

Assessment of TMJ Disorders among the Patients Visiting a Private Dental College at Kanpur

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Abstract

Introduction: Temporomandibular joint (TMJ) has various different structures (including mandibular condyles, meniscus, glenoid fossa, ligaments, and muscles). This study was conducted to check the prevalence rate of TMJ disorders in Kanpur population among patients visiting dental college outpatient department.

Material & Methods: A total of 200 patients were selected for the study with inclusion criteria of 20-60 years of age. Every patient was examined for any discrepancy in the TMJ structure and function and patients were provided a questionnaire to fill after taking complete history and thorough examination.

Result: A sample of 200 patients was collected. 69% of the patients had TMJ disorders out of which 67% were male patients and 33% were female patients and only 2% of them had the disorder precipitated due to their occupational habits. Among the total sample, maximum number of patients with TMD disorders was teachers (29%) whereas policemen (1%) and farmers (2%) were among the least affected. The involvement in TMJ Pathologies among the 69% of the patients either involved one side (unilateral) or both sides (bilateral).

Conclusion: The harmony and balance between the masticatory system and the function are crucial to keep the TMJ complex healthy. Patients who had habits should be educated and enlightened about the severe effects they may face for TMJ disorders and the further possible severities to the TMJ if the habits are not discontinued.

Keywords: Diet, occupational disorders, TMJ disorders.

Introduction

Temporo mandibular joint (TMJ) has various different structures (including mandibular condyles, meniscus, glenoid fossa, ligaments, and muscles). The conventional function of TMJ depends upon the harmony of these structures.[1,2,3,4,5]

The environmental factors that influence the function of the joint are mechanical, psychological, occupational and personal habits. Otherwise the TMJ continues to function normally. [6, 7]

The human body continues to try to repair its aggression; but if this continues, the body loses the ability to repair its aggression and the signs & symptoms begin to appear. The signs and symptoms of TMD involve or facial and preauricular pain, as well as limitation of mouth opening, TMJ brings during function and displacement of articular disc. [8]

Temporomandibular joint (TMJ) disorders can cause various combinations of limitation of movement of the jaw, pain, locking or clicking sounds. Pain, in particular, is a frequent cause of limitation of movement. [9]

Disorders of the (TMJ), and how people respond to them, vary widely and fall into three main categories: [10]

- (1). Myofascial pain dysfunction syndrome involves tenderness or pain in the muscles that control jaw function.
- (2). Internal derangement of the TMJ involves anterior displacement of the meniscus with or without auto reduction, dislocated jaw, or injury to the condyle.
- (3). Arthritis refers to a group of degenerative/inflammatory joint disorders.

This study was conducted to check the prevalence rate of TMJ disorders in Kanpur population among patients visiting dental college outpatient department.

Materials & Methods

The present study was carried out in the department of Oral Medicine and Radiology, Rama dental college hospital and research centre, Kanpur from September 2019 to December 2020. A total of 200 patients were selected for the study with inclusion criteria of 20-60 years of age and who were willing to participate in the study.

Patients with known cases of TMJ diseases, suffering from any systemic diseases were excluded from the study. Each patient of study underwent the routine examination of the TMJ such as clicking, crepitating, limitation or deviation during mouth opening, and pain. We relied on the principles based on International RDC/TMD and the amendments thereto (version: 20 Jan 2014), in the preliminary examination of the TMJ. [11]

It was done by single examiner to maintain the equality of result for each participant. Every patient was provided a questionnaire to fill after taking complete history and thorough examination. Physical examination of the collected sample was done in two ways:

- (1) Lateral position: assessment of mandibular condylar movement by direct palpation over the joint while the patient opens and closes the mandible, at the preauricular area;
- (2) Posterior position: assessment of mandibular condylar movement by direct palpation of the mandibular condyle while the patient opens and closes the mandible, through the external auditory meatus.

