

# PREVALENCE OF CERVICOGENIC HEADACHE IN COMPUTER USERS

*An Observational study*

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## Abstract

**Background** - Chronic hemicranial pain that is referred to the brain from either the neck's bony structures or its soft tissues is known as cervicogenic headache syndrome. The characteristics of CGH that set it apart from other headaches are side locking pain, pain that is made worse by pressure on the neck muscles, and head movement. Neck issues at work are increasingly frequently observed in heavy computer users. Cervical pain can be caused by a variety of factors, but sitting for prolonged periods of time with no downtime, being inactive, having poor postural control, and experiencing increased physical, mental, and psychological stress at work are the most common among office employees. Further interventional research to address CGH in computer users will build on the findings of this prevalence investigation.

**Methodology** - Ethical approval had been obtained. The subjects chosen ranged in age from 18 to 40 years old and worked for at least 32 to 42 hours per week. An online questionnaire form was created and distributed among computer users based on the International Headache Society's ICHD-3 and Biondi Checklist criteria for cervicogenic headache. The pain intensity was measured using a Visual Analog Scale. A statistical analysis was performed, and the results were tabulated.

**Result** - 110 computer users between the ages of 18 and 40 were included in this observational study, with 57.3 percent men and 42.7 percent women. 34.85% of users have CGH, according to the International Headache Society's ICHD-3 and Biondi Checklist for CGH criteria.

**Conclusion** - According to ICHD-3 and Biondi checklist Criteria, the study's findings show that 34.85 percent of computer users get cervicogenic headaches.

**Keywords:** Headache , Neck pain , Cervicogenic Headache , Biondi Checklist

## Introduction

Cervicogenic headache is a syndrome defined by chronic hemicranial pain referred to the head from either bony structures or soft neck tissues. [4]

The International Headache Society<sup>5</sup> released the second edition of their International Classification of Headache Disorders, which identified 14 different types and subclassifications of headaches. [5] Primary and secondary headaches are the two most common types of headaches. [5]. Primary headaches include those of vascular origin (cluster and migraine headaches) as well as tension headaches caused by stress. [5]. Cervicogenic headache is caused by a musculoskeletal disorder around the neck and head. [5].

CGH is distinguished from other headaches by side locking pain, pain aggravated by applying pressure to neck muscles, and head movement [1]. Pain radiates from the back of the head to the front. <sup>[1]</sup>CGH is caused by a convergence of sensory input from the upper cervical spine into the trigeminal spinal nucleus, which includes input from: upper cervical facets, upper cervical muscles, C2-3 intervertebral disc, vertebral and internal carotid arteries, upper spinal cord dura mater, and posterior cranial fossa. <sup>[6]</sup>. Muscular trigger points are commonly found in the suboccipital, cervical, and shoulder musculature, and when manually or physically stimulated, these trigger points can refer pain to the head. <sup>[4]</sup>.

Neck disorders affect approximately 30% of males and 50% of females of varying ages. [12] Cervical pain and stiffness affect approximately 9.5% and 17% of the global population, respectively. [13] Work-related neck problems are now common among heavy co Furthermore, cervical pain is a multifactorial cause, particularly in office workers, due to long periods of sitting with little rest, inactivity, poor postural control, and increased physical, mental, and psychological stress at work [11].

There has been significant technological advancement in computers, as well as an industrial shift toward a more service-oriented economy.[8]. This has resulted in more sedentary jobs as the number of employees has been reduced to minimise corporate profit losses, resulting in increased productivity demands for those who remain with the company and an increase in sick leave due to neck pain.[8].

Computer users [14]. Because of the increased loading and demand for postural support, work-related musculoskeletal disorders (WRMSD) have increased, with cervical pain accounting for 30-40% of these health problems. [8,10]. This means that more people are using computers for work and recreation, and we need to find better ways to deal with neck pain caused by prolonged computer use. [8 [8].

## AIM –

To study the prevalence of cervicogenic headache in computer users.

**OBJECTIVES –**

1. To find out the prevalence of CGH in computer users.
2. To find out which age group is more impacted.
3. To find out which gender is more prone to develop CGH.

