FREQUENCY OF DIFFERENT WORK RELATED MUSCULOSKELETAL DISORDERS AMONG DENTISTS IN PAKISTAN

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ABSTRACT

Objectives: *To determine the frequency of different work related musculoskeletal disorders among dentists.*

Methods and materials: *This cross sectional survey was conducted in different public and private sectors dentistry setups using convenient sampling. In this study the data was collected from 450 dental professionals using NORDIC questionnaire and a structured proforma. Dentist with any history of fractures and surgery were excluded from the study. The data was entered and analyzed using SPSS 25. Chi-square test was used for testing the association between musculoskeletal disorder and different study variable. P-value of 0.05 and less has been considered as significant*

Results: *Among 450 dentists 236(52.4%) were male and 214(47.6%) were female. Mena age of male were 37.08±9.27 whereas mean age of female was33.43±10.42years. Among the dentist 393(87.3%) have musculoskeletal disorder. Among these 393 subjects 388(86.22%) have pain; 124(31.6%) have Mild, 122(31.0%) have moderate and 142(36.1%) have Severe Pain. Pain was found in Hand among 28(6.2%), in Wrist among 52(11.6%), in Fore Arm among 9(2.0%), in Upper Arm among 20(4.4%), in Shoulder among 314(69.8%), in Neck among 210(46.7%), in Upper Back among 20(4.4%), in Middle Back among 163(36.2%) and in Lower Back among 226(50.2%).*

Conclusion: *Overall Shoulder, neck and lower back pain was frequent respectively among dentists but wrist and middle back pain was statistically significantly higher among female. Musculoskeletal disorder affects the workability of dentists as well as socioeconomically. Therefore it is suggested that there should be knowledge and practice based workshops should be conducted to address this issue.*

Key words: *Dentists, work related, pain, musculoskeletal disorders*

INTRODUCTION

Work-related musculoskeletal disorders are common among dentist as compared to other health professions.[1] According to one survey,[2] most common complaints among dentis after stress related issues are systemic reactions followed by musculoskeletal problems in hand and neck. Repeated upper

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limbs involvement and long standing hours during the procedure leads to hand, wrist, neck and back pain among dentists.[3-5] These disorders may leads to disabilities like carpel tunnel syndrome (CTS) etc. and effects their quality of life.[6] Marklund etal. 2020[7] reports that MSD reduced the sleep quality as well as workability of dentists.[7] It was found that the neck pain in dentist even restrict them from recreational activities[8].

There are many risk factors associated with musculoskeletal disorders has been observed in literature. Al-Rawi et al., 2018[9] reveals that postural deviations are associated with pain. Another study found the relationship between disorders and the average working hours per week[10] A study conducted in Germany documents that neck pain was more frequent among Female dentist as compared to male.[11]

A metacentric study conducted in Lahore Pakistan also reports that work related Pain was present in 45.7% dentists, weakness in 20.4%, burning sensation in 3.7% and Swelling was present in 1.2% of the dentists.[12] Another study conducted in Peshawar presented that years of practice were associated with back and neck pain whereas hand was not found associated with any study variable like no. of patients checkups per day or no. of breaks taken etc.[13]

Thus the musculoskeletal disorder and work related pain can be considered as an ice berg tip which affects the physical and mental wellbeing as well as has an economic burden. The aim of the study was to determine the Frequency of different postural and work related musculoskeletal disorder among dentist. So that remedial as well as awareness program can be design for dentist.

MATERIALS AND METHODS

This cross sectional survey was conducted in different public and private sectors dentistry setups using convenience sampling technique. In this study the data was collected from 450 dental professionals using NORDIC questionnaire and a structured proforma. Approval was granted by Ethical Review Board of Institute of Dentistry, CMH Lahore Medical College. After receiving ethical approval, survey monkey was used to design the structured questionnaire. In Pakistan, a study was done on dental professionals over the course of three months, from 15th July to 15th October, 2021. In the study, dentists between the ages of 24 and 65 were included. Dentist with any history of fractures and surgery were excluded from the study.

The questions were all closed-ended. At the start of the questionnaire, the study's purpose was described. The questionnaire began with a definition of musculoskeletal pain and disorders to aid responders in understanding the term. Written consent was obtained. The questionnaire were filled in person form all the dentists.A pilot survey was completed by 20 dentists and dental students. It was discovered that the questionnaire has an internal reliability score of 0.865, or Cronbach's alpha value.

The data was entered and analyzed using SPSS 25. All the data was converted in to categories for statistical presentation and analysis. The data has been presented in the form of Frequency (Percentages) chi-square test has been used for testing the association between musculoskeletal disorder and different study variable. P-value of 0.05 and less has been considered as significant.

