BULLETIN OF STOMATOLOGY AND MAXILLOFACIAL SURGERY
Volume 21, Issue 6

DOI: 10.58240/1829006X-2025.21.6-222

AURICULAR ACUPRESSURE AS AN ADJUNCT FOR POST-EXTRACTION PAIN MANAGEMENT: A CLINICAL INTERVENTIONAL STUDY

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***Received:Jun** 17. 2025; **Accepted:** Jun 30, 2025; **Published:** Jul 20*

ABSTRACT

Background: Post-extraction dental pain is a common issue that affects patient recovery and comfort. Conventional pharmacological interventions, while effective, are often accompanied by undesirable side effects. As a result, there is increasing interest in non-pharmacological approaches such as auricular acupressure, a traditional Chinese medicine technique, which involves stimulating specific points on the ear to alleviate pain.
Objectives: To assess the effectiveness of auricular acupressure in managing postoperative pain following dental extraction compared to a placebo intervention.
Methods: This hospital-based interventional study was conducted in the dental outpatient department of a tertiary care hospital. Ninety participants aged 18–60 years undergoing simple tooth extraction were randomly assigned to either an experimental group (n=45) receiving auricular acupressure at the Shenmen point or a control group (n=45) receiving pressure at non-therapeutic ear points. Pain was measured using the Verbal Descriptor Scale (VDS) at three time points: pre-operatively, post-operatively, and during a 3-day follow-up. Data were analyzed using non-parametric statistical methods, including the Kruskal-Wallis and Bonferroni-adjusted Mann-Whitney U tests.
Results: There was no significant difference in baseline pain levels between the two groups ($p=0.117$). However, post-operative and follow-up VDS scores were significantly lower in the auricular acupressure group compared to the control group ($p<0.001$ for both). The intervention group demonstrated consistently reduced pain intensity over time, indicating the effectiveness of auricular acupressure in managing postoperative dental pain.
Conclusion: Auricular acupressure is an effective, safe, and non-invasive complementary technique for reducing pain following dental extractions. Its incorporation into postoperative care protocols may enhance patient comfort while minimizing reliance on pharmacologic analgesics.

***Keywords**:* Auricular acupressure, dental extraction, postoperative pain, non-pharmacological intervention, Shenmen

point, complementary therapy.

INTRODUCTION

Postoperative pain following dental extraction is a common clinical challenge that can significantly affect a patient's recovery and overall experience. Pain management plays a vital role in promoting wound healing, reducing anxiety, and improving patient satisfaction. Although analgesics are widely prescribed to manage dental pain, they may be associated with adverse effects such as gastrointestinal discomfort, allergic reactions, or dependency in some cases[1,2]. Therefore, exploring safe and effective non-pharmacological alternatives has become increasingly important in modern dental care. Auricular acupressure is a therapeutic technique derived from traditional Chinese medicine, where specific points on the external ear are stimulated to influence different body systems. It is based on the concept that the ear is a microsystem representing the entire body, and by applying pressure to targeted points, physiological responses such as pain reduction can be achieved. Unlike acupuncture, which requires needles, auricular acupressure is non-invasive, making it more acceptable and accessible for a wide range of patients[3,4].

In recent years, there has been growing interest in the application of auricular acupressure in various clinical settings, including pain management, anxiety reduction, and postoperative care[5]. Some studies have reported positive outcomes in using this method to alleviate pain in conditions such as migraines, back pain, and labor. However, limited research has been conducted specifically in the context of dental procedures, particularly tooth extractions, where acute pain is a predictable consequence[6]. This study aims to evaluate the effectiveness of auricular acupressure as an adjunct method to control pain after dental extraction. By conducting a hospital-based interventional study, we intend to assess whether this technique can offer measurable pain relief compared to standard care alone. The findings of this research may help integrate holistic, patient-friendly practices into mainstream dental treatment protocols[7]. Additionally, this study seeks to address gaps in current literature by providing clinical evidence on the practicality and efficacy of auricular acupressure in dental settings[8].

