

Knowledge, Attitude and Practices Regarding Temporomandibular Joint Disorders among Dental Students and Practitioners

Research Article

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Abstract

Objectives: Temporomandibular joint syndrome, also known as temporomandibular disorder (TMD), is a common musculo-skeletal disorder affecting the masticatory muscles, the temporomandibular joint (TMJ), and related structures in the orofacial region. TMJ pain, restriction of mandibular movement, TMJ and facial deformities are all common symptoms. An adequate understanding about TMD is essential for early diagnosis, timely intervention and successful outcomes. The aim of this study was to assess the knowledge, attitude and practices regarding temporomandibular joint disorders among the private dental practitioners and dental students in our institution.

Methods: A cross-sectional study was conducted among the Dental students and Dental practitioners in Chennai. Dental students were undergraduate [UG], postgraduate [PG] and fellowship [FDS] dental students of Saveetha Dental College, Saveetha University, Chennai. Private Dental practitioners participated in the study were general dental practitioners and speciality dental practitioners belonging to the various branches of dentistry. A total of 200 participants were randomly enrolled in the study and completed a questionnaire consisting of 20 close-ended questions including demographic details. The questions in the questionnaire were designed in three sections to assess their basic knowledge, attitude, and practices regarding temporomandibular disorders. Based on the responses from the participants their knowledge data were classified into good, moderate/fair and poor; and their attitude was evaluated as positive or negative. The collected data was validated, tabulated and analysed with Statistical Package for Social Sciences for Windows, version 23.0 (SPSS Inc., Chicago, IL, USA) and results were obtained. Descriptive analysis was performed and Chi-square test was used to test associations between categorical variables. P value < 0.05 was considered statistically significant.

Results: Our study consisted of 200 participants with Female participants (63%) predominating male participants (37%). Post graduate students [males and females] were the predominant participants in this study. Among specialized dental practitioners, oral surgeons (23.50%) predominantly participated in the study, followed by prosthodontists and endodontists. Associations between categorical variables gender, educational qualification of the participants, and responses to knowledge, attitude and practices questionnaire were statistically significant [P value < 0.05]. Thus, variations existed in the knowledge, attitude and practices regarding TMD among the participants based on gender and educational qualification. Female participants had good levels of knowledge and positive attitude towards TMD than the male participants.

Conclusion: It can be concluded from this study that dental practitioners have good level of knowledge regarding temporomandibular disorders whereas dental students exhibited moderate levels of knowledge. Specialty dental practitioners had better knowledge than general dental practitioners. Post graduate students had better knowledge than the undergraduate and fellowship dental students. Both dental practitioners and dental students showed positive attitudes towards updating knowledge and management of temporomandibular joint disorders. However, general dental practitioners and dental students lacked confidence and had difficulties in treating the patients with temporomandibular disorders in their practice. Speciality dental practitioners exhibited excellent clinical practices for the TMD patients. Hence, this study emphasizes the need for improved education in the teaching curriculum for dental students regarding temporomandibular disorders.

Keywords: Dental Students; Dental Practitioners; TMD; Temporomandibular Joint Disorders; Knowledge; Attitude; Practice.

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Introduction

Temporomandibular joint syndrome, also known as temporomandibular disorder (TMD), is a common musculoskeletal disorder affecting the masticatory muscles, the temporomandibular joint (TMJ), and related structures in the orofacial region [1]. TMJ pain, restriction of mandibular movement, TMJ, and facial deformities are all common symptoms. The temporomandibular joint (TMJ), also known as the ginglymo-arthrodial joint, is a bi-artrodial joint made up of the articular surface of the temporal bone and the head of the mandible, which is enclosed in a fibrous capsule [1, 2]. An articular disc divides the joint into two synovial joint cavities. The joint capsule, articular eminence, and upper arches are all attached to the disc's anterior portion [1-3]. The mandibular fossa and temporal bone, also known as the retrodiscal tissue, are located in the posterior portion. The TMJ is stabilized by three major ligaments: the temporomandibular, stylomandibular, and sphenomandibular ligaments. The superficial temporal and maxillary branches of the external carotid supply the TMJ with arterial blood [3]. The anterior tympanic, deep auricular, and ascending pharyngeal arteries are also contributing branches. The auriculotemporal and masseteric branches of the mandibular nerve (V3), which is a branch of the trigeminal nerve, supply sensory nerves to the TMJ [4]. The etiology of TMD is complex. TMD has been linked to a variety of theories, including mechanical displacement, trauma, biomedical, osteoarthritis, muscle theory, neuromuscular, psychophysiological, and psychosocial theories.

The diagnostic criteria (DC)/TMD published by Schiffman in 1992 represents the evolution of widely accepted research diagnostic criteria for TMD. It is a two-axis system that includes a physical axis as well as a psychosocial diagnosis. The physical system is divided into the most common muscle and joint problems. A more standardized, reliable self-reporting questionnaire, clinical examination systems, scores, and decision trees are proposed in the classification. It combines biophysical diagnosis with a disability index that assesses how pain affects a patient's behavior [5]. The classification is based on clinical examination procedures; however, imaging procedures that are not included in the classification are the best way to assess specific disorders. The American Dental Association adopted Weldon Bell's classification, which logically categorizes these disorders, with only minor changes [6]. The use of such a logical classification system improves diagnostic ability as well as professional communication. All temporomandibular joint disorders fall into one of four broad categories, each with its own set of characteristics which are masticatory muscle disorders, temporomandibular joint disorders, Chronic Mandibular Hypomobility, and growth disorders. Temporomandibular joint disorders are further divided into Derangement of the condyle-disc complex which are Disc displacements, Disc dislocation with reduction, and Disc dislocation without reduction [7]. Structural incompatibility with articular surfaces includes deviations in form, Adherences and adhesions, Subluxation and luxation (hypermobility), and Dislocations. The third sub division is Inflammatory disorders of the TMJ which are Synovitis or capsulitis, Retrodicitis, Arthralgia, and Arthritis which is divided into Osteoarthritis, Osteoarthrosis and Systemic arthritis. Signs and symptoms of TMD are pain which is most common and seen in the TMJ and in the masticatory muscles, two types of joint sounds which are clicking and crepitations, limitations in mandible movements, and

displacement of the condyle from fossa. Tooth mobility, pulpitis, and tooth wear are some of the common dental symptoms [8]. There are also few otology symptoms like tinnitus, itching in the ear, vertigo and the patients also present with recurrent headaches [9, 10]. The task of identifying the TMD disorder and managing it could be difficult. Before beginning treatment, it is critical to determine the disorder with sufficient evidence [11]. There are several treatment options for TMD ranging from conservative, minimally invasive to invasive (surgical) therapy. Symptomatic care, which includes (a) a soft diet, (b) mild inflammatory agents, (c) moist heat packs alternating with ice, and (d) voluntary tooth disengagement, is the first step in treating TMJ disorders [12]. The main aim of our study was to assess the knowledge, attitude and practices regarding temporomandibular joint disorders among the private dental practitioners and dental students in our institution.