Anything below 40 mm interincisal opening is considered limited in our study. Along with the clinical examination of the patient, the aid of orthopantomograph was also taken in every patient. [12]

Statistical analysis

The collected data of the present study was analysed in frequency and percentage, using SPSS version 17.0 for windows.

Result

A sample of 200 patients was collected. 69% of the patients had TMJ disorders out of which 67% were male patients and 33% were female patients. (Figure 1, 2) Maximum percentage of patients (41%) was between the age ranges of 31-40 years and the minimum (10%) were between the age ranges of 20-30 years. (Figure 3)

For the assessment of any occupation related habits that may affect the TMJ the patients were further categorized, based on their occupation. Among the total sample, maximum number of patients with TMD disorders was teachers (29%) whereas policemen (1%) and farmers (2%) were among the least affected. (Figure 4)

Among the 69% of patients with TMJ disorders, only 2% of them had the disorder precipitated due to their occupational habits. (Figure 5) All the patients with TMJ disorders were examined for various TMJ pathologies such as clicking, limitation, tenderness and deviation. On examination, maximum patients (76%) were presented with clicking and minimum (4.5%) were presented with tenderness. (Figure 6)

The involvement in TMJ Pathologies among the 69% of the patients either involved one side (unilateral) or both sides (bilateral) (Figures 7, 8, 9, 10, and 11). Patients were also inquired about any history or habits that could be the possible cause of the TMD. (Figure 11, 13) The type of the diet consumed by the patients was also noted in case it could any alteration in the normal TMJ function. (Figure 14)

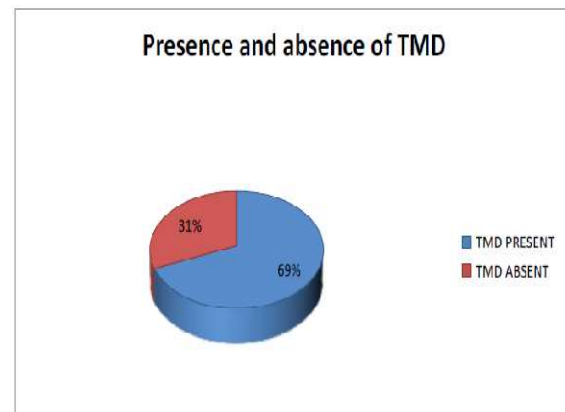


Figure 1: Pie chart demonstrating the presence and absence of TMD among the collected sample.

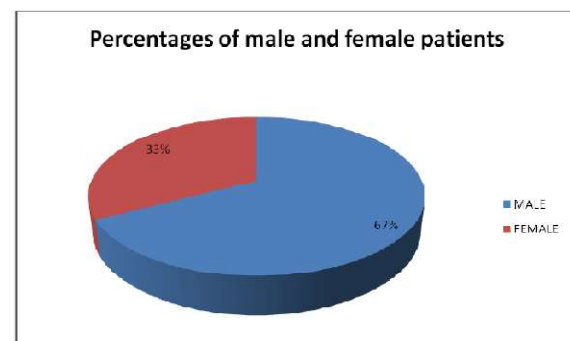


Figure 2: Pie chart demonstrating the percentages of male and female patients among the collected sample

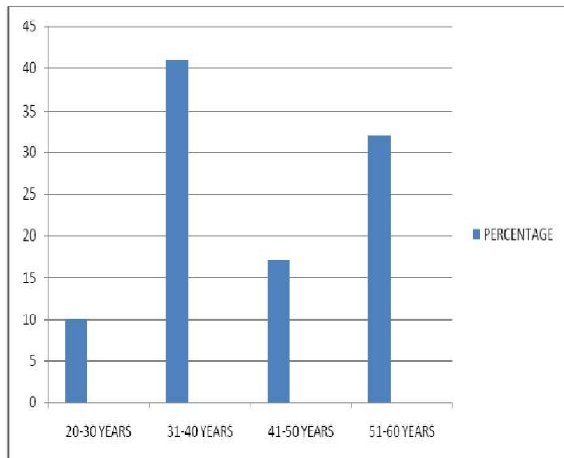


Figure 3: Bar graph showing the percentages of the collected sample of 200 patients and their respective age ranges.

