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Research Article

Neck Pain among Dental Practitioners

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Abstract

Dentistry is a demanding profession regarding concentration and precision. Performance of dental treatment results in a very inflexible work posture and under stressful body position for prolonged period, bad pattern and faulty neck posture disturbs the normal spine curve of neck leading to muscular imbalance and consequently lead to neck pain and disability. The aim of the study is to measure the prevalence of neck pain among the Dental surgeons in Dhaka city of Bangladesh. This is a cross-sectional survey type study. Dentists who reported neck pain last for 12 months were selected as a study population. After screening Neck pain intensity was measured by using 101 NPRS. Then the dentists were given NPAD questionnaire to measure disability level due to neck pain. About 36.60% dental surgeons had neck pain whereas 63.40% did not have. Among 71 dental surgeons 55.20% had moderate neck pain according to neck pain and disability scale (NPAD scale) followed by 23.90% had mild pain and 20.90% had severe pain respectively. Statistically no significant association was found between neck pain and age group. Statistically significant association was found between neck pain and duration of job of the respondents. Moreover, study found that negative correlation between age of the dental surgeons and pain score and it was not statistically significant. It is concluded from the study that prevalence of neck pain among dental surgeons working in Dhaka city is still high i.e. one in every three dental surgeons suffered from neck pain. Preventive musculoskeletal awareness campaign and posture training can be conducted among dental surgeons.

Key words: neck pain; dental practitioner; bangladesh

Introduction

The dentists are at high risk of neck and lower backache problems due to the limited work area with a limited scope of movement and narrow visual field associated with the oral cavity. These working restrictions frequently cause a clinician to assume stressful body positions to achieve good access and visibility inside the oral cavity. Furthermore, dental procedures are usually long; require much more concentration during work.[1] Dentist often cannot avoid prolonged static postures. Even in optimal seated postures, more than one-half of the body's muscles are contracted statically, and there is little movement of the vertebral joints. This may result in damaging physiological changes that can lead to neck or musculoskeletal disorders.[2] in dentistry, overstrained and awkward postures, repetitiveness of different joint movements, use of high frequency vibration tools, and psychological stress have been identified as risk factors.[2,3] Studies have shown that dentists report more frequent musculoskeletal pain4,5 particularly neck pain, has been found to be a major health problem for dental practitioners.[6,7] its exact causes and an exact diagnosis is often difficult. It has been stated that the most common sites of pain among dentists are in the areas of the cervical and lumbar vertebrae. [8-10] Dentists are exposed to biomechanical risk factors, which indicate that work forced postures, would imply more risk of soreness and presence of skeletal muscle lesions. These lesions could begin to appear at the beginning of their clinical practice as students, by acquiring inadequate postures and working habits that will accompany them for the rest of their professional life, acquiring an unhealthy lifestyle in their work environment.[11] It is very important to maintain an adequate work posture and that the instruments and furniture that the dentist is working with have adequate working characteristics.[12] Working environment plays an important role in developing musculoskeletal problem. Sitting position, instrument handling, frequency of working hours is included with this problem. Sitting position is the most important factor as part of their working environment. Working hour has a direct relation in developing musculoskeletal symptom. Though there are high prevalence of the

complaints of musculoskeletal system in dental professionals, but relatively few studies had focused in this profession.

Methods

This study focuses prevalence of neck pain among at a single point in a specified time. Considering time period and resource availability, cross-sectional analytical study design was most feasible for this study. Apart from socio-economic condition, working environment and life style pattern of study population, information on various factors that affect the muscles, ligaments and bones were also obtained in a cross-cut way. This study was conducted among dentists working in different dental clinics in Dhaka. This area was conveniently selected for data collection and to get adequate sample of study population. This study was carried out among dentists engaged in current dental practice in Dhaka, Bangladesh. This may force them to adopt different working conditions, which is reflected through potential differences in musculoskeletal health condition in neck. This situation provides an excellent opportunity to study how these different working conditions affect neck. Non-probability convenient sampling technique was used to collect sample. Face to face interview was conducted to collect data. Pre-tested structured questionnaire was used to gather information. Medical records and history taking was used to find out neck pain. Dentists both male and female from different dental Clinics in Dhaka were included in the study. Data were collected by 101NPRS scale and questionnaire of NPAD. The study focused on prevalence of neck pain among dentists at a single point in a specified time. Neck pain was measured using the standardized 101 Numerical Pain Rating scale. The Numeric pain rating scale is a unidimensional measure of pain intensity in adults. The 101-point numeric scale 0-100 which 0 means no pain and 100 means worst pain imaginable. After completing 101 NPRS scale the dentists who reported neck pain, was given the Neck Pain and Disability Scale (NPAD) to measure the disability levels due to neck pain. The scale includes 20 pain items which comprise of four factors: problems with the neck (neck stiffness, head turning, looking over head, medicine effects on neck pain), intensity of pain (today's a pain, average pain, worst pain), effects of neck pain on emotion and cognition, and neck pain interference with functional aspects of living. Study participants were selected from different dental clinics in Dhaka. Computer technology SPSS was used for classification, differentiation, presentation and analysis of data. Descriptive as well as inferential statistics were used to analyze data. Data were presented in graph and table.

