Original Research Article

Prevalence of Back Pain and Neck Pain among Dentists in Hisar, India

Jaspreet Kaur[1], Manoj Malik[1], Sonu Punia[1], Yogesh[2]

[1]Assistant Professor, Dept. of Physiotherapy, GJUST, Hisar-125001.
[2]Dept. of Physiotherapy, GJUST, Hisar-125001.

Corresponding Author: Sonu Punia

ABSTRACT

Introduction: Prevalence of musculoskeletal disorders (MSD) was found very high in dental surgeon at world level. Among these MSDs, neck pain & Low back pain are most common.

Objective: After extensive search on prevalence of MSDs pain among dentists in different countries, we planned a study to examine prevalence, aggravating & relieving factors, preventing treatment intervention among dentists of an urban local community, Hisar from Haryana in India.

Methodology: The present study was cross sectional survey study conducted at Department of Physiotherapy, GJUS&T, Hisar. 110 Dentists from an urban community (Hisar city from India) were randomly recruited. Outcome measure for study was pain intensity which was measured by Visual analogue scale (VAS). Cross-tabulation and Chi square test (χ^2) was used to assess the relationship between two variables at 95% confidence intervals.

Results: 110 dentists out of 130 filled complete questionnaire and returned to researcher (response rate of 84%). Out of total participants, 52.7% were male, 47.3% female. Mean age of all participants were 33.47±6.43. 57.3% of participants had pain but when we categorized it into different variables, prevalence of neck pain was 30%, upper back pain was 13.6%, and lower back pain was 30%.

Conclusion: Our results revealed a higher prevalence of neck & back pain among dentist, indicating the role of work-related risk factors in these disorders and study also found some significant relationships between age and pain intensity, practice hours and pain intensity.

Key words: Musculoskeletal disorders; Dentist; Pain intensity

INTRODUCTION

Prevalence of musculoskeletal disorders (MSD) was found very high in dental surgeon at world level. Among these MSDs, neck pain & Low back pain are most common. [1] There were many contributing factors like long hours sitting work, faulty posture, and repetition of movements and use of heavy instrument during work leads to overexertion of cervical spine and lumbar spine. Long working hour's demands higher muscular fatigue and consequently increase the risk of neck pain & LBP in dentists. [2,3] Prolonged bending at spinal level and extend their torso and neck toward the patient and hold this position during entire procedure overexert the lumbar and cervical spine. Simultaneously, when performing on small oral cavity with in limited working space while doing small delicate procedure with the use of small instruments further overburden musculoskeletal structures like muscles, tendons, ligaments and small joints. [4,5]

Low back pain in dentists associated with more faulty posture at lumbar level but degeneration occurring in spinal structures due to ageing is also contributing factors. [4]

Females showed a higher frequency of pain involving the cervical, lumbar, dorsal, and wrist areas placing them at a higher risk of injury than males. On the

contrary, another study reported a higher frequency of pain from male dentists about back pain and female dentists were at higher risk of tendonitis. [6-8]

Literature search from different countries display higher prevalence of neck pain & back pain was relatively high in dentists of Iran (back pain 75%, 86.67%), Brazil (MSD pain 57.5%, neck 15.7%, shoulders 12.7% and lower back 15.7%), Lebanon (61.5% spinal pain, 31.6% of cervical pain, 22.3% of lumbar pain and 13.0% of dorsal pain), Serbia (82.6% MSD pain, 49.5% neck pain and 46% back pain), Australia (neck pain 85%), India (neck pain 83%), Poland (neck pain 47%), Queensland, Brisbane (neck pain 66.2%), Andhra Pradesh, India (52%), south Africa (neck 70%, hand 56.5%, shoulder pain 55.8%), Malaysia (upper back 71%, lower back 60%, wrists/hands (52%). [9-24] After extensive search on prevalence of MSDs pain among dentists in different countries, we planned a study to examine prevalence, aggravating & relieving factors, preventing treatment intervention among dentists of an urban local community, Hisar from Haryana in India.

