



The Relationship Between Stress and Myofascial Pain Syndrome in Dental Students

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Abstract

Myofascial pain syndrome (MPS) is common amongst patients with musculoskeletal pain problems. MPS is a pain state originating from muscle and neighboring fascia. Patients typically present with localized pain in a constrained area or referred pain of numerous patterns. Dental students experience substantial amounts of stress during their clinical study, since this type of training (genuine treatment of patients), are by far the most stressed-out when compared to other medical students.

The present study aimed to investigate the relation between stress and myofascial pain syndrome in dental students.

The Study was conducted at the Al-Farabi University College in Baghdad, A 15 males and 15 female students were examined, and their ages ranging from 22 to 25 years, all patients' muscles were examined according to diagnostic Criteria for Temporomandibular Disorders 2014.

Two clinical examinations were performed one after spring vacation and another one four months later near final examination period, result of second clinical examination showed marked increase in number of students with involved muscles especially for the temporalis and submandibular muscles.

Increase psychological stress in final stage of dental college due to intensive course of study and clinics cause some student to clench their teeth repeatedly which increase the prevalence of myofascial pain syndrome.

Introduction:

Myofascial pain can be demarcated as “a regional myogenous pain state characterized by local parts of strong, hypersensitive bands of muscle tissue identified as the trigger points” otherwise called myofascial trigger point pain. The existence of central excitatory effects is a crucial characteristic of this myalgic complaint. The occurrence of referred pain is communal, often approximating a tension-type headache (1).

The muscle pain with or without restrictions in mouth opening is generally referred to as “myofascial pain dysfunction syndrome,” a somewhat unfortunate term, as it is often confused and used interchangeably with the more practical and better defined concept of “Myofascial pain syndrome” (MPS) labeled by Simons, Travell and Simons (2). The patient’s chief complaint is frequently directed near the site of referred pain and hardly the exact source of pain (the trigger points). The clinician may accidentally direct treatment in the direction of the secondary spots of pain, resulting in failure to treat the real cause of the pain, thereby leading to unsuccessful treatment. History taking, must precisely include frequencies of repetitive muscle trauma, inappropriate postural habits, existence of occlusal parafunction and mental, with emotional stress (3). On clinical examination, the patient will demonstrate, reduced range and speed of mandibular movement which usually correlates to the location and intensity of trigger point pain. The pain is commonly described as a dull ache or pressure which can be throbbing and severe. The masticatory muscles are tender on palpation with identifiable trigger points on palpation (4). MPS is a common disorder; as a general condition, it affects as much as 85% of the general population. Myofascial disorders are the most predominant causes of chronic headaches besides neck pain. Statistics also display that they affect about 50% of individuals suffering from these symptoms. Furthermore, even 100% of patients identified with chronic non-specific neck pain may agonize from MPS (5).

Stress is an essential response that aids to adjust to the everyday demands of life. Stress is both necessary and desirable for our bodies to respond to various demands calling for adaptation and adjustment. Without these standard body reactions, self-preservation would be impossible. The disruption of an individual's standard response to stress, though, may result in a breakdown of the homeostatic processes (6). Psychological stress is defined as a state of distress, subsequent to subjective interpretation of some factor or event. The emphasis here is the subjectivity of psychological stress, or in other words, the individuality of the discomfort state to precise events (6). Stress and anxiety which were a common cause of “myofascial pain syndrome”, due to the fact that stress can cause a individual to clench and unclench their teeth repetitively, causing pain because of the repeated muscle contractions, leading to drop in pH and liberating of pain producing substance such as, the bradykinin, ATP and H⁺ (7, 8).

Dental students have to face the added stresses of their studies and student life in addition to the stresses correlated to dentistry as a profession. Perception of stress is due to the tendency of the dental students toward perfectionism based on their history of high accomplishment and superiority in previous schooling and the fact that the excellence is the norm in dental school. The consequence of years of study on stress levels had been found to be considerable, with the fifth year of the 5-year curriculum considered the utmost stressful. (9).

Subject materials and methods

This a Comparison Study was conducted at the Al-Farabi University College in Baghdad, Iraq , during February of 2023 after spring break to May of 2023. All 30 undergraduate fifth grade dental students were eligible to participate.