Results

About 36.60% dental surgeons had neck pain whereas 63.40% did not have.

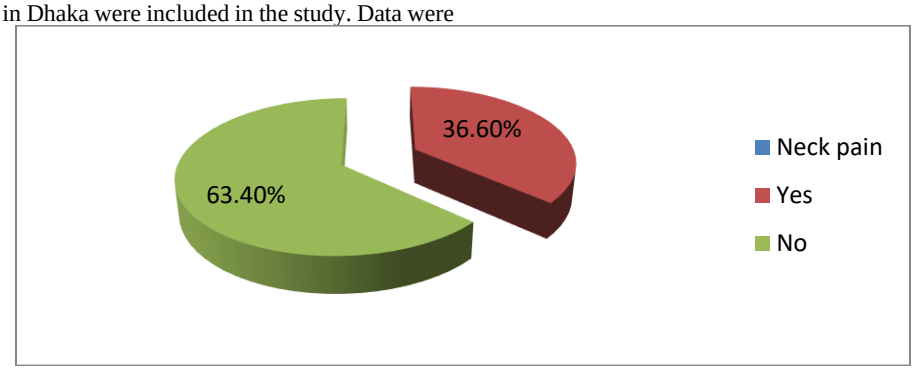

Figure 1: Prevalence of neck pain (n=194).

Among 194 dental surgeons 71 were suffering from neck pain. Among 71 dental surgeons 55.20% had moderate neck pain according to neck pain and disability scale (NPAD scale followed by 23.90% had mild pain and 20.90% had severe pain respectively.

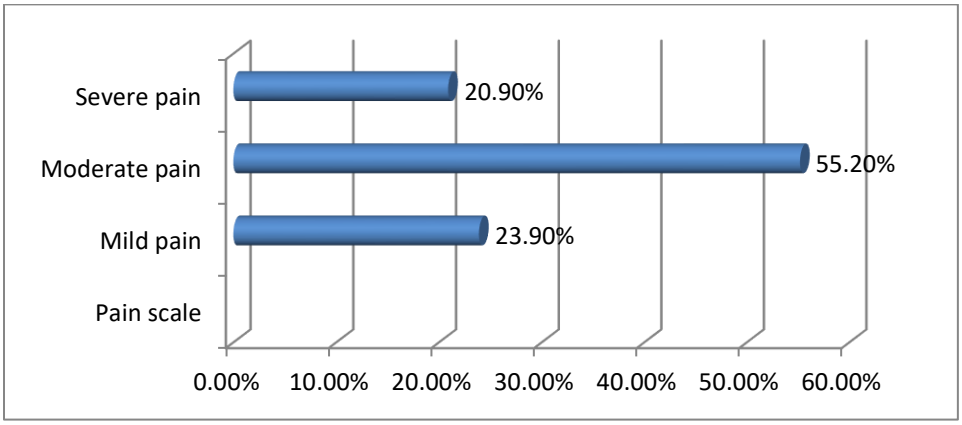

Figure 2: Neck pain scale (n=71).

Age group	Neck pain		Total	χ2	p value
	Present	Absent			
	n(%)	n(%)			
25-34	32(16.5)	47(24.2)	79(40.7)	2.626	0.453
35-44	27(13.9)	61(31.4)	88(45.4)		
45-54	10(5.2)	13(6.7)	23(11.9)		
55-64	2(1.0)	2(1.0)	4(2.1)		
Total	71(36.6)	123(63.4)	194(100.0)		

Table 1: Association between neck pain and age group.

Statistically no significant association was found between neck pain and age group (p=0.453>0.05).