Pain management following dental extraction remains a critical aspect of postoperative care. While pharmacological interventions are commonly employed, they may lead to undesirable side effects or contraindications in certain patients. As a result, there is growing interest in complementary and alternative methods for pain relief that are both safe and effective[9]. Auricular acupressure, a non-invasive technique based on traditional Chinese medicine, involves stimulating specific points on the ear believed to correspond to various parts of the body. Recent studies suggest that this method may help reduce pain and promote healing by modulating the nervous system and enhancing endorphin release. This hospital-based interventional study aims to evaluate the effectiveness of auricular acupressure in controlling pain following dental extraction procedures[10]. By exploring this approach, the study seeks to contribute to the development of holistic and patient-centered postoperative care strategies. Given the increasing emphasis on minimizing drug reliance and offering personalized care, interventions such as auricular acupressure could serve as valuable tools in improving patient outcomes without introducing additional risks or complications. In summary, this research explores the potential of auricular acupressure as a complementary pain management strategy following tooth extractions[11]. Through systematic evaluation and analysis, the study aims to offer insights into alternative approaches that could enhance postoperative care, reduce dependence on medications, and contribute to more holistic dental practice[12].

MATERIALS AND METHOD

Study Design and Setting

This hospital-based interventional study was conducted in a dental outpatient department of a tertiary care hospital. The research aimed to evaluate the effectiveness of auricular acupressure in reducing postoperative pain following dental extraction. Ethical clearance was obtained from the institutional review board prior to the commencement of the study, and all participants provided written informed consent.

Participants and Sampling

Participants were selected using a purposive sampling technique based on predefined inclusion and exclusion criteria. Individuals aged between 18 and 60 years, undergoing simple tooth extraction under local anesthesia, and willing to participate were included in the study. Patients with systemic illness, ongoing pain medication, history of ear infections or surgeries, and those who had undergone multiple extractions were excluded.

Group Allocation and Randomization

Eligible participants were randomly assigned to either the experimental or control group using a simple randomization method. A set of sequentially numbered opaque envelopes containing either an odd or even number was used for allocation. Participants who picked envelopes with odd numbers were assigned to the experimental group, while those with even numbers were placed in the control group.

Intervention Procedure

Following the dental extraction, *Melastoma candidum* seeds were applied to the Shenmen point on the outer ear

in participants of the experimental group. In the control group, seeds were placed on non-specific, placebo points that do not correspond to pain relief in auricular therapy. Seed placement was performed by a trained professional using adhesive tape. Pain intensity was assessed using the Verbal Descriptor Scale (VDS) both before extraction and during seed placement.

Post-Procedure Instructions

Participants were advised to apply gentle pressure to the seeds for approximately 30 seconds, three times a day—morning, afternoon, and before bedtime—for a duration of three days. Contact numbers were exchanged for follow-up and to allow participants to report any issues or discomfort related to the intervention.

Participants who fulfilled the inclusion criteria and provided written informed consent were randomly assigned to either the experimental or control group. The allocation was determined using a random number sequence. Each number was sealed in an opaque envelope, and participants were asked to draw one. Those who selected odd numbers were placed in the experimental group, while those with even numbers were assigned to the control group.

