

The Effectiveness of Hypnotherapy Versus Mindfulness Meditation on Headache Outcomes and Stress in Adults with Tension-Type Headache: An Experimental Study

Dr. Priyanka Rathore¹, Dr. Hunita Dhanju²

¹MPT Student, Department of Physiotherapy, PGDCAH (Hypnotherapist),

²Assistant Professor, Department of Physiotherapy
Pioneer Physiotherapy College, Vadodara, India.

Corresponding Author: Dr. Priyanka Vikram Singh Rathore

DOI: <https://doi.org/10.52403/ijrr.20261002>

ABSTRACT

Background: Tension type headache (TTH) is the most prevalent headache disorders and is commonly associated with increased stress, reduced functional ability, and impaired quality of life. Non-pharmacology interventions targeting mind-body connection, such as hypnotherapy and mindfulness meditation, have gained attention as effective management strategies. However, limited research directly compares their effectiveness in individuals with TTH.

Objective: to compare the effect of hypnotherapy versus mindfulness meditation on headache outcomes and stress using headache diary, HIT-6 and PSS-10 in adults with tension type headache.

Method: according to purposive sampling 40 individuals meeting inclusion exclusion criteria were enrolled and randomly divided in group A and B.

Results: Paired T-test was used for within and unpaired T-test for between group analysis, showed significance difference in.

Conclusion: Both interventions showed significant reduction in all parameters; however, hypnotherapy had out performed

mindfulness meditation showing more pronounced therapeutic benefits.

Keywords: Hypnotherapy, Mindfulness meditation, Tension-type Headache, Mind-body intervention, Stress

INTRODUCTION

Tension type headache (TTH) is one of the most prevalent primary headaches, ranging from 30% to 78% in general population. 20-24 age group is most affected one. TTH is commonly described as a bilateral, pressing, or tightening pain of mild to moderate intensity. Chronic, sustained extrafusal muscle contraction leads to triggers point activation. (1,2,3,4) Stress has been identified as strongest triggers for TTH, creating vicious cycle which significantly affects individual's quality of life and overall wellbeing. (4,5,6,7) The pain of TTH is managed with analgesics (acetaminophen, aspirin or NSAIDs) and adjuvant therapies like yoga, acupuncture, relaxation and neurofeedback. (8)

Recently, greater attention has been given to mind-body approaches such as hypnotherapy and mindfulness meditation. Hypnotherapy is therapeutic techniques uses focused attention, guided relaxation,

heightened awareness to alter pain perception and stress. It uses dissociation, absorption, and suggestibility, enabling individuals to experience changes in perception and emotional response to pain. (8,9) While, Mindfulness meditation, rooted deep in Buddhist traditions, (10,11) it emphasizes on present moment awareness (observer-self) and non-judgmental acceptance of thoughts and emotions. It has gained recognition for reducing stress, anxiety, and chronic pain by altering subjective experience of pain by enhancing emotional appraisal. (12) Both of these techniques address the psychological and emotional dimensions of TTH.

Most researches done previously has generally focused on general pain population thus more rigorous, controlled studies are needed to evaluate their effectiveness specifically for TTH. This study aims to provide a comparative analysis of these interventions, contributing to the development of effective, evidence-based treatment strategies. The objective of this study is to determine and compare the effects of hypnotherapy and mindfulness meditation on headache outcomes and stress in adults with tension type headache using headache diary (13) (frequency, duration and intensity (NPRS)(14), headache impact scale -6 (HIT-6) (ICC=0.80(15)), and perceived stress scale-10 (PSS-10) (ICC=0.91(16)). This study hypothesized that hypnotherapy and mindfulness meditation may or may not have significant difference on headache outcomes and stress.

MATERIALS & METHODS

This study is a comparative (experimental study), purposive sampling was used to collect the sample population from Vadodara city, Gujarat.

The study was commenced after obtaining ethical approval, following this google form was circulated in various colleges through social media to screen patients with headaches.

Selection criteria

Adults aging 18-40 years of age, irrespective of gender, subject suffering from tension type headache, fulfilling diagnostic criteria according to ICHD-3 having NPRS more than or equal to 5 having headache for more than 1 year, no cognitive dysfunction and willing to participate were included in study and those who have other headache disorder, having psychiatric disorder (past or present), neurological disorder, headache because of injury, substance abuse, prior and on regular practice of hypnotherapy or mindfulness meditation with 6 months and any medical condition that would contraindicate participation were excluded from the study. Eligible patients were recruited for the study.

Participants were provided with clear understanding of the study and written informed consent was obtained. Participants then were randomly allocated into two groups; Group A (Hypnotherapy) and Group B (Mindfulness meditation).

