

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

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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 was 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.

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