Materials And Methods

A cross-sectional study was conducted during the academic year from January 2021 to March 2021 among the Dental students and Dental practitioners in Chennai. Dental students were undergraduate [UG], postgraduate [PG] and fellowship [FDS] dental students of Saveetha Dental College, Saveetha University, Chennai. Private Dental practitioners participated in the study were general dental practitioners and speciality dental practitioners belonging to the various branches of dentistry. A total of 200 participants were randomly enrolled in the study which consisted of 67 dental internship students [UG], 91 dental postgraduate students [PG], 8 FDS students, 17 general dental practitioners and 17 specialty dental practitioners.

They voluntarily completed a questionnaire consisting of 20 close-ended questions including demographic details [Table 1]. The questionnaire was selected from previous research on relevant topic and few amendments in the questionnaire were made with the help of professionals [13]. The questions in the questionnaire were designed in three sections to assess their basic knowledge, attitude, and practices regarding temporomandibular disorders. Based on the responses from the participants their knowledge levels were classified into good, moderate/fair and poor; and their attitude was evaluated as positive or negative.

Statistical Analysis

Data was entered in excel and was imported to SPSS. The variables were defined.

The collected data was validated, tabulated and analysed with Statistical Package for Social Sciences for Windows, version 23.0 (SPSS Inc., Chicago, IL, USA) and results were obtained. Categorical variables were expressed in frequency and percentage; and continuous variables in mean and standard deviation. Descriptive analysis was used to describe the gender, educational qualification and area of specialization of the participants. Chi-square test was used to test associations between categorical variables (gender, educational qualification of the participants, responses to knowledge, attitude and practices questionnaire). P value < 0.05 was considered statistically significant. Thus, variations in the knowledge, attitude and practices regarding TMD was assessed among the participants based on gender and educational qualification using chi-square test.

Table 1. Questionnaire on knowledge, attitude and practices regarding temporomandibular joint disorders among the dental students and practitioners.

S.no	Questions	Options
1	Gender	1) Male 2) Female
2	Educational qualification	1) Internship students 2) Post graduate students 3) FDS students 4) General dental practitioners 5) Specialized dental practitioners
3	Area of specialization	1) Conservative dentistry and endodontics 2) Orthodontics 3) Oral medicine and radiology 4) Public health dentistry 5) Oral surgery 6) Prosthodontics 7) Oral pathology 8) Periodontics 9) Pedodontics
4	What level of knowledge about TMJ disorders is provided during graduation, in your opinion?	1) Little or basic information 2) In-depth information
5	What is the most common population affected by temporomandibular joint disorders?	1) Young individuals 2) Middle age individuals 3) Old individuals
6	Which of the following factors contribute to the etiology of TMJ disorders?	1) Emotional stress 2) Trauma to maxillofacial region 3) Bruxism 4) Abnormal body posture 5) Mouth breathing 6) Malocclusion 7) Genetics 8) Trauma from hyperextension 9) Associated with other musculoskeletal disorders
7	A person with a temporomandibular joint disorder may experience which of the following symptoms?	1) Pain in preauricular region 2) Difficulty in mouth opening 3) Joint sounds 4) Joint lock 5) Muscle pain 6) Referred Pain to Cervical Region 7) Altered pathway of mouth opening 8) All of the above
8	Are you familiar with the research diagnostic criteria for temporomandibular joint disorder classification (RDC/TMD)?	1) Yes 2) No
9	What constitutes myofascial pain diagnostic criteria?	1) Pain on palpation of three or more muscle sites (trigger points) 2) Dull regional pain 3) Sharp shooting pain 4) Localized tenderness in firm bands of muscles 5) Reduction in pain with local anesthetic injections into the muscles
10	What are the diagnostic criteria of anterior disc displacement with reduction (ADDWR)?	1) Clicking or pop 2) Crepitus 3) Reproducible joint sounds 4) Point of deviation altered by varying the speed of mouth opening 5) Elimination of joint sounds on protrusion
11	What are all the diagnostic signs that could lead to an osteoarthritis diagnosis?	1) Crepitus 2) Clicking 3) Joint pain on lateral palpation 4) Pain increasing on movement of the joint 5) Painless joint movements 6) Soft end feel
12	In the treatment of temporomandibular joint disorders, identifying and removing occlusal interferences is effective	1) Agree 2) Disagree
13	Patients with temporomandibular joint disorders can begin orthodontic treatment	1) Agree 2) Disagree
14	In the treatment of myofascial pain, relaxation training is an effective technique	1) Agree 2) Disagree
15	Not all Individuals with joint sounds need to be treated	1) Agree 2) Disagree
16	There is no requirement for all TMD patients to have a radiographic examination prior to treatment formulation	1) Agree 2) Disagree
17	Do you have confidence in diagnosing TMDs, making therapeutic decisions, and evaluating treatment outcomes?	1) 0 -No confidence 2) 1 -Yes with little confidence 3) 2 -Yes with full confidence
18	Do you offer medical treatment to temporomandibular joint disorder patients?	1) Yes 2) No
19	Do you believe your practice area requires more experts in the field of temporomandibular joint disorders?	1) Yes 2) No
20	Do you update your knowledge about temporomandibular joint disorders?	1) Yes 2) No

*For questions 5,6,7,9,10 and 11 relevant multiple options can be chosen. For other questions kindly choose one apt answer.

Results

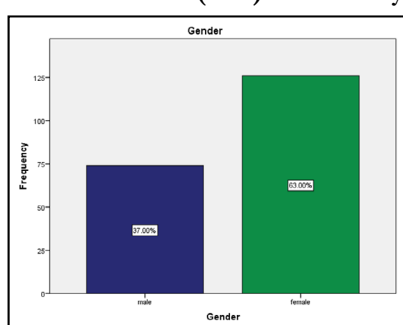
Our study consisted of 200 participants with Female participants (63%) predominating male participants (37%) [Figure 1]. Post graduate students [males and females] were the predominant participants in this study (45.50%) [Figure 2]. Among specialized dental practitioners, oral surgeons (23.50%) predominantly participated in the study, followed by prosthodontists and endodontists [Figure 3]. Knowledge, attitude and practices regarding TMD was assessed among the participants based on gender and educational qualification for each question and results obtained.

Assessment of knowledge levels obtained regarding TMD during graduation was done. 32.50% of the males and 41.50% of the females replied that little or basic information was provided

whereas 4.50% of males and 21.50% of females answered that In depth information was provided and the results were statistically significant [$p < 0.05$]. Females obtained in-depth information regarding TMD during graduation than the males. 73.50% of the participants replied that little or basic information was provided about TMJ disorders during graduation.

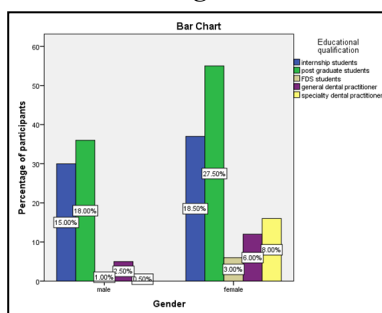
33.50% of internship students, 35% of postgraduate students and 5.50% of the specialized dental practitioners replied that little or basic information was provided and only 10.50% of PG students, 4% of FDS students, 8.50% of general dental practitioners and 3% of specialized dental practitioners replied that In depth information was provided and the results were statistically significant [Chi-square value- 9.306; $p = 0.002 (< 0.05)$]. Post graduate students obtained in-depth information regarding TMD during graduation than the undergraduate dental students. Dental prac-

Figure 1. Bar graph represents the gender distribution of the study population. Female participants (63%) were predominant than males (37%) in our study.



