

Original Article

Musculoskeletal disorders among dental surgeons at selected private dental hospitals in dhaka city

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ABSTRACT

A descriptive cross-sectional study was conducted among 96 dental surgeons at selected private dental hospitals in Dhaka city (North). The objective of the study was to find out musculoskeletal disorders within dental surgeons at selected private dental hospitals in Dhaka city during the period between September to November 2012. Convenient sampling technique was used and information was gathered by face to face interview with a pre tested semi structured questionnaires. Among the respondents, 43.8% were of in the age group of 36 - 40 years age, 18.8% were in the age group of up to 35 years, and 13.5% were in the age group of 41 – 45 years and 19.8% in the age group of over 50 years. The 67.7% were male and 32.3% were female respondents. By professional educational level 36.4% were Bachelor in Dental surgery and 63.5% were post graduated. . Among the respondents 79.2% who had professional experience more than 10 years missing in practice due to MSD more than 29.2% who had professional experience more than 10 years or less. The reduction and prevention of MSDs among dental surgeons should include their education and awareness regarding the importance of work related risk factors.

Introduction

Musculoskeletal disorders are common in several professions. It is considered one of the major occupational hazards and dentistry is

one of them. A dental surgeon has a little area for intervention. So, he needs to be cautious all the time. Besides, the dentists have to sit a long time at a stretch or sometimes need to stand in a little bit odd position. So, their vertebral column as well as weight transmitting bones becomes exhausted. Oral cavity space is so narrow that if concentration is lost then severe injury may occur at any time. Pressure on eyes, brain, hands and accordingly vertebral column, waist and hip becomes exhausted in dental activities.^{1,2} Sometimes mental pressure is also become a factor for the dentist, which causes fatigue, depression and deliberate self harm. Musculoskeletal disorders like pain, weakness

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are commonly found among dental surgeon. When dentistry changed from a standing job to a sit down task, musculoskeletal pain in the neck and shoulder region became more prevalent. This may explain the eventual focus on these areas.^{7,8,9} However, musculoskeletal pain in the lower back, regardless of occupation, remains a constant cause of loss of work for dentists and should be equally examined. Because dentists spend long hours hunched over their patients with their arms raised and their hands positioned relative to their patients' mouths, supported stress is placed on the muscles of the lower back. The scenario of Bangladesh has no differences than the other parts of the world.^{3,4,5,6} There are a lot of studies on pain disorders of dentists all over the world, but the life style and pattern of daily dental treatment procedures such as posture, gesture etc is not changed a lot, so that the suffering are remaining. This study aimed to find out the musculoskeletal disorders among the dentists working in different level of private dental hospitals of Dhaka city.

Materials and methods:

Simple random sampling method was used as sampling technique for this current study. In Dhaka city (North) there were five private dental colleges were selected purposively. A list dental surgeons working in these dental colleges was prepared. Around 130 dental surgeons were included as per inclusion criteria. Dental surgeons, practicing minimum for five years in private dental hospitals of Dhaka city (North). Those who were not physically or mentally fit for participating in the study.

Results:

A cross-sectional study was conducted to determine the musculoskeletal disorders among dental surgeons at selected private dental hospitals in Dhaka city. Data was collected by using pre-tested, semi structured questionnaire. The interview was done in face to face with respondents. After collecting the data, it was cleaned accordingly and later analyzed by SPSS version 16. The overall results of the study have been presented in tabular form thereby interpreting the results in this chapter the following main headings.

Socio-demographic Characteristics, Ergonomics Related Issues, Work Related Health Problems.

Table 1: Distribution of respondents by their age and sex (n=96)

Age	Sex		Total n (%)
	Male n (%)	Female n (%)	
Up to 35 years	12 (18.5%)	6 (19.4%)	18 (18.8%)
36 - 40 years	29 (44.6%)	13 (41.9%)	42 (43.8%)
41 - 45 years	4 (6.2%)	9 (29.0%)	13 (13.5%)
46 - 50 years	3 (4.6%)	1 (3.2%)	4 (4.1%)
Above 50 years	17 (26.2%)	2 (6.5%)	19 (19.8%)
Total	65 (100.0%)	31 (100.0%)	96 (100.0%)

Mean 41.34±7.658 years, Minimum- 33 years and Maximum 60 years

The above table shows that majority of the both male and female respondents were of in the age group of 36 - 40 years age (43.8%) followed by 19.8% in the age group of over 50 years (Male-26.2%, Female-6.5%), 18.8% in the age group of up to 35 years (Male-18.5%, Female-19.4%), 13.5% in the age group of 41 – 45 years (Male-6.2%, Female-29.0%), 4.2% in the age group of 46 – 50 years (Male-4.6%, Female-3.2%).