Age group	Neck pain		Total	χ2	p value
	Present	Absent			
	n(%)	n(%)			
25-34	32(16.5)	47(24.2)	79(40.7)	2.626	0.453
35-44	27(13.9)	61(31.4)	88(45.4)		
45-54	10(5.2)	13(6.7)	23(11.9)		
55-64	2(1.0)	2(1.0)	4(2.1)		
Total	71(36.6)	123(63.4)	194(100.0)		

Table 2: Association between neck pain and gender.

Statistically no significant association was found between neck pain and gender (p=0.269>0.05).

Gender	Neck pain		Total	χ2	p value
	Present	Absent			
	n(%)	n(%)			
Male	58(29.9)	92(47.4)	150(77.3)	1.220	0.269
Female	13(6.7)	31(16.0)	44(22.7)		
Total	71(36.6)	123(63.4)	194(100.0)		

Table 3. Association between neck pain and duration of job.

Statistically significant association was found between neck pain and duration of job of the respondents (p=0.023<0.05).

Job duration (yrs)	Neck pain		Total	χ2	p value
	Present	Absent			
	n(%)	n(%)			
1-10	45(23.2)	77(39.7)	122(62.9)	7.511	0.023
11-20	17(8.8)	42(21.6)	59(30.4)		
≥21	9(4.6)	4(2.1)	13(6.7)		
Total	71(36.6)	123(63.4)	194(100.0)		

Table 4: Association between neck pain and educational status.

Statistically no significant association was found between neck pain and educational status of the respondents (p=0.174>0.05).

Educational status	Neck pain		Total	χ2	p value
	Present	Absent			
	n(%)	n(%)			
Bachelor	36(18.6)	79(40.7)	115(59.3)	3.501	0.174
Master	32(16.5)	41(21.1)	73(37.6)		
Doctorate	3(1.5)	3(1.5)	6(3.1)		
Total	71(36.6)	123(63.4)	194(100.0)		

Table 5: Relationship between age and pain score.

Table shows negative correlation between age of the dental surgeons and pain score and it is not statistically significant (p=0.691>0.05).

Correlation		
Age	Neck pain score	
	Pearson correlation	-0.029
	Sig. (2-tailed)	0.691
	N	194
Neck pain score	Age	
	Pearson correlation	-0.029
	Sig. (2-tailed)	0.691
	N	194

Table 6: Association between duration of job and pain scale.

Statistically no significant association was found between duration of job and pain scale of the respondents (p=0.527>0.05).

Job duration (yrs)	Pain scale			Total	χ2	p value
	Mild	Moderate	Severe			
	n(%)	n(%)	n(%)			
1-10	8(11.9)	27(38.8)	10(13.4)	45(64.2)	3.188	0.527
11-20	6(7.5)	10(13.4)	3(4.5)	19(25.4)		

≥21	3(4.5)	2(3.0)	2(3.0)	7(10.4)		
Total	16(23.9)	37(55.2)	14(20.9)	71(100.0)		

