



THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 4, Issue 4 (October–December 2023)



Original Article

Prevalence of Cervicogenic Headache and Its Association with Upper Crossed Syndrome in Dentists

Hira Ghous¹, Saba Ghous¹, Rabail Asim¹, Quratulain², Rabbyya², Muhammad Umer Farooq Mujahid³, Muhammad Arslan⁴ and Amna Khalid^{5*}

¹University of Faisalabad, Faisalabad, Pakistan

²University of Lahore, Sargodha Campus, Sargodha, Pakistan

³University of Health Sciences, Lahore, Pakistan

⁴Government College University Faisalabad, Faisalabad, Pakistan

⁵Faculty of Medical Sciences, Government College University Faisalabad, Faisalabad, Pakistan

ARTICLE INFO

Key Words:

Cervicogenic Headache, Upper Crossed Syndrome, Dentists

How to Cite:

Ghous, H., Ghous, S., Asim, R., Quratulain, ., Rabbyya, ., Mujahid, M. U. F., Arslan, M., & Khalid, A. (2023). Prevalence of Cervicogenic Headache and Its Association with Upper Crossed Syndrome in Dentists: Prevalence of Cervicogenic Headache. *THE THERAPIST (Journal of Therapies & Rehabilitation Sciences)*, 4(04). <https://doi.org/10.54393/tt.v4i04.177>

*Corresponding Author:

Amna Khalid
Faculty of Medical Sciences, Government College University Faisalabad, Faisalabad, Pakistan
amnakhali@gcuf.edu.pk

Received Date: 11th November, 2023

Acceptance Date: 26th December, 2023

Published Date: 31st December, 2023

ABSTRACT

Cervicogenic headaches refer to a type of headache that originates from the cervical spine can be exacerbated by certain neck movements. Recognizing the link between cervicogenic headaches and Upper Cross Syndrome allows for targeted diagnostic assessments. **Objective:** To examine the relationship between cervicogenic headaches and USC in dental professionals and deeper understanding of the impact of occupational factors on the occurrence and severity of these headaches. **Methods:** This cross-sectional study was conducted on 180 participants selected through purposive sampling technique. Inclusion Criteria was both genders between 20 and 50 years age dentist. Having sitting duration of 3 hour or more than 3 hours. Exclusion Criteria was any malignancy related to soft tissues and joints. Study ran from 1 March 2022 to 30 September 2022. **Results:** The cervical flexion rotation test was positive in 40.7% i.e. 44 participants and is negative in 59.3% i.e. 64 participants. The pectoralis major contracture test was positive in 45.4% i.e. 45 participants and is negative in 54.6% i.e. 59 participants and there is a relation between cervicogenic headache and upper crossed syndrome and in dentists. **Conclusions:** The findings of this research highlight a substantial prevalence of cervicogenic headache among dentists 45.4% and emphasize a significant association between cervicogenic headache and the presence of upper crossed syndrome. These results provide valuable insights for dental professionals, clinicians, and policymakers to implement appropriate interventions and ergonomic strategies to mitigate the burden of cervicogenic headache in dental practice.

INTRODUCTION

Cervicogenic headache (CEH) is a symptomatic headache characterized by chronic unilateral headache and symptoms and signs of neck involvement [1]. CEH is often worsened by neck movement, sustained awkward head position or external pressure over the upper cervical or occipital region on the symptomatic side. Abolition of the headache following diagnostic anesthetic blocks of cervical structures or its nerve may provide evidence that the pain is attributed to a neck disorder [2]. The major musculoskeletal problem in the adult population is neck

pain and its prevalence is about 16.7% to 75.1% in the world [3]. Cervicogenic headache is a secondary type of headache which includes referred pain from the neck [4]. Diagnostic criteria for cervicogenic headache include cervical pain and rigidity. Cervicogenic headaches are one-sidedly originating from the posterior side of the head and neck, moving to the anterior, and at times linked with same-side arm soreness. Another type of cervicogenic headache is bilateral pain, on both sides of the neck and head that is increased by neck movements and by specific professions