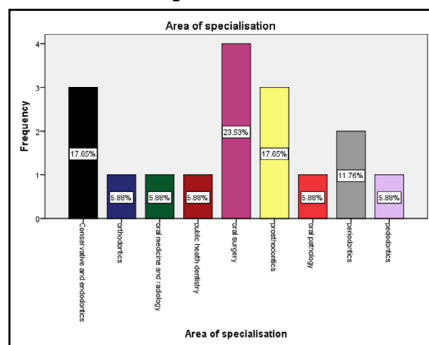
Female participants (63%) were predominant than males (37%) in our study.

Figure 2. Bar graph represents the association between gender and educational qualification of the participants.



15% of males and 18.50% of females were internship students, 18% of males and 27.50% of females were postgraduate students, 1% of males and 3% of females were FDS students, 2.50% of males and 6% of females were general dental practitioner, 0.50% of males and 8% of females were specialized dental practitioner. Chi-square value- 9.970; $p = 0.003 (< 0.05)$, and the results were statistically significant. Post graduate students [males and females] were the predominant participants in this study.

Figure 3. Bar graph represents the area of specialization of the dental practitioners in our study.



Black represents conservative and endodontics which was 17.65%, blue is orthodontics which was 5.88%, green is oral medicine and radiology which was 5.88%, red was public health dentistry with 5.88%, pink is oral surgery which was 23.53%, yellow is prosthodontics which was 17.65%, orange was oral pathology which was also 5.88%, grey was periodontics which was 11.76% and purple was Pedodontics which was 5.88%. Among specialized dental practitioners, oral surgeons predominantly participated in the study, followed by prosthodontists and endodontists.

tioners had in depth information about TMD than dental students [Figure 4].

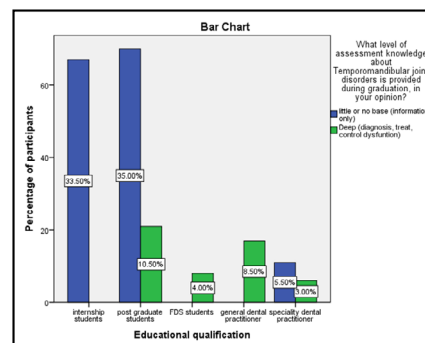
Knowledge of the participants regarding common population affected by TMD was assessed. 18.50% of males and 19.50% of females replied young individuals, 10% of males and 17% of females answered middle age individuals whereas 8.50% of males and 26.50% of females opted for old individuals and the results were statistically significant [p<0.05]. Most of the males felt young individuals are commonly affected by TMD Whereas females thought that the old individuals are the commonly affected by TMD. 38% of the participants replied that the most common population affected by TMJ disorders are young individuals.

33.50% of internship students and 4.50% of PG students replied young individuals, 21.50% of PG students and 5.50% speciality dental practitioners answered middle aged individuals, whereas 19.50% of PG students, 4% of FDS students, 8.50% of general dental practitioner and 3% of speciality dental practitioners replied old individuals and the results were statistically significant [Chi-square value- 9.306; p =0.002 (<0.05)]. Majority of the dental practitioners and post graduate students answered that middle age and older individuals are commonly affected by TMD, whereas undergraduate students replied that young individuals were affected by TMD [Figure 5].

knowledge of the participants regarding etiology of TMD was assessed. 5.50% of male participants replied emotional stress, 16.50% of males and 29.50% of females answered trauma to maxillofacial region, 8% of males and 9% of females replied bruxism, 2.50% of males and 3% of females replied abnormal body posture, 3% of the females answered mouth breathing, 2% of females replied malocclusion and genetics, 1% of males and 4% of females replied trauma by hyperextension, 1.50% of females replied any association with other musculoskeletal disorders and 3.50% of male and 9% of females answered all the options and the results were statistically significant [p<0.05]. Both males and females answered that trauma to the maxillofacial region was the predominant factor contributing to the aetiology of the TMD followed by bruxism. 46% of the respondents answered that trauma to the maxillofacial region was the most common aetiology of TMJ disorders.

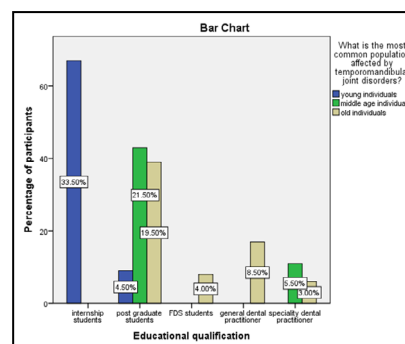
5.50% of internship students replied emotional stress, 28% of internship students, 12.5% of postgraduate students and 5.50% of speciality dental practitioners answered trauma to maxillofacial region, 17% of postgraduates replied bruxism, 5.50% of PG students replied abnormal body posture, 3% of PG students answered mouth breathing, 2% of PG students replied malocclusion and 1.50% of PG students and 0.50% of speciality dental

Figure 4. Bar graph depicting association between educational qualification of the participants and level of knowledge obtained regarding TMD during graduation.



33.50% of internship students, 35% of postgraduate students and 5.50% of the specialized dental practitioners have replied that little or basic information was provided and 10.50% of PG students, 4% of FDS students, 8.50% of general dental practitioners and 3% of specialized dental practitioners have replied that In depth information was provided and the results were statistically significant [Chi-square value- 9.306; p =0.002 (<0.05)]. Post graduate students obtained in-depth information regarding TMD during graduation than the undergraduate dental students. Dental practitioners had in depth information about TMD than dental students.

Figure 5. Bar graph depicting association between educational qualification of the participants and the knowledge regarding common population affected by TMD.



33.50% of internship students and 4.50% of PG students have replied as young individuals, 21.50% of PG students and 5.50% speciality dental practitioners have said middle aged individuals, whereas 19.50% of PG students, 4% of FDS students, 8.50% of general dental practitioner and 3% of speciality dental practitioners have replied as old individuals and the results were statistically significant [Chi-square value- 9.306; p =0.002 (<0.05)]. Majority of the dental practitioners and post graduate students answered that middle age and older individuals are commonly affected by TMD, whereas undergraduate students replied that young individuals were affected by TMD.

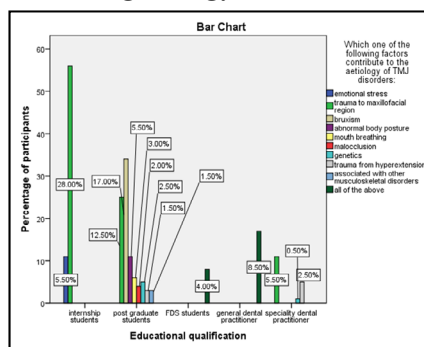
practitioners replied genetics, 1.50% of PG students and 2.50% of speciality dental practitioners answered trauma by hyperextension, 1.50% of PG students replied any association with other musculoskeletal disorders and 4% of FDS students and 8.50% of general dental practitioners opted all the options and the results were statistically significant [Chi-square value- 33.830; $p = 0.003 (<0.05)$]. Post graduate students answered that bruxism is the predominant contributing factor for TMD, undergraduate students replied that trauma to the maxillofacial region is the main factor for TMD, whereas dental practitioners answered that trauma to the maxillofacial region or multiple risk factors can contribute to TMD [Figure 6].

knowledge levels of the participants regarding clinical features of TMD was assessed. 11% of the males and 11.5% of females replied pain in periauricular, 10% of males and 9.50% of females answered difficulty in mouth opening as the symptom, 1.50% of males and 9% of females replied sound joints, 7.50% of males and 8.50% of females answered joint lock, 2.50% of males and 3.50% of females replied muscle pain, 5% of the females answered referred pain to cervical region, 1% of males and 4% of females replied altered pathway of mouth opening as the symptom present and 3.50% of males and 12% of females opted all the options and the results were statistically significant [$p < 0.05$].