METHODOLOGY

The present study was cross sectional survey study conducted at Department of Physiotherapy, GJUS&T, Hisar. 110 Dentists from an urban community (Hisar city from India) were randomly recruited. Inclusion criteria selected for participation in study were qualified dentist, work experience of at least one year and voluntarily to participate in the study. Participants were excluded if they had any past history of spinal deformities, spinal malignancies, musculoskeletal & neurological disease that may be vulnerable factor for neck & back pain, trauma to spine. A signed written inform consent was taken from dentist consisting of information about the details of the study.

Outcome measure for study was pain intensity which was measured by Visual analogue scale (VAS). [25] The general data collection form which was prepared by authors to collect demographic details of participants age, height, weight, body mass index, years of work experience, working hours per day (<4hours; 4-8 hours; >8hours), aggravating factors & relieving factors, any types of treatment (rest; medications; physiotherapy; physiotherapy and exercises; stretching exercise; yoga; yoga and physiotherapy.

Data analysis

Final data analysis was done using SPSS version 16.0 software. Cross-tabulation and Chi square test (χ^2) was used to assess the relationship between two variables at 95% confidence intervals.

RESULTS

110 dentists out of 130 filled complete questionnaire and returned to researcher (response rate of 84%). Out of total participants, 52.7% were male, 47.3% female. Mean age of all participants were 33.47±6.43. 57.3% of participants had pain but when we categorized it into different variables, prevalence of neck pain was 30%, upper back pain was 13.6%, and lower back pain was 30%.

45.5% of participants were taking treatment which further subdivides in to specifics types of treatment (2.7% Yoga; 3.6% Yoga & Exercise; 16.4% Stretching exercise, 4.5% Exercise & Medicine; 5.5% Physiotherapy; 4.5% Medicine; 2.7% Physiotherapy & Medicine; 53.6 % no treatment). The descriptive characteristics of participants are shown in Table-1.

Table 1: Descriptive statistics of variables

Variables	Mean	Range
Male Age	35.62±6.14	23-54
Female Age	31.07±5.93	23-54
Pain intensity	2.10±2.12	0-7
Working hours per day (hour)	2.28 ±0.54	1-3
Experience of practice	8.53± 5.47	1-23

No significant gender differences found in prevalence of pain as shown in table 2.

Table 2 cross tabulation between Pain & Gender

	Sex		Total
Pain	Male	Female	
Count	34	29	63
% within pain	54.0%	46.0%	100.0%
% within Sex	58.6%	55.8%	57.3%
% of Total	30.9%	26.4%	57.3%

But Pain intensity increases with advancing age as depicted in table 3.

Table 3 Cross tabulation between Pain & Category Age

Pain	CatAge			Total
	Up to 30 years	30.00-35.0 years	Greater than 35 years	
Count	18	23	22	63
% within pain	28.6%	36.5%	34.9%	100.0%
% within CatAge	46.2%	60.5%	66.7%	57.3%
% of Total	16.4%	20.9%	20.0%	57.3%

Maximum pain perception present with 4-8 practice hours in table 4

Table 4: cross tabulation between Practice hours and Pain intensity

Pain	practice hours			Total
	<4 hrs	4-8 hrs	>8 hrs	
Count	4	35	24	63
% within pain	6.3%	55.6%	38.1%	100.0%
% within practice hours	80.0%	50.7%	66.7%	57.3%
% of Total	3.6%	31.8%	21.8%	57.3%

Chi square test value (χ^2) showed non significant relationship between pain and CatAge, gender and practice hours but pain intensity increases with increase working hours and age in table 5.

Table 5: chi square test

	Value	df	Asymp. Sig. (2-sided)
Pain*Cat Age	3.325[a]	2	.190
Pain * gender	.091[a]	1	.763
Practice hours*Pain intensity	3.563[a]	2	.168

a* indicates non significant at p≤0.05

DISCUSSION

The Purpose of our study was to check the prevalence of neck & back pain and relationship between variable that affects intensity of pain. Prevalence of neck pain 30% and back pain was also 30% that is supported by previous studies. [26,27] No significant differences found in gender but higher prevalence in males as compared to females. Our study results also showed that as age increases pain symptoms also increases might be due to degenerative changes started in human body with age as previously stated by studies. [4] Study finding also stated that maximum pain intensity present in 4-8 hours of practice. A recent review done in 2018 includes 49 studies (cross-sectional studies and review papers from 2001-2016) found higher prevalence of Musculoskeletal disorders in dentistry supported our study findings.