**METHODOLOGY AND MATERIALS –**

Study Design - Observational Study

Study setup- School, Office and IT industry

Sampling Technique-Simple random Sampling

Sample Size- 120

Study Duration - 6 months

**INCLUSION AND EXCLUSION CRITERIA**

Inclusion Criteria	Exclusion criteria
18-40 years	Above 40 years
Both genders	Diagnosed cervical condition
Computer users	Physiotherapy treatment for neck pain in past 3 months
Willing to participate	Congenital condition of cervical spine.
	History of direct trauma to cervical spine.
	Spinal abnormalities
	Red Flags

**VIRTUAL PLATFORM USED**

- Google forms
- Emails
- Whatsapp
- Facebook
- Instagram

**OUTCOME MEASURE**

1. Bondi checklist for CGH
  2. Visual Analog scale
- Reliability – 0.98

Validity – 0.60

**PROCEDURE -**

The ethical committee provided its approval. Individuals were approached through virtual platforms, and those who met the inclusion criteria were chosen. The participants' consent was obtained. Following the completion of the consent forms, the demographic data of the participants, including age, gender, height, weight, average work experience, and average number of daily working hours, were collected. Patients were asked to complete a questionnaire based on their symptoms. Data is gathered and analysed using the most appropriate statistical tests.

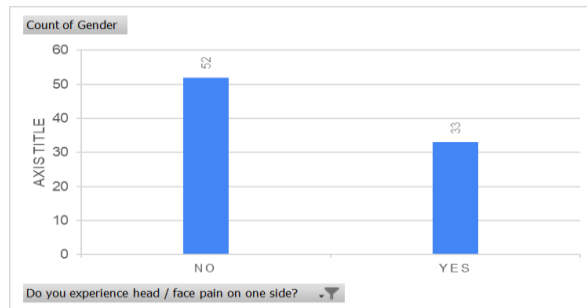
**STATISTICAL ANALYSIS**

Table 1 – No. of Individual Participated in the study

Gender	No. of Subjects
Male	63(57.3%)
Female	47(42.7%)

**Interpretation** – Table shows total of 110 participants out of which 42.7% are female and 57.3% are male. The column chart shows the count of participants i.e., 47 females and 63 males.

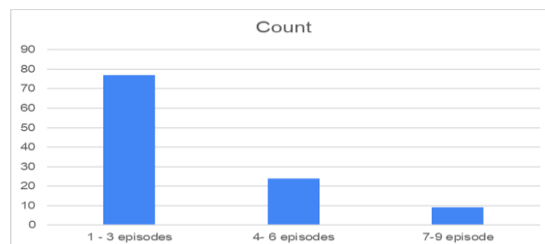
### Biondi Check List 1.Side locking head/face pain



**Interpretation** – Figure 3 shows participants experiencing one side head or face pain 33 participants (30%) have experienced pain whereas 52 participants (47.3%) haven't experienced any side locking pain.

### 2.No. of episodes of head or face pain in a month

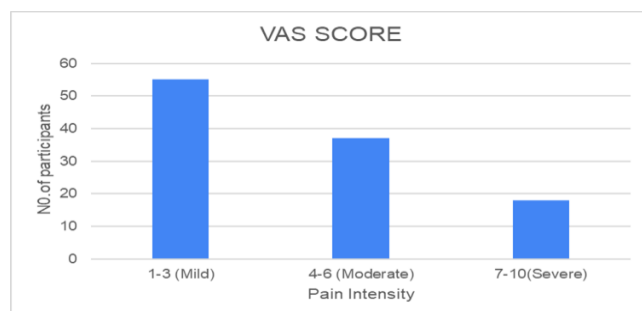
No. of episode of head/face pain in a month	Count
1 – 3	77(70%)
4- 6	24(21.8%)
7-9	9(3.6%)



**Interpretation** – Figure 4 shows about 77 participants (70%) experience at least 1-3 episodes of pain in a month 24 participants (21.8%) experience 4 – 6 episodes of pain in a month whereas 9 participants (3.6%) experience 7-9 episodes in a month.