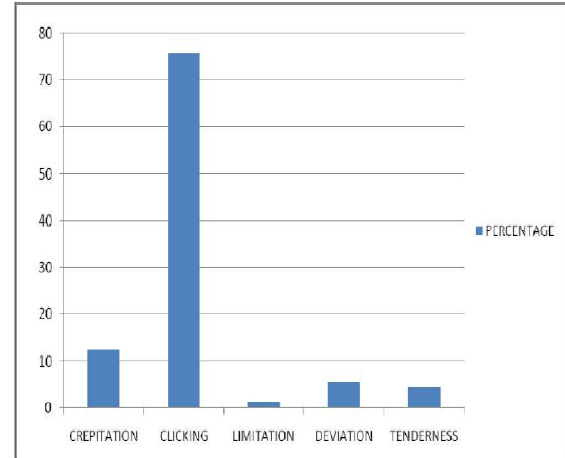


Figure 6: Bar graph showing the percentages of the patients having the different TMJ pathologies.

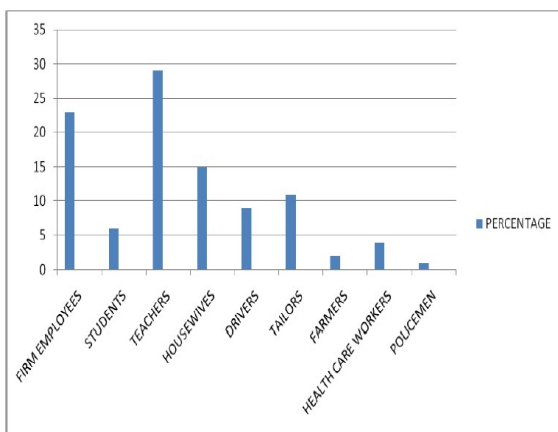


Figure 4: Bar graph representing the percentage of the collected sample of 200 patients with their respective occupations.

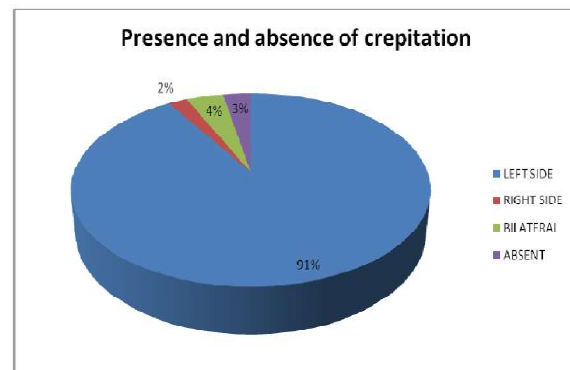


Figure 7: Pie chart demonstrating the percentages of patients with presence and absence of crepitation on either side of the face.



Figure 5: Pie chart representing the percentages of presence or absence of occupational habits in patients with TMJ disorders.

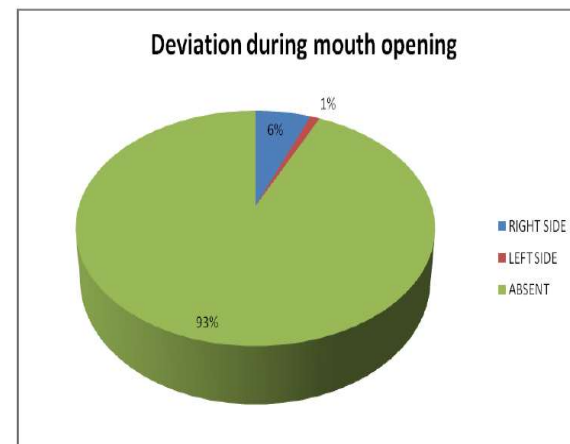


Figure 8: Pie chart demonstrating the percentages of patients representing presence or absence of deviation during mouth opening on either side of the face.