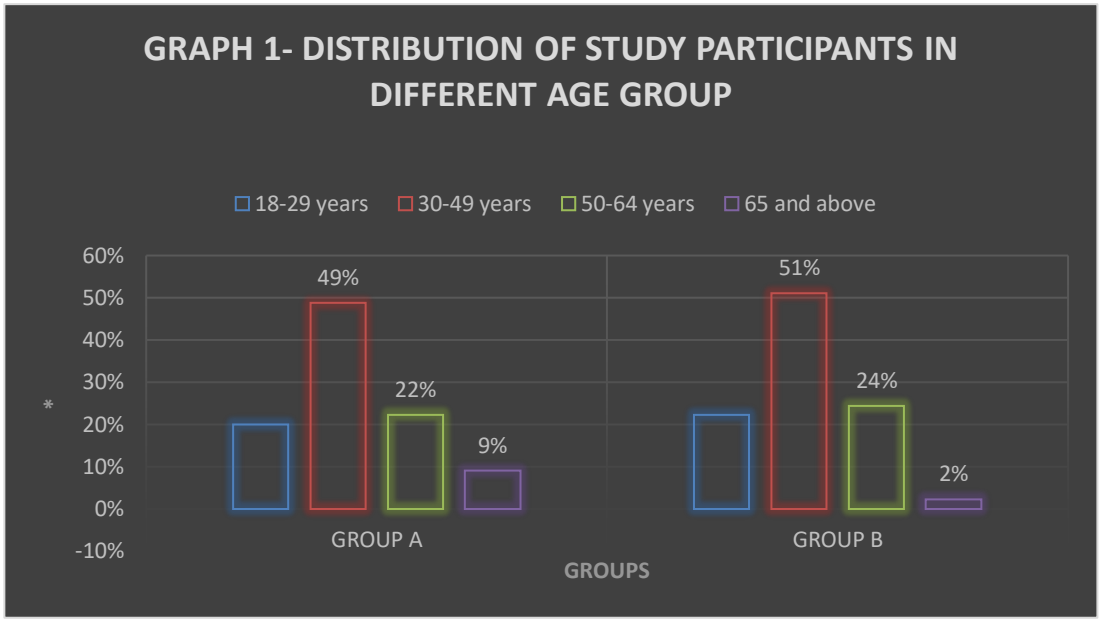
Demographic information—including age, gender, educational background, occupation, and economic status—was collected from each participant. Tooth extractions were performed under local anesthesia. Following the procedure, *Melastoma candidum* seeds were applied to the Shenmen auricular point in the experimental group, while placebo seeds were placed on non-therapeutic ear points for the control group. During the application of the seeds, the patient's pain was assessed using the Verbal Descriptor Scale (VDS), which ranges from 0 to 10. Higher scores indicate greater pain intensity, while lower scores reflect less discomfort. The scale is interpreted as follows: 0 (no pain, very happy), 1–2 (hurts just a little), 3–4 (hurts a little more), 5–6 (hurts even more), 7–8 (hurts a whole lot), and 9–10 (pain as intense as imaginable). Pain levels were recorded both before the extraction and immediately afterward during the seed placement. After the initial pain assessment, participants were instructed to apply firm pressure to the seeds on their ears for 30 seconds, three times a day—once in the morning, once in the afternoon, and once at night—for a total of three days. Contact details were exchanged; participants were given a number to report any discomfort or issues, and their own phone numbers were recorded for follow-up. Three days post-extraction, participants returned for a follow-up assessment. The Verbal Descriptor Scale was used again to measure the level of pain reduction experienced during this period. This follow-up helped evaluate the effectiveness of auricular acupressure in managing postoperative dental pain. Data analysis was carried out using SPSS software version 26.0. Tests for normality, including Kolmogorov-Smirnov and Shapiro-Wilk, indicated that the data did not follow a normal distribution. Therefore, non-parametric tests were employed. Descriptive statistics were used to analyze demographic characteristics, while inferential statistics, specifically the Kruskal-Wallis test, were used to compare the mean pain scores between the experimental and control groups

RESULTS

The Normality tests Kolmogorov-Smirnov and Shapiro-Wilks tests results revealed that Visual pain analog scale scores do not follow Normal distribution. Therefore, to analyse the data, non- parametric methods were applied. To compare the mean values between two interventions, Kruskal Wallis test was used followed by Bonferroni adjusted Mann Whitney test for multiple pair wise comparison. To analyse the data SPSS (IBM SPSS Statistics for Windows, Version 26.0, Armonk, NY: IBM Corp. Released 2019) was used. Significance level was fixed as 5% ($\alpha = 0.05$).

TABLE 1. DISTRIBUTION BASED ON AGE AMONG THE STUDY PARTICIPANTS

Groups	Age (In Years)	Number	Percentage	Mean ± SD	P- value
GROUP A	>18-29	9	20%	41.61±14.46	>0.05
	30-49	22	48.8%		
	50-64	10	22.2%		
	65 and above	3	9%		
GROUP B	18-29	10	22.2%	40.42±14.06	
	30-49	23	51.1%		
	50-64	11	24.4%		
	65 and above	1	2.3%		

