

Prevalence of Upper Extremity Musculoskeletal Problems among Male and Female Dental Students - A cross sectional study

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ABSTRACT

Background: To estimate gender difference in prevalence of UE MSDs among dental students. Cumulative trauma disorders (CTD), repetitive strain injuries (RSIs), and overuse syndrome are all terms used to describe MSDs. Overuse movement patterns involving repetitive and intense movements at the joint, as well as other risk factors, enhance the likelihood of musculoskeletal diseases in dentistry students.

Aim: To provide the importance of the proper ergonomics and proper posture to dental students. So that to avoid upper extremity musculoskeletal disorders among them

Methods: Data was collected from dentistry students studying at the University of Lahore in a descriptive cross-sectional survey. The data was collected using a standard Nordic Questionnaire. The SNQ is divided into two sections, one of which includes descriptive statistics and the other of which has a series of questions with yes/no questions that indicate the areas of the body impacted by MSDs and the locations of feelings experienced from the positional uncomfortable graphic.

Results: According to the results, the dentistry student's encountered U.E joints problems more during their daily life predominantly in shoulder and wrist joints and the pain evaluation prove the results.

Conclusion: Dentistry students have a higher prevalence of UE MSDs with shoulder and wrist most affected according to the findings.

Keywords: Musculoskeletal disorders, Standardized Nordic questionnaire, Dental students.

INTRODUCTION

Every year countless dental learners are at a danger of job related musculoskeletal issues because Dental practice is a high risk profession¹. Different factors can affect the incidence of such disorders which include genetics, stress, inappropriate position during work, and absence of consistent exercise². While working Dental students usually adopt uneasy stationary postures and maintain uncomfortable positions for longer duration of time causing prolonged muscular exhaustion, pain and endless physiological damage which may lead to career ending disability³. Musculoskeletal disorders are common causes in dental training which involves the recurrent exercise of lifting, stooping, bending, sustained sitting, or standing⁴.

Musculoskeletal Disorders: The conditions influencing nerves, tendons, muscles and supportive structures such as intervertebral discs with indications ranging from mild recurrent pain/discomfort to persistent pain/discomfort. Neck, shoulder, back, wrist and hand are usually affected by these disorders. The general indications of these issues are decreased range of movement, distortion, numbness, itchy, cramping⁵. There are variety of disorders which can differ in severity from acute to chronic and distressing conditions such as carpal tunnel syndrome⁶. MSD is also known as repetitive strain injury or overuse syndrome⁷.

The causes of MSDs exposure to risk factor: Fatigue is seen in someone when one is exposed to MSDs risk factors. The term upper extremity is an anatomical term referring to those body parts including the upper limbs. Shoulder, arm, forearm, wrist, and hand are included in upper extremity. The upper extremities are mainly vulnerable to repetitive motion injuries and injuries from bad posture⁸. But, except for the wrist, no major gender differences were detected in musculoskeletal disorders. The highest occurrence of musculoskeletal disorders arose in female dentist students due to their additional traumatic work. There is a lot of contradiction concerning the effect of the years of work on the occurrence of musculoskeletal disorders⁹.

Dental student: a person whose occupation is the care, treatment, and repair of the teeth¹⁰. It can further be defined as "a life characterized by display of high intellectual, practical and moral qualities and capabilities, in service to patients and community"¹¹. In other words dentistry is define as the assessment, analysis ,anticipations and treatment of diseases of oral opening and the adjacent structures provided dentist within the scope of his/her knowledge training and practice in accordance with the ethics of profession and suitable law¹². Numerous aspects have been documented as having the chance in affecting MSD's and exaggerating its indications.

Standardized Nordic questionnaire: SNQ is a poll planned to standardize the recording and investigation of MSDs among different populaces. The NMQ can be used as a questionnaire or as a structured conversation and interviews. Standard Nordic Questionnaire comprises of double or various decision addresses that can act naturally directed.

It consist of 2 parts on is general questionnaire which contain the demographic detail of individual and 2nd part has closed ended questions about the region of pain and discomfort. SNQ was created with the point of filling in as a screening instrument for evaluating the individual danger of creating MSDs additionally to assess and giving medicinal services administrations and to gauge the result of epidemiological investigations on MSDs. Screening may fill in as an indicative apparatus for examining the workplace work station and device outline and help roll out the important improvements in order to keep the advancement of MSDs¹³.

The rationale of this study is to provide the importance of the proper ergonomics and proper posture to dental students. So that to avoid upper extremity musculoskeletal disorders among them.

METHODOLOGY

The researchers utilized a cross-sectional study design. After the synopsis was approved by Ethical Review Board, the study was finished in six months. The approach of simple random has been employed. A total of 132 people were included in the study. Dental students were the intended audience. The inclusion criteria were undergraduate dentistry students from the University of Lahore,

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while the exclusion criteria were those who had a dental ailment of any kind. In certain universities, the questionnaire has been delivered as handouts. The information was gathered in person or by representatives selected by each institution. The Standardized Nordic Questionnaire, a self-administered questionnaire, was employed. A variety of questions were asked, with yes and no responses indicating the severity of the symptoms. Questions about the causes of musculoskeletal problems, as well as overall health, are included in this part of the questionnaire.

