**Prevalance Of Work-Related Muskulo-Skeletal Pain Among Dental Students**


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Abstract

**Introduction:** The incidence of work related musculoskeletal pain is quiet high in dental professionals. The application of ergonomics in dentistry would enhance optimum access, discernibility, relief and control in clinical practice. Appropriate ergonomic design is essential to avoid repetitive strain injuries, which can progress to long-term disability over time.

**Aim & objective of the study:** The aim and objective of the present study was to evaluate prevalence of work-related musculoskeletal pain among dental students of Sri Sai College of Dental Surgery, Vikarabad.

**Materials and Methods:** The study design was Cross-sectional. 120 students of 4th year, interns and post graduates were included in the study by convenient sampling method. The response rate was 90.6%. Data was gathered through self-compiled questionnaire and it consisted of demographic variables, pain related variables, sites of pain, interference with clinical work and awareness of appropriate working positions and postures.
Results: Majority (76.2%) of students reported to have musculoskeletal pain, out of which lower back pain was experienced by 78% and neck pain by 75.2%. Majority of respondents in this study have no good knowledge regarding correct posture and positions of working.

Conclusion: Most of the dental students were suffering from musculoskeletal pain. The application of ergonomics in dentistry would enhance optimum access, discernibility, relief and control in clinical practice. Hence, proper training and awareness regarding dental ergonomics should be provided to the dental students.

KEYWORDS: Musculoskeletal pain, dental students, working postures, Dental ergonomics.

Introduction

The World Health Organization defines a musculoskeletal disorder (MSD) as a disorder of the muscles, tendons, peripheral nerves or vascular system not directly resulting from an acute or instantaneous event. Musculoskeletal disorders (MSDs) are among the most common causes of long-term disability. The incidence of work related musculoskeletal pain is quiet high in dental professionals.\[4-10\] They arise from the repeated biomechanical stress from the hands, wrist, elbows, back, neck and shoulders. Though the multifactorial nature of MSDs makes it difficult to pinpoint the exact etiologic factors, there are risk factors which contribute to the development of the musculoskeletal disorders such as prolonged static posture, repetitive movements, genetic predisposition, mental stress, mechanical stress, extrinsic stress, physical conditioning, age, non work activities, awkward positions, poor posture, poor postural muscle strength, poor flexibility, infrequent breaks, inappropriate selection and use of dental stools and magnification aids etc.\[1\]

The effects of working under such conditions have consequences that extend well beyond physical disability leading to decrease in the elasticity of tissue strength as a result of degenerative arthritic changes in the spine related to repetitive micro-trauma. Studies have shown the prevalence of at least one MSD complaint among dentists range from 60 – 93 percent with lower back, neck and shoulder pain being most common. Patients with MSDs may exhibit any of the following symptoms/ complaints like pain, paresthesia, stiffness, swelling, redness and/or weakness.\[2,3\]

Hence, ergonomics is the scientific discipline concerned with designing equipment’s and techniques for maximum efficiency and safety to optimize human well-being and overall
system performance in the work area. The application of ergonomics in dentistry would enhance optimum access, discernibility, relief and control in clinical practice. Appropriate ergonomic design is essential to avoid repetitive strain injuries, which can progress to long-term disability over time.\[4\]

The present study is intended to investigate the prevalence of awareness about ergonomics and musculoskeletal disorders among dental students.

**METHODOLOGY**

A self-administered questionnaire was designed and distributed to 120 dental students of 4\textsuperscript{th} year, interns and postgraduates studying at Sri Sai College of Dental Surgery. The duration of this cross sectional study was 2 weeks. A convince sampling method was used for this study. [Flow chart -1] All the participants filled the questionnaire which mainly focused on the awareness of ergonomics and MSDs. The questionnaire included 20 questions regarding the demographic characteristics such as age, gender; implementation of ergonomics, the work conditions (such as working posture), and the organization of dentist’s work (number of breaks), effect of improper postures on the neck, back, wrist areas (Table no-2).

The SPSS statistical package software version 20 was used to analyse the data collected and percentages were used to know the prevalence rate of Musculoskeletal disorders from the questionnaires. To generate charts and figures Microsoft Office Excel 2010 was used.

**Flow chart -1**

120 dental students

11 students did not participate

Total of 109 students participated in the study
RESULTS

A total of 109 participants out of 120 initially contacted completed the questionnaire. Among the total participants participated in the study, majority of the respondents were females (75%) and only (25%) of the individuals were males (Table -1;Graph- 2). 28 of 109 (25.7%) were older than 25 years of age and 73.4% (n=80) were about years 20 of age. Majority of the participants who experienced work related musculoskeletal disorders were postgraduate students (Graph- 1). Majority of the respondents reported experiencing some sort of musculoskeletal discomfort. The respondents reported lower back (78%) and neck (75.2%) region to be most commonly involved site while upper back and shoulder areas are less affected i.e. 58.7%, 64.2% respectively. Knees are the least affected areas, i.e only (22%) of participants experienced knee pain. Majority of the participants reported the reason for the discomfort due to lack of rest and position maintained more than half an hour on each patient. 37 individuals (34.7%) had knowledge about correct postures while performing the dental procedure while sixty nine (64.2%) participants reported having no knowledge about dental ergonomics and do not perform any exercises to reduce the pain.