Males answered that pain in the preauricular region followed by difficulty in mouth opening as the predominant clinical features of TMD. Females replied that patients can present with all the signs and symptoms of TMD or predominantly with pain in the preauricular region. 23% of participants replied that pain in the preauricular region as the most common symptom of TMD.

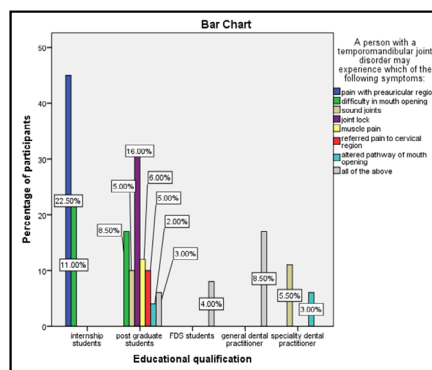
22.50% of internship students replied pain in periauricular, 11% of internship students and 8.50% of PG students answered difficulty in mouth opening as the symptom, 5.50% of speciality dental practitioners answered sound joints, 16% of PG students replied joint lock, 6% of PG students answered muscle pain, 5% of PG students replied referred pain to cervical region, 2% of PG students and 3% of speciality dental practitioners answered altered pathway of mouth opening as the symptom present and 3% of PG students, 4% of FDS students and 8.50% of general dental practitioners opted for all the options and the results were statistically significant [Chi-square value- 22.118; $p = 0.002 (<0.05)$]. Most of the Postgraduate students answered lock joints as the predominant finding in patients with TMD, undergraduate students replied that pain in the preauricular region as the common clinical manifestation in TMD, whereas dental practitioners answered that joint sounds or multiple signs and symptoms manifest in patient with TMD [Figure 7].

Figure 6. Bar graph depicting association between educational qualification of the participants and the knowledge regarding etiology of TMD.



5.50% of internship students replied as emotional stress, 28% of internship students, 12.5% of postgraduate students and 5.50% of speciality dental practitioners have said trauma to maxillofacial region, 17% of postgraduate have said it as bruxism, 5.50% of PG students have replied as abnormal body posture, 3% of PG students have said the reason as mouth breathing, 2% of PG students have replied as malocclusion and 1.50% of PG students and 0.50% of speciality dental practitioners have replied as genetics, 1.50% of PG students and 2.50% of speciality dental practitioners have replied as trauma by hyperextension, 1.50% of PG students have replied as any association with other musculoskeletal disorders and 4% of FDS students and 8.50% of general dental practitioners have replied as all of the above and the results were statistically significant [Chi-square value- 33.830; $p = 0.003 (<0.05)$]. Post graduate students answered that bruxism is the predominant contributing factor for TMD, undergraduate students replied that trauma to the maxillofacial region is the main factor for TMD, whereas dental practitioners answered that trauma to the maxillofacial region or multiple risk factors can contribute to TMD.

Figure 7. Bar graph depicting association between educational qualification of the participants and the knowledge regarding clinical features of TMD.



22.50% of internship students have replied as pain in periauricular, 11% of internship students and 8.50% of PG students have told difficulty in mouth opening is the symptom, 5.50% of speciality dental practitioners have replied as sound joints, 16% of PG students have told as joint lock, 6% of PG students have told it as muscle pain, 5% of PG students have told as referred pain to cervical region, 2% of PG students and 3% of speciality dental practitioners have replied as altered pathway of mouth opening is the symptom seen and 3% of PG students, 4% of FDS students and 8.50% of general dental practitioners have replied as all of the above symptoms can be seen and the results were statistically significant [Chi-square value- 22.118; $p = 0.002 (<0.05)$]. Most of the Postgraduate students answered lock joints as the predominant finding in patients with TMD, undergraduate students replied that pain in the preauricular region as the common clinical manifestation in TMD, whereas dental practitioners answered that joint sounds or multiple signs and symptoms manifest in patient with TMD.

Assessing the awareness levels of the participants regarding research and diagnostic criteria for temporomandibular joint disorder (RDC/TMD) showed that 26.50% of males and 36.50% of females were aware and 10.50% of males and 26.50% of females were not aware and the results were statistically significant [$p < 0.05$]. Most of the male and female participants were aware about the RDC/TMD classification. 63% of the participants were familiar with the research and diagnostic criteria for TMJ disorders.

33.50% of internship students, 24% of PG students and 5.50% of speciality dental practitioners were aware and 21.50% of PG students, 4% of FDS students, 8.50% of general dental practitioners and 3% of speciality dental practitioners were not aware and the results were statistically significant [Chi-square value- 3.746; $p = 0.036 (< 0.05)$]. Majority of the postgraduate and undergraduate dental students, dental practitioners were aware about the RDC/TMD classification. General dental practitioners were unaware compared to the speciality dental practitioners [Figure 8].

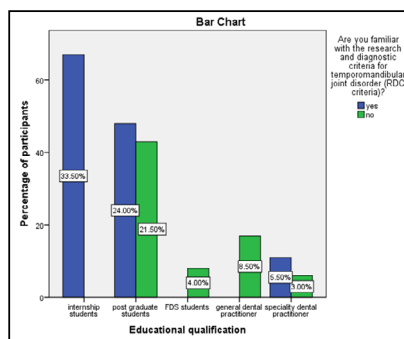
Knowledge of the participants regarding myofascial pain diagnostic criteria was assessed. 10.50% males and 11.50% females replied pain on palpation of three or more muscles, 11% of males and 13% of females answered dull regional pain, 8.50% of males and 12.50% females answered sharp shooting pain, 2.50% of males and 2% of females replied localized tenderness in firm bands of muscles and 4.50% of males and 24% of females replied reduc-

tion in pain with local anaesthetic injections into the muscles and the results were statistically significant [$p < 0.05$]. Majority of the female participants replied that reduction in pain with local anaesthetic injections into the muscles constitutes the diagnostic criteria for myofascial pain. Most of the males answered that dull regional pain and pain on palpation of three or more muscles sites as the diagnostic criteria for myofascial pain. 28.5% of participants answered that reduction in pain with local anaesthetic injections into the muscles constitutes the myofascial pain diagnostic criteria.