such as driving, laundry working, and carpentry [5]. The prevalence of cervicogenic headache in dentists is 26.73%. Upper crossed syndrome is occurred by weak lower and middle trapezius, deep neck flexors, serratus anterior and tight upper trapezius and levator scapulae, suboccipital muscles, and sternocleidomastoid, pectoralis major and minor. The UCS occurs due to an imbalance of muscles between postural and phasic muscles. Static muscles can tighten and phasic muscles can loosen. Imbalance of opposite group muscles causes postural abnormalities in upper crossed syndrome [6]. The prevalence of the upper cross syndrome is increasing day by day in the general population. This syndrome is presenting with postural imbalance due to over-tightening of pectoralis and trapezius muscle groups and loosening of lower and middle trapezius muscles that cause winging of the scapula. Elevation and abduction of the scapula lead to rounded shoulders. The syndrome is mostly linked with poor posture in daily life [7, 8]. There is a 50% prevalence of job-related musculoskeletal pains caused by improper posture with repetitive motions, high vibration tools, any injury in the upper limb, and prolonged static contractions [9, 10]. Dentistry is a profession that claims plenty of quality work and concentration. For a long period, Dental practitioners require deep attention, proper eyesight, psychomotor abilities, and habit to keep posture according to ergonomics. Output, work rate, and function of dentists are altered by the decrease of any of these abilities. MSK problems cause long-term pain and disability. It is considered by the WHO and United Nations that MSK problems are the most prevalent and affects thousands of people in the world [11]. During practice in clinics working posture of dentists is abnormal such as long-term forward bending of the trunk and forward posture of the shoulder. There is a greater risk of cervical pain, shoulder pain, and pain of superior thoracic in dental professionals [12]. Musculoskeletal problems incidence rate is about 46.7% of the population. In musculoskeletal disorders, the commonest complaint is lower back pain and its prevalence is about 57.8% associated with neck pain having an incidence rate of 37.5% and prevalence of shoulder pain is 29.6%. There is a positive link between a dentist's position, experience at the clinic, and musculoskeletal problems. There is a large incidence rate of musculoskeletal problems in the general population [13]. Dentistry is an exhausting occupation that needs a lot of care, exactness, and a series of multiple abilities. Dental professionals are at greater risk of work-related problems because of continuous working hours, exposure to body fluids, and prolonged appointments that cause MSDs. Multiple intrinsic and extrinsic factors can be a cause of musculoskeletal pain. These factors affect social, physical

as well as psychological health negatively and make dental professionals more prone to early retirement, absence from work duties, and unskillful work providing [14]. Dentists are at high risk of cumulative disorders because of persistent occupational health dangers. Dental professionals mostly attain improper posture during work such as the 7 rotated position of the head, flexed position of the neck, and abduction of the shoulder for a prolonged time which leads to pain, chronic muscle fatigue, and discomfort. Due to work with accuracy and attentiveness, dentists experience psychological stress linked with MSDs [15, 16]. Cervical brachial pain is caused because of dynamic and static overload during dental treatment. Routine dental work out without rest leads to disruption of the spine's normal biomechanics and worse the resistance of vertebrae. Dentists adopt abnormal posture due to long periods of working hours and because of mental and physical pressure [17]. Dentists attain unsymmetrical and disturbing posture during work. They work for hours without changing the position of the head and neck. In the dental profession, awkward posture, and repeated motions such as filling, scaling, and making cavities cause both MSDs and psychological stresses that lead to fatigue. These problems cause a reduction in efficient results and exceptional work. In America, about 81% of dental personnel experience cervical, shoulder, and backache [18, 19].

The objective of this research was examining the relationship between cervicogenic headaches and USC in dental professionals, this study aims to provide a deeper understanding of the impact of occupational factors on the occurrence and severity of these headaches.

METHODS

This was cross sectional study design conducted in Faisalabad Medical University, Aziz Fatima Medical College, Madinah Teaching Hospital. The targeted population of the study comprises dentists from 2 medical institutes and 1 hospital who have cervicogenic headache associated with the upper cross syndrome sample size was 108 participants and was calculated by using Rao soft calculator.