RESULT

Among 450 dentists 236(52.4%) were male and 214(47.6%) were female. Mena age of male were 37.08±9.27 whereas mean age of female was33.43±10.42years (Table: 1). 75% of male dentists were reported pain in shoulder as compared to female dentists. (Figure: 1) Among the dentist 393(87.3%) have musculoskeletal disorder. Among these 393 subjects 388(86.22%) have pain; 124(31.6%) have Mild, 122(31.0%) have moderate and 142(36.1%) have Severe Pain. Out of 450, 179(39.8%) responded regarding pain that it rarely Occur, 97(21.6%) replied it occasionally occurs, 96(21.3%) replied it often occur and among 16(3.6%) it always occurs (Figure 2). Reason of musculoskeletal disorder among 96(21.3%) was Work posture, 208(46.2%) was Number of years practicing and 54(12.0%) was of practice hours and 5(1.1%) assume that Type of dental procedures are the contributing factors.

Assocation was significant in comparison of musculoskeletal disorders. (Table:2) Among dentist with Mild Pain 15(12.1%) were taking no treatment, 86(69.4%) were using painkillers 18 (14.5%) were taking muscle relaxants and 5(4.0%) were consulting physiotherapists. Among dentists with Moderate

Pain 50(41.0%) were taking pain killers, 50 (41.0%) were taking relaxants and 22(18.0%) were consulting physiotherapist. Similarly among dentist with severe pain 2(1.4%) were taking pain killers, 44(31.0%) were taking relaxants and 96(67.6%) were treating it by physiotherapy.

DISCUSSION

Work related musculoskeletal disorders are more prevalent among dentists as compared to other health professionals due their hectic and long standing practices. In the current study the musculoskeletal disorder underline risk factors and dentists approach toward it has been assessed. The frequency was higher in the current study as compared to previous literature[5,12]. As compared to previous study it was also observed that among the study population hand, wrist and middle back of female was more prone to pain as compared to males (Figure 1).[11]

In current study, working hours and experience was found associated with the musculoskeletal disorder (Table 1). Among dentists with less than five years of experience the musculoskeletal disorder were more frequent than more than five years of experience dentists[14-16]. In contrast in our study House officers/PGs have less disorders as compared to registrar/demonstrators. On critical data analy-

Table 1. Comparison of musculoskeletal disorder regarding different risk factors.

Variables	Categories	Musculoskeletal disorder		Total	p-value
		Yes	No		
Age	22-30	126(68.9%)	57(31.1%)	183(40.7%)	<0.001*
	31-40	177(100.0%)	0(0%)	177(39.3%)	
	41-50	50(100.0%)	0(0%)	50(11.1%)	
	>51	40(100.0%)	0(0%)	40(8.9%)	
Gender	Male	216(91.5%)	20(8.5%)	236(52.4%)	<0.001*
	Female	177(82.7%)	37(17.3%)	214(47.6%)	
Weight	40-50	5(100.0%)	0(0%)	5(1.1%)	<0.001*
	51-60	46(59.0%)	32(41.0%)	78(17.3%)	
	61-70	55(100.0%)	0(0%)	55(12.2%)	
	71-80	85(83.3%)	1716.7% ()	102(22.7%)	
	81-90	163(95.3%)	8(4.7%)	171(38%)	
	91-100	39(100.0%)	0(0%)	39(8.7%)	
Height	51-60	43(100.0%)	0(0%)	43(9.6%)	<0.001*
	61-70	306(84.3%)	57(15.7%)	363(80.7%)	
	>71	44(100.0%)	0(0%)	44(9.8%)	
Year of Graduation	1980-1990	40(100.0%)	0(0%)	40(8.9%)	<0.001*
	1991-2000	58(100.0%)	0(0%)	58(12.9%)	
	2001-2010	141(100.0%)	0(0%)	141(31.3%)	
	2011-2020	154(73.0%)	57(27.0%)	211(46.9%)	
Designation	House officers/PG	30(53.6%)	26(46.4%)	56(12.4%)	<0.001*
	Demonstrator/Lecturer/Registrar	47(100.0%)	0(0%)	47(10.4%)	
	Senior Lecturer/Senior Registrar	106(100.0%)	0(0%)	106(23.6%)	
	Senior Faculty (Assist Prof. Assoc. Prof., Professor)	164(100.0%)	0(0%)	164(36.4%)	
	Private Practitioner	46(59.7%)	31 (40.3%)	77(17.1%)	
Working Hours/ Week	11-20 hours	40(88.9%)	5(11.1%)	45(10%)	0.040*
	21-30 hours	115(83.9%)	22(16.1%)	137(30.4%)	
	31-40 hours	192(86.5%)	30(13.5%)	222(49.3%)	
	>41 hours	46(100.0%)	0(0%)	46(10.2%)	

*Chi square test significant at 0.05

sis it was noticed that the house officers/Pgs were working 11-30 hours a week. Most of the PGs were working 11-20 hours a week whereas 34(20.7%) senior faculty and 12(26.1%) private practitioners were working more than forty-one hours a week. It was also observed that the dentist were taking treatment for the musculoskeletal disorders the frequency was comparable with previous literature[16,17]. It is documented that Paracetamol was being used as pain killers among dentist with mild to moderate pain intensity.[14,17] In the current study, before entering the dentistry profession, the majority of the dentists in the current study were questioned about their physical condition and any severe musculoskeletal issues.