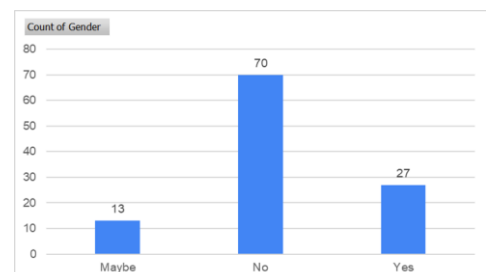
### 3.Pain Intensity

Pain Intensity	Count
1-3(Mild)	55
4-6(Moderate)	37
7-10 (Severe)	18



**Interpretation** – Figure 5 -The above bar diagram shows around 55 participants have mild pain intensity 37 participants have moderate pain intensity and 18 participants experience severe pain intensity.

Pain increased on sustained neck position	No. of participants
Maybe	25
No	55
Yes	30

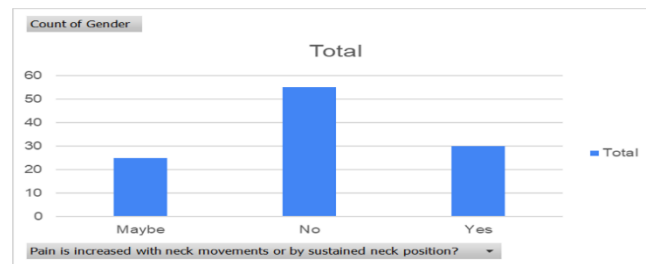


### 4.Pain increased on sustained neck position

**Interpretation** –Figure 6 - The above data analysis shows that around 50% (55 participants) experience no increase in headache after sustained neck position whereas 27.3% (30 participants) experienced increase in neck pain after sustained neck position.

About 22.7 % (25 participants) were not sure about increase in headache after sustained neck position.

### 5. Pain increased on applying pressure on neck musculature



**Interpretation** – Figure 7 - The above analysis shows that out of 110 participants

- 27(24.5%) participants experienced increase in headache after applying digital pressure on neck muscle
- 70(63.6%) participants didn't experience any increase in headache/pain
- Whereas 13 (11.8%) participants were not sure.

### 6. Neck Mobility

Able to move neck completely	No. of participants
Maybe	5
No	8
Yes	97



**Interpretation** – Figure 8 – The above analysis shows

almost 97 (88.2%) participants were able to move their neck completely without any restrictions. 8 (7.3%) participants experienced restricted Neck Rom.

### RESULT –

- The study participants recruited in this study are individuals who use computers for work in PCMC's offices and IT industry.
- The number of people who took part in the study is depicted in Table 1. There were 110 participants in total, with 63 men (57.3 percent) and 47 women (42.7 percent).
- Figure 1 depicts participants who are experiencing pain on one side of their head or face. 33 participants (30%) have reported pain, while 52 participants (47.3%) have reported no side locking pain.
- Figure 2 shows that approximately 77 participants (70 percent) have at least 1-3 episodes of pain per month. 24 participants (21.8%) have 4 - 6 episodes of pain per month, whereas 9 participants (3.6%) have 7-9 episodes per month.
- Figure 3 depicts the pain intensity of participants as measured by the Visual Analog Scale. To make the calculations easier, the values are grouped together. Around 55 participants are experiencing mild pain. During a cervicogenic headache episode, 37 participants report moderate pain intensity, while 18 report severe pain intensity.
- Figure 4 shows that approximately 50% (55 participants) have no increase in headache after prolonged neck position, whereas 27.3 percent (30 participants) have an increase in neck pain after prolonged neck position.
- Approximately 22.7 percent (25 participants) were unsure about the increase in headache after prolonged neck position.
- Figure 5 demonstrates that approximately 27 (24.5 percent) of 110 participants experienced an increase in headache after applying digital pressure to the neck muscle. 70 (63.6 percent) of participants reported no increase in headache/pain, while 13 (11.8 percent) were unsure.
- Figure 6 - Almost 97 (88.2 percent) of participants were able to move their neck completely freely. 8 (7.3 percent) of participants had restricted Neck Rom.

### DISCUSSION-

The current study sought to determine the prevalence of cervicogenic headache in computer users. The study was conducted over a 6-month period with a sample size of 110 participants. The study's population ranged in age from 18 to 40 years old and worked on a computer for at least 32-42 hours per week.