Findings of review discussed certain significant causing factors for developing neck & back pain among dentists. Our study also depicted several aggravating factors include Repetition of movement in one posture fatigued muscle rapidly, making them more prone to overused injury of active muscles and results in inflammation. So inflammation of fatigued muscles can be reduced by taking frequent breaks in between sitting. As prevalence of pain among dentists is increasing day by day, so more attention is needed to develop a preventing strategy and thorough knowledge of ergonomic principles should be addressed. Ergonomic advice should be taught at college education level (use of light weighted modern equipment, adjustable sitting arrangements, sufficient light, easy access of instruments, and resting period in between procedure and position change.

Proper exercise management can reduce the effects of overused repetitive micro trauma and relaxation of shortened muscles. This holistic technique might be a challenge to dental professionals, but the result benefits in reducing MSD symptoms.

CONCLUSIONS

Our results revealed a higher prevalence of neck & back pain among dentist, indicating the role of work-related risk factors in these disorders and study also found some significant relationships between age and pain intensity, practice hours and pain intensity.

Conflict of interest
There was no conflict of interest.

REFERENCES

1. Airaksinen O, Brox J, Cedraschi C, Hildebrandt J, Klaber-Moffett J, Kovacs F, et al. European guidelines for the management of chronic nonspecific low back pain. Eur Spine J 2006; 15:192-300. doi: 10.1007/s00586-006-1072-1

2. Hayes MJ, Cockrell D, Smith DR. A systematic review of musculoskeletal disorders among dental professionals. Int J Dent Hyg. 2009; 7:159-165. doi: 10.1111/j.1601-5037.2009.00395.x.

3. Rajeshree Moodley, Saloshni Naidoo, Jacqueline van Wyk. The prevalence of occupational health-related problems in dentistry: A review of the literature. J Occup Health 2018; 60: 111-125. doi: 10.1539/joh.17-0188-RA.

4. Ozge CM, Bulent E, Irem D. Low back pain prevalence in healthcare professionals and identification of factors affecting low back pain. Journal of Back and Musculoskeletal Rehabilitation 2016; 1–9. DOI 10.3233/BMR-160571.

5. Chikte UM, Khondowe O, Louw Q, Musekiwa A. A meta-analysis of the prevalence of spinal pain among dentists. Sadj. 2011; 66(5): 214-8.

6. Al-Mohrej OA, AlShaalan NS, Al-Bani WM, Masuadi EM, Almodaimegh HS. Prevalence of musculoskeletal pain of the neck, upper extremities and lower back among dental practitioners working in Riyadh, Saudi Arabia: a cross-sectional study. BMJ Open. 2016 Jun 20; 6(6):e011100. doi: 10.1136/bmjopen-2016-011100

7. Lalumandier JA, McPhee SD, Parrott CB, Vendemia M. Musculoskeletal pain: prevalence, prevention, and differences among dental office personnel. Gen Dent. 2001; 49(2): 160-6.503.

8. Raghavendra S, Sandhya K. Practice patterns and their influence on prevalence of musculoskeletal disorders among Indian dentists. International Journal of Research in Medical Science 2015 Dec; 3(12):3459-3464. http://dx.doi.org/10.18203/2320-6012.ijrms20151229.

9. Mohseni-Bandpei MA, Rahmani N, Halimi F, Farooq MN. The prevalence of low back pain in Iranian dentists: An epidemiological study. Pak J Med Sci. 2017; 33(2):280-284. doi: https://doi.org/10.12669/pjms.332.11519hi

10. Rahmani N, Amiri M, Mohseni Bandpei MA, Mohsenifar H, Pourahmadi MR. Work related neck pain in Iranian dentists: An epidemiological study. J Back Musculoskelet Rehabil. 2013; 26:9-15. doi: 10.3233/BMR-2012-0343.