RESULTS

In the final analysis, results showed that the prevalence of the upper crossed syndrome is 45.73% which was diagnosed by pectoralis major contracture test. Prevalence of cervicogenic headache is 40.7% and there is a strong relationship present between upper crossed syndrome and cervicogenic headache. As the value of Pearson chi-square test in "Sig." is 0.000, which is less than 0.05. It means that strong relation exists between cervical flexion rotation test and pectoralis major contracture test. Table 1 displays demographic characteristics of

participants which show total number of participants, mean and standard deviation of Age, Gender, and Sitting hours. Total participants are 108. Mean age is 26.1944 ± 3.33897. Mean and standard deviation of sitting hours is 2.0185 ± 0.89632, respectively.

Table 1: Demographic characteristics of participants

	N	Mean + SD
Age	108	26.1944 + 3.33897
Gender	108	1.7685 + .42375
Sitting hours	108	2.0185 + .89632

Table 2 tells us the relationship between pectoralis major contracture test and cervical flexion rotation test. 35 persons with positive cervical flexion rotation test have positive, pectoralis major contracture test. It means that relation exists between cervical flexion rotation test and pectoralis major contracture test.

Table 2: Association between Cervical flexion rotation test and Pectoralis major contracture test

Cervical flexion rotation test	Pectoralis major contracture test			p-value
	Positive	Negative	Total	
Positive	35	9	44	0.000
Negative	14	50	64	
Total	49	59	108	

Figure 1 demonstrates that in positive cervical flexion rotation test values, maximum percentage of positive pectoralis major contracture test is found. It means that higher the values of positive cervical flexion rotation test, more chances of getting positive pectoralis major contracture test.

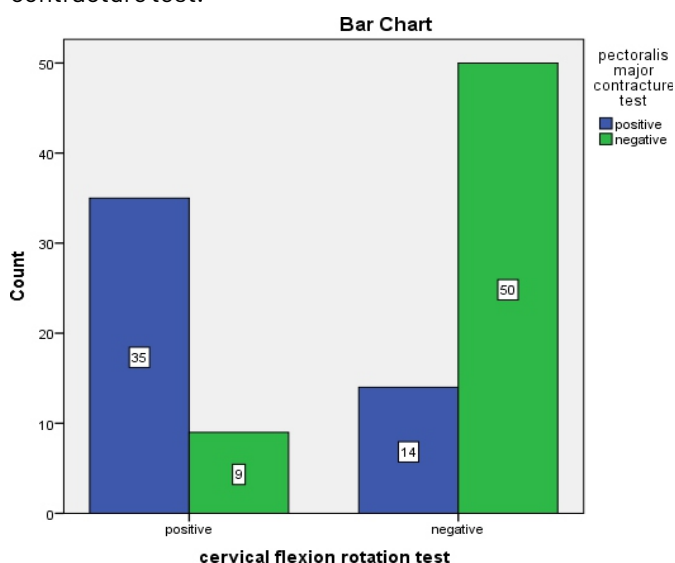


Figure 1: Bar Chart of Pectoralis Major Contracture Test and Cervical Flexion Rotation Test

DISCUSSION

The final analysis concluded that the prevalence of the upper crossed syndrome is 45.73% which was diagnosed by

