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Original Research Article

Exploring the most frequent musculoskeletal disorders indental students- A questionnaire based survey

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ABSTRACT

Background and Aim: Musculoskeletal disorder (MSD) are a group of conditions that affect the muscles, bones, tendons, ligaments, and other supporting structures in the body. The purpose of this study is to determine the risk factors associated with MSD, to evaluate the occurrence of MSD and to ascertain if they are also aware of the measures to prevent and manage these conditions.

Materials and Methods: A questionnaire based study was done including the dental students who were working in clinics, this comprising of third year, final year as well as interns of our institute via social networks. The variables taken into consideration were demographic details presence and absence of pain, average working hours per day, break between attending patients, best practices followed by subject to minimize MSD.

Results: Among 270 dental students, 202 responses were collected, with response rate of (74.81%). The most common site affected by MSD was the lower back reported in 26.3% subjects, while other regions affected in descending order were, neck (16.8%), more than one region (15.3%) followed by Upper back (14.9%), no pain(10.8%), Shoulders (9.6%) and elbow (6.3%).Statistical analysis among the different variables showed how awareness regarding measures like stretching exercises and physical activities positively influences work performance and act as a catalyst in reducing MSD.

Conclusion: Occurrence of musculoskeletal disorders among dental students is significantly high due to lack of awareness regarding maintaining proper posture, implementing regular breaks and physical exercises. MSD in dentistry can be diminished through following proper posture, taking adequate breaks between the patients and maintaining good physical health.

1. Introduction

Dentistry is a demanding profession that requires a dental surgeon's expertise and wide range of skills. The Centre of disease control and prevention defines Musculoskeletal disorders (MSD) as "injuries or disorder of the muscles, nerve, tendon, joint and supporting structures of the upper and the lower limbs, neck and lower back that are caused, precipitated and intensified by sudden exertion of prolonged exposure to physical factors such as repetition, force, vibration or improper posture."

Dental fraternity is particularly susceptible to musculoskeletal disorders due to the genre of their work which involves sitting or standing for a long time and using equipments that can be heavy and difficult to manipulate. In the field of dentistry, repeated tasks such as cavity preparation, root canal treatment, extraction and scaling contribute significantly to musculoskeletal disorders leading to strain on the musculoskeletal system and even long term injuries. The occurrence of MSD in the general population in India is about 7.08%.

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Therefore, it is important for future dental practitioners to be acquainted of the risk factors associated with MSD and to determine their prevalence. Thus, this study aimed to determine the occurrence of MSD among the dental students who are working in clinics and to ascertain if they are also aware of the measures to prevent and manage these conditions.

2. Materials and Methods

The study included specifically those dental students who were working in the clinics, mainly comprising third and final year as well as interns of our Institute. After being approved by the Ethics Committee and prior consent being taken from the students, the questionnaire was discussed and formulated by all authors. To check its validity, the google form was first circulated among some students, then the questions were finalized and then was circulated via google forms through different communication platforms. The questionnaire included demographic data (age and the gender of the student). The questionnaire on MSD, to collect the data related to awareness and any disorder related to it included proper posture and chair position, tackling any MSD, region of pain, average working hours per day, time spent in library hours per day, break between attending patient, any stretching or relaxing exercise, use of laptop and computer and indulging in any physical activity.

3. Results

The questionnaire was distributed among 270 dental students of the Institute. The response rate was good (74.81%). A total of 202 participants responded to the questionnaire {(41.6%) BDS third year, (23.8%) final year, (34.6%) interns}, out of which 70.3% participants were females and 29.7% were males. Age group of the participants ranged from 19-30 years, (mean age 24.5 years). The overall prevalence of MSD among study subjects was 68.3%. (Table 1)

3.1. Posture

Maximum response were the combination of standing and sitting dentistry 57.9%, while 34.7% subjects followed sitting dentistry and only 7.4% followed standing type of dental practice while treating patients. (Figure 1)

3.2. Site of musculoskeletal disorders

The most common site affected by MSD was the lower back reported in 26.3% subjects, while other regions affected in descending order were, Neck(16.8%), more than one region (15.3%) followed by Upper back(14.9%), no pain(10.8%), Shoulders(9.6%) and elbow (6.3%). (Figure 2)

Table 1: Distribution of participants according to age, gender, year of study, awareness of MSD and use of laptop or computer

Variable results		Data
Age	19-22yrs	47.6%
	23-26yrs	46.4%
	27-30yrs	6%
Gender	Female	70.3%
	Male	29.7%
Year of study	3^{rd} year	41.6%
	Final year	23.8%
	Interns	34.6%
Awareness of MSD	Aware	99.5%
	Not at all	0.5%
Use of laptop or computer	<2hr/day	39.6%
	2-4 hrs/day	20.3%
	4-8hrs/day	8.9%
	>8hrs/day	1%
	No use	30.2%