A 15 male and 15 female students were examined, and their ages ranging from 22 to 25 years (mean = 23 years, 0.966 SD.). The selection of the subjects based on excluding individuals suffer from the following conditions:

Partially edentulous students, Students with parathyroid gland disease, students with neoplastic disease, and students with "developmental disorders" of the TMJ such as condylar aplasia, hypoplasia, or hyperplasia; and fibromyalgia were not considered for this study.

All patients acknowledged about the study, and informed consent obtained from the Patients. All patients' muscles were examined according to diagnostic Criteria for Temporomandibular Disorders 2014 (10) that classified temporomandibular disorders into myalgia, arthralgia, headache attributed to temporomandibular joint, intraarticular disc disorders and degenerative joint disease.

Muscle Pain with Palpation

The Pain brought in muscles thru palpation was a standard clinical investigation. The intent was, to determine if the patients reports pain next to palpation of a muscle or joint, and determine if any brought pain replicates or duplicates the patient's pain complaint. Several methods were available, depending on the purpose of the examination. Extra-oral masticatory muscles: the "temporalis and masseter". The palpation paths for temporalis and masseter muscles, with three palpation areas per zone. The goal was to palpate each zone as fully as possible, so three areas palpated, within each zone using (1 kg) of pressure (12).

Temporalis (1 kg of pressure)

Started with the "anterior zone" (posterior to the bony margin of anterior temporalis): the area above the zygomatic arch palpated, and continues within the zone, until the superior boundary of the muscle touched. A middle area of the anterior zone palpated.

"Middle zone" (in front of the ear): the area above the zygomatic arch, and continues till the superior boundary of the muscle reached. "Posterior zone" (in line with the top of the ear): started immediately, above the ear and continued till the superior boundary of the muscle, reached.

Masseter (1 kg of pressure)

The zones of palpation for the three areas of the "masseter muscle" involved; superior, middle, and inferior. The Palpation sequence for the "masseter muscle" involve (while the other hand stabilizes the mandible), the "Origin zone" (inferior to the bony margin of the zygomatic process): started at the area just anterior to the condyle. The "Body zone" (in front of ear lobe): started at the most posterior aspect of the muscle. The "Insertion zone" at the area anterior and superior to the mandible angle, in each zone the palpation continued till the anterior border of the muscle.

Supplemental Muscles Palpation Areas (0.5 kg palpation pressure)

Posterior and submandibular masticatory muscle areas The Patient extends head anteriorly, in order to open the space posterior and medial to the "posterior border of the mandible". The finger placed in the space that opened, and pressed (anteriorly and medially). Then Finger placed on the "medial aspect" of the inferior border of the mandible, with force directed superiorly and laterally (i.e., against the medial wall of the mandible). The patient could ask to retract head and drop the chin, in order to permit the palpating finger to move as described.

Lateral Pterygoid Area

The Finger placed in upper vestibule while mandible is deviated to the same side. The most; "medial, superior, and posterior area" in the vestibule palpated.

Temporalis Tendon

The Finger placed against the "ascending ramus" while the mandible was slightly open, and the finger moved, superiorly as far as possible, while maintained contact with the underlying hard surface.

Statistical analysis

For statistical analysis a chi square test was used to find out whether the differences between the two sets of clinical examinations findings are statically significant or just occurred by chance..and the statistical significance was set to p values < 0.05. In addition to that

percentages of different findings were calculated. The statistical package for social science (SPSS Version 26) was used to analyze data.

Results

The first clinical examination of students performed after spring vacation, in which there were no exams or educational clinics, and as a result a minimum stress, the myofascial pain on palpation in first examination was concentrated in Temporals M. 14(46.67%) patients, Masseter M. 12 (40%) patients, Posterior Mandibular M. 13(43.33%), the Submandibular muscles 8 (26.67%) patients and Lateral Pterygoid muscles 8(26.67%) patients whereas Temporalis tendon 11 (36.67%) patients.