pectoralis major contracture test. Prevalence of cervicogenic headache is 40.7% and there is a strong relationship present between upper crossed syndrome and cervicogenic headache. Gupta et al., concluded that dentists work for hours without changing the position of the head and neck [17]. Abnormal posture and repeated motions lead to fatigue. About 81% of dentists experience cervical shoulder and backache these results were accordance to current research. Kumar et al., revealed that the clinical working posture of dentists cause a greater risk of cervical pain, shoulder pain, and pain of upper thoracic in dentists these results were accordance to current research [12]. These problems cause the upper crossed syndrome. Neck extensor and pectoral muscles tighten in an upper crossed syndrome that is associated with weakness of scapular muscles and neck flexor muscles. This leads to a headache termed cervicogenic headache these findings were accordance to current findings. Tirgar et al., study concluded that upper crossed syndrome emphasizes the neck region because of bad posture, poor ergonomics, and prolonged sitting or standing [19]. The main complaint of the upper cross syndrome is neck and upper back pain current study focused on determining the association between cervicogenic headache and upper back pain that considers an upper crossed syndrome also focused on dentists have a high ratio of work-related musculoskeletal disorders that occurs because of disturbing positions. This causes stress on the back and head. Current study focus on the relationship between upper crossed syndrome that occurs due to disturbing positions and its association with cervicogenic headache. Cibulka et al., study has been mentioned that neck pain is a common condition that affects 70% population [20]. Dentists are more prone to musculoskeletal problems such as chronic neck pain these were accordance to current research findings 70% of dental students go on about neck pain. Therefore, our study aims to determine the cervicogenic headache in dentists that have prolonged sitting of 3, 4, 5, or more than 5 hours. Past study revealed that dentists are more prone to musculoskeletal problems these results were accordance to current research. Most effected region is shoulder and most recurrent complaint is shoulder pain. Daneshmandi et al., stated that upper cross syndrome is having a high ratio in today's population [6]. The syndrome is often linked with poor posture in daily life or occupation of a person like dentist these results were accordance to current research. Khawar et al., claims that musculoskeletal conditions are associated with the disproportion of muscles and cause 13 joint abnormalities [21]. Postural positions in repeated motions and an inactive lifestyle cause imbalance of muscles and one of the muscular imbalances cause the upper crossed syndrome.

Long-term sitting cause UCS these results were accordance to current research. In 2010 Pargali et al., stated that dentists are at greater risk of developing MSDs during work [22]. Dentistry is likely not the first element for the evolution of low back pain or neck pain, but it could highlight the symptoms these results were accordance to current research.

CONCLUSIONS

In the final analysis, conclude that the prevalence of the upper crossed syndrome is 45.73% which was diagnosed by pectoralis major contracture test. Prevalence of cervicogenic headache is 40.7% and there is a strong relationship present between upper crossed syndrome and cervicogenic headache. As the value of Pearson chi-square test in "Sig." is 0.000, which is less than 0.05. It means that relation exists between cervical flexion rotation test and pectoralis major contracture test. By shedding light on the specific challenges faced by dental professionals and their impact on headache occurrence, this research can contribute to preventive strategies, improved diagnostic criteria, and targeted therapeutic interventions, ultimately enhancing the well-being and occupational health of dentists.

Authors Contribution

Conceptualization: AK

Methodology: HG, R,

Formal analysis: MUFM, Q

Writing-review and editing: HG, SG, RA, MUFM, MA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