Intervention

The sessions were provided for 2 days per week (45 minutes supervised session) for 4 weeks (8 sessions) with home practice on remaining days with guided audio script. The sessions were delivered in calm, well-ventilated and dim light environment.

Group A received hypnotherapy which includes 5 minutes of induction session, 10 minutes of deepener, 20 minutes of ego strengthening and 10 minutes of therapeutic suggestions and reorientation. Group B received mindfulness meditation includes 5 minutes of breath awareness, 20 minutes of body scan meditation and 20 minutes of guided relaxation.

Headache diary was provided to each participant for prior and post 4 weeks for pre and post data. While HIT-6 and PSS-10 data was obtained on first and last day of intervention.

Statistical Analysis

Data was analysed at 5% level of significance with confidence interval (CI) at 95%. Normality of data for all outcomes were tested using Shapiro-Wilk's test at 5% level of significance and it showed normal distribution.

RESULT

Baseline data was equally distributed in both groups shown in Table 1.

Data were analysed by using dependent t-test for within group comparison for outcome measures. Significant difference was observed in within data shown in table 2(group A) and table 3(group B). For between group comparison independent t-test was use data showed significant difference (shown in table 4) depicting better performance in group A.

Table 1: Descriptive data expressed in mean, standard deviation (SD), and significance value p-value			
BASELINE DATA	GROUP A (HYPNOTHERAPY) (N=20)	GROUP B (MINDFULNESS MEDITATION) (N=20)	SIGNIFICANCE LEVEL (p-value)
	MEAN $\pm$ SD	MEAN $\pm$ SD	
AGE	27.25 $\pm$ 2.07	26.05 $\pm$ 3.73	0.1
GENDER	18	18	
Female	2	2	
Male			
HEADACHE DIARY (intensity)	4.83 $\pm$ 0.47	4.95 $\pm$ 0.39	0.4
HEADACHE DIARY (frequency)	14 $\pm$ 3.98	14 $\pm$ 3.98	0.9
HEADACHE DIARY (Duration)	3.71 $\pm$ 0.9	3.98 $\pm$ 0.71	0.1
HIT-6	54.8 $\pm$ 4.12	54.8 $\pm$ 4.12	0.9
PSS-10	21.1 $\pm$ 2.55	21.2 $\pm$ 2.48	0.8

Table 2: Within group analysis for group A (hypnotherapy), data expressed in mean, standard deviation (SD), and significance value p-value					
OUTCOME MEASURES	PRE		POST		SIGNIFICANCE LEVEL (p-value)
	MEAN	SD	MEAN	SD	
HEADACHE DIARY (Intensity)	4.83	0.47	1.62	0.29	< 0.0001
HEADACHE DIARY (Frequency)	14	3.98	3.45	0.75	< 0.0001
HEADACHE DIARY (Duration)	3.71	0.9	0.2	0.01	<0.0001
HIT-6	54.8	4.12	45.5	3.06	<0.0001
PSS-10	21.1	2.55	12.1	2.34	<0.0001

Table 3: Within group analysis for group B (Mindfulness meditation), data expressed in mean, standard deviation (SD), and significance value p-value					
OUTCOME MEASURES	PRE		POST		SIGNIFICANCE LEVEL (p-value)
	MEAN	SD	MEAN	SD	
HEADACHE DIARY (Intensity)	4.95	0.39	2.91	0.39	<0.0001
HEADACHE DIARY (Frequency)	14	3.98	8.05	2.4	<0.0001
HEADACHE DIARY (Duration)	3.98	0.7	2.37	0.1	<0.0001
HIT-6	54.8	4.12	48.95	2.79	<0.0001
PSS-10	21.2	2.48	13.7	1.97	<0.0001

DISCUSSION

This study compared the effectiveness of hypnotherapy and mindfulness meditation in adults with tension type headache over the period of weeks. Both interventions significantly reduced headache intensity, frequency, duration, disability and stress. Hypnotherapy had more prominent result compare to mindfulness meditation.