22% of internship students replied pain on palpation of three or more muscles, 11.50% of internship students, 9.50% of Postgraduate students and 3% of speciality dental practitioners answered regional pain. 18.50% of postgraduate students and 2.50% of speciality dental practitioners answered sharp shooting pain. 4.50% of Postgraduate students replied localised tenderness in firm bands of muscles and 13% of postgraduate students, 4% of FDS Students, 8.50% of general dental practitioners and 3% of speciality dental practitioners replied reduction in pain with local anaesthetic injections into the muscles and the results are statistically significant [Chi-square value- 16.327; $p = 0.001 (< 0.05)$]. PG students answered sharp shooting pain as the diagnostic criteria, UG students replied pain on palpation of three or more muscles sites as the diagnostic criteria and the dental practitioners replied that reduction in pain with local anaesthetic injections into the muscles as the diagnostic criteria for myofascial pain [Figure 9].

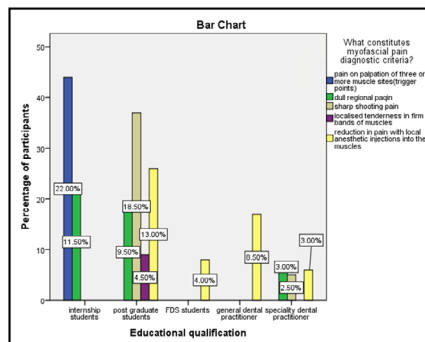
Knowledge of the participants regarding diagnostic criteria for

Figure 8. Bar graph depicting association between educational qualification of the participants and the awareness regarding research and diagnostic criteria for temporomandibular joint disorder.



33.50% of internship students, 24% of PG students and 5.50% of speciality dental practitioners were aware and 21.50% of PG students, 4% of FDS students, 8.50% of general dental practitioners and 3% of speciality dental practitioners were not aware and the results were statistically significant [Chi-square value- 3.746; $p = 0.036 (< 0.05)$]. Majority of the postgraduate and undergraduate dental students, dental practitioners were aware about the RDC/TMD classification. General dental practitioners were unaware compared to the speciality dental practitioners.

Figure 9. Bar graph depicting association between educational qualification of the participants and the knowledge regarding myofascial pain diagnostic criteria.



22% of internship students have replied as pain on palpation of three or more muscles, 11.50% of internship students, 9.50% of Postgraduate students and 3% of speciality dental practitioners have said dull regional pain. 18.50% of postgraduate students and 2.50% of speciality dental practitioners have told it as sharp shooting pain. 4.50% of Postgraduate students have replied as localised tenderness in firm bands of muscles and 13% of postgraduate students, 4% of FDS Students, 8.50% of general dental practitioners and 3% of speciality dental practitioners have replied as reduction in pain with local anaesthetic injections into the muscles and the results are statistically significant [Chi-square value- 16.327; $p = 0.001 (< 0.05)$]. PG students answered sharp shooting pain as the diagnostic criteria, UG students replied pain on palpation of three or more muscles sites as the diagnostic criteria and the dental practitioners replied that reduction in pain with local anaesthetic injections into the muscles as the diagnostic criteria for myofascial pain.

anterior disc displacement with reduction was assessed. 10% of males and 10% of females replied clicking or pop, 12.50% of males and 20% of females replied crepitus, 10% of males and 9.50% of females answered reproducible joint sounds, 2% of males and 18% of females replied varying the speed of mouth opening and 2.50% of males and 5.50% of females replied elimination of joint sounds on protrusion and the results were statistically significant [p<0.05]. Both males and females answered crepitus as an important finding for ADDWR. Significant number of females also replied point of deviation altered by varying the speed of mouth opening as important diagnostic criteria. 32.5% of the participants reported crepitus as the most commonly presenting symptom for diagnosis of anterior disc displacement with reduction.

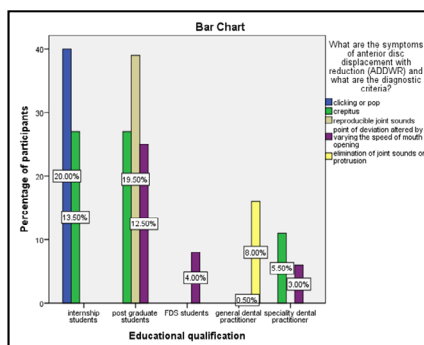
20% of internship students replied clicking or pop, 13.50% of internship and postgraduate students and also 5.50% of speciality dental practitioners replied crepitus, 19.50% of postgraduate students answered reproducible joint sounds, 12.50% of postgraduate students, 4% of FDS students and 3% of speciality dental practitioners answered varying the speed of mouth opening and 8% of general dental practitioners replied elimination of joint sounds on protrusion and the results were statistically significant [Chi-square value- 19.109; p =0.004 (<0.05)]. Majority of PG students answered reproducible joint sounds as the diagnostic criteria, UG students replied clicking or pop as the diagnostic criteria, general dental practitioners replied elimination of joint sounds on

protrusion and speciality dental practitioners answered that Point of deviation altered by varying the speed of mouth opening as the diagnostic criteria for anterior disc displacement with reduction [Figure 10].

Knowledge of the participants regarding the diagnostic criteria for osteoarthritis was assessed. 11% of males and 14.5% of females replied crepitus, 11% of males and 15% of females answered clicking, 8% of males and 7% of females replied joint pain on lateral position, 3.50% of males and 11.50% of the females answered painless joint movements and 3.50% of males and 7% females replied soft end feel and the results were statistically significant [p<0.05]. Males and females answered that both crepitus and clicking predominantly constitute the diagnostic signs for osteoarthritis. 25.5% of participants replied crepitus as the diagnostic sign for osteoarthritis.

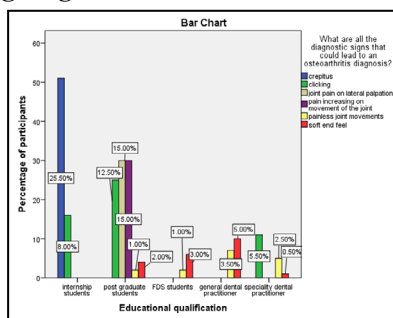
25.50% of internship students replied crepitus, 8% of internship students, 12.50% of postgraduate students and 5.50% of speciality dental practitioners answered clicking. 15% of postgraduate students answered joint pain on lateral position. 1% of postgraduate students and FDS students, 3.50% of general dental practitioners and 2.50% of speciality dental practitioners answered painless joint movements and 2% of postgraduate students, 3% FDS students, 5% of general dental practitioners and 0.50% of speciality dental practitioners replied soft end feel and the results were statistically significant [Chi-square value- 16.808; p =0.015

Figure 10. Bar graph depicting association between educational qualification of the participants and the knowledge regarding diagnostic criteria for anterior disc displacement with reduction.



20% of internship students have replied as clicking or pop, 13.50% of internship and postgraduate students and also 5.50% of speciality dental practitioners have replied as crepitus, 19.50% of postgraduate students have said reproducible joint sounds, 12.50% of postgraduate students, 4% of FDS students and 3% of speciality dental practitioners have said varying the speed of mouth opening and 8% of general dental practitioners have replied as elimination of joint sounds on protrusion and the results were statistically significant [Chi-square value- 19.109; p =0.004 (<0.05)]. Majority of PG students answered reproducible joint sounds as the diagnostic criteria, UG students replied clicking or pop as the diagnostic criteria, general dental practitioners replied elimination of joint sounds on protrusion and speciality dental practitioners answered that Point of deviation altered by varying the speed of mouth opening as the diagnostic criteria for anterior disc displacement with reduction.