Discussion

Dentistry is physically and mentally a demanding profession. The physical characteristics include good psychomotor skills, hearing, visual quality, manual skill and ability to maintain good posture during work for an extended period of time. In case the dentist fails to adjust to a particular working environment, he/she can incur injury or disability. Hence dentists are at risk of work-related diseases/injuries e.g allergies, systemic diseases, loss of hearing and musculoskeletal problems. World Health Organization describes work related musculoskeletal diseases being dependent on many factors including but not exclusive to structural, psychosocial and socio-cultural variables. The second most common MSD in dentistry is neck pain.13 The symptoms of MSD are categorized by occurrence of uneasiness, disablement and pain for a prolonged time period in the soft tissue structures.53 Dentistry demands high accuracy and is frequently performed with the cervical spine being rotated and flexed forward. This produces high static load in the neck region. Extended duration of static load and repetitive movements can result in neck pain, tension neck syndrome, muscle imbalance or cervical instability.14 As the oral cavity is narrow, dentists have a constrained visual field and restricted movement of neck and back leading to pain in these regions.55 The forward flexion of head and neck leads to cervical spine instability that causes straightening of its curvature. There is an increased risk of disc herniation and prolapse due to the lengthening and shortening of particular muscles, tendons and ligaments. Inflammation of neck muscles ensues due to overload and an unstable neck posture.14 As a result of tension neck syndrome (TNS), patients can have some symptoms like rigidity, pain and soreness in the region of trapezius. This is frequently associated with muscular spasm or tenderness or trigger points. It is not necessary that all symptoms must be localized in the region of neck but this can radiate into arms, skull and between shoulder blades. The most common symptoms of TNS are headache. The primary causative factor for TNS is poor posture with forward head position. The associated factors with neck pain include forward head posture or increased working hours. The symptoms of neck pain can be worse in professions where work demands extended head posture and utilization of muscles with reduced endurance that stabilize the neck.14 Risk factors for this problem include high demands of job, poor job control, minimum social support and some personal characteristics.15 Age related changes in vertebral column, its shape, weakness of muscles, poor practice posture / techniques of lifting and mechanical pressure are factors that contribute in neck and back pain.16 Cervico-genic headache is a pain that refers from cervical spine to the head. Physiology of this pain is conjunction between trigeminal afferents and upper three cervical spinal nerves afferents.17 The present study found that mean age of the respondents was 36.88±7.22 years. More than half of the respondents passed Bachelor of Dental Surgery. Mean duration of job of the respondents was 9.48±6.28 years. About 36.60% dental surgeons had neck pain whereas 63.40% did not have. Among 71 dental surgeons 55.20% had moderate neck pain according to neck pain and disability scale followed by 23.90% had mild pain and 20.90% had severe pain respectively. Statistically significant association was found between neck pain and duration of job of the respondents. Moreover, study found that negative correlation between age of the dental surgeons and pain score and it was not statistically significant. A cross sectional survey was carried out by convenience sampling in 3 different dental hospitals of Lahore, Pakistan. Neck pain was the most common complaint. 23.7% subjects had mild pain, 28.2% had moderate pain that was episodic, 10.6% had moderate pain, 3.2% had severe episodic pain and 1% reported severe pain. Results indicated that the frequency of neck pain and neck disability in dentists seemed to be high and are an area that needs further deliberation.18 The association of the neck pain with forward head posture by 20 degrees is in 70% of patients since the cause of cervical instability and flattening of neck curvature is forward head posture. Osteoarthritis of the cervical spine and cervical spondylosis occurs in patients who maintain a flexed head for longer periods of time. The frequency of neck pain and cervical spondylosis is high among dentists.19 The intensity and frequency of neck pain, disability and its related factors have been proved by this study. Present results parallel results of other studies in which estimations of frequency of neck pain in dentists was done.20 The posture of a working dentist while performing procedures has effects on the neck region.21 In the past, many studies have been done to find out the different causative factors that create disablements among dentists. Results of most studies show that dentistry requires high accuracy and is frequently performed with cervical spine flexed forward and rotated. This produces high static load in the neck region. Extended duration of static load and repetitive movements can result in neck pain, tension neck syndrome, muscle imbalance or cervical instability.22 Oral cavity is narrow and the dentists have a constrained visual field that entails restricted movement of neck and back, leading to pain in these regions.23 There are psychosocial risk factors like a demanding job or minimum social support. There can be personal traits like height, inappropriate time period for rest etc and these can increase the risk of neck pain. Physical inactivity and overload from family and work can also increases the risks.24 Work related risk factors include repeated movements, bad posture, vibrations, high temperatures, chemical or noxious factors and radiations. A survey conducted in China showed that 83.8% dentist suffered from neck pain which was corroborated by another study as well.25-26 Another study was conducted to evaluate the intensity and location of musculoskeletal pain among the students and professors from different postgraduate programs in the School of Dentistry, University of Barcelona (Spain) which again proved that the neck region was the most affected (58% of all participants) location in the body. Females and younger dentists showed a high frequency of neck pain.27

Conclusion

Dentists are at the high risk of musculoskeletal symptoms in the neck. The reason for it is the position of work is difficult with cervical spine in flexion and rotation, repetitive procedure which demand accuracy. Among 71 dental surgeons 55.20% had moderate neck pain according to neck pain and disability scale followed by 23.90% had mild pain and 20.90% had severe pain respectively. Statistically no significant association was found between neck pain and age group. Statistically significant association was found between neck pain and duration of job of the respondents. Moreover, study found that negative correlation between age of the dental surgeons and pain score and it was not statistically significant. It is concluded from the study that prevalence of neck pain among dental surgeons working in Dhaka city is still high. Neck pain can be overcome by some preventive measures like dentist's chair is properly constructed and the design of work unit should be appropriate, educate the dentist regarding ergonomics and should improve the work organization.

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