training, in contrast to acupuncture where the background of the practitioner can influence the outcome of the treatment; acupressure can also be taught easily to the child/parent, if used as a self-care measure(1) Alternative medicine is used across the world for the holistic management of Dental pain including acupressure and acupuncture. Acupuncture involves the insertion of specialized needles into trigger points (acupuncture points) that are situated along channels called “meridians” that run throughout the body. Acupressure follows the same principles as acupuncture, but it involves stimulation of the points with gentle finger pressure instead of fine needles(5) acupuncture was compared with drug therapy, no difference was found, which could be due to the interventions being equally

effective or to the studies being insufficiently powered for a valid assessment of equivalence.(6) In dentistry, the ability of pressure technique has been proven for managing numerous chronic orofacial disorders, acupressure can be considered as a sensible alternative and/or supplement to present dental practice, both as an analgesic and for addressing different dental disorders(7) acupressure therapy, it mainly helps relieve the pain and discomfort associated with the TMD (7).

Venhams self-report measure anxiety is measured using a picture selection task which can be rapidly administered and is readily understood and accepted by the child. Adequate levels of test-retest and internal consistency reliability were established for the final picture selection test. Test scores showed the predicted correlations with other indices of situational distress; these findings supported the construct validity of the test.(8) Pulse oximeter, which measures the pulse rate and oxygen saturation, is one of the most acceptable methods for measuring the physiological changes as it gives continuous use as secondary outcome

CONCLUSION

Acupressure could play a promising role in adjunct with conventional treatment modalities because it is easy to apply, safe and non-invasive. Acupressure significantly reduces dental anxiety in children.

CONFLICT OF INTEREST:

Authors declare that there is no any conflict of interest.

REFERENCES:

1. Avisa P, Kamatham R, Vanjari K, Nuvvula S. Effectiveness of acupressure on dental anxiety in children. *Pediatr Dent*. 2018;40(3):177–83.
2. Farhat-mchayleh N, Harfouche A. Techniques for Managing Behaviour in Pediatric Dentistry : Comparative Study of Live Modelling and Tell – Show – Do Based on Children ' s Heart. *Pediatr Dent*. 2009;75(4).
3. Naik PN, Kiran RA, Yalamanchal S, Kumar VA, Goli S, Vashist N. Acupuncture: An alternative therapy in dentistry and its possible applications. *Med Acupunct*. 2014;26(6):308–14.
4. Zijlstra FJ, Van Den Berg-De Lange I, Huygen FJPM, Klein J. Anti-inflammatory actions of acupuncture. *Mediators Inflamm*. 2003;12(2):59–69.
5. Rifaat S. Evaluation of acupressure effect on reducing the need for dental injection in fixed

prosthodontics. 2019;10(5):268–70.

6. Pilkington K, Kirkwood G, Rampes H, Cummings M, Richardson J. Acupuncture for anxiety and anxiety disorders - A systematic literature review. *Acupunct Med.* 2007;25(1–2):1–10.
7. Rohmetra A, Tandon R, Singh K, Jaiswal A. Acupressure therapy in orthodontics: A review. *Int J Orthod Rehabil.* 2017;8(1):26.
8. Venham LL, Gaulin-kremer E, Ph D. A self-report measure of situational anxiety for young children. 1979;1(2):91–6.