REFERENCES

- [1] Knackstedt H, Bansevicius D, Aaseth K, Grande RB, Lundqvist C, Russell MB. Cervicogenic headache in the general population: the Akershus study of chronic headache. *Cephalalgia*. 2010 Dec; 30(12): 1468-76. doi: 10.1177/0333102410368442.
- [2] Headache Classification Subcommittee of the International Headache Society. The international classification of headache disorders. *Cephalalgia*. 2004; 24(1): 9-160.
- [3] Genebra CV, Maciel NM, Bento TP, Simeão SF, De Vitta A. Prevalence and factors associated with neck pain: a population-based study. *Brazilian Journal of Physical Therapy*. 2017 Jul; 21(4): 274-80. doi: 10.1016/j.bjpt.2017.05.005.
- [4] Rubio-Ochoa J, Benítez-Martínez J, Lluch E, Santacruz-Zaragoza S, Gómez-Contreras P, Cook CE. Physical examination tests for screening and diagnosis of cervicogenic headache: A systematic review. *Manual Therapy*. 2016 Feb; 21: 35-40. doi: 10.1016/j.math.2015.09.008.
- [5] Malavde R and Salunkhe P. Prevalence of Cervicogenic Headache in Dentists. *Indian Journal of Public Health Research & Development*. 2020 May; 11(5).
- [6] Daneshmandi H, Harati J, Fahim Poor S. Bodybuilding links to upper crossed syndrome. *Physical Activity Review*. 2017; 5(17): 124-31. doi: 10.16926/par.2017.05.17.
- [7] Ijaz A, Khan I, Ahmed A, Sadiq S. Frequency of neck pain among dentists. *Pakistan Orthodontic Journal*. 2016; 8(2): 89-93.
- [8] Alghadir A, Zafar H, Iqbal ZA. Work-related musculoskeletal disorders among dental professionals in Saudi Arabia. *Journal of Physical Therapy Science*. 2015; 27(4): 1107-12. doi: 10.1589/jpts.27.1107.
- [9] Muralidharan D, Fareed N, Shanthi M. Musculoskeletal disorders among dental practitioners: does it affect practice?. *Epidemiology Research International*. 2013; 2013. doi: 10.1155/2013/716897.
- [10] Srijessadarak T, Sae-Lee D, Paungmali A, Bumrerraj S, Boonprakob Y. Investigations of upper crossed syndrome's characteristics in dental students. *Journal of Associated Medical Sciences*. 2017 Sep; 50(3): 404-.
- [11] Rehman k, ayaz h, urooj w, shah r. Work-related musculoskeletal disorders among dental practitioners in khyber pakhtunkhwa. *Pakistan Oral & Dental Journal*. 2013 dec; 33(3).
- [12] Kumar M, Pai KM, Vineetha R. Occupation-related musculoskeletal disorders among dental professionals. *Medicine and Pharmacy Reports*. 2020 Oct; 93(4): 405. doi: 10.15386/mpr-1581.
- [13] Feng B, Liang QI, Wang Y, Andersen LL, Szeto G. Prevalence of work-related musculoskeletal symptoms of the neck and upper extremity among dentists in China. *BMJ Open*. 2014; 4(12). doi: 10.1136/bmjopen-2014-006451.
- [14] Kierklo A, Kobus A, Jaworska M, Botuliński B. Work-related musculoskeletal disorders among dentists-a questionnaire survey. *Annals of Agricultural and Environmental Medicine*. 2011; 18(1).
- [15] Shams-Hosseini NS, Vahdati T, Mohammadzadeh Z, Yeganeh A, Davoodi S. Prevalence of musculoskeletal disorders among dentists in Iran: A systematic review. *Materia socio-medica*. 2017 Dec; 29(4): 257.

doi: 10.5455/msm.2017.29.257-262.

- [16] Ahmed H and Batinic M. Prevalence and Risk Factors of Neck Pain Among Dentists and Dental Hygienists.
- [17] Gupta BD, Aggarwal S, Gupta B, Gupta M, Gupta N. Effect of deep cervical flexor training vs. conventional isometric training on forward head posture, pain, neck disability index in dentists suffering from chronic neck pain. *Journal of clinical and diagnostic research: Journal of Clinical and Diagnostic Research for Doctors*. 2013 Oct; 7(10): 2261. doi: 10.7860/JCDR/2013/6072.3487.
- [18] Al Khalili Y, Ly N, Murphy PB. Cervicogenic headache. 2018.
- [19] Tirgar A, Javanshir K, Talebian A, Amini F, Parhiz A. Musculoskeletal disorders among a group of Iranian general dental practitioners. *Journal of Back and Musculoskeletal Rehabilitation*. 2015 Jan; 28(4): 755-9. doi: 10.3233/BMR-140579.
- [20] Cibulka MT, Weissenborn D, Donham M, Rammacher H, Cuppy P, Ross AS. A new manual muscle test for assessing the entire trapezius muscle. *Physiotherapy Theory and Practice*. 2013 Apr; 29(3): 242-8. doi: 10.3109/09593985.2012.718856.
- [21] Khawar A, Khawar S, Tauqeer S, Amjad F, Rubab HI, Wafa HS. Association of upper cross syndrome with prolonged sitting among young adults. *Pakistan Biomedical Journal*. 2022 Jan: 370-4. doi: 10.54393/pbmj.v5i1.218.
- [22] Pargali N, Joukar N. Prevalence of musculoskeletal pain among dentists in Shiraz, Southern Iran. 2010.