Original Article

# INSOMNIA IN OLDER ADULT: A CASE REPORT

**Himanshu Sharma[1*], M K Gupta, PhD.[2], Shamama Athar[3], Ruchika Pal[4], Deepshikha Sharma[5]**

[1] MPT (Neuro) Research Scholar, Department of Physiotherapy Career Point University Kota.
[2] Research Supervisor, School Of Health & Allied Sciences, Career Point University, Kota, Rajasthan, India.
[3] Physiotherapist, Swarnagiri Neuro Physiotherapy And Multispecialty Clinic Kota.
[4] Consultant Physiotherapist, Swarnagiri Neuro Physiotherapy and Multispecialty Clinic Kota, Rajasthan.
[5] PG Student Department of Psychology, Chandigarh University.
**Corresponding author:** Himanshu Sharma, MPT (Neuro) Research Scholar, Department of Physiotherapy Career Point University Kota.
**Email:** pthimanshu@gmail.com

**DOI:** 10.47750/pnr.2023.14.S01.134

## Abstract

Sleep problems are common in the elderly population.Epidemiological analysis have shown that 30%–60% of all older persons have one or more sleep complaint, including difficulty falling asleep, problems staying asleep at night or falling back asleep after awakening, early morning awakenings, extreme daytime sleepiness, and daytime exhaustion.(1) Insomnia is a critical problem which is characterised by having a hard time initiating sleep,besieged to maintain sleep, waking up frequently during the night, be liable to wake up too early and are unable to go back to sleep, sleep is non-restorative or of poor quality.(2) It affects the quality of life and health status of a person. It is no longer just an appendage of psychiatric disease in that increasing substantiation supports that insomnia is associated with medical problems such as increased cardiovascular risks.(3) Sleep disturbances increase with age. Total sleep time and sleep competence (i.e., the percent of time spent sleeping when lying in bed) decreases and the time awake after sleep onset increases during middle age, and sleep efficiency continues to decrease amongst older adults. Older adults also experience changes in their circadian cycle, with earlier bed and wake times.(4)

## Introduction

The basic components which causes insomnia are biological factors such as chronic pain, respiratory diseases, psychological factors like anxiety, depression, OCD(Obsessive Compulsive Disorder), social issues, physical disability and poor health. (5) The diagnostic criteria for Insomnia is given in Table 1. Insomnia is associated with significant indisposition if left untreated. The strongest level of evidence is for mental illness. Older individuals with insomnia have a 23% increase in risk of development of depression symptoms. Several studies have documented an increased risk of depression in older patients with continual insomnia. A recent study noted 44% of older patients with persistent insomnia continued to have depression 6 months later as compared to only 16% of those without insomnia.(6) Sleep disturbances amplify with age. Total sleep time and sleep efficiency (i.e., the percentage oftime spent sleeping when lying in bed) decreases and the time awake after sleep onset increasesduring middle age, and sleep competence continues to decrease among older adults. Olderadults also encounter changes in their circadian cycle, with earlier bed and wake times. Sleep problems among the general population cannot be overlooked because persistent sleep problems may have serious consequences. A study carried out in North India by SankhaShubhraChakrabarti et al, in 2014, he found that in a total population of 504, Insomnia was present in 32% of the population. A statistically significant association was found between increasing age and insomnia but no significant sex differences were noticeable. Early insomnia was found to be the most common prototype of insomnia identified (39% of total affected). Most of the cases were of chronic insomnia (89.45%) and associated with some comorbidity (100%). A recent study signified anxiety about COVID-19 correlated positively with insomnia severity and suicidal ideation. In a study of 2022 by JCSM, the global

pooled prevalence rate of sleep problems among all populations is 35.7% and patients with COVID-19 appeared to be the most affected group, with a pooled rate of 74.8%.

## Aim of Study:

This study endeavours to explore the effect of CES in the patients with insomnia. This study was done to offer relevant information about Insomnia, Cranial Electrical Stimulation, and its uses and effectiveness in a patient.

| S.No. | **Table 1: Diagnostic Criteria according to DSM V[3]** |
|---|---|
| **A.** | A predominant complaint of dissatisfaction witli sleep quantity or quality, associated<br>with one (or more) of the following symptoms:<br>1. Difficulty initiating sleep. (In children, this may manifest as difficulty initiating sleep without caregiver intervention.)<br>2. Difficulty maintaining sleep, characterized by frequent awakenings or problems returning to sleep after awakenings. (In children, this may manifest as difficulty returning to sleep without caregiver intervention.)<br>3. Early-morning awakening with inability to return to sleep. |
| **B.** | The sleep disturbance causes clinically significant distress or impairment in social, occupational, educational, academic, behavioral, or other important areas of functioning. |
| **C.** | The sleep difficulty occurs at least 3 nights per week. |
| **D.** | The sleep difficulty is present for at least 3 months. |
| **E.** | The sleep difficulty occurs despite adequate opportunity for sleep. |
| **F.** | The insomnia is not better explained by and does not occur exclusively during the<br>course of another sleep-wake disorder (e.g., narcolepsy, a breathing-related sleep disorder,a circadian rhythm sleep-wake disorder, a parasomnia). |
| **G.** | The insomnia is not attributable to the physiological effects of a substance (e.g., a drugof abuse, a medication). |
| **H.** | Coexisting mental disorders and medical conditions do not adequately explain the predominantcomplaint of insomnia. |

