Saudi Journal of Medical and Pharmaceutical Sciences **ISSN 2413-4929 (Print)**
Scholars Middle East Publishers **ISSN 2413-4910 (Online)**
Dubai, United Arab Emirates
Website: https://saudijournals.com/ DOI: 10.36348/sjmps.2017.v03i07.007

Original Research Article

Prevalence of musculokseletal pain among dentist: a cross-sectional study

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Abstract: Around the globe, occupational-related diseases are widespread and common. Posture during work and duty hours are the major risk factor in the development of musculoskeletal disorder. The rationale behind the study is to find out the prevalence of musculoskeletal disorder among dentist. Data was evaluated by using chi square test. The duration of the study was from Dec 2016 to Feb 2017 including pilot survey. 60 dentists were elected randomly and were questioned about personal characteristics, job history, work load, physical risk factors at work place and about low back pain (LBP) and neck pain. 5 point Likert Scale was used to measure responses and 10 item-scales was used to evaluate the prevalence of MSD. Informed consent was signed by the participants. Non-probability sampling technique was applied Confidentiality was assured. Data was analyzed by using SPSS 21.00 version. As evaluated from a study that back and neck pain is highly prevalent among dentist. According to results, 75% dentist exhibited back pain, 45% showed shoulder pain, 10% had elbow pain, 3% had wrist pain, 36% had upper back pain, 48.3% had lower back pain, 16% had hip, buttock and thigh pain, 8% showed bilateral knee pain, and 5% had bilateral ankle pain.
Keywords: Musculoskeletal disorder, dentist, hygienist, cervical pain, lower back pain

INTRODUCTION

During past few decades there is a marked increase in the prevalence of musculoskeletal disorder among dentist [1]. However, Low Back Pain (LBP) and neck pain ranked among the most common complaint [2, 6]. Certain factors play a vital role in the development of musculoskeletal disorders *et al.* [3]. Static posture for prolong duration; frequent bending and twisting have been associated with work-related back and neck pain [7]. Taking these factors in account, exposure of dentist to these venomous work related factor can put them on high risk in the development of back and neck pain *et al.* [4], Russell *et al.*[8]. Moreover, musculoskeletal disorders i.e. weakness, pain and parenthesis shares a high association with broad range of profession [9].

Musculoskeletal disorder are mostly caused by the trauma (to the bones, joints, muscle, tendons, ligaments, or nerves), jerking movements, car accidents, falls, fractures, sprains, dislocations, and the direct blows to the muscle [10]. Symptoms associated with musculoskeletal disorders are localized or generalized pain that can aggravate with movement, muscles pull, fatigue, sleep disruption, muscle spasm and burning sensation [2].Most common MSDs prevalent in dentistry are chronic low back pain [11]. This pain often refers into the hip, buttock or lower limb region [11]. The pain may be caused bymuscle strains or trigger points, instability of the spinal vertebra due to weak postural muscles, hypo mobile spinal facet joints, or spinal disc disease including herniation [4].

AIMS AND OBJECTIVE

- To identify the musculoskeletal pain among Dentist.
- The aim of this study was to investigate the one-year prevalence of self-reported musculoskeletal pain in the neck, shoulder and lower back areas among dentists in Karachi, Pakistan.
- To find out the most affected part of the body.

HYPOTHESIS

- It is assume that cervical is most affected part of the body among dentist.

LITERATURE REVIEW

Erick concluded in a study of musculoskeletal disorder that individual factors such as gender, age and teaching experience are positively correlated [12]. Poor posture, inappropriate lifting and carrying have also been related with a high prevalence of MSD. Psychosocial factors such as poor colleagues and supervisor support, low job satisfaction and high job stress are known to be associated with MSD. On the other hand, regular physical exercise has been proved to be a protective factor in some studies [13].

Abdulmonem et al., [5] carried out an observational quantitative cross-sectional surveyin Saudi's female school teachers in five different areas. Four hundred and eighty six female school teachers responded to the survey. Severe Low back pain was reported by 38.1% of teacher, followed by knee pain (26.3%), heel (24.1%), shoulder (20.6%), upper back (17.7%), hip joint (16.5%),ankle (12.3%), neck (11.3%). Sever pain of elbow (5.6%) and wrist (7.4%) was the least reported. A combination of variables: body mass index, Vitamin D deficiency, teaching levels, presence of chronic illness, were found to be significantly associated with musculoskeletal pain. The results of self-reported prevalence of musculoskeletal pain among female Saudi school teachers are useful to educate the school teachers for adequate care so as to prevent these pains [14].

