

Efficacy of Hypnosis as an Adjunct to Alleviate Pain and Anxiety Levels of the Patients During Endodontic Treatment: An In Vivo Study

Vaibhav Nikam¹ Lalitagauri Mandke² Radhika Navare Kulkarni³ Mansi Vandekar⁴ Hitesh Pawar⁵ Shagun Garg^{6*}

¹MDS, Department of Conservative Dentistry and Endodontics, Dr. D. Y. Patil Dental College & Hospital, Navi Mumbai, Maharashtra, India.

²Professor, Department of Conservative Dentistry and Endodontics, Dr. D. Y. Patil Dental College & Hospital, Navi Mumbai, Maharashtra, India.

³Associate Professor, Department of Conservative Dentistry and Endodontics, Dr. D. Y. Patil Dental College & Hospital, Navi Mumbai, Maharashtra, India.

⁴Associate Professor, Department of Conservative Dentistry and Endodontics, Dr. D. Y. Patil Dental College & Hospital, Navi Mumbai, Maharashtra, India.

⁵Senior Lecturer, Department of Conservative Dentistry and Endodontics, Dr. D. Y. Patil Dental College & Hospital, Navi Mumbai, Maharashtra, India.

⁶Senior Lecturer, Department of Conservative Dentistry and Endodontics, Dr. D. Y. Patil Dental College & Hospital, Navi Mumbai, Maharashtra, India.

ABSTRACT

Background: Dental procedures create anxiety in patients' minds, which can cause major hindrance during treatment procedures. Hypnosis can serve as an effective non – pharmacological aid in resolving this problem. To assess the efficacy of using hypnoanalgesia as an adjunct to reduce pain and anxiety levels of a patient during endodontic procedures.

Materials and Methods: Random clinical trial was performed with twenty adult patients with irreversible pulpitis in their posterior tooth. The pain and the anxiety of the patients were measured using the Visual analogue scale and Modified Dental Anxiety index respectively at the various intervals during the treatment. Electric pulp testing was also performed prior to starting the treatment to check if hypnosis alleviated the pain tolerance capacity. Statistical Analysis: Paired samples T-test and ANOVA test were performed

Results: P value of < 0.001 was obtained which proved that there was statistically significant increase in the pain threshold value and reduction in needle prick pain felt and the anxiety level of the patient pre and post hypnosis.

Conclusion: Dental hypnosis can increase the pain threshold, and help in alleviating the patients' anxiety. It can serve as a useful aid in management of patients who dread dental treatment.

Keywords: Hypnosis, Anxiety, Pain management.

INTRODUCTION

Majority of the dental patients face extreme anxiety and fear during the dental treatment^{1, 2}. Such attitude of some patients to stomatological procedures^{3, 4} is a cause of their irregular visits in dental clinics, which, in consequence, may increase

the severity of their dental problems. Many adults avoid dental treatment due to the dental phobia⁵.

Clinical hypnosis could be a non-invasive therapeutic option to increase treatment comfort both for the patients and dentists. Hypnosis plays an

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*Correspondence Dr. Shagun Garg.

Department of Conservative Dentistry and Endodontics, Dr. D. Y. Patil Dental College & Hospital, Navi Mumbai, Maharashtra, India.

Email: shagungarg18@gmail.com

important role in the management of dental anxiety and dental phobia^{6,7}. Hypnosis is a set of techniques designed to enhance concentration, minimize one's usual distractions, and heighten responsiveness to suggestions to alter one's thoughts, feelings, behavior, or physiological state. It is a procedure than can be used to facilitate various types of therapies and treatments⁸.

Hypnosis is defined as "A state of consciousness involving focused attention and reduced peripheral awareness characterized by an enhanced capacity for response to suggestion."

Hypnoanalgesia not only creates anesthesia but it also reduces patient anxiety, increases patient comfort both, during and post operative procedures. Moreover anxiety increases pain that the anaesthetics cannot block^{9,10}.

In dental field hypnosis is used for,

- The Management Fear and Anxiety
- Hypnosis for Dental Analgesia
- Control of Bleeding
- Control of Salivation
- Control of Bruxism
- Control of Gagging
- Pediatric Dental Hypnosis

Hypnosis has gained world-wide acceptance in medical procedures. It not only provides analgesia during and after the treatment, but also reduces the blood at the field of surgery, improves healing, reduces scar formation, etc¹¹. On 23 April 1955, the British Medical Association (BMA) approved the use of hypnosis in the areas of psychoneuroses and hypnoanesthesia in pain management in childbirth and surgery. At this time, the BMA also advised all physicians and medical students to receive fundamental training in hypnosis.

In 1958, the American Medical Association approved a report on the medical uses of hypnosis. The Ministry of Health & Family Welfare, Government of India, in its letter no.R.14015/25/96-U&H(R) (Pt.) dated 25 November 2003, has categorically stated that hypnotherapy is a recommended mode of therapy in India.