DISCUSSION

A high percentage of musculoskeletal pain among dental professionals has been reported in literature.[4-10] Excessive use of heavy forces, working for long duration hours in the same constant uncomfortable position and posture are the prime factors responsible for musculoskeletal pain.[7,9,11] The occurrence of musculoskeletal disorders especially among dental students has always been under reported. Hence the prevalence of work-related musculoskeletal pain among dental students was the prime purpose of our study. Madaan reported 81% musculoskeletal pain among dental students.[1] Our results are in agreement with this study. It is normally seen that the percentage of musculoskeletal pain in published literature is high among female dentists as compared to male dentist, for example in a study conducted by Lindfors where 75% high chances of musculoskeletal pain among female dental practitioners.[5] We found lower back (78%), neck (75.2%) and wrist (70.6%) region as most frequently reported affected regions. Similar observations were made by Kierklo A[12], Shrestha BP[13] and Dayakar MM[8] which can be attributed to the use of a posture for their convenience in majority of dental students with a prevalence rate of (87.2%). Kanteshwari...
K[14] reported that less than 50% were aware of the correct working posture in their study while 70% had musculoskeletal pain. Our results are in accordance with the study.

A study conducted by Dayakar MM[8] reported that dental professionals from the beginning of their practice can lower the load of muscular pain by functioning in a proper manner. There is no doubt that dental schools should concentrate more on students correct working posture from the starting of their clinical rotations. Dental students tend to have a less clinical working time but still they have reported high level of musculoskeletal pain even after a shorter engaging period clinically. In order to reduce this problem, the dental students should be taught, provide awareness of the ergonomics and trained about correct working posture so that chronic painful conditions and possible early retirements can be avoided. Less sample size and the duration of the study can be considered as the limitations of the study.

CONCLUSION

Based on the above results, a high prevalence of work-related musculoskeletal pain was reported among dental students. It was also found that majority of respondents in this study have a no good knowledge regarding correct posture and positions of working.

REFERENCES:-


4. Dhanya Muralidharan, Nusrath Fareed, Shanthi M. Musculoskeletal Disorders among Dental Practitioners: Does It Affect Practice?. Epid Research Int 2013:1-6

Table 1- Percentages about different musculoskeletal disorders.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>NO(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. REASON FOR DISCOMFORT?</td>
<td></td>
</tr>
<tr>
<td>A) Lack of rest</td>
<td>13.8%</td>
</tr>
<tr>
<td>B) Position maintained for more than half an hour per patient</td>
<td>33.9%</td>
</tr>
<tr>
<td>C) Both</td>
<td>52.3%</td>
</tr>
<tr>
<td>2. Do you bend your back without conscious during treatments?</td>
<td>88.1%</td>
</tr>
<tr>
<td>3. Do you adjust operator chair prior to beginning of procedure?</td>
<td>96.3%</td>
</tr>
<tr>
<td>4. DO you normally take breaks between patient encounters?</td>
<td>72.5%</td>
</tr>
</tbody>
</table>
Table 2 - Questionnaire

<table>
<thead>
<tr>
<th>QUESTIONS</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Age of the participant:-</td>
<td>A) above 20 yrs</td>
</tr>
<tr>
<td>2) Gender of the participant?</td>
<td>A) male</td>
</tr>
<tr>
<td>3) Do you think ergonomics play a critical role in dentistry?</td>
<td>A) YES</td>
</tr>
<tr>
<td>4) Do you have proper knowledge regarding dental ergonomics?</td>
<td>A) YES</td>
</tr>
<tr>
<td>5) Did you ever experience <strong>lower back</strong> pain/stiffness during treating patients?</td>
<td>A) YES</td>
</tr>
<tr>
<td>6) Did you ever experience <strong>upper back</strong> pain/stiffness during treating patients?</td>
<td>A) YES</td>
</tr>
<tr>
<td>7) *Did you ever experience <strong>shoulder pain</strong>/stiffness during treating patients?</td>
<td>A) YES</td>
</tr>
<tr>
<td>8) Did you ever experience <strong>neck pain</strong>/stiffness during treating patients?</td>
<td>A) YES</td>
</tr>
<tr>
<td>9) Did you ever experience pain in <strong>wrists/hands</strong>?</td>
<td>A) YES</td>
</tr>
<tr>
<td>10) Did you experience any pain or discomfort in</td>
<td>A) YES</td>
</tr>
</tbody>
</table>
your **one or both knees**?

11) Do you bend your back without conscious during treatments?  
   A) YES  
   B) NO

12) Do you think change in your posture position would affect your spine?  
   A) YES  
   B) NO

13) Do you normally take breaks between patient encounters?  
   A) YES  
   B) NO

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**Graph-1:** Educational qualification of the participants

<table>
<thead>
<tr>
<th>Educational qualification</th>
<th>IV BDS</th>
<th>INTERN</th>
<th>PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>100%</td>
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</table>

**Graph-2:** Sex distribution among participants.

- Male: 25%
- Female: 75%
Graph -3 :- Sites of musculoskeletal pain involved.