11. Artênio JÍG, Gabriella BS, Renato MA, Cléa ASG, Carlos ES. Musculoskeletal Disorders and Perception of Working Conditions: A Survey of Brazilian Dentists in Sa~O Paulo. International Journal of Occupational Medicine and Environmental Health 2017; 30(3):367-377. https://doi.org/10.13075/ijomeh.1896.00724.

12. Jaoude SB, Naaman N, Nehme E, Gebeily J, Daou M. Work-Related musculoskeletal pain among lebanese dentists: An epidemiological study. Niger J Clin Pract 2017;20:1002-9. DOI: 10.4103/njcp.njcp_401_16

13. Reddy, V, Bennadi, D, Satish, Gura, U. Occupational hazards among dentists: a descriptive study. Journal of Oral Hygiene & Health 2015. 3:185.doi:10.4172/2323-0702.1000185.

14. Kierklo, A, Kobus, A, Jaworska, M, Botulinski, B. Work-related muculoskeletal disorders among dentists-a questionnaire survey. Annals of Agricultural and Environmental Medicine 2011; 18(1):79-84.

15. Sakzewski, L, Naser-ud-Din, S. Work-related musculoskeletal disorders in Australian dentists and orthodontists: risk assessment and prevention. Work 201; 52:559-79.

16. Muralidharan, D, Fareed, N, Shanthi, M. Musculoskeletal disorders among dental practitioners: does it affect practice? Epidemiology Research International 2013; 2013: (Article716897): 6 pages. doi 10.1155/2013/716897.

17. R Moodley, S Naidoo, J Van Wyk. The prevalence of occupational health-related conditions among oral health practitioners in KwaZulu-Natal, South Africa. SADJ 2017; 72 (10): 448 - 454. http://dx.doi.org/10.17159/2519-0105/2017/v72no10a1.

18. Udoye CI, Aguwa EN. Musculoskeletal symptoms: a survey amongst selected Nigerian dentists. Int J Dent Sci. 2007; 5:1-5.

19. Hayes MJ, Smith DR, Taylor JA. Musculoskeletal disorders and symptom

severity among Australian dental hygienists. BMC Res Notes. 2013; 4:250-260. doi: 10.1186/1756-0500-6-250

20. Samir Z, Sediqe E, Gholamreza S, Anousheh RM, Amin M. Prevalence of musculoskeletal disorders among Iranian dentists. J Health Sci Technol. 2017; 1(2):70-74.

21. Narges SSH, Tahereh V, Zeinab M, Ali Y, Somayeh D. Prevalence of Musculoskeletal Disorders among Dentists in Iran: A Systematic Review. Mater Sociomed. 2017; 29(4): 257-26. 10.5455/msm.2017.29.257-262.

22. Efthimios S, Christina BD, V. Papadopoulos, Ioannis DG. Lower back and neck pain among dentistry students: a cross-sectional study in dentistry students in Northern Greece. European Journal of Orthopaedic Surgery & Traumatology https://doi.org/10.1007/s00590-018-2195-x

23. Abiodun-Solanke IM, Agbaje JO, Ajayi DM, Arotiba JT. Prevalence of neck and back pain among dentists and dental auxiliaries in South-western Nigeria. Afr J Med Med Sci 2010; 39(2): 137-42.

24. Alexopoulos EC, Stathi IC, Charizani F. Prevalence of musculoskeletal disorders in dentists. BMC Musculoskelet Disord 2004; 5: 16.

25. Waterfield J, Sim J. Clinical assessment of pain by visual analogue scale. Br J Ther Rehabil. 1996;3:94-97.r.2011.17.2.131

26. Jyoti KK, Himanshu T. A study on relationship between neck pain and handgrip strength in dentists as an occupational hazard. Al Ameen J Med Sci 2018; 11(1): 27-30. ISSN 0974-1143.

27. Sandhya K, Raghavendra S. A study on the influence of ergonomics on the prevalence of chronic pain disorders among dentists. International Surgery Journal 2017; 4 (12) : 3873. http://dx.doi.org/10.18203/2349-2902.isj20175070.

How to cite this article: Kaur J, Malik M, Punia S et al. Prevalence of back pain and neck pain among dentists in Hisar, India. Int J Health Sci Res. 2018; 8(6):146-150.

****