## Methodology:

**PSQI-H (Pittsburg Sleep Quality Index – Hindi Version):-** The PSQI was developed with several goals: (i)To provide a steadfast, valid, and standardized measure of sleep quality; (ii) To distinguish between 'good' and 'poor' sleeps, (iii) To provide an index that is easy for subject to use and for clinicians and researchers to elucidate; and (iv) To provide a brief, clinically useful assessment of a variety of sleep disturbances that might influence sleep quality.[9]It is an effective instrument used to determine the quality and patterns of sleep in adults. Itdifferentiates "poor" from "good" sleep quality by measuring seven components: subjective sleep quality, sleep latency, sleepduration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction over the last month. India is the second most populous country in the world. Hindi is the most extensively

spoken language in India and enjoys the peculiarity of being the 4th most widely spoken language in the world. A Hindi translation and validation of the PSQI provide an internationally standardized questionnaire for sleep quality assessment for Hindi speaking population not only in India but also widely dispersed Indian diaspora all over the world. It was based on the following steps:(a) translation, (b) back-translation, (c) comparison between translation and back-translation performed by a group of experts, and (d) pre-pilot test in intended population.The test-retest reliability between the original PSQI and PSQI-H. The test-retest reliability of the PSQI-H global score over 4 weeks interval showed an intraclass correlation coefficient (ICC) of 0.979 and ranged from 0.883 to 0.975 for the seven components.[10]

**CES (Cranial Electrical Stimulation):**Cranial electrical stimulation (CES) is a noninvasive brainstimulation technology that uses a low intensity(0.1–16 mAmp) alternating current (AC) applied to thehead through one or more electrodes. Preset, often patentedstimulus frequency patterns vary across different CESdevices.[11]CES is believed to influence the subcortical brain structures known to synchronize emotions, such as the reticular activating system, thalamus, and hypothalamus, as well as the limbic system. CES may stimulate regions that regulate pain messages, neurotransmitter function, and hormone production via the hypothalamic-pituitary axis. CES treatments induce significant changes in the electroencephalogram, increasing alpha (8–12 Hz) relative power and decreasing relative power in the delta (0–3.5 Hz) and beta (12.5–30 Hz) frequencies.[12] Ear clip electrodes, moistened with an appropriateconducting solution, are applied for 20 minutes to an hour ormore on an initial daily basis for a week or two, followed by areduced schedule of 2 or 3 treatments a week until the insomniais resolved, and then further reduced to an as-needed (p.r.n.)basis.[13]

**Case Report:**A male with age 55 yrs old, teacher by profession, came with a complaint of sleeplessness since 8 years, with no any history of DM, HTN, trauma and thyroid. His sleeping time was 10 pm but it initiated after 1 and half hours after going to bed. He used to wake up 3-4 times during his sleep and woke up 5 am in the morning. It was very difficult for the patient to maintain enough enthusiasm and concentration towards his work. A detailed physical examination of the patient was done to rule out other comorbidities. The evaluation process was carried out in accordance with DSM V. Self questionnaires were executed as well as PSQI-H questionnaire was also accomplished to determine the severity of Insomnia.It was found that he had ***Chronic Sleep onset insomnia***.

**Patient Position:**The patient was lied down in supine position in a comfortable medium heighted couch with a comfortable pillow under his head, and eyes closed.

**Patient Preparation:**The therapy room was dark, the ear lobes were cleaned with medical spirit solution with a cotton ball before the application of electrodes to reduce the resistance of skin.

**Apparatus Preparation:**The electrodes were cleaned with the medical spirit and Conductive (ECG) gel was applied to the electrodes.