Current study has tried to determine the contributing factors of musculoskeletal disorders among dentists. Working / standing posture and hours of working per week were found to be strong contributory factors. It is need of the time that the young dentists may be trained accordingly so that they can cope with the work related musculoskeletal issues.

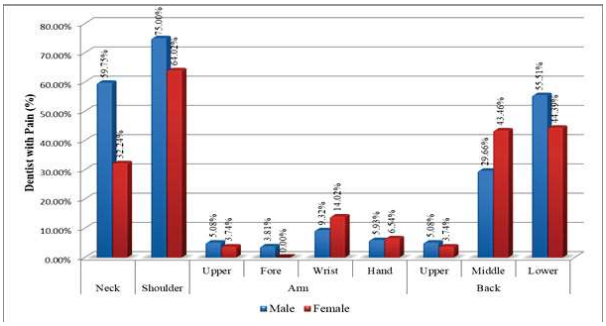

Fig 1: Gender wise Comparison of Pain site.

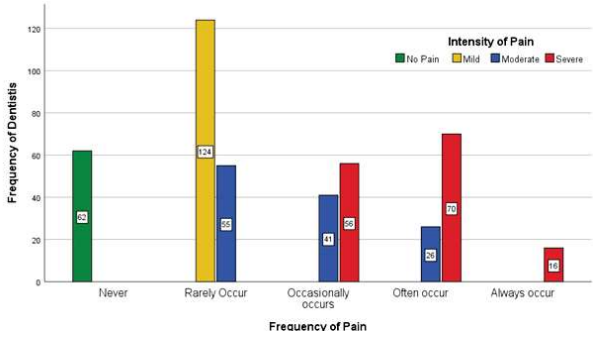

Fig 2: Comparison of Frequency of pain and intensity of pain

Table 2. Pain intensity wise comparison of Musculoskeletal Disorders.

		Intensity of Pain				Total	p-value
		Situational	Mild	Moderate	Severe		
Arm	Hand	0	8(6.5%)	16(13.1%)	4(2.8%)	28(6.2%)	<0.001*
	Wrist	0	31(25.0%)	21 (17.2%)	0	52(11.6%)	<0.001*
	Fore Arm	0	5(4.0%)	4(3.3%)	0	9(2.0%)	0.011
	Upper Arm	0	8(6.5%)	8 (6.6%)	4(2.8%)	20(4.4%)	0.032
	Shoulder	0	86(69.4%)	90(73.8%)	138(97.2%)	314(69.8%)	<0.001*
	Neck	0	60(48.4%)	66(54.1%)	84(59.2%)	210(46.7%)	<0.001*
Back	Upper Back	0	8(6.5%)	8(6.6%)	4(2.8%)	20(4.4%)	0.032
	Middle Back	5(8.1%)	34(27.4%)	70(57.4%)	54(38.0%)	163(36.2%)	<0.001*
	Lower Back		40(32.3%)	64(52.5%)	122(85.9%)	226(50.2%)	<0.001*
Designation	House officers/PG	31(55.4%)	25(44.6%)			56(12.4%)	<0.001*
	Demonstrator/Lecturer/ Registrar		37(78.7%)	10(21.3%)		47(10.4%)	
	Senior Lecturer/Registrar		38(35.8%)	68(64.2%)		106(23.6%)	
	Senior Faculty		8(4.9%)	24(14.6%)	132(80.5%)	164(36.4%)	
	Private Practitioner	31(40.3%)	16(20.8%)	20(26.0%)	10(13.0%)	77(17.1%)	
Working Hours	11-20 hours	10(22.2%)	30(66.7%)	5(11.1%)		45(10%)	<0.001*
	21-30 hours	22(16.1%)	68 (49.6%)	47(34.3%)		137(30.4%)	
	31-40 hours	30(13.5%)	26(11.7%)	64 (28.8%)	102(45.9%)	222(49.3%)	
	>41 hours			6(13.0%)	40(87.0%)	46(10.2%)	
Total		62(13.8%)	124(27.6%)	122(27.1%)	142(31.6%)		

*Chi square test significant at 0.05

CONCLUSION

In summary, Shoulder, neck and lower back pain was frequent among dentists but wrist and middle back pain was statistically significantly higher among female. Musculoskeletal disorder affects the workability of dentists as well as their daily routine life. Therefore it is suggested that knowledge and practice based workshops should be conducted to address this issue.

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