Hypnotherapy had showed significant reduction in all these parameters and these findings were supported by Flynn and Khazraee, they reported hypnotherapy reduces pain and improves psychological flexibility (8,17) and Barbosa and Miltner had explained it neurophysiological effects on pain modulation and stress reduction. (18,19)

Table 4: Between group analysis for group A and B, data expressed in mean, standard deviation (SD), and significance value p-value						
OUTCOME MEASURES	GROUP A		GROUP B		T-VALUE	SIGNIFICANCE LEVEL (p-value)
	MEAN	SD	MEAN	SD		
HEADACHE DIARY (Intensity)	1.6	0.2	2.9	0.3	-11.73	<0.0001
HEADACHE DIARY (Frequency)	3.45	0.75	8.05	2.4	-8.05	<0.0001
HEADACHE DIARY (Duration)	0.2	0.01	2.37	0.1	-54.45	<0.0001
HIT-6	45.5	3.06	48.95	2.7	-3.71	<0.0001
PSS-10	12.1	2.3	13.7	1.97	-2.26	<0.0001

While, Mindfulness meditation also showed significant improvement consistent with previously done studies by Principe, Napadow, and Calderone, who highlighted its role in enhancing pain acceptance, reducing emotional reactivity, and improving well-being. However, Rehman noted limited effects in some studies due to methodological constraints. (20,21,22,23)

Between group comparison had revealed hypnotherapy to more effective, aligning with Pennazi and Pisapia, who reported hypnotherapy have stronger and long-lasting effects. (24) Jeansen, Patterson, Keppler, and Prabowo explained that hypnotherapy acts through descending pain inhibitory pathways and central modulation,

(25,26,27) further supporting the findings of this study.

Although the effects of mindfulness meditation were significant, they were comparatively less pronounced than those observed with hypnotherapy. Hypnotherapy demonstrated superior efficacy in between group comparisons provides valuable insight, suggesting comprehensive reduction in intensity frequency, duration, disability and stress associated with TTH, as hypnotherapy address direct modulation pain perception at central nervous system level, while mindfulness meditation works on understanding, awareness and acceptance of pain which reduces suffering and enhances overall health.

Therefore, integrating structured hypnotherapy and mindfulness-based practices within multidisciplinary rehabilitation programs can provide holistic, safe, and cost-effective approach to TTH, improving overall wellbeing.

While this study provides valuable insights, certain limitation should be noted firstly, sample size was small and less diverse, no objective measures were taken and long term follow up were not taken. Thus, future studies should include a larger and diverse population, objective measures like electroencephalography, heart rate, blood pressure, and others should be incorporate, long-term follow is recommended to determine the sustainability of treatment and improve validity of findings.

CONCLUSION

Hypnotherapy and mindfulness meditation are effective options for managing tension type headache in adults. However, hypnotherapy had outperformed particularly in decreasing headache symptoms and stress. Finding of this study suggest that incorporating relaxation-based methods into headache management can improve patient well-being and quality of life. Overall, both interventions can be recommended as a non-pharmacological treatment options.

Declaration by Authors

Ethical Approval: Approved by Institutional Review Board (IRB) with proposal number: PPC/OW/1325J/2025 dated 04-10-2025.

Acknowledgement: I'm grateful to my mentor Hunita Dhanju for guiding me throughout this research.

Source of Funding: None

Conflict of Interest: No conflicts of interest declared.

Creative Commons Attribution License 4.0

This is an open-access article published under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0).

<https://creativecommons.org/licenses/by/4.0>

REFERENCES

1. Ropper AH, Samuels MA, Klein JP. Pain. In: Ropper AH, Samuels MA, Klein JP, editors. Adams and Victor's Principles of Neurology. 10th ed. New York: McGraw-Hill Education; 2014. p. 128-149.
2. Headache classification committee of the International Headache Society (IHS). The international Classification of Headache Disorders, 3rd edition (ICHD-3). Cephalalgia. 2018;38(1):1-211.
3. Yang Y, Cao Y. Rising trends in the burden of migraine and tension-type headache among adolescents and young adults globally, 1990 to 2019. J Headache Pain. 2023 Jul 27;24(1):94.
4. Cathcart S, Winefield AH, Lushington K, Rolan P. Stress and tension-type headache mechanisms. Cephalalgia. 2010 Oct;30(10):1250-67.
5. Lars Bendtsen. Tension type headache. J headache pain. 2013;14(suppl 1):O2
6. Priyanka Yadav. Tension type headache and perceived stress level: A correlational study. Int J Indian Psychol. 2017;4(7).
7. Ritu Meena, Deepa Meena, Samar Hussain. Quality of life in patients with tension-type headache, migraine without aura and mixed type headache. Int J Pharm Clin Res. 2022;14(2):223-228.
8. Amir Moghadam Ahmadi, Mina Jafari, Laaya Sabzevari, Atena FallahTafti, Reza Bidaki. Evaluation of the effect of hypnotherapy on the headache. Sleep Hypn. 2018;20(2):114-119.
9. Hammond DC, editor. Handbook of Hypnotic Suggestions and Metaphors. New York: W.W. Norton & Company; 1990