Figure 11. Bar graph depicting association between educational qualification of the participants and the knowledge regarding diagnostic criteria for osteoarthritis.



25.50% of internship students have replied as crepitus. 8% of internship students, 12.50% of postgraduate students and 5.50% of speciality dental practitioners have told it as clicking. 15% of postgraduate students have replied as joint pain on lateral position. 1% of postgraduate students and FDS students, 3.50% of general dental practitioners and 2.50% of speciality dental practitioners have replied as painless joint movements and 2% of postgraduate students, 3% FDS students, 5% of general dental practitioners and 0.50% of speciality dental practitioners have replied as soft end feel and the results were statistically significant [Chi-square value- 16.808; p =0.015 (<0.05)]. Most of the PG students answered that joint pain on lateral palpation and pain increasing on movement of the joint as the diagnostic criteria for osteoarthritis, UG students and dental practitioners replied painless joint movements, soft end feel and clicking as the diagnostic criteria for osteoarthritis.

(<0.05)]. Most of the PG students answered that joint pain on lateral palpation and pain increasing on movement of the joint as the diagnostic criteria for osteoarthritis, UG students answered crepitus as the diagnostic criteria and dental practitioners replied painless joint movements, soft end feel and clicking as the diagnostic criteria for osteoarthritis [Figure 11].

Attitude of the participants regarding TMD were assessed. 32.50% of males and 43.50% of females have agreed that in the treatment for TMJ Disorders identifying and removing occlusal interference is effective, whereas 4.50% of males and 19.50% of females disagreed and the results were statistically significant [p<0.05]. Majority of male and female participants agreed that in the treatment for TMJ Disorders identifying and removing occlusal interference is effective. 76% of the participants agreed that in treatment of temporomandibular joint disorders, identifying and removing occlusal interferences is effective.

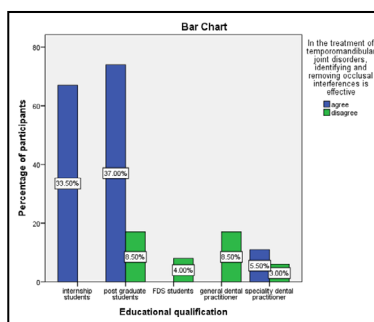
33.50% of internship students, 37% of postgraduate students and 5.50% of specialty dental practitioners have agreed that in the treatment for TMJ Disorders identifying and removing occlusal interference is effective, whereas 8.50% of postgraduate students, 4% of FDS students, 8.50% general dental practitioners and 3% of specialty dental practitioners disagreed and the results were statistically significant [Chi-square value- 9.024; p =0.002 (<0.05)]. Majority of the PG, UG students, and speciality dental practitioners agreed that in the treatment for TMJ Disorders identifying and removing occlusal interference is effective. Only general dental practitioners disagreed to it [Figure 12].

25% of males and 36.50% of females agreed that patients with TMD can undergo orthodontic treatment, whereas 12% of males and 26.50% of females disagreed and the results were statistically not significant [p>0.05]. Majority of male and female participants agreed that patients with TMD can undergo orthodontic treatment. 61.50% of the dental practitioners answered that patient with TMJ disorders can begin with orthodontic treatment. 33.50% of internship students, 22.50% of postgraduate students and 5.50% of specialty dental practitioners have agreed that patients with TMD can undergo orthodontic treatment, whereas 23% of postgraduate students, 4% of FDS students, 8.50% of general dental practitioners and 3% of speciality dental practitioners disagreed and the results were statistically not significant [Chi-square value- 1.826; p =0.115 (>0.05)]. Majority of the PG, UG students, and speciality dental practitioners agreed that patients with TMD can undergo orthodontic treatment. Only general dental practitioners disagreed to it [Figure 13].

20% of males and 20% of females have equally agreed that in the treatment of myofascial pain, relaxation training is an effective technique, whereas 17% of males and 43% of females have disagreed and the results were statistically significant [p<0.05]. Males agreed that in the treatment of myofascial pain, relaxation training is an effective technique, whereas most of the female participants disagreed. 60% of the participants disagreed that in treatment of myofascial pain, relaxation training is an effective technique.

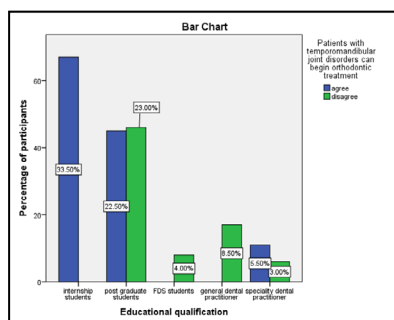
20% of internship students and 20% of postgraduate students have equally agreed that in the treatment of myofascial pain, relaxation training is an effective technique, whereas 13.50% of in-

Figure 12. Bar graph depicting association between educational qualification of the participants and their attitude regarding occlusal rehabilitation for TMD patients.



33.50% of internship students, 37% of postgraduate students and 5.50% of specialty dental practitioners have agreed that in the treatment for TMJ Disorders identifying and removing occlusal interference is effective, whereas 8.50% of postgraduate students, 4% of FDS students, 8.50% general dental practitioners and 3% of specialty dental practitioners disagreed and the results were statistically significant [Chi-square value- 9.024; p =0.002 (<0.05)]. Majority of the PG, UG students, and speciality dental practitioners agreed that in the treatment for TMJ Disorders identifying and removing occlusal interference is effective. Only general dental practitioners disagreed to it.

Figure 13. Bar graph depicting association between educational qualification of the participants and their attitude regarding orthodontic treatment for TMD patients.



33.50% of internship students, 22.50% of postgraduate students and 5.50% of specialty dental practitioners have agreed that patients with TMD can undergo orthodontic treatment, whereas 23% of postgraduate students, 4% of FDS students, 8.50% of general dental practitioners and 3% of specialty dental practitioners disagreed and the results were statistically not significant [Chi-square value- 1.826; p =0.115 (>0.05)]. Majority of the PG, UG students, and speciality dental practitioners agreed that patients with TMD can undergo orthodontic treatment. Only general dental practitioners disagreed to it.

ternship students, 25.50% of postgraduate students, 4% of FDS students, 8.50% of general dental practitioners and 8.50% of speciality dental practitioners have disagreed and the results were statistically significant [Chi-square value- 9.667; $p = 0.002 (<0.05)$]. Most of the UG students agreed that that in the treatment of myofascial pain, relaxation training is an effective technique, whereas majority of PG, general dental practitioners and speciality practitioners disagreed to it [Figure 14].

17% of males and 29.50% of females agreed that not all Individuals with joint sounds need to be treated whereas 20% of males and 33.50% of females have disagreed, however the results were statistically not significant [$p > 0.05$]. Most of the male and female participants disagreed and felt that all Individuals with joint sounds needs to be treated. 53.50% of the participants disagreed with the statement that not all individuals with joint sounds need to be treated.