Table 2: Distribution of respondents by their professional Practice type and sex (n=96)

Sex	Practitioner type		Total
	general surgeon	specialist practitioner	
Male	59 (70.2%)	6 (50.0%)	65 (67.7%)
Female	25 (29.8%)	6 (50.0%)	31 (32.3%)
Total	84 (100.0%)	12 (100.0%)	96 (100.0%)

The above table shows the respondents by their professional practice type and sex. Among the respondents 87.5% (Male- 70.2%, Female-29.8%) general practitioner and 12.5% (Male- 70.2%, Female-29.8%) specialist practitioner.

Table 3: Distribution of respondents by work hour per day (n=96)

Work Hour	Frequency	Percent
Up to 8 hours	31	32.3

More than 8 hours	65	67.7
Total	96	100.0

Mean 8.80±1.646 hours, Minimum 5 hours and Maximum 12 hours

The table shows that among the respondents 67.7% (n=65) work more than 8 hours per day and rest 32.3% (n=31) work for up to 8 hours.

Table 4: Distribution of respondents by professional experience (n=96)

Experience	Frequency	Percent
Up to 10 years	48	50.0
11 - 15 years	29	30.2
More than 15 years	19	19.8
Total	96	100.0

Mean 14.21±8.971 years, Minimum 5 years and Maximum 36 years

The table 5 shows that among the respondents, 50.0% (n=48) are practicing for up to 10 years, 30.2% (n=29) for 11- 15 years and rest 19.8% (n=19) for more than 15 years.

Table 5: Distribution of respondents by suffering from pain during work in last 3 months

Pain	Frequency	Percent
Yes	86	89.6
No	10	10.4
Total	96	100.0

The above table shows that among the respondents reported that they 89.6% (n=86) are suffering from pain during work in last 3 months.

Table 6: Distribution of respondents severity of pain (n=197)

Severity of Pain	Frequency	Percent (%)
Mild	37	38.5
Moderate	52	54.2
Severe	7	7.3
Total	96	100.0

The table 8 shows that among the total respondents, about 54.2% (n=52) respondents had moderate pain, respondents had 38.5% (n=37) mild pain and 7.3% (n=7) respondents had severe pain.

Discussion

A cross-sectional study was conducted to find out the musculoskeletal disorders among dental surgeons at selected private dental hospitals in Dhaka city. Among the respondents of the current study majority (43.8%) of the both male and female respondents were of in the age group of 36- 40 years age followed by one-fifth in the age group of over 50 years, another fifth in the age group of up to 35 years, thirteen percent in the age group of 41- 45 years (Mean 41.34±7.658 years). Among the respondents two-third was male. By professional educational near about sixty percent were post graduate and eighty five percent general practitioners with male predominance.^{15,16,17,18}

Among the respondents two-third were found working for more than 8 hours per day (Mean 8.80±1.646 hours) and half of the respondents are practicing for up to 10 years (Mean 14.21±8.971 years).¹⁹

By physical movement the current study reported that 46.9% respondents have to work in sitting posture for more than 6 hours per day, 50% in standing position for 3 hours per day. Repetitive hand movements need in 46.9% respondents during their works for 4 hours per day and with bent trunk for 3 hours, and 75% have to work for 3 hours with turned shoulder.^{10,11,12,13} The current study revealed that among the respondents ninety percent are suffering from pain during work in last 3 months. Study conducted in Polland²⁰ found that over 92% of the surveyed dentists experienced MSDs.¹⁴ The prevalence of MSDs stated in other studies was slightly lower than presented here. For example only 62% of Greek dentists²¹ and 54–92% of Italian dentists²² reported at least one musculoskeletal

complaint. By severity of pain more than half had moderate pain, near about forty percent had mild pain. For pain more than half miss their practice.

By site of pain ninety percent respondents mentioned that they are suffering from pain at neck & shoulder, forty five percent at elbow, two-third at wrist & hand, eighty percent at upper back and at Lower back. In study in Polland²⁰ MSD pain was found in the neck (47%) and lower back (35%), 20%

demonstrated problems in the midback, and also in the shoulders (20%), in wrists (18.3%) and in elbows by 15–16% of respondents. MSD was found more among the respondents who work more than 8 hours per day and who had professional experience more than 10 years (91.7%) ($p>0.05$). The number of years of practice plays an important role in the occurrence of MSDs, although both younger and older dentists report the same symptoms, as confirmed in other studies²⁴. Association between missing in practice due to MSD was found more among the respondents who work more than 8 hours per day (69.2%) and who had professional experience more than 10 years or less (29.2%). Statistically it was found significant ($p<0.05$).²³

Conclusion

The current study concludes that around ninety percent of dental surgeons of the current study are suffering from MSDs. By site of pain ninety percent had from pain at neck & shoulder, forty five percent at elbow, two-third at wrist & hand, eighty percent at upper back and at Lower back. The severity of pain more than half had moderate pain, near about forty percent had mild pain. For pain more than half miss their practice. The symptoms of MSDs increase with the number of years of practice.