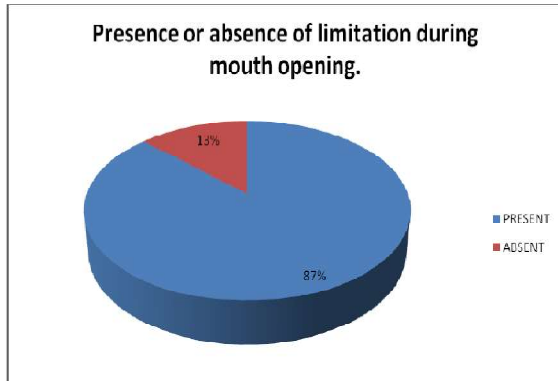


Figure 9: Pie chart representing the percentages of subjects with presence or absence of limitation during mouth opening.

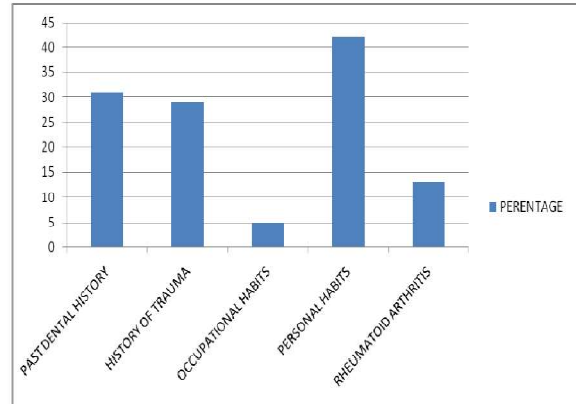


Figure 12: Bar graph representing the percentages of patients having different criteria

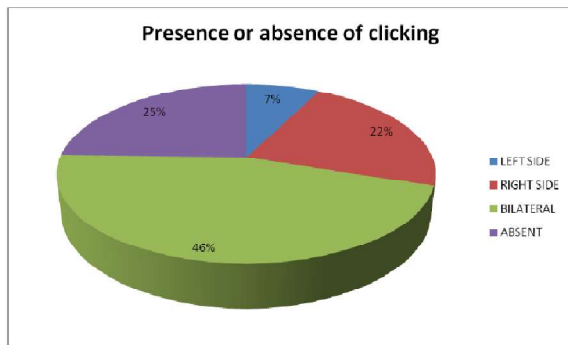


Figure 10: Pie chart demonstrating the percentages of patients with presence or absence of clicking on either side of the face.

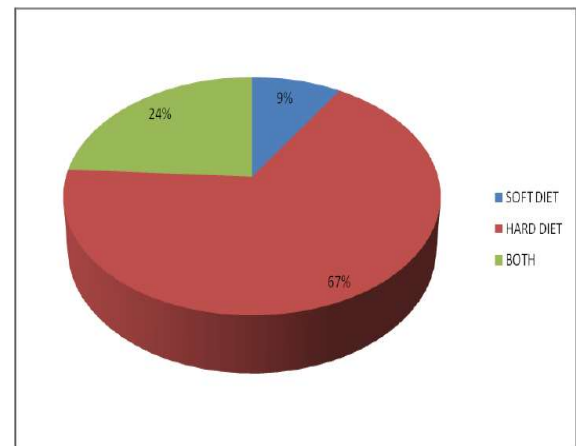


Figure 13: Pie charts demonstrating the percentages of patients whose diets are soft, hard, or both.