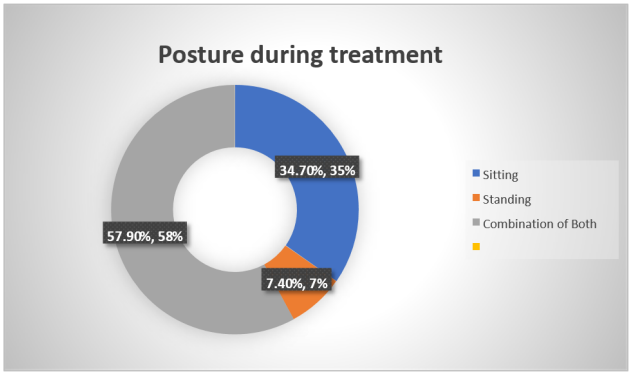

Figure 1: Showing various posture followed by participants

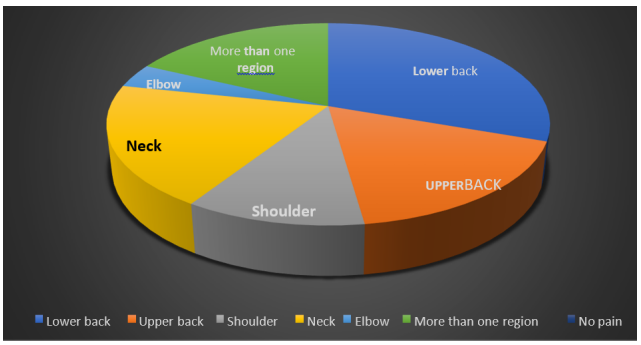

Figure 2: Showing region of pain followed by participants

3.3. Average working hours per day

Since this was an institutional based study on students the maximum working period was 4hr/day (45%). And maximum time spend in library was 2-4hrs/day (47%).

Table 2: Percentage of working hours and time spent in library hours per day

Time	Working Hours per day	Time spent in library Hours per day
<2hrs/day	16.3%	43.1%
2-4 hrs/day	45%	47%
4-8 hrs/day	33.7%	7.9%
>8hrs/day	5%	2%

3.4. Best practices followed by subjects

Maximum response of subjects who indulged in any physical activity (56.9%), while who didn't indulge in any physical activity 30.2%, and those who practiced both yoga and exercise 12.9%.

Subjects who embraced stretching exercises in between treating patients 24.8% and who didn't 43.1% and who engage sometimes 32.2%. (Figure 3)

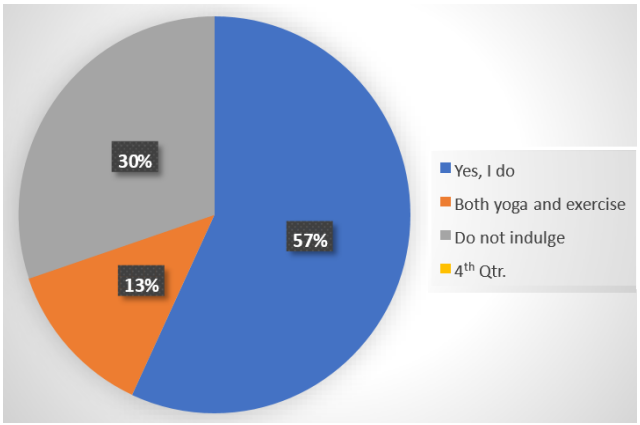

Figure 3: Showing percentage of people indulged in physical activity

4. Discussion

This questionnaire based survey aimed to assess the prevalence of MSD among dental students of this Institute.

In the present study, majority of the dental students followed the combination of sitting and standing posture (57.9%) while treating patients. Similar results were obtained in a study of Kumar M et al[1] in which 151 subject participated where combination of sitting and standing dentistry was practiced by 65.6%, and sitting posture by 29.1% and by 5.3% whereas the observations by Dabholkar et al. contrast as 5% dentists preferred combination of sitting and standing. The results varied as observations of Dabholkar et al included dental practitioners whereas in this study only dental students were encompassed.

In recent times it has been observed MSDs in professionals correlated with time. In this study, average working hour per day is 2-4 (45%) while in another survey conducted,[2,3] contrast results were observed as average working hour per day is 4-6 (64%).

In the present study the site of pain changed from lower back to neck, more than one region, upper back, shoulder to elbow. Similar results were observed by Mskeik A et al[4] with more prevalence in lower back and alike result in[2,5–13] whereas dissimilar result in[14–17] with more common site of pain is neck.

In today's working scenario, computers and laptop have become a necessity. Students regularly work on laptop for assignments, paper presentation, for maintaining patient records, for online courses and preparation of competitive exams. In this study, 39.6% of the individual used computers or laptops for less than 2 hours per day while in[1,18] study 45.7% used electronics for 2-4 hours per day. So, prolonged working hours with computers or laptops could aggravate MSDs.

In the present study, we found some encouraging results that half of the dental professionals indulged in physical activities regularly while in another survey conducted[8] $2/3^{rd}$ of the dentists regularly indulged in activities and similar results were seen in Kierklo et al. observation while contrast results were seen[19] where 48.6% individuals were not indulged in physical activities.

Hence, it is suggested that MSD and pain can be reduced by maintaining a habit of proper chair position and posture while treating patients and maintaining a good physical health through exercises. Nowadays lectures, seminars, workshops focusing on the health should be included in the curriculum of the students so that in the long run, they do not suffer and carry out a successful clinical practice.

5. Conclusion

Exploration of musculoskeletal disorders among dental students sheds light on an important issue affecting the well-being of future oral healthcare providers. The findings of this article highlight the prevalence and impact of musculoskeletal disorders in the dental profession, specifically among dental students. The research underscores the need for increased awareness, preventive measures, and interventions to mitigate the risk factors associated with these disorders. By addressing ergonomic factors, promoting proper posture, implementing regular breaks, and providing education on self-care techniques, dental institutions can contribute to the overall health and longevity of dental students' careers. By prioritizing the well-being of dental professionals-in-training, we can enhance their quality of life, productivity, and overall

success in the field of dentistry.

6. Source of Funding

None.

7. Conflict of Interest

None.

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