References

1. Cohen LA, Romberg E, Grace EG, Barnes DM. Attitudes of advanced dental education students toward individuals with AIDS. *J Dent Educ.* 2005;69:896–900.
2. National Institute of Occupational Safety and Health. *Musculoskeletal disorders and workplace factors: a critical review of epidemiologic evidence for work-related musculoskeletal disorders of the neck, upper extremity, and low back.* Baltimore: U.S. Department of Health and Human Services, 1997.
3. Fasunloro A, Owtade FJ. Occupational Hazards among clinical dental staff. *J Contemp Dent Pract* 2004; (5) 2, 134-152
4. Alexopoulos EC, Stathi IC, Charizani F. Prevalence of musculoskeletal disorders in dentists. *BMC Musculoskelet Disord* 2004. At: www.biomedcentral.com/1471-2474/5/16. Accessed: July 15, 2010.
5. Shugars, D., Williams, D., Cline, S., Fishburne, C. (1984). Musculoskeletal back pain among dentists, *General Dentistry.* 32, 481.
6. Runderantz, B., Johnson, B., and Moritz, U. Cervical pain and discomfort among dentists. *Epidemiological, clinical and therapeutic aspects.* *Swedish dental journal*, 1990.14:71-80.
7. Auguston, T., Morken, T. (1996). Musculoskeletal problems among dental health personnel: a survey of the public dental health services in Hordaland. *Tidsskr Nor Laegeforen*, 116, 2776-2780.
8. Finsen, L., Christensen, H., Bakke, M. Musculoskeletal disorders among dentists and variation in dental work. *Applied Ergonomics*, 1998. 29: 119-125
9. Chohanadisai S., Kukiattrakoon B., Yapong B., Kedjarune U., Leggat P. (2000). Occupational health problems of dentists in Southern Thailand. *Int Dent J.* 2000.50: 36-40
10. Robinson GE, Wuehrmann AH, Sinnott GM, McDevitt EJ. Four-handed: dentistry the whys and wherefore. *J. Am Dent Assoc* 1968; 77:573-87.
11. Valachi B, Valachi K: Mechanism leading to musculoskeletal disorder in dentistry. *J. Am Dent Assoc* 2003, 134, 1344–1350.
12. Marshall ED, Duncombe LM, Robinson RQ, Kilbreath SL. Musculoskeletal symptom in NewSouthWales dentists. *Aust Dent J.* 1997 Aug;42(4):240-6.
13. Bassett S. Back problems among dentists. *J Can Dent Assoc.* 1983 Apr;49(4):251-6. No abstract available.
14. Ylipaa, V., Szuster, F., Spencer, J., Preber, H., Benko, S., Arnetz, B. (2002). Health, mental wellbeing and musculoskeletal disorders: a comparison between Swedish and

Australian dental hygienists. *Journal of Dental Hygiene*, 2002.76: 47-59.

dental auxiliaries. *J Contemp Dent Pract* 2001, 2:17–30.

15. Finsen, L., Christensen, H., Bakke, M. Musculoskeletal disorders among dentists and variation in dental work. *Applied Ergonomics*, 1998. 29: 119-125.
16. McGill, S., Hughson, R., Parks, K. Lumbar erector spinae oxygenation during prolonged contractions; implications for prolonged work. *Ergonomics*, 2000. 43, 486-493.
17. Valchi, B., Valichi, K. Mechanisms leading to musculoskeletal disorders in dentistry. *J American Dent. Assoc*, 2003. 134, 1344-1350.
18. Szymanska J: Disorders of the musculoskeletal system among dentists from the aspect of ergonomics and prophylaxis. *Ann Agric Environ Med* 2002, 9:169-173.
19. Akesson I, Lundborg G, Horstmann V, Skerfving S: Neuropathy in female dental personnel exposed to high frequency vibrations. *Occup Environ Med* 1995, 52(2):116-23.
20. Kierklo A, Kobus A, Jaworska M, Botulski B. Work-related musculoskeletal disorders among dentists –A questionnaire survey. *Ann Agric Environ Med* 2011, 18, 79–84.
21. Alexopoulos EC, Stathi IC, Charizani F: Prevalence of musculoskeletal disorders in dentists. *BMC Musculoskelet Disord* 2004, 5, 1–8. Available from: <http://www.biomedcentral.com/1471-2474/5/16>.
22. Sartorio F, Vercelli S, Ferriero G, Angelo FD, Migliaro M, Franchignoni M: Disturbi musculo-scheletrici di natura lavorativa negli operatori sanitari dentali. 1 – Prevalenza e fattori di rischio. *G Ital Med Lav Erg*, 2005, 27, 165–169.
23. Newell TM, Kumar S: Prevalence of musculoskeletal disorders among orthodontics in Alberta. *Int J Ind Ergon* 2004, 33, 99–107.
24. Al Wazzan K, Almas K, Al Shethri SE: Back and neck problems among dentists and