MATERIALS AND METHODS

Twenty random adult patients with irreversible pulpitis in their posterior tooth were randomly selected for this study. The study protocol was approved by the Ethical committee of the Institute. All the patients were in good health determined by health history and oral questioning. A valid and informed consent was taken from the patients who were willing for the study.

Patients that were included had not taken any analgesic 8 hours prior to first appointment. At the first appointment, a Modified Dental Anxiety Index was filled by the patient before the treatment. Electric pulp testing was carried out and the value to which pain was felt was noted. Then a hypnotic trance was induced and hypnoanalgesia suggestion was given to the patient. Then the electric pulp test was repeated and the value to which the pain was felt was noted.

Keeping patient in hypnotic trance a local anesthesia injection was given to the patient. Then the patient was slowly brought out of trance and pain to needle prick was noted using VAS. The access opening and coronal pulp removal was done and the tooth was temporized. At the end of first appointment Modified Dental Anxiety Index was filled by the patient. At the second appointment, local anesthesia injection was given (without hypnosis) and pain to the needle prick was noted using Visual Analogue Scale and then the root canal treatment was carried out.

Data obtained:

- Modified Dental Anxiety Index Preoperative.
- Electric Pulp Testing Value Preoperative.
- Electric Pulp Testing Value Under Hypnoanalgesia.
- Visual Analog Scale Pain Value To Injection Under Hypnoanalgesia.
- Modified Dental Anxiety Index Post First Appointment.
- Visual Analog Scale Pain Value To Injection Without Hypnoanalgesia.

Statistical analysis:

The above data obtained was collected and statistically analyzed using ANOVA test and T-test.

Table 1: Data table

sr no	age	sex	Electric pulp testing before hypnosis	electric pulp testing after hypnosis	difference in electric pulp testing before and after hypnoanalgesia	needle prick pain with hypnoanalgesia	needle prick pain with out hypnoanalgesia	difference in needle prick pain before and after hypnoanalgesia	modified dental anxiety index before	modified dental anxiety index after	difference in modified dental anxiety index
1	32	f	3	4	1	1	7	6	14	9	5
2	18	m	3	5	2	3	7	4	25	17	8
3	36	f	6	7	1	6	7	1	9	7	2
4	22	f	4	6	2	0	5	5	20	11	9
5	30	m	8	10	2	4	6	2	9	5	4
6	34	m	8	10	2	2	5	3	8	5	3
7	25	f	8	10	2	0	8	8	16	7	9
8	26	m	6	8	2	1	5	4	9	6	3
9	30	m	8	10	2	0	4	4	18	10	8
10	22	m	8	10	2	0	5	5	15	10	5
11	20	f	2	5	3	4	7	3	14	7	7
12	45	m	5	6	1	1	1	0	9	6	3
13	22	m	5	10	5	3	6	3	17	10	7
14	32	m	3	4	1	0	4	4	18	10	8
15	21	m	3	5	2	0	3	3	14	10	4
16	35	m	6	8	2	2	5	3	10	8	2
17	25	f	7	9	2	0	6	6	17	10	7
18	29	m	5	7	2	1	3	2	13	9	4
19	37	f	3	6	3	1	4	3	19	12	7
20	27	f	6	7	1	2	7	5	20	15	5

RESULTS

Table 2. Paired Samples t-test of "Electric Pulp Testing Before Hypnoanalgesia" vs "Electric Pulp Testing After Hypnoanalgesia"

Group	N	Mean	CI 95% ²	Standard Deviation ³	Min	Max
Electric_Pulp_Testing_Before	20	5.35	4.448 - 6.252	2.059	2.0	8.0
Electric_Pulp_Testing_After	20	7.35	6.393 - 8.307	2.183	4.0	10.0

p value: < 0.001¹

Table 3. Paired Samples t-test of "Modified Dental Anxiety Index Before Hypnoanalgesia" vs "Modified Dental Anxiety Index After hypnoanalgesia"

Group	N	Mean	CI 95% ²	Standard Deviation ³	Min	Max
Modified_Dental_Anxiety_Index_Before	20	14.7	12.649 - 16.751	4.680	8.0	25.0
Modified_Dental_Anxiety_Index_After	20	9.2	7.847 - 10.553	3.088	5.0	17.0

p value: < 0.001¹

Table 4. Paired Samples t-test of "Needle Prick Pain Without Hypnoanalgesia" vs "Needle Prick Pain With Hypnoanalgesia"

Group	N	Mean	CI 95% ²	Standard Deviation ³	Min	Max
Needle_Prick_Pain_With_Out_Hypnoanalgesia_	20	5.25	4.486 - 6.014	1.743	1.0	8.0
Needle_Prick_Pain_With_Hypnoanalgesia	20	1.55	0.805 - 2.295	1.701	0.0	6.0

p value: < 0.001¹

The p values for the paired sample T tests were<0.001which indicates that there is a statistically significant difference between:

- *Pain to Needle prick with and without hypnoanalgesia,
- *Electric pulp testing before and after hypnoanalgesia,
- *Modified Dental Anxiety Index Preoperative and postoperative.