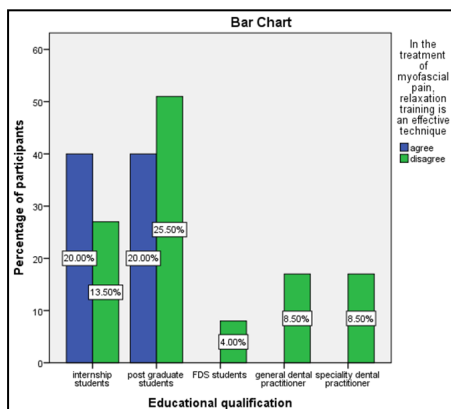
15.50% of internship students, 22.50% of postgraduate students and 8.50% of speciality dental practitioners have agreed that not all Individuals with joint sounds need to be treated whereas 18% of internship students, 23% of postgraduate students, 4% of FDS students and 8.50% of general dental practitioners have disagreed, however the results were statistically not significant [Chi-square value- 0.014; $p = 0.511 (>0.05)$]. Only the speciality dental

practitioners agreed that not all Individuals with joint sounds need to be treated, whereas most of the PG, UG students and general dental practitioners disagreed to it and felt that all Individuals with joint sounds needs to be treated [Figure 15].

29.50% of males and 26.50% of females agreed that there is no requirement for all TMD patients to have a radiographic examination prior to treatment formulation whereas 7.50% of males and 36.50% of females have disagreed and the results were statistically significant [$p < 0.05$]. Most of the males agreed that there is no requirement for all TMD patients to have a radiographic examination prior to treatment formulation, whereas majority of the female participants disagreed to it. 56% of the participants answered that there is no requirement of radiographic examination prior treatment formulation of all TMJ disorders.

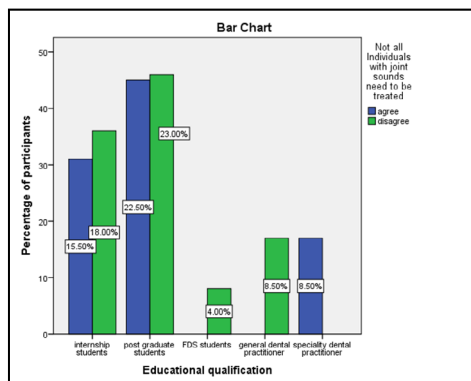
20.50% of internship students, 25% of postgraduate students, 4% of FDS students, 3.50% of general dental practitioners and 3% of speciality dental practitioners agreed that there is no requirement for all TMD patients to have a radiographic examination prior to treatment formulation whereas 13% of internship students, 20.50% of postgraduate students, 5% of general dental practitioners and 5.50% of speciality dental practitioners disagreed and the results were statistically significant [Chi-square value- 26.843; $p = 0.01 (<0.05)$]. Majority of the PG and UG stu-

Figure 14. Bar graph depicting association between educational qualification of the participants and their attitude regarding treatment for myofascial pain.



20% of internship students and 20% of postgraduate students are equally agreed that in the treatment of myofascial pain, relaxation training is an effective technique, whereas 13.50% of internship students, 25.50% of postgraduate students, 4% of FDS students, 8.50% of general dental practitioners and 8.50% of speciality dental practitioners have disagreed and the results were statistically significant [Chi-square value- 9.667; $p = 0.002 (<0.05)$]. Most of the UG students agreed that that in the treatment of myofascial pain, relaxation training is an effective technique, whereas majority of PG, general dental practitioners and speciality practitioners disagreed to it.

Figure 15. Bar graph depicting association between educational qualification of the participants and their attitude regarding treatment for TMD patients.



15.50% of internship students, 22.50% of postgraduate students and 8.50% of speciality dental practitioners have agreed that not all Individuals with joint sounds need to be treated whereas 18% of internship students, 23% of postgraduate students, 4% of FDS students and 8.50% of general dental practitioners have disagreed, however the results were statistically not significant [Chi-square value- 0.014; $p = 0.511 (>0.05)$]. Only all of the speciality dental practitioners agreed that not all Individuals with joint sounds need to be treated, whereas most of the PG, UG students and general dental practitioners disagreed to it and felt that all Individuals with joint sounds needs to be treated.

dents agreed that there is no requirement for all TMD patients to have a radiographic examination prior to treatment formulation, whereas most of the dental practitioners disagreed to it [Figure 16].

Confidence level of the participants in diagnosing TMDs, making therapeutic decisions, and evaluating treatment outcomes were assessed. 16% of males and 24.50% of females replied '0 - no confidence', 19% of males and 28% of females answered '1-little confidence', whereas 2% of males and 10.50% of females answered '2-full confidence', however the results were statistically not significant [$p > 0.05$]. Most of the male and female participants replied that they had little or no confidence in diagnosing TMDs, making therapeutic decisions, and evaluating treatment outcomes. 47% of the participants answered that they have little confidence in diagnosing TMJ disorders, making therapeutic decisions and in evaluating treatment outcomes.

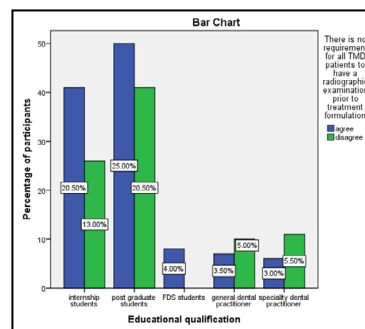
16.50% of internship students, 21.50% of postgraduate students, 2% of general dental practitioners and 0.50% of speciality dental practitioners replied '0 - no confidence', 17% of internship students, 19.50% of postgraduate students, 5.50% of general dental practitioners and 5% of speciality dental practitioners answered '1-little confidence' whereas 4.50% of postgraduate students, 4% of FDS students, 1% of general dental practitioners and 3% of speciality dental practitioners answered '2-full confidence', however the results were not statistically significant [Chi-square value-

5.421; $p = 0.114 (>0.05)$]. Most of the PG and UG students and general dental practitioners replied that they had little or no confidence in diagnosing TMDs, making therapeutic decisions, and evaluating treatment outcomes. In contrast majority of the speciality dental practitioners and some of the PG students replied that they had full confidence in diagnosing TMDs, making therapeutic decisions, and evaluating treatment outcomes [Figure 17].

Practices of the participants regarding TMD were assessed. 17.50% of males and 29% of females provided medical treatment to TMD patients and 19.50% of males and 34% of females did not provide medical treatment, however the results were statistically not significant [$p > 0.05$]. Thus, a proportion of male and female participants did not provide medical treatment to their TMD patients. 53.50% of the participants replied that they did not provide medical treatment to their patients with TMD.

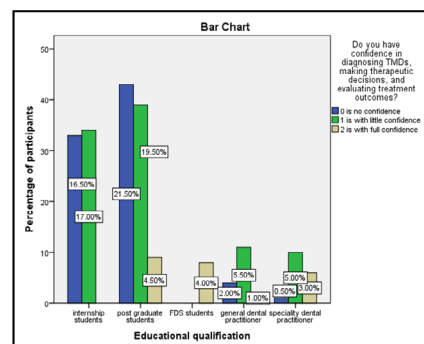
16.50% of internship students, 22% of postgraduate students, 2.50% of general dental practitioners and 5.50% of speciality dental practitioners provided medical treatment to TMD patients and 17% of internship students, 23.50% of postgraduate students, 4% of FDS students, 6% of general dental practitioners and 3% of speciality dental practitioners did not provide medical treatment, however the results were statistically not significant [Chi-square value- 0.030; $p = 0.489 (>0.05)$]. Most of the participants offered medical treatment to TMD patients especially the speciality dental practitioners. However, a slightly higher propor-

Figure 16. Bar graph depicting association between educational qualification of the participants and their attitude regarding radiographic evaluation for TMD patients.