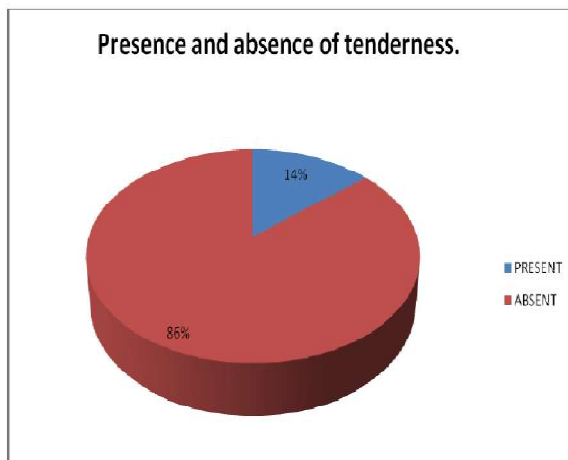


Figure 11: Pie chart representing the percentages of presence and absence of tenderness.

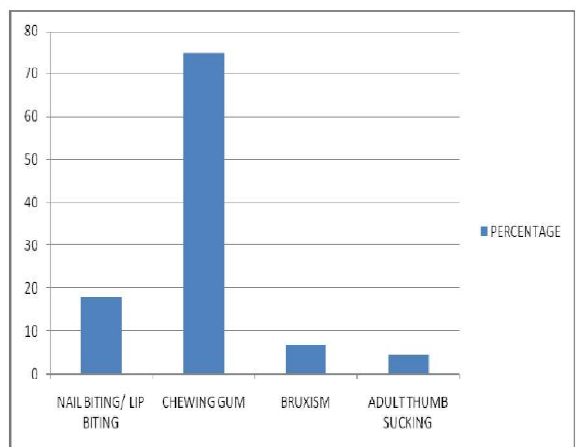


Figure 14: Bar graph representing the percentages of patients and their respective habits.

Discussion

Temporomandibular disorders (TMD) are a broad group of clinical problems involving the masticator musculature, the temporomandibular joint, surrounding bony and soft tissue components, and combinations of these problems.[13] Symptoms of TMD include decreased mandibular range of motion, pain in the muscles of mastication, temporomandibular joint (TMJ) pain, associated joint noise with function, generalized myofascial pain, and a functional limitation or deviation of the jaw opening.[13] The prevalence of TMD is thought to be greater than 5% of the population.[14] Lipton and colleagues showed that about 6% to 12% of the population experience clinical symptoms of TMD.[15] Patients with TMD symptoms present over a broad age range; however, there is a peak occurrence between 20 and 40 years of age.[16]

In our study among the 69% of patients who had TMJ disorders, the most common TMJ signs and symptoms was clicking which was 76%, and most patients had either bilateral clicking (46%) or its absent (25%), followed by crepitation (12.2%), deviation (5.5%), tenderness (4.5%) and limitation (1.5%), as shown in related studies. [7, 10, 17]

The predominance of males was seen in our study, there were 67% males and 33% females suffering with TMD which was similar to the study conducted by Alshaban and Waheed (65% males) while Lee et al reported more females (60.4%) and Hirsch et al. (51.9%) reported in their study, the predominance of the female with TMJ disorders during pubertal development.[7, 18]

Maximum (41%) patients suffering from TMD were between the age range of 31-40 years followed by 51-60 years (32%), 41-50 years (17%) which was found contrary to the study conducted by Alshaban and Waheed where maximum (58%) were reported among the age group of 19-29 years.[1]

We inquired about the occupation of the patients to know about the relevance of it to the occurrence of TMD. Most the patients in the present study with TMD was seen among teachers (29%) followed by firm employees (23%) while in the in study done by Alshaban and Washed, (30%) of the patients were firm employees which was in contrary to our study.[1]

Further, the patients were questioned on different criteria with the goal of identifying the causative factors of the disorder:

(1). The gravest cause concluded from the research was habits (42%). Most patients had associated habits that resulted in TMJ disorders. Patients had habits like chewing gum (75%), nail or lip biting (18%), and bruxism (7%). Most patients were not

aware of the severity of the habits on the TMJ, as shown in related studies. [19-24]

- (2). The second most common cause concluded was previous dental treatments (29%), specifying to a history of long dental appointments or previous orthodontic treatment.[25]
- (3). Patients were inquired about having any history of trauma to the head and neck area that may have had an impact on the TMJ. The results concluded that 17% of the patient had a history of trauma, as stated in previous studies.[26,27]
- (4). 10% of the patients had rheumatoid arthritis, as found in literature studies. [28,29]

Patients were also inquired on the type of diet they consumed to access any possible relationship between the type of diet and TMJ disorder:

The results of the present study stated that most patients had a hard diet (56%) which could be a contributing factor in causing the disorders, as shown in related studies.[30,31] Long-term consumption of hard diet has a direct impact on the TMJ; hence, the patients should be educated and motivated to discontinue the habit.