Mohammad et al., [15] conducted a study on the prevalence of musculoskeletal disorders (MSDs) among Iranian high school using Nordic questionnaires as the diagnostic tool. Data on MSDs were analyzed in 231 high school teachers. The survey was performed four times, twice every year. The MSDs were defined using three definitions, based on the frequency, duration and pain intensity of the symptoms. Symptoms causing work interference in the last 12 months were reported by 35% male and 15% female participants at baseline. Low back symptoms were the most common cause of work impairment (male = 69%, female = 77%), followed by equality pain in the neck. Based on the participants report, during the last 24 months there were totally 35% male and 15% female days of sick leave due to MSDs. The study confirms that the high prevalence of musculoskeletal problems may prevent teachers from doing their jobs, resulting in work absenteeism, decrease work productivity, and may incur direct and indirect costs [16].

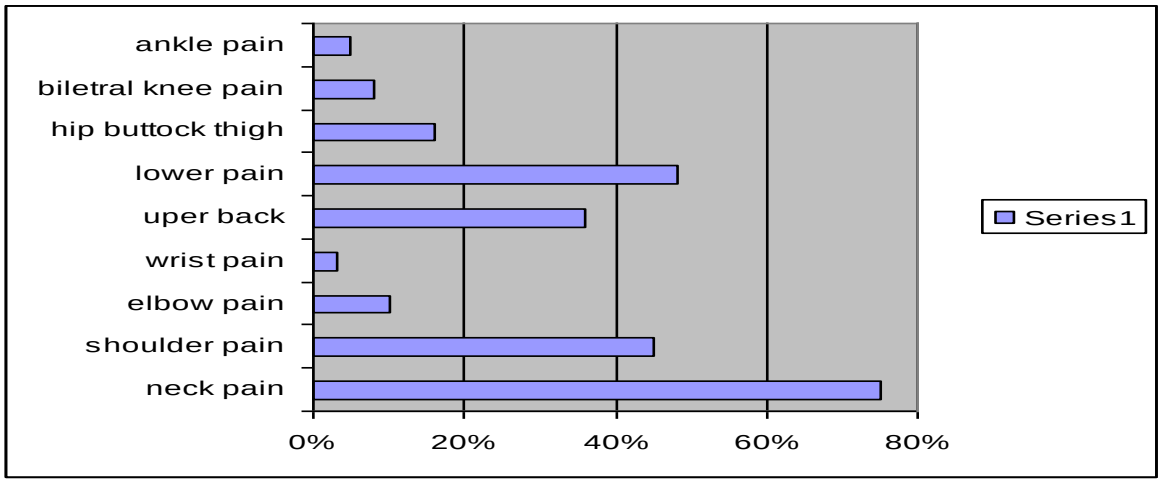
Oliveira Dantas and de Lima *et al*. [17] noticed the relationship between physical load and musculoskeletal complaints among Brazilian dentists. The aim of the present study was to assess the relationship between physical load and musculoskeletal complaints in dentistry and to analyze the prevalence and severity of such complaints in nine anatomical regions using a cross-sectional study of 387 dentists from Natal, Brazil. The highest prevalence of complaints was related to the lower back (58.4%) and the lowest prevalence was found in the elbow (10.3%) Pain complaints were associated with the following characteristics: awkward posture at work; prolonged standing or sitting; strenuous position of the upper limbs; excessive tightening of the hands during clinical treatment; and the use of vibrating tools. The results of the present study suggest a high prevalence of musculoskeletal complaints in dentists that are significantly associated with variables related to their physical workload [18].

METHODOLOGY

This cross-sectional study compared the variable of interest among dentist and hygienist through self-constructive survey questionnaire via quantitative approach. Researchers followed the strategy of Haque and Aston [19] and Haque *et al.,* [20] by considering the comparative analysis. The duration of the study was from Dec 2016 to Feb 2017 including pilot survey. 60 dentists were elected randomly and were questioned about personal characteristics, job history, work load, physical risk factors at work place and about low back pain (LBP) and neck pain. 5 point Likert Scale was used to measure responses and 10 item-scales was used to evaluate the prevalence of MSD. Informed consent was signed by the participants. Non-probability sampling technique was applied Confidentiality was assured. Data was analyzed by using SPSS 21.00 version.