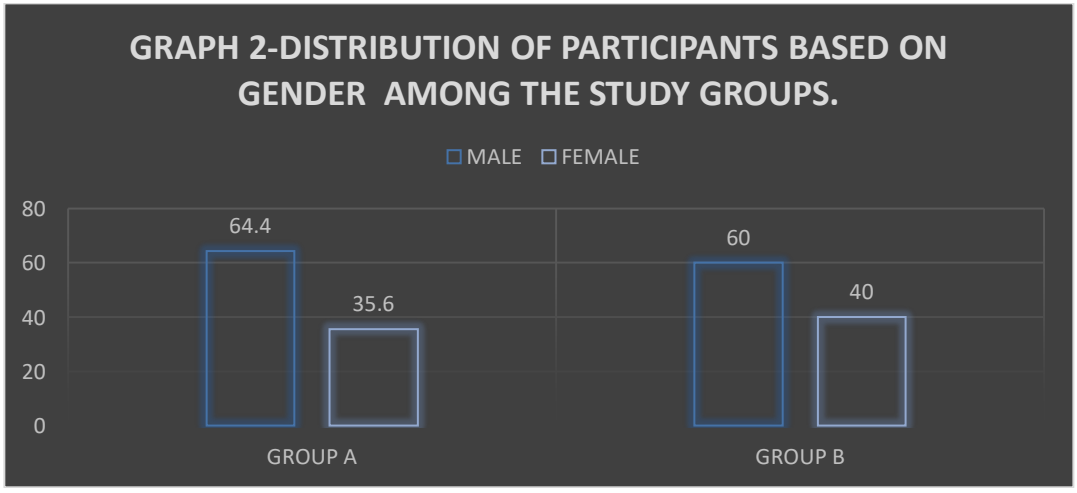


Graph 1

Table 1 and graph 1 shows the distribution of different age groups included in the study. The mean age of the study participants in group A were 41.61±14.46, group B were 40.42±14.06. Higher percentages of individuals were under 30-49 years old. In group A, higher percentage of participants were found to be 48.8% under the age group of 30-49 years and least percentage of individuals were found to be 9% of individual who were in age group of 65 years and above. In group B, the maximum numbers of age group were found to be 48.8% who are in age group of 30-49 years old and minimum was found to be in age group of 65 years old and above with 2.3%. The results were found to be statistically significant at $p<0.05$.

TABLE 2. DISTRIBUTIONS OF PARTICIPANTS BASED ON GENDER AMONG THE STUDY GROUPS

GROUPS	GENDER	NUMBER	PERCENTAGE DISTRIBUTION	P-value
GROUP A	MALE	29	64.4%	<0.001*
	FEMALE	16	35.6%	
GROUP B	MALE	27	60%	
	FEMALE	18	40%	

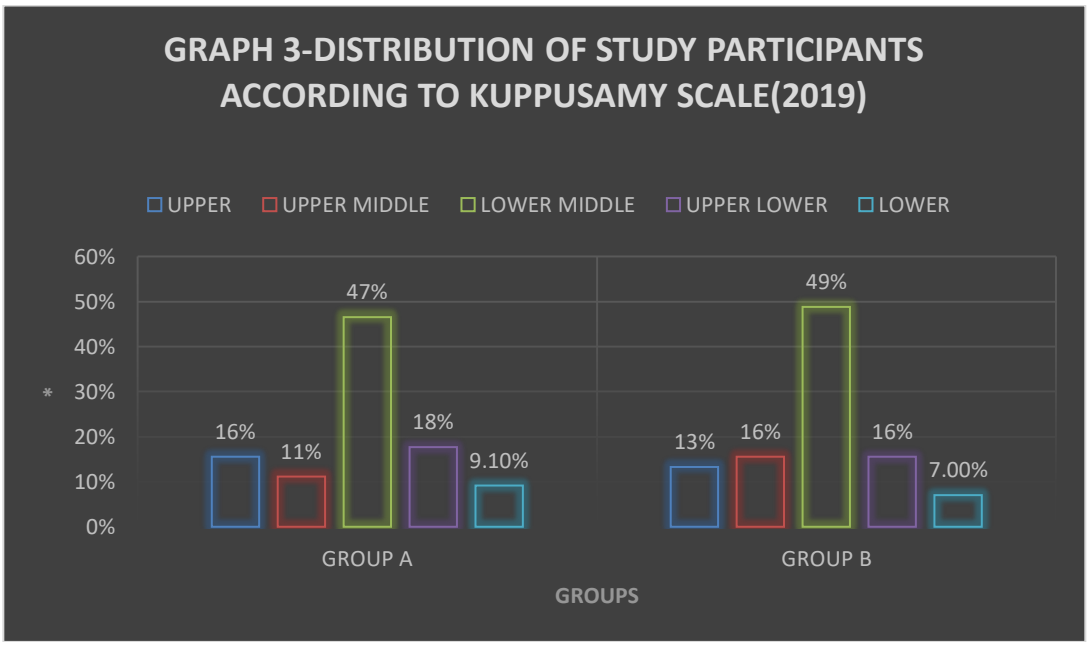


Graph 2

Table 2 and graph 2 shows the gender distribution among the study participants in Group A and Group B. In Group A, 64.4% were males and 35.6% were females. Among the Group B participants, 60% were males and 40% were females. The results were found to be statistically significant at $p<0.05$.