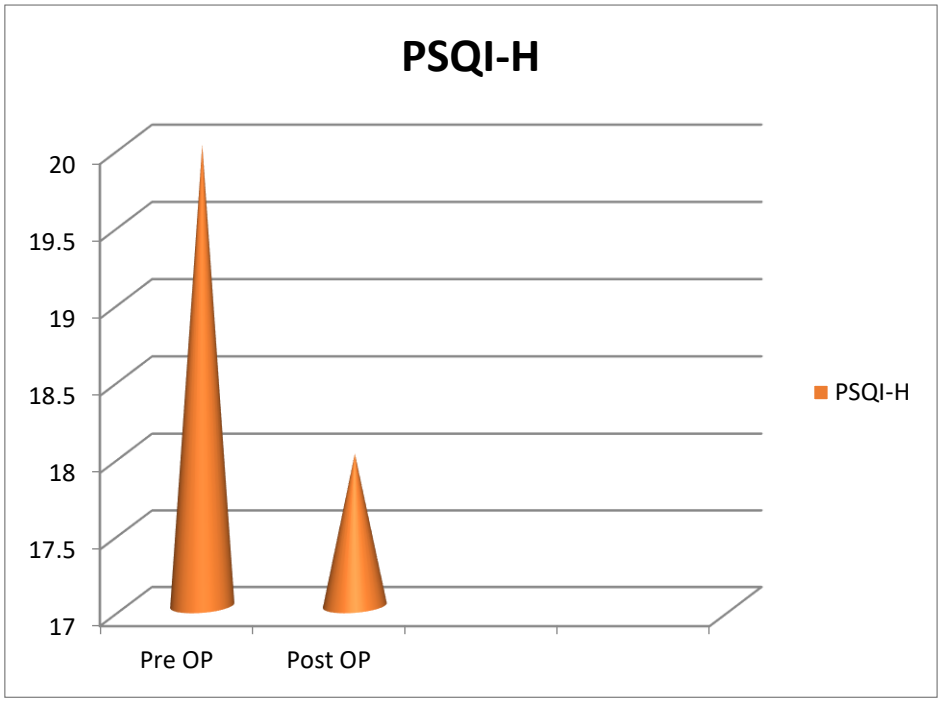

**Electrode Placement:**The electrodes were placed to the earlobes.

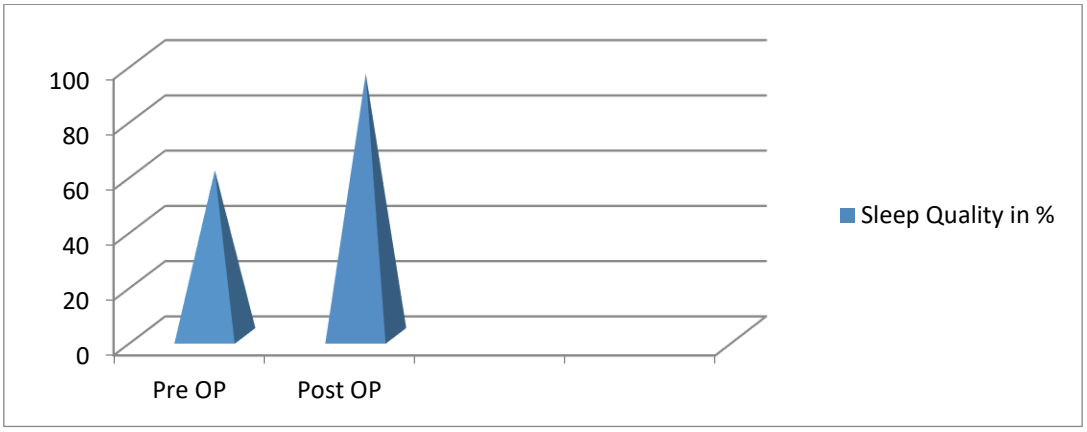
**Machine Operation:**The RELAXITENS (Make By Johari Digital Health Care ltd, India) machine was usedto treat the patient. The Pulse width was set to 150Hz, and the intensity was gradually increased to superficial sensory stimulation.