RESULTS

Table 1 shows the demographic analysis of 132 participants involved in this study population. The mean values for the age shows 51.5% of age category (21-22) & 48.5 % of age category (23-24). Gender distribution was 50% males and 50% females. The rest of factors including year of study, MSK problem, psychological issues, family history, soft tissue disorder and hormonal issues depicted under the table 1. Table 2 shows the that students who have any trouble (ache, pain, discomfort, numbness) during last 12 months are 85 and their percentage is 64.4 and students who don't have any trouble during last 12 months are 47 and their percentage is 35.6. The table 3 defines the students who are preventing from carrying out normal activities during last 12 months are 45 and their frequency is 34.1 and students who are not preventing from carrying out normal activities during last 1 months are 87 and their percentage is 65.9. Last table illustrates that students who's intensity of pain ranges between 0-1 are 82 and their percentage is 62.1, students who's intensity of pain ranges between 2-8 are 49 and their percentage is 37.1 and students who's intensity of pain ranges between 9-10 are 1 and their frequency is 0.8.

Table 1: Descriptive statistical analysis (n=132)

Gender	66(50%)/66(50%)
Age	(21-22)51.5% (23-24)48.5%
Year of study	3 rd (56) 4 th (76)
MSK problem	85(Y) 76(N)
Psychological problem	59(Y) 73(N)
Family history	69(Y) 63(N)
Soft Tissue Disorder	30(Y) 102(N)
Hormonal Issues	33(Y) 99(N)

Table 2 Value of any type Discomfort during last 12 months in U.E Joints

Joints	Frequency			
	R Side	L Side	Bilateral	No Pain
Shoulder	68(51.5%)	13 (9.8%)	03(2.3%)	03(2.3%)
Elbow	24(18.2%)	11(8.3%)	13(9.8%)	84(63.6%)
Wrist/Hand	32(24.2%)	26(19.7%)	03(2.3%)	71 (53.8%)

Table 3 Values of ADL's during last 12 months in U.E Joints limited

Joints	Frequency			
	R Side	L Side	Bilateral	No Pain
Shoulder	30(22.7%)	12(9.1%)	6(4.5%)	84(63.6%)
Elbow	16(12.1%)	15(11.4%)	07(5.3%)	94(71.2%)
Wrist/Hand	18(13.6%)	19(14.4%)	07(5.3%)	88 (66.7%)

Table 4 Intensity of Pain

Range	Frequency%
0-1	82(62.1%)
2-8	49(37.1%)
9-10	1(0.8%)

DISCUSSION

Hameed, Ghafoor et al conducted a cross-sectional study in which he determine the prevalence of work-related musculoskeletal disorders (MSDs) among dentists. 78% people were seen to have MSDs. 15.2% of the MSDs was due to lack of rest which was the most frequent reason and 27.5% was because of having static posture for more than half an hour.

In the present study I found that 67 students working from 1-6 months and their frequency is 50.8 and 65 students are working from 7-12 months and their frequency is 49.2. There were some dentist students that work prolong without any interval for 1-2 hours are 46.2 percent and students that work prolong without any interval for 3-4 hours are 53.8%.

Soleimani, Daneshmandi et al did a descriptive cross-sectional study. Around 160 dentists completed the Nordic standard questionnaire and a demographics questionnaire. Also, throughout different dental procedures, photographs of dentists' working positions were clicked. Using Rapid Upper Limb Assessment (RULA) method, the maximum repetitive positions were nominated and assessed. Between men and women only in the wrist/hand significant different was seen. All dentists' postures fell into action level 2 and 3 when posture examination results are shown. Occurrence of musculoskeletal symptoms in dentists was high and the risk levels were intermediary to high when outcomes of this study revealed.

In the present study I also used Nordic standard questionnaire and I found that dentist student who have any musculoskeletal problem are 85 and their percentage is 64.4 and students who don't have any musculoskeletal problem are 47 and their percentage is 35.6. A research done by Valerie woods et al, on the commonness of MSD's among information processors working seriously on the PC; discovered through a self-announced survey a predominance of 86% among this populace including visual and musculoskeletal side effects. The zones most influenced were wrist/hand, elbow and after that took after by neck. The subjects announced poor seating, consistent writing and sitting for long lengths without rest as the foundations for their torment/uneasiness¹⁴.

A cross sectional study is done by M Aghilinejad in which he described that musculoskeletal disorders in Iranian steel industries occurred in high rate. Ergonomic intermediation policies into the workplaces must be motivated to exclude environmental threats such as physical handling of heavy loads and apposition on the time of work¹⁵. P Tittiranonda, & S Burastero performed a study, on college students to discover computer associated musculoskeletal issues amongst university scholars. 170 subjects were incorporated and the Boston University Computer and Health Survey and the International Physical Activity Questionnaire were given¹⁶. Evangelos C Alexopoulos did this study. The purpose of this study was to examine the relations between psychosocial, physical and individual features and different endpoints of musculoskeletal ailments of hand/wrist, shoulders, neck, and low back.

In the present study I also found that students who have psychological stress are 59 and their percentage is 44.7 and students who don't have psychological stress are 73 and their percentage is 55.3.

CONCLUSION

MSDs are extremely common among the dentistry students, with the shoulder and wrist being the most commonly afflicted areas. It is believed that men and women have a baseline risk due to a mix of biological, mental, and cultural factors, which can be increased by physical and psychosocial employment characteristics.

RECOMMENDATIONS

While filtering the data, I discovered that various studies on the prevalence of UE MSDs have been conducted on medical populations such as surgeons, physiotherapists, and nurses, as well as non-medical professions. However, there is no information on the MSDs of UE experienced by dentistry students. The purpose of this study is to determine the prevalence of UE MSDs and which body regions or areas are most vulnerable to MSDs among dental students. There is a need to perform such research and explore such elements that are responsible for MSDs of UE in

dentistry students and other non-medical students, so that the causative factors MSDs in them can be eliminated.

Competing interests: Nil.

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