10. Kabat-Zinn J. Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. New York: Delacorte. 1990
11. Goyal M, Singh S, Sibinga EMS, et al. Meditation programs for psychological stress and well-being: A systematic review and meta-analysis. *JAMA Intern Med.* 2014;174(3):357–368.
12. Zeidan F, Grant JA, Brown CA, McHaffie JG, Coghill RC. Mindfulness meditation-related pain relief: evidence for unique brain mechanisms in the regulation of pain. *Neurosci Lett.* 2012 Jun 29;520(2):165-73
13. Phillip D, Lyngberg AC, Jensen R. Assessment of headache diagnosis: a comparative population study of a clinical interview with a diagnostic headache diary. *Cephalalgia.* 2007 Jan;27(1):1-8.
14. Hawker GA, Mian S, Kendzerska T, French M. Measures of adult pain: Visual Analog Scale for Pain (VAS Pain), Numeric Rating Scale for Pain (NRS Pain), McGill Pain Questionnaire (MPQ), Short-Form McGill Pain Questionnaire (SF-MPQ), Chronic Pain Grade Scale (CPGS), Short Form-36 Bodily Pain Scale (SF-36 BPS), and Measure of Intermittent and Constant Osteoarthritis Pain (ICOAP). *Arthritis Care Res (Hoboken).* 2011 Nov;63 Suppl 11:S240-52.
15. Rendas-Baum R, Yang M, Varon SF, Bloudek LM, DeGryse RE, Kosinski M. Validation of the Headache Impact Test (HIT-6) in patients with chronic migraine. *Health Qual Life Outcomes.* 2014 Aug 1;12:117.
16. Lee EH. Review of the psychometric evidence of the perceived stress scale. *Asian Nurs Res (Korean Soc Nurs Sci).* 2012 Dec;6(4):121-7.
17. Flynn N. Systematic Review of the Effectiveness of Hypnosis for the Management of Headache. *Int J Clin Exp Hypn.* 2018 Oct-Dec;66(4):343-352.
18. Barbosa FC, Tadine RM, Rezende JDP, Lopes GCD, Attie A, Machado S, Barbosa ES. Neuroscience of hypnosis: a neurophysiological view of hypnotherapy. *Rev Gest Soc Ambient.* 2024;18(4):e077.
19. Miltner WHR, Franz M, Naumann E. Neuroscientific results of experimental studies on the control of acute pain with hypnosis and suggested analgesia. *Front Psychol.* 2024 Apr 4;15:1371636. doi: 10.3389/fpsyg.2024.1371636.
20. Principe E, Pirrotta M, Fava N, Marchio C, Catalano LM, Iannacchero R, Bosco D. The effectiveness of mindfulness as a complementary therapy in headache patients: a preliminary interventional study. *Confin Cephalalgica.* 2025;35(2).
21. Napadow V. The mindful migraine: does mindfulness-based stress reduction relieve episodic migraine? *Pain.* 2020 Aug;161(8):1685-1687.
22. Calderone A, Latella D, Impellizzeri F, de Pasquale P, Famà F, Quartarone A, Calabrò RS. Neurobiological Changes Induced by Mindfulness and Meditation: A Systematic Review. *Biomedicine.* 2024 Nov 15;12(11):2613.
23. Aemaz Ur Rehman M, Waseem R, Habiba U, Fahad Wasim M, Alam Rehmani S, Alam Rehmani M, Abdullah M, Khabir Y, Rehan Hashmi M, Almas T, Shahan Ali S, Huzaifa Shah SM, Fatima K. Efficacy of mindfulness-based intervention for the treatment of chronic headaches: A systematic review and meta-analysis. *Ann Med Surg (Lond).* 2022 May 27;78:103862.
24. Penazzi G, De Pisapia N. Direct comparisons between hypnosis and meditation: a mini-review. *Front Psychol.* 2022;13:958185.
25. Jensen MP, Patterson DR. Hypnotic approaches for chronic pain management: clinical implications of recent research findings. *Am Psychol.* 2014 Feb-Mar;69(2):167-77.
26. Keppler J. Shedding light on the fundamental mechanism underlying hypnotic analgesia. *Ann Palliat Med.* 2018 Jan;7(1):170-176.
27. Prabowo T. Self-hypnosis model reduces anxiety and pain in post-general anesthesia patients. *Open Access Maced J Med Sci.* 2021 Mar 9;9(T4):137-40

How to cite this article: Priyanka Rathore, Hunita Dhanju. The effectiveness of hypnotherapy versus mindfulness meditation on headache outcomes and stress in adults with tension-type headache: an experimental study. *International Journal of Research and Review.* 2026; 13(10):10-15. doi: 10.52403/ijrr.20261002