Conclusion

TMD is a complex symptom, caused by multiple factors that are poorly understood and it affects people between 20 and 40 years old with 20% to 40% of the adult population got selected to some degree. The harmony and balance between the masticators system and the function are crucial to keep the TMJ complex healthy. If anything that disrupts this equation, the body tries to correct it but to certain limit; when the abnormal functions continue, at that time the signs and symptoms appear. Hence, the patient education is an important factor in the treatment of the TMD disorder, and grave importance should be given to this entity in order to reduce the incidence of the disorders. Patients who had habits should be educated and enlightened about the severe effects they may face for TMJ disorders and the further possible severities to the TMJ if the habits are not discontinued.

References

- [1] AlShaban KK, Gul Abdul Waheed Z. Prevalence of TMJ Disorders among the Patients Attending the Dental Clinic of Ajman University of Science and Technology- Fujairah Campus, UAE. *Int. J. Dent.* 2018; 10.
- [2] Ahmed F. Illustrated dental embryology, histology, and anatomy. *British Dental Journal.* 2011; 2:575.
- [3] M. Fehrenbach and S. Herring, *Illustrated Anatomy of the Head and Neck*, Elsevier, St. Louis, MO, USA, 2012.

- [4] Morriss-Kay GM, Wilkie AO. Growth of the normal skull vault and its alteration in craniosynostosis: insights from human genetics and experimental studies. *J Anat.* 2005; 207:637-53.
- [5] Moss ML. The non-existent hinge axis. In Proceedings of the American Institute of Oral Biology 29th Meeting, Chicago, IL 1972.
- [6] Slade GD, Ohrbach R, Greenspan JD, Fillingim RB, Bair E, Sanders AE et al. Painful temporomandibular disorder: decade of discovery from OPPERA studies. *J. Dent. Res* 2016; 95:1084-92.
- [7] Lee JY, Kim YK, Kim SG, Yun PY. Evaluation of Korean teenagers with temporomandibular joint disorders. *Journal of the Korean Association of Oral and Maxillofacial Surgeons.* 2013; 39:231-7.
- [8] List T, Jensen RH. Temporomandibular disorders: Old ideas and new concepts. *Cephalalgia.* 2017; 37:692-704.
- [9] Odell EW. *Cawson's essentials of oral pathology and oral medicine e-book.* Elsevier Health Sciences; 2017 May 2. Available at: <https://www.elsevier.com/books/cawsons-essentials-of-oral-pathology-and-oral-medicine/odell/978-0-443-10125-0>.
- [10] Sidebottom AJ, Farook S, Cascarini L (2014) Current Management of Temporomandibular Joint (TMJ) Disease. *J Arthritis* 3: 138. Doi: 10.4172/2167-7921.1000138.
- [11] Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, List T, Svensson P. 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. *J. oral & facial pain and headache.* 2014; 28:6.
- [12] Burket LW, Greenberg MS, Glick M. *Burket's oral medicine: diagnosis and treatment.* BC Decker; 2003.
- [13] Wadhwa S, Kapila S. TMJ disorders: future innovations in diagnostics and therapeutics. *J Dent Educ.* 2008; 72:930-47.
- [14] Scrivani SJ, Keith DA, Kaban LB. Temporomandibular disorders. *N Engl J Med.* 2008;359:2693-705.
- [15] Lipton J, Ship J, Larach-Robinson D. Estimated prevalence and distribution of reported orofacial pain in the United States. *J. Am. Dent. Assoc.* 1993; 124:115-21.