TABLE 3-DISTRIBUTION OF STUDY PARTICIPANTS AMONG THE STUDY GROUPS BASED ON KUPPUSAMY SOCIOECONOMIC STATUS

GROUPS	MODIFIED KUPPUSAMY SOCIOECONOMICSTATUS	NUMBER	PERCENTAGE	MEAN ± SD	P-value
GROUP A	Upper	7	15.5%	2.92±.934	<0.001
	Upper middle	5	11.1%		
	Lower middle	21	46.6%		
	Upper lower	8	17.7%		
	Lower	4	9.1%		
GROUP B	Upper	6	13.3%	2.90±.844	
	Upper middle	7	15.5%		
	Lower middle	22	48.8%		
	Upper lower	7	15.5%		
	Lower	3	7%		



Graph 3

Table 3 and graph 3 shows the Modified Kuppusamy Scale (2019) among the two groups included in the study. In the Group A participants, lower middle class were the highest and lower classes were the lowest, which were found to be 46.6% and 9.1% respectively. In Group B, lower middle class participants were comparatively higher as in 48.8%. The upper class were found to be lowest with 7%. Statistically significant difference was obtained ($p<0.05$) which showed balanced Kuppusamy Scale representation in the study group.

TABLE 4. INDEPENDENT-SAMPLES KRUSKAL-WALLIS TEST TO COMPARE VDS SCORE DURING PRE-OPERATIVE PERIOD

		PROCEDURE		P-VALUE
		AURICULAR ACUPRESSURE GROUP	CONTROL GROUP	
Pre-operative VDS Score	N	45	45	0.102
	Mean	2.1452	2.7857	
	Median	2.0000	2.0000	
	Standard deviation	1.95887	2.62758	
	Variance	3.837	6.904	
	Minimum	.00	.00	
	Maximum	7.00	8.00	