Table 5. ANOVA test of average Difference In Electric Pulp Testing Before And After Hypnoanalgesia according to gender.

Group	N	Mean	CI 95% ³	Standard Deviation ⁴	Min	Max	Kurtosis ⁵	Skew ⁶	p abnormal ⁷
F	8	1.875	1.297 - 2.453	0.835	1.0	3.0	-1.329	0.222	0.556
M	12	2.083	1.520 - 2.647	0.996	1.0	5.0	4.564	2.138	< 0.001

The p value for the ANOVA test were >0.01 which indicates that there is no statistically significant difference male and female response to hypnoanalgesia.

DISCUSSION

Dental anxiety stems out of fear of pain, fear of needle pricks during anaesthesia⁵ as well as exaggerated dental anecdotes. Anxious patients avoid or delay dental treatment, leading to aggravation of their dental problems even leading to extraction.^{1,2} Hypnosis plays an important role in the management of dental anxiety and dental phobia. Also, the use of hypnoanalgesia alone or along with local anesthesia injection facilitates a very comfortable treatment experience for the patient.

Hypnoanalgesia increases patients' pain threshold for the needle prick, which is very helpful since majority of root canal treatments or deep fillings require giving local anesthesia⁸. Anxiety was measured using the Modified Dental Anxiety Scale which was introduced in 1995¹². Modified Dental Anxiety Scale (MDAS) is a brief, self-complete questionnaire consisting of five questions and summed together to produce a total score ranging from 5 to 25. It has reasonable psychometric properties, low instrumental effects and can be integrated into everyday dental practice as a clinical aid and screen for dental anxiety.

The pain was measured using Visual Analogue Scale (VAS). Visual Analogue Scale is a unidimensional measure of pain intensity, which has been widely used in diverse adult populations. The present study was carried out to check the efficacy of hypnoanalgesia as an adjunct to local anesthesia to aid in reducing the anxiety and the needle prick pain felt by the patients.

CONCLUSIONS

Within the parameters of this study the following conclusions can be drawn

Hypnoanalgesia can serve as a useful adjunct to local anesthesia as it significantly decreases the anxiety levels of the patient.

There was a significant reduction in response to electric pulp testing showing increased patient's pain threshold.

Under hypnoanalgesia there was a statistically significant decrease in the needle prick pain experienced by the patients.

Gender, has no statistically significant association with the success of using hypnoanalgesia as an adjunct to local anesthesia.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. Brett Deacon, Jonathan Abramowitz. Fear of needles and vasovagal reactions among phlebotomy patients Anxiety Disorder 20(2006)946-960.
2. Michael Yelland, Kathy Heathcote Fear of needles Nature and prevalence in general practice. Australian Family Physician Vol.38, No.3, March 2009

3. H.D Edmondson, B. Roscoe, M.D. Vickers. Biochemical Evidence of Anxiety in Dental Patients British Medical Journal ,1972,4,7-9
4. de Jongh A, Aartman IHA, Brand N. Trauma-related phenomena in anxious dental patients.trauma related phenomena in anxious patients. Community Dent Oral Epidemiol 2003; 31:52-8
- 5.The avoidance and delaying of dental visits in Australia. Australian Dental Journal 2012;57: 1-5.
6. Zach McCready Is Hypnosis an Appropriate Conjunctive Treatment for Dental Phobia? HYPNOSIS JOURNAL
7. Eitner, S, Schultze-Mosgau, S, Heckmann, J, Wichmann, M, and Holst, S. Changes in neurophysiologic parameters in a patient with dental anxiety by hypnosis during surgical treatment. Journal of Oral Rehabilitation.(2006),33:496-500.doi:10.1111/j.1365-2842.2005.01578
8. Hypnosis for the Relief and Control of Pain American Psychological Association,July 2, 2004
9. Recife, Pernambuco State, Brazil. Michelle Marie T. Oliveira, Viviane Colares, Cad. Saude Publia. The relationship between dental anxiety and dental pain in children aged 18 to 59 months: a study in,Rio de Janeiro,25(4):743-750, ABR,2009
10. Kieko Okawa, Tatsuya Ichninohe,Bull Anxiety May Increase Pain During Dental Treatment Tokyo Dent (2005) 46(3),51-58
11. Milton H. Erikson, Seymour Hershman, Irving I. Selter, The Practical Application Of Medical And Dental Hypnosis.
12. Humphris, Gerry M.T. Morrison, and S.J Lindsay. The Modified Dental Anxiety Scale : validation and United Kingdom norms. Community dental health12.3 (1995):143-150.