RESULTS

Sixty dentists having age bracket between 20 to 40 years reported musculoskeletal pain in neck, shoulder, wrist, upper back, lower back, hip, ankle, knee and feet. To find out the most affected part of the body in musculoskeletal pain, stratification was done to see the effect of modifiers on outcome. Chi square test was applied considering $p \leq 0.05$ as significant.As evaluated from a study, back and neck pain is highly prevalent among dentist. According to results, 75% dentist exhibited back pain, 45% showed shoulder pain, 10% had elbow pain, 3% had wrist pain, 36% had upper back pain, 48.3% had lower back pain, 16% had hip, buttock and thigh pain, 8% showed bilateral knee pain, and 5% had bilateral ankle pain.



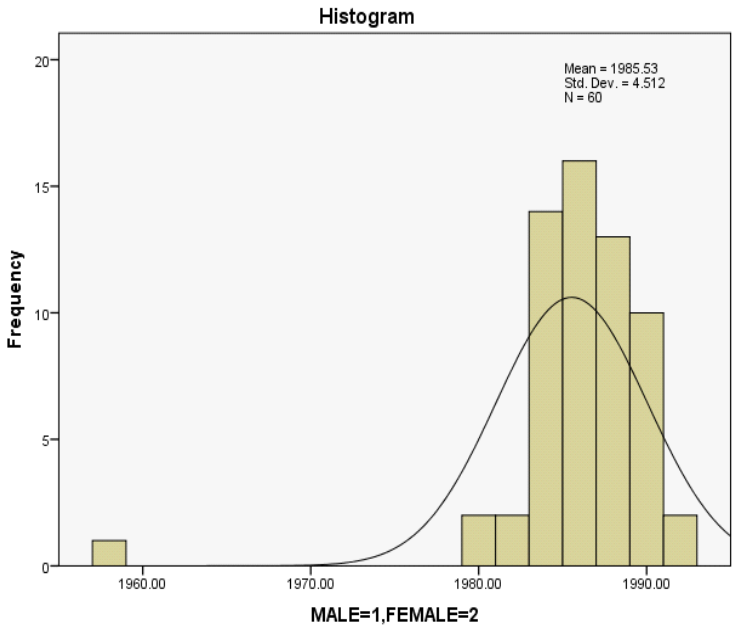


Fig-1: Percentages of Affected Part

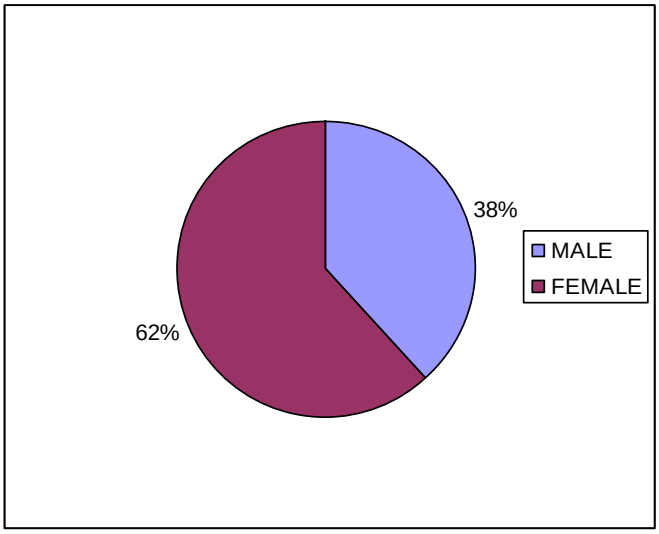


Fig-2: Percentage of Gender

Table–1: Frequency of Patients According to Region

Region	Pain	Frequency (n)	Percentage (%)
NECK	Yes	45	75%
	No	15	25%
SHOULDER	Yes	29	48.5%
	No	31	41.9%
ELBOW	Yes	6	10%
	No	54	90%
WRIST	Yes	2	3.3%
	No	58	96.2%
UPPER BACK	Yes	22	36.7%
	No	38	63.6%
LOWER BACK	Yes	25	35.1%
	No	35	64.9%
BOTH HIP BUTTOCK AND THIGH	Yes	10	16%
	No	50	84%
B/L KNEE	Yes	5	8.3%
	No	55	91.7%
B/L ANKLE AND FEET	Yes	3	5.0%
	No	57	95%