- [16] De Rossi SS, Greenberg MS, Liu F, Steinkeler A. Temporomandibular disorders: evaluation and management. *Med Clin.* 2014; 98:1353-84.
- [17] Modi P, Shaikh SS, Munde A. A cross sectional study of prevalence of temporomandibular disorders in university students. *Int J Sci Res Publ* 2012; 2:1-3.
- [18] Hirsch C, Hoffmann J, Tuerp JC. Are temporomandibular disorder symptoms and diagnoses associated with pubertal development in adolescents? An epidemiological study. *J. Orofac. Orthop.* 2012;73:6-18.
- [19] Fernandes G, Franco-Micheloni AL, Siqueira JT, Gonçalves DA, Camparis CM. Parafunctional habits are associated cumulatively to painful temporomandibular disorders in adolescents. *Braz. oral res.* 2016; 30:1-7.
- [20] Pereira LJ, Pereira-Cenci T, Cury AA, Pereira SM, Pereira AC, Ambosano GM, Gavião MB. Risk indicators of temporomandibular disorder incidences in early adolescence. *Pediatric dentistry.* 2010; 32:324-8.
- [21] Cairns ARE. The influence of gender and sex steroids on craniofacial nociception. *Headache: The Journal of Head and Face Pain.* 2007; 47:319-24.
- [22] Motghare V, KuMar J, Kamate S, KuShwaha S, Anand R, Gupta N, Gupta B, Singh I. Association between harmful oral habits and signs and symptoms of temporomandibular joint disorders among adolescents. *J. clin. Diagn.* 2015;9:ZC45.
- [23] Motta LJ, Guedes CC, De Santis TO, Fernandes KP, Mesquita-Ferrari RA, Bussadori SK. Association between parafunctional habits and signs and symptoms of temporomandibular dysfunction among adolescents. *Oral Health Prev Dent.* 2013;11:3-7.
- [24] Murad B, Sepah NG, Rehman B, Ahmad T. Parafunctional habits among undergraduate clinical students and house officers at Khyber College of Dentistry. *JKCD.* 2016; 6:20-4.
- [25] Habib SR, Al Rifaiy MQ, Awan KH, Alsaif A, Alshalan A, Altokais Y. Prevalence and severity of temporomandibular disorders among university students in Riyadh. *The Saudi Dent J.* 2015; 27:125-30.
- [26] Pham DN, Hugonnet-Boby E, Barthelemy I, Shi J. Zygomatic arch fracture extended to the glenoid fossa: a cause of TMJ pain. *REV STOMATOL CHIR.* 2014; 115:121.
- [27] Xiang GL, Long X, Deng MH, Han QC, Meng QG, Li B. A retrospective study of temporomandibular joint ankylosis secondary to surgical treatment of mandibular condylar fractures. *J. Oral Maxillofac. Surg.* 2014; 52:270-4.
- [28] Witulski S, Vogl TJ, Rehart S, Ottl P. Evaluation of the TMJ by means of clinical TMD examination and MRI diagnostics in patients with rheumatoid arthritis. *BioMed Res Int.* 2014; 1-9.
- [29] Zwir LM, Terreri MT, Sousa SA, Fernandes AR, Guimarães AS, Hilário MO. Are temporomandibular joint signs and symptoms associated with magnetic resonance imaging findings in juvenile idiopathic arthritis patients? A longitudinal study. *Clin. Rheumatol.* 2015;34:2057-63.
- [30] Kogawa EM, Calderon PS, Lauris JR, Araujo CR, Conti PC. Evaluation of maximal bite force in temporomandibular disorders patients. *J. Oral Rehabil.* 2006; 33:559-65.
- [31] Kim BI, Jeong SH, Chung KH, Cho YK, Kwon HK, Choi CH. Subjective food intake ability in relation to maximal bite force among Korean adults. *J. Oral Rehabil.* 2009; 36:168-75.

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