The second clinical examination was performed on the same students, but the examination was conducted 4 months later during the period of examinations and educational clinics for dentistry, which is a period in which the students under extreme psychological stress, and most of the muscles when examined showed pain on palpation Temporals M. 22(73.33%) patients, Masseter M. 19(63.33%) patients, patients and Posterior Mandibular M. 17(56.67%), patients and Submandibular muscles 16(53.33%) patients and Temporalis tendon 16(53.33%) patients and Lateral Pterygoid muscles 14(46.67%) patients and was more in this muscles as the number of students who suffered during this period was more than half of the students as shown in table (1).

Other symptoms appeared in the jaw joint, tetanus, clicking and other problems. not included in the study. Positive palpation result considered when patient report pain on palpation either on one side or both right and left side of the muscles.

Discussion

It is a known fact that Myofascial Pain Syndrome is associated with psychological stress. Dental students are exposed to immense psychological stress during their study particularly in the final year of their undergraduate study (11).

The study aims to find the rate of the MPS among the fifth-year dental students and its relation with the stress intensity to which the dental students are exposed to.

The results of the study revealed that a considerable number of students had MPS in the clinical examination that was conducted after the mid-year vacation, a period which is supposed to be stress free and the student were in a physical, mental and psychological relaxed status. This finding indicates that the fifth year dental students are under continuous stress at least a psychological one during this year.

The results of the second clinical examinations showed a higher rate of myofascial pain syndrome among the examined students than the rate of the first set of examination after mid-year vacation. That differences in the rate were statistically significant for the temporalis and submandibular muscles, a result in concordance with that found by Reissmann, Daniel et al., (12). This increase in the rate of MPS in the second set of examination can be attributed to the increase physical, mental and psychological stress to which the students are exposed to. The second set of clinical examinations were conducted in May 2023 where students are preparing for the final year clinical and written examinations. This period is characterized as the most intense physical, mental, and psychological stressful period during of the five-year dental college study. During this period the students have to fulfil a number of requirements as a prerequisite for their graduation like the participation in the management of certain number and specified clinical dental cases, the preparations for the final written and oral examination, in addition to the psychological stress that is imposed on the them due to the expected change in their status from a student to a responsible medical doctor after graduation. It is recommended that students have psychological support through group support sessions and share experience with previous graduated dentists and finally backing students in achieving clinical requirement by teaching staff.

Conclusion

Fifth year dental student are under physical, mental and psychological stress along the whole year. These stressful conditions are intensified near the end of the of the final academic year. Myofascial pain syndrome had been reported among the fifth-year dental student. The rate of the reported Myofascial Pain syndrome is

higher near the beginning of the final year examination.

Suggestion

It has been suggested to run large scale study that involve more students in different grades of dental school, that cover all temporomandibular joints disorders beside myofascial pain syndrome.