GRAPH 4. COMPARISON OF MEAN DIFFERENCE OF VISUAL ANALOG SCALE DURING PRE-OPERATIVE PERIOD AMONG THE STUDY GROUP

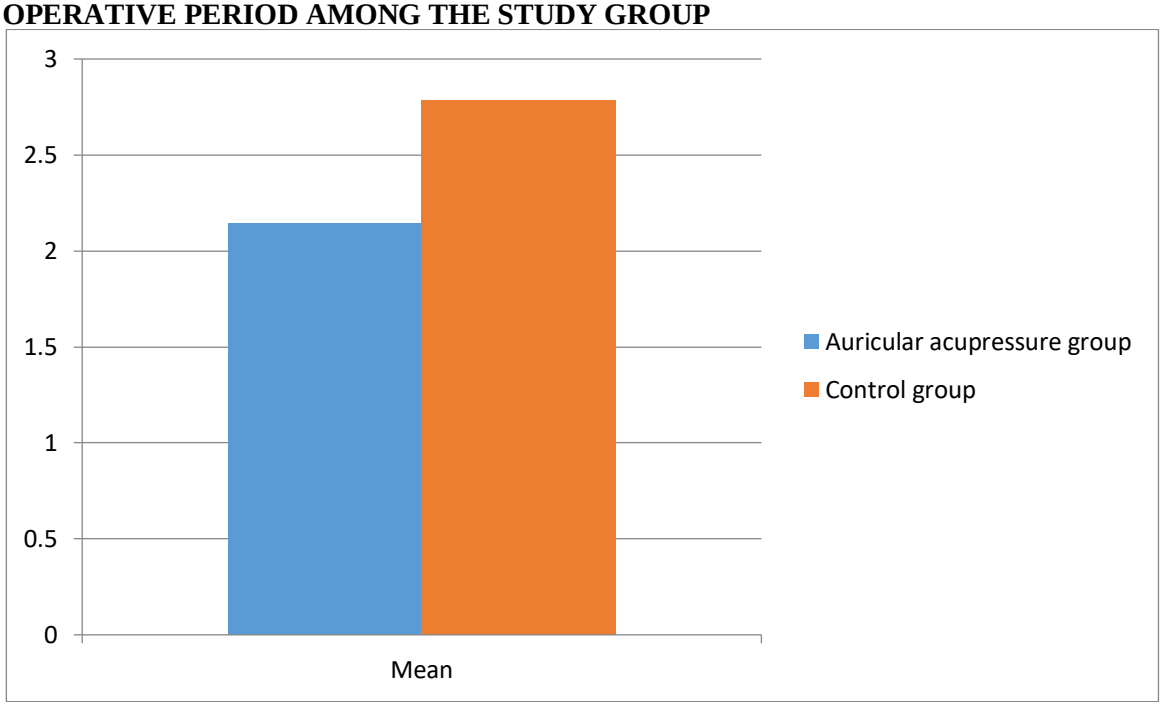
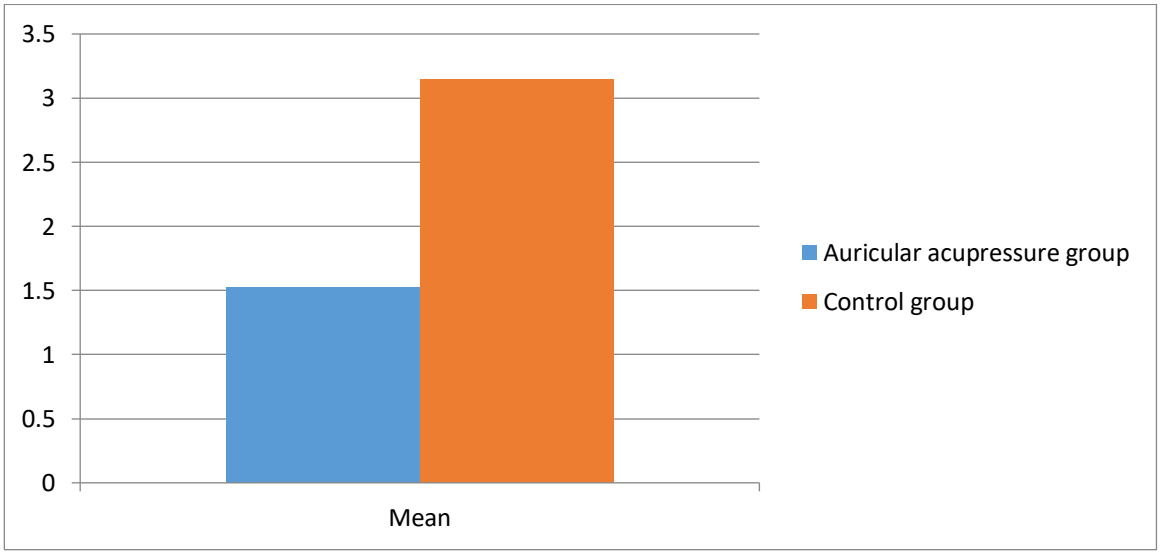


Table 4, graph 4 shows the comparison of mean difference among the study groups during pre-operative period. The mean of visual pain analog scale was found to be higher (2.78) in control group. The P-value >0.05 implies that there was no statistical difference between the study and control group.

TABLE 5. INDEPENDENT-SAMPLES KRUSKAL WALLIS TEST TO COMPARE VDS SCORE DURING POST-OPERATIVE PERIOD

		PROCEDURE		P-VALUE
		AURICULAR ACUPRESSURE GROUP	CONTROL GROUP	
Post-operative VDS Score	N	45	45	0.001*
	Mean	1.5238	3.1429	
	Median	1.0000	2.0000	
	Standard deviation	.80359	2.22592	
	Variance	.646	4.955	
	Minimum	1.00	1.00	
	Maximum	4.00	8.00	

GRAPH 5. COMPARISON OF MEAN DIFFERENCE OF VISUAL ANALOG SCALE DURING POST-OPERATIVE PERIOD AMONG THE STUDY GROUP



Graph 5

Table 5, graph 5 shows the comparison of mean difference among the study groups during post-operative period. The mean of visual pain analog scale was found to be higher (3.14) in control group. The P-value <0.05 implies that there was statistical difference between the study and control group.