According to a study conducted by Meisam Nobari (2017), headache is an extremely common problem that most of the time is mild or infrequent, but in severe or frequent types, causes significant suffering with decreased or eliminated working capacity.

Cervicogenic headache, according to David. M Biondi (2005), is a chronic, hemicranial pain syndrome in which the sensation of pain originates in the cervical spine or soft tissues of the neck and is referred to the head. The trigeminocervical nucleus is a region of the upper cervical spinal cord where sensory nerve fibres from the trigeminal nerve's descending tract converge with sensory fibres from the upper cervical roots.

This convergence of nociceptive pathways allows pain signals to be referred from the neck to the trigeminal sensory receptive fields of the face and head, as well as activation of the trigeminovascular neuroinflammatory cascade, which is widely regarded as one of the important pathophysiologic mechanisms of migraine.

Neck disorders (ND) can result from any of the complex systems of structures in the cervical spine, which is the most mobile and least stable part of the human spine. Neck pain and dysfunction are common in the general population, affecting up to 67 percent of people at some point in their lives.

Several studies were conducted to screen for cervical pain and its prevalence in computer users, with the conclusion that computer monitors, keyboards, ergonomics, effort, and other factors have a significant impact on the physical and mental health of the subjects.

According to a study conducted by Zhiyong Mind and Matti Narhi (2004), long-term computer work necessitates a static upper body posture. The neck supports the head, which accounts for roughly one-seventh of total body weight. The muscles of the neck, shoulder, and upper limbs become overloaded and eventually injured in order to maintain a static posture.

Some researchers have documented that muscular tension and stress to the shortened structures can cause pain and develop a vicious cycle (muscular tension > pain > increased tension > pain). Computer work will also strain the muscles and joints in the neck, shoulder, and upper limbs. Muscles and joints become stressed when their supporting structures deteriorate.

Forward Head Posture (FHP) is an anterior positioning of the head in the sagittal plane relative to the line of gravity. This condition is frequently observed in people who work on a computer for an extended period of time. Office workers who work in a static sitting posture for an extended period of time are more likely to adopt poor body posture, resulting in musculoskeletal disorders.

Phil Page (2011) discovered that forward head posture increases stress on the upper cervical segments in his study. Watson and Trott36 discovered that CGH patients had more forward head posture than other patients, which was associated with weakness and decreased endurance of the deep neck flexors.

Electro-myographic studies revealed that the cervical, trapezius, and erector spinae muscles have continuous electric impulses, indicating overwork and tension. Patients with CGH frequently present with tightness of the sternocleidomastoid, upper trapezius, levator, scalenes, suboccipital, pectoralis minor, and pectoralis major, which is consistent with Janda's Upper Crossed Syndrome.

Cervicogenic headache patients are more likely to experience myofascial trigger point pain, which is caused by overactivity of the SCM, upper trapezius, and temporalis. SCM myofascial trigger points exhibit a referred pain pattern similar to CGH (posterior to frontal). Indeed, Jaeger55 discovered that 12 of 12 CGH patients had at least three myofascial trigger points on their symptomatic side that reproduced their headaches more than 50% of the time.

**My study's goal was to determine the prevalence of cervicogenic headache in computer users using the Biondi Checklist and the ICHD 3 criteria. According to the data analysis, the prevalence is around 34.85 percent.**

**It was also discovered that females were more likely than males to develop cervicogenic headache.** In a study conducted by Niels Nilssons (1997), he discovered that two-thirds of frequent headache sufferers were women, while only one-third were men, compared to the overall 20-59-year-old group's equal male female distribution. This was a statistically significant difference (chi-square test,  $P = 0.001$ ). As a result, women were roughly twice as likely as men to experience frequent headaches.

According to a similar study conducted by Phil Page (2012), females appear to be more predisposed to CGHs, which affect four times as many women as men. Because CGHs are more common in women, it is important to consider menstruation and hormonal changes as a cause of headaches. Menstrual headaches are common two days before menstruation and last until the end of the cycle.

**The study also discovered that participants between the ages of 18 and 25 were more affected than others by cervicogenic headache.**

## CONCLUSION

According to the ICHD-3 and Biondi checklist Criteria, the prevalence of cervicogenic headache in computer users is 34.85 percent, according to the study.

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