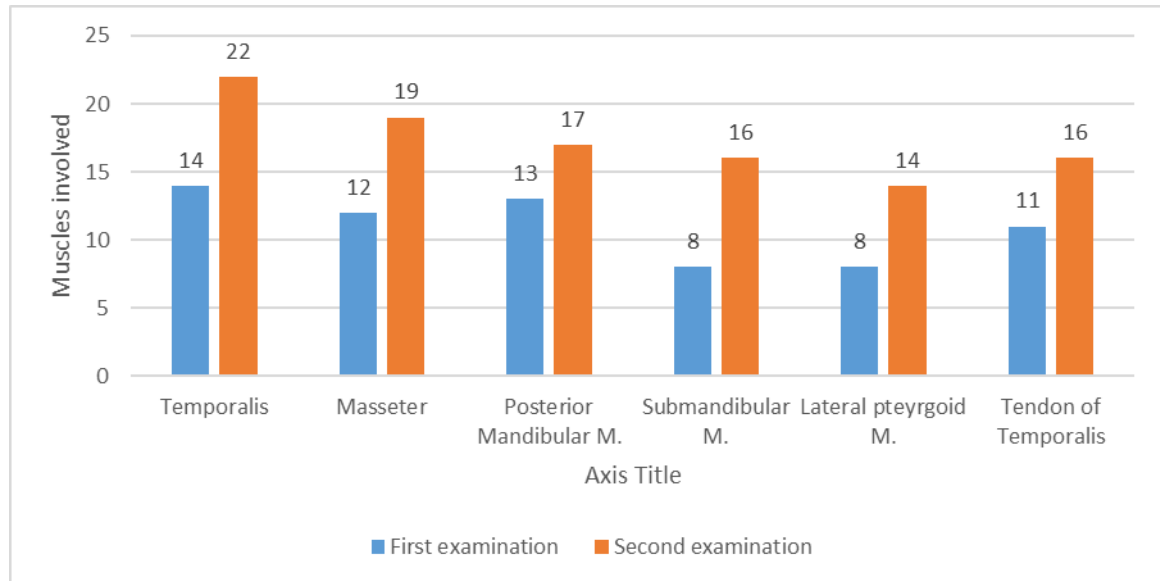


Figure (1) Muscles with positive response to palpations

Table (1) Muscles with positive response to palpations

Muscles	First examination	Second examination	X2 value	P value
1. Temporalis M	14 (46.67%)	22 (73.33%)	4.44	0.05 S
2. Masseter M	12 (40%)	19 (63.33%)	3.270	0.1
3. Posterior Mandibular M	13 (43.33%)	17 (56.67%)	1.07	0.9
4. Submandublar M	8 (26.67%)	16 (53.33%)	4.44	0.05 S
5. Lateral Pterygoid M	8 (26.67%)	14 (46.67%)	2.58	0.1
6. Temporalis tendon M	11 (36.67%)	16 (53.33%)	1.68	0.9
All Patients	30	30		

S: Sig. at P<0.05, X2 Chi square, P value Probability value

References

- 1- Mirza Farhatullah Baig, Yashoda Ashok, Oral and Maxillofacial Surgery for the Clinician, 2021 ISBN : 978-981-15-1345-9
- 2- Travell JG, Simons DG. Myofascial pain and dysfunction: the trigger point manual. Lippincott Williams & Wilkins; 1992.
- 3- Baig MF, Ashok Y. Myofascial pain dysfunction syndrome. Oral and Maxillofacial Surgery for the Clinician. 2021:1343-60.
- 4- Sciotti VM, Mittak VL, DiMarco L, Ford LM, Plezbert J, Santipadri E, Wigglesworth J, Ball K. Clinical precision of myofascial trigger point location in the trapezius muscle. Pain. 2001 Sep 1;93(3):259-66.
- 5- Nirupama. S1, Nishmitha J Suvarna ,Rashmi P V1 ,Preethi Poonja, Gowri P Bhandarkar ,Roopashri R Kashyap ,Prasanna Kumar, Raghavendra Kini, Myofascial Pain Dysfunction Syndrome: A Review, ARC Journal of Dental Science. 2018, Volume 3, Issue 3, PP 1-4
- 6- Cerezo-Télez E, Torres-Lacomba M, Mayoral-del Moral O, Sánchez-Sánchez B, Dommerholt J, Gutiérrez-Ortega C. Prevalence of myofascial pain syndrome in chronic non-specific neck pain: a population-based cross-sectional descriptive study. Pain medicine. 2016 Dec 1;17(12):2369-77.
- 7- Panta P. The possible role of meditation in myofascial pain syndrome: a new hypothesis. Indian journal of palliative care. 2017 Apr;23(2):180.
- 8- Mense S. Muscle pain: mechanisms and clinical significance. Deutsches Ärzteblatt International. 2008 Mar;105(12):214.
- 9- Alzahem AM, Van der Molen HT, Alaujan AH, De Boer BJ. Stress management in dental students: a systematic review. Advances in medical education and practice. 2014 May 28:167-76.
- 10- Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, List T, Svensson P, Gonzalez Y, Lobbezoo F, Michelotti A. Diagnostic criteria for temporomandibular disorders (DC/TMD) for clinical and research applications: recommendations of the International RDC/TMD Consortium Network and Orofacial Pain Special Interest Group. Journal of oral & facial pain and headache. 2014;28(1):6.
- 11- Alwan MH, Salam AA. Prevalence of Temporomandibular Joint Disorder among Dental Students of the University of Baghdad. Journal of Oral and Dental Research. 2023;10(2).
- 12- Reissmann DR, John MT, Schierz O, Seedorf H, Doering S. Stress-related adaptive versus maladaptive coping and temporomandibular disorder pain. Journal of orofacial pain. 2012 Jun 1;26(3):181