TABLE 6. INDEPENDENT-SAMPLES KRUSKAL-WALLIS TEST TO COMPARE VDS SCORE DURING FOLLOW-UP PERIOD

		PROCEDURE		P-VALUE
		AURICULAR ACUPRESSURE GROUP	CONTROL GROUP	
Follow up VDS Score	N	45	45	<0.001*
	Mean	1.1905	3.4524	
	Median	1.0000	2.5000	
	Standard deviation	.63392	2.45150	
	Variance	.402	6.010	
	Minimum	.00	3.00	
	Maximum	3.00	8.00	

GRAPH 6 COMPARISON OF MEAN DIFFERENCE OF VISUAL ANALOG SCALE DURING FOLLOW-UP PERIOD AMONG THE STUDY GROUP

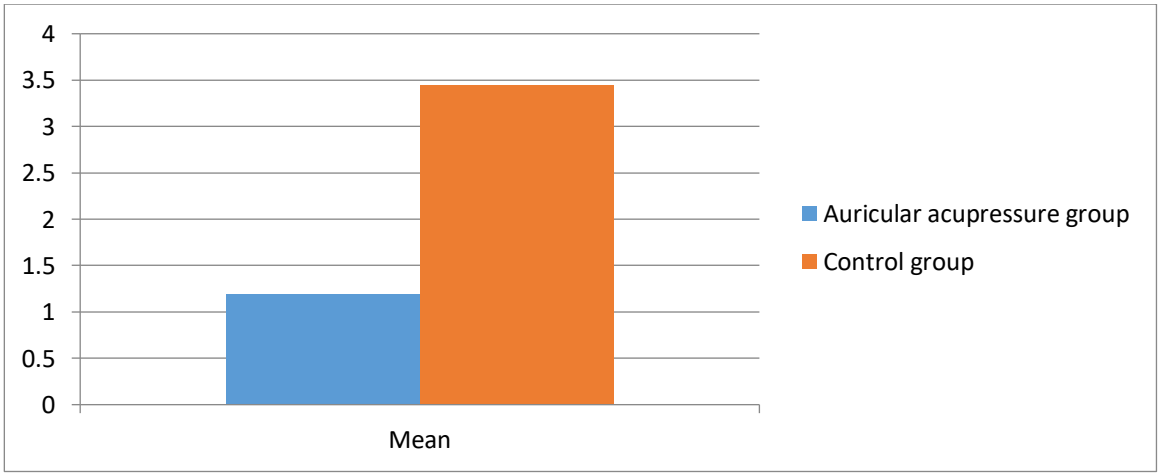


Table 6, graph 6 shows the comparison of mean difference among the study groups during follow-up period. The mean of visual pain analog scale was found to be higher (3.45) in control group. The P-value <0.05 implies that they was statistical difference between the study and control group.

TABLE 7.BONFERRONI ADJUSTED MANN-WHITNEY U TEST FOR PAIR WISE COMPARISON

PAIR WISE COMPARISONS		P-VALUE
Pre-operative VDS Score	Auricular acupressure-control group	0.117
Post-operative VDS score	Auricular acupressure-control group	<0.001
Follow up VDS Score	Auricular acupressure-control group	<0.001