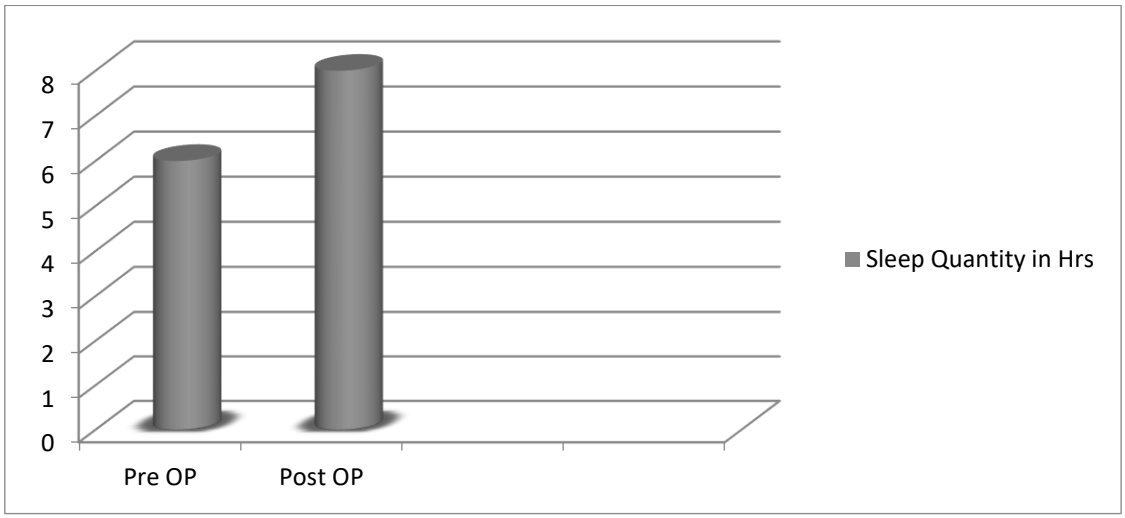
**Dosage and duration:**The patient was treated for 20 minutes a day for 5 days in week for 2 weeks.

## Result:

The initial PSQI-H score was 20,after the treatment of 2 weeks it was dropped by 20% to 17.Sleep quality was increased by 45% from 55% to 90% and Sleep depth increased by 25% from 5.5 hours to 8 hours.



## Conclusion:

Regarding the results observed After 2 weeks of treatment, an average increase in the sleep time was 2 hrs at the end of the treatment. Sleep satisfaction was very good. While in addition, It was observed that number of awakenings per night was also decreased in a remarkable way.With the results obtained, we can conclude that treatment with CES and Sleep hygeine is effective as the objectives of the treatment were met.Furthermore the patient reported after four month of follow up questionnaire that he feels fresh with good sleep and maintaining the sleep hygeine and it has helped him to improve his overall health.

## References


1. Susan M. Mc Curry et al. Evidence based Psychological Treatments for Insomnia in Older Adults , The American PsychologicalnAssociation,2007.
2. Dong Rak Kwon et al, Synergic effects of Cranial electrotherapy Stimulation with sleep hygiene in patients with chronic Insomnia, Journal of Sleep Medicine, 2019.
3. DSM V, 5th Edition ™
4. Gretchen A. Brenes et al, Insomnia in older Adults with generalized Anxiety Disorders, AmJ. Geriatr Psychiatry, June 2009.
5. Dhaval Patel et al, Insomnia in the elderly: A review, JCSM, Feb 2018.
6. Dhaval Patel et al, Insomnia in the elderly: A Review, JCSM, Oct 2021.
7. Haitham Jahrami et al, Sleep problems during the covid-19 Pandemic by Population: A Systematic review and Meta analysis, JCSM,2022
8. Indrajeet Singh Gambhir et al, Insomnia in the elderly- A hospital based study from North- India, Journal of Clinical Gerontology & Geriatrics, Elsevier, Aug 2014.
9. Daniel J. Buysse et al, The Pittsburgh Sleep Quality Index: A new Instrument for Psychiatric Practice and Research, Psychiatry Research,1988.
10. Anil Kumar et al, Validation of Hindi Version of the Pittsburg Sleep Quality Index, JAPI,2020.
11. Janet Mindes et al, Cranial Electrical Stimulation, Textbook of Neuromodulation, Springer Science +Business media,2015.
12. Daniel L. Kirsch et al, Cranial Electrotherapy Stimulation for treatment of anxiety and insomnia, Psychiatry Clin N Am,36(2013) 169-176.
13. Mashall F. Gilula et al, CES in the treatment of Insomnia : A Review and Meta- Analysis, Practical Pain Management , 2007.
14. Dr.D.Bhattacharya et al, Epidemiology of Insomnia –A review of the Global and Indian Scenario, Indian Journal of Sleep Medicine,2013.
15. ASA (American Sleep Association)
16. The American academy of Sleep Medicine, *www.aasmnet.org* ,copyright @ AASM 2008
17. www.ninds.nih.gov/Disorders/understanding-sleep
18. Juan Carlos Rodrigues et al., Author Manuscript March 2015, HHS Public Access
19. Michael J. Sateia et al. Clinical Practice Guidelines for the Pharmacological Treatment of chronic insomnia in adults:AASM clinical Practice Guidelines,JCSM, Feb 15,2017
20. Childs A, Price L.et al,Cranial electrotherapy stimulation reduces aggression in violent neuropsychiatric patients. Prim Psychiatr 2007;
21. R. Kidwai, S. H. Ahmed et al, Prevalence of insomnia and use of sleep medicines in urban communities of Karachi, Pakistan: *J Pak Med Assoc 2013*.