Table-2: Frequency of Patients with pain in different Regions according it gender

Region	Pain	Frequency (n)	Percentage (%)
NECK	MALE Yes	17	62.2%
	FEMALE YES	28	37.8%
SHOULDER	MALE Yes	23	38.3%
	FEMALE YES	37	61.7%
ELBOW	MALE Yes	3	50.3%
	FEMALE YES	3	50.7%
WRIST	MALE Yes	00	00%
	FEMALE YES	2	100%
UPPER BACK	MALE Yes	8	36.4%
	FEMALE YES	14	63.6%
LOWER BACK	MALE Yes	13	56.5%
	FEMALE YES	13	35.135%
BOTH HIP BUTTOCK AND THIGH	MALE Yes	5	21.3%
	FEMALE YES	5	13.7%
B/L KNEE	MALE Yes	2	40.0 %
	FEMALE YES	3	60.0%
	FEMALE YES	3	60.0%
B/L ANKLE AND FEET	MALE Yes	1	33.3%
	FEMALE YES	2	66.7%

Table-3: Frequency and Association of Clinical Features According to Age Groups

Region	Pain	Male	Female	P-Value
Neck	Yes (n=45)	17	28	0.0556*
	No (n=15)	5	10	
Shoulder	Yes (n=60)	23	37	0.002***
	No (n=0)	0	0	
Elbow	Yes (n=6)	3	3	0.0603*
	No (n=54)	20	34	
Wrist	Yes (n=2)	00	2	0.0376****
	No (n=58)	23	37	
Upper back	Yes (n=22)	8	14	0.517******
	No (n=38)	15	23	
Lower back	Yes (n=26)	13	13	0.154**
	No (n=34)	10	24	
Hip buttock and thigh	Yes (n=10)	5	5	0.414**
	No (n=50)	18	32	
Knee	Yes (n=5)	2	3	0.642**
	No (n=55)	21	34	
Ankle and feet	Yes (n=3)	1	2	0.154**
	No (n=57)	22	35	

DISCUSSION

This cross-sectional study inspects the prevalence of MSD and severity of symptoms among dentist and hygienist in Karachi. As evaluated from a study that wrist, shoulder and lower back pain are most commonly associated with dentist while hygienist develops upper back pain more frequently [7]. However, according to former studies, hygienists are more likely to develop hand/wrist pain due to monotonous scaling. Moreover, according to contemporary researches, pshyosociol factors (such as lack of interest) are also accepted as a major risk factor other than work-related factors [16, 21; 22]. In addition, two third hygienist and dentist reported pain that lasts for more than 2 days. Interestingly, female dentist experience more MSD symptoms (esp. pain and headache) in comparison to male as evaluated in a Pakistani study [23]. Similar findings were noted in Brazil and Lithuania [24]. The rationale behind this is not clearly understood, however this may be due to the fact that females are more concerned about their form and fitness [24, 5]. Hygienists develop MSD in more than one part of the body [25].

As recorded, numerous hygienists seek medical attention for MSD. Around one third dentist seek medical treatment for pain in neck, shoulder, upper and lower back; similar findings were reported in Saudi's and Australian dentist [25]. Hygienist with MSD suffers obvious financial and social cost [22, 26]. According to survey in USA, hygienist with pre-existing pain was unable to attend their work for approx 5 weeks/year [27]. Moreover, in Sweden, dentist tends to leave their profession due to MSD [28]. It is observed that pre-mature retirement is most commonly associated with MSD [28].

CONCLUSION:

As evaluated from a study that back and neck pain is highly prevalent among dentist. According to results, 75% dentist exhibited back pain, 45% showed shoulder pain, 10% had elbow pain, 3% had wrist pain, 36% had upper back pain, 48.3% had lower back pain, 16% had hip, buttock and thigh pain, 8% showed bilateral knee pain, and 5% had bilateral ankle pain.

In general, musculoskeletal disorders are extremely momentous problem among dentist and hygienist which pose pessimistic impact on routine life and entail medical attention. More studies are required to comprehend the epidemiology, risk factor and its impact on dentist and hygienist.

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