GRAPH 7. COMPARISON OF MEAN DIFFERENCE AMONG THE STUDY GROUP AT DIFFERENT INTERVAL

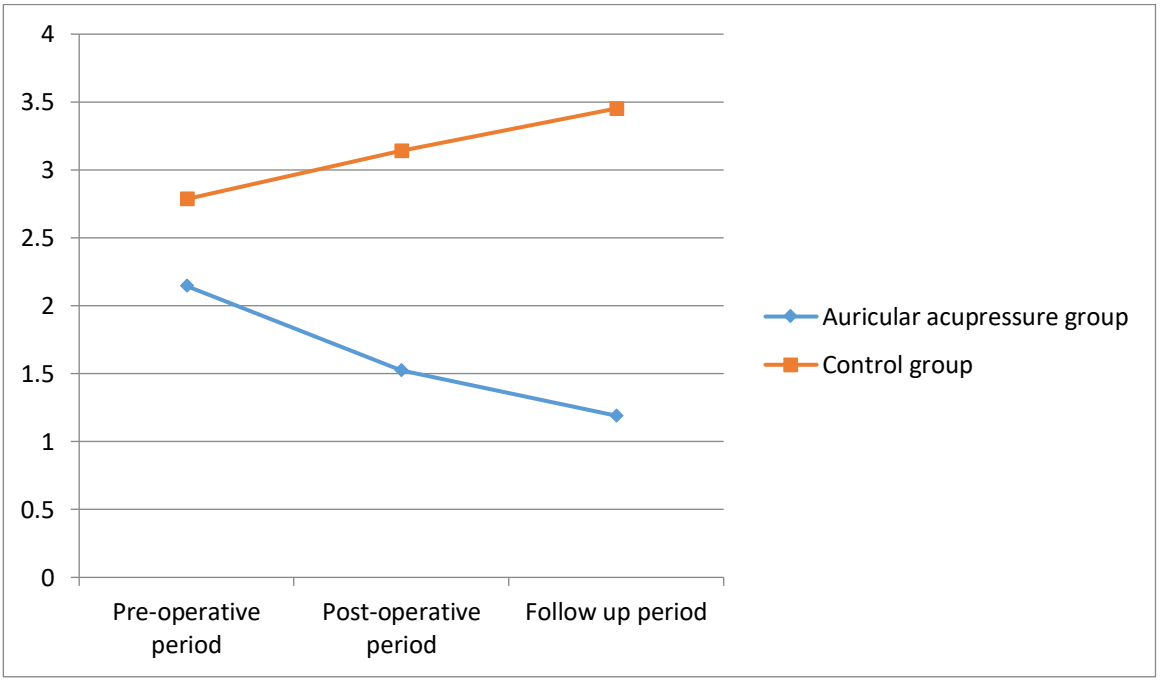


Table 7, graph 7 shows the comparison of mean difference among the study group at different interval and showed that higher mean difference were found among the follow up period in control group followed by post-operative period in control group and least was found among the auricular acupressure group in different time intervals.

DISCUSSION

The present study evaluated the efficacy of auricular acupressure as a non-pharmacological intervention to manage post-extraction pain in dental patients. The results demonstrated a statistically significant reduction in postoperative pain scores in the auricular acupressure group compared to the control group, particularly during the follow-up period. This finding supports previous research indicating that stimulating specific auricular points, such as Shenmen, can modulate pain perception and enhance endogenous analgesic responses.

Auricular therapy, rooted in Traditional Chinese Medicine, conceptualizes the ear as a microsystem reflecting the entire body. This approach posits that targeted stimulation of auricular points can influence somatic and visceral functions through neurophysiological pathways, notably via the vagus and trigeminal nerve[13,14]. The significant decrease in pain scores observed post-intervention aligns with findings from other clinical trials where auricular acupressure effectively reduced discomfort in various medical and dental context[15].

The selection of the Shenmen point in this study is noteworthy, given its frequent association with pain relief, anxiolysis, and autonomic regulation[16]. Shenmen stimulation is believed to promote the release of endorphins and modulate the hypothalamic-pituitary-adrenal axis, thereby reducing nociceptive response. Our findings echo those of Yeh et al. (2014), who observed reduced analgesic consumption in post-surgical patients following auricular acupressure at similar points[17].

The difference in pain perception between the intervention and control groups was especially pronounced during the follow-up period. This suggests that auricular acupressure may offer sustained analgesic effects, even after the immediate postoperative phase. Similar long-lasting outcomes were reported in studies assessing auriculotherapy in orthopedic and obstetric patients[18]. Importantly, this study adds to a growing body of literature that advocates for integrative approaches in pain management. Non-pharmacological techniques such as auricular acupressure are especially valuable for patients who are contraindicated for NSAIDs or opioids, or for those seeking drug-free pain control[19,20]. The absence of side effects in the intervention group further strengthens the safety profile of this modality.

Demographic variables such as age, gender, and socioeconomic status were evenly distributed across the study groups, minimizing potential confounding. The use of a validated pain scale (Verbal Descriptor Scale) and a randomized controlled design enhances the reliability of the findings. Despite promising results, several limitations should be acknowledged. The sample size was relatively small and drawn from a single institution, which may limit generalizability. Also, while the placebo group received seeds on non-therapeutic points, some tactile stimulation may have produced minor physiological responses, potentially diluting group differences[21,22,23]. Future studies with larger, multicenter cohorts and blinding mechanisms are warranted to validate and expand upon these findings. Additionally, exploring the role of patient-specific variables such as anxiety, pain threshold, and expectation may provide deeper insights into the mechanisms and effectiveness of auricular acupressure.

CONCLUSION

This study supports the use of auricular acupressure as an effective and safe adjunctive technique for managing postoperative dental pain. Given its simplicity, affordability, and non-invasive nature, auricular acupressure holds promise as a complementary tool in modern dental practice, aligning with current trends toward personalized and holistic patient care.

DECLARATIONS

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

There is no funding for this research.

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