20.50% of internship students, 25% of postgraduate students, 4% of FDS students, 3.50% of general dental practitioners and 3% of speciality dental practitioners agreed that there is no requirement for all TMD patients to have a radiographic examination prior to treatment formulation whereas 13% of internship students, 20.50% of postgraduate students, 5% of general dental practitioners and 5.50% of speciality dental practitioners disagreed and the results were statistically significant [Chi-square value- 26.843; $p = 0.01 (<0.05)$]. Majority of the PG and UG students agreed that there is no requirement for all TMD patients to have a radiographic examination prior to treatment formulation, whereas most of the dental practitioners disagreed to it.

Figure 17. Bar graph depicting association between educational qualification of the participants and their confidence in diagnosing and treating patients with TMD.



16.50% of internship students, 21.50% of postgraduate students, 2% of general dental practitioners and 0.50% of speciality dental practitioners replied as '0 - no confidence', 17% of internship students, 19.50% of postgraduate students, 5.50% of general dental practitioners and 5% of speciality dental practitioners have said '1-little confidence' whereas 4.50% of postgraduate students, 4% of FDS students, 1% of general dental practitioners and 3% of speciality dental practitioners have replied as '2-full confidence', however the results were not statistically significant [Chi-square value- 5.421; $p = 0.114 (>0.05)$]. Most of the PG and UG students and general dental practitioners replied that they had little or no confidence in diagnosing TMDs, making therapeutic decisions, and evaluating treatment outcomes. In contrast majority of the speciality dental practitioners and some of the PG students replied that they had full confidence in diagnosing TMDs, making therapeutic decisions, and evaluating treatment outcomes.

tion of PG, UG students and general dental practitioners did not offer medical treatment to their TMD patients [Figure 18].

21.50% of males and 24% of females agreed that their practice area requires more experts in the field of temporomandibular joint disorders whereas 15.50% of males and 39% of females disagreed and the results were statistically significant [p<0.05]. Most of the male participants agreed that that their practice area requires more experts in the field of temporomandibular joint disorders, whereas majority of females disagreed to it. 54.50% of participants thought that their practice area does not require more experts in the field of TMJ disorders.

14% of internship students, 23% of postgraduate postgraduate students and 8.50% of speciality dental practitioners agreed that their practice area requires more experts in the field of temporomandibular joint disorders whereas 19.50% of internship students, 22.50% of postgraduate students, 4% of FDS students and 8.50% of general dental practitioners have disagreed and the results were statistically significant [Chi-square value- 7.530; p =0.005 (<0.05)]. Speciality dental practitioners and most of the PG students agreed that that their practice area requires more experts in the field of temporomandibular joint disorders, whereas majority of general dental practitioners and UG students disagreed to it [Figure 19].

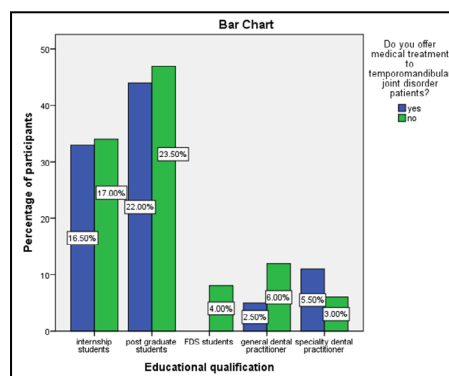
10% of males and 33% of females replied that they keep themselves updated with the knowledge about TMD whereas 27% of males and 30% of females were not updated and the results were statistically significant [p<0.05]. Most of the female participants kept themselves updated about the knowledge of TMD compared to males. 57% of the respondents were not updated about TMJ disorders on a regular basis.

18% of internship students, 16.50% of postgraduate students and 8.50% of speciality dental practitioners replied that they keep themselves updated with the knowledge about TMD whereas 15.50% of internship students, 29% of postgraduate students, 4% of FDS students and 8.50% of general dental practitioners were not updated and the results were statistically significant [Chi-square value- 12.227; p =0.01 (<0.05)]. Speciality dental practitioners and most of the UG students kept themselves updated about the knowledge of TMD, whereas general dental practitioners and majority of PG students were not updated [Figure 20].

Discussion

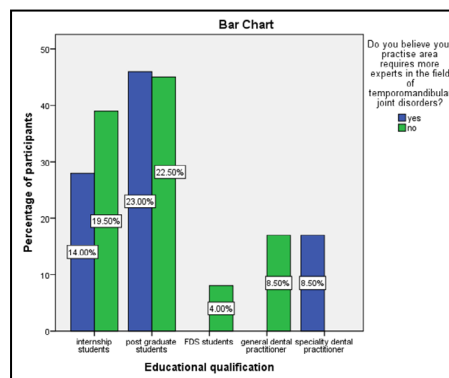
Our study was done to assess the knowledge, attitude and practices regarding TMD among dental practitioners and students. This will help in understanding the existing deficits and problems thereby taking measures to solve them which will improve the standard of care for TMD patients. In a study, 84% of partici-

Figure 18. Bar graph depicting association between educational qualification of the participants and their medical management for TMD patients.



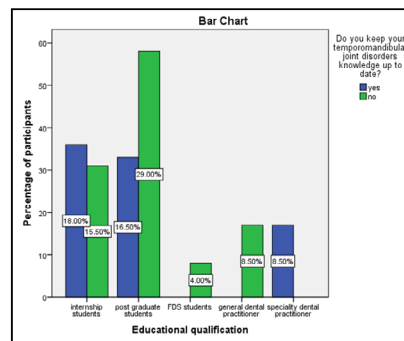
16.50% of internship students, 22% of postgraduate students, 2.50% of general dental practitioners and 5.50% of speciality dental practitioners provided medical treatment to TMD patients and 17% of internship students, 23.50% of postgraduate students, 4% of FDS students, 6% of general dental practitioners and 3% of speciality dental practitioners did not provide medical treatment, however the results were statistically not significant [Chi-square value- 0.030; p =0.489 (>0.05)]. Most of the participants offered medical treatment to TMD patients especially the speciality dental practitioners. However a slightly higher proportion of PG, UG students and general dental practitioners did not offer medical treatment to their TMD patients.

Figure 19. Bar graph depicting association between educational qualification of the participants and the need for TMD experts in their practice area.



14% of internship students, 23% of postgraduate postgraduate students and 8.50% of speciality dental practitioners agreed that their practice area requires more experts in the field of temporomandibular joint disorders whereas 19.50% of internship students, 22.50% of postgraduate students, 4% of FDS students and 8.50% of general dental practitioners have disagreed and the results were statistically significant [Chi-square value- 7.530; p =0.005 (<0.05)]. Speciality dental practitioners and most of the PG students agreed that that their practice area requires more experts in the field of temporomandibular joint disorders, whereas majority of general dental practitioners and UG students disagreed to it.

Figure 20. Bar graph depicting association between educational qualification of the participants and their practices towards updating knowledge about TMD.



18% of internship students, 16.50% of postgraduate students and 8.50% of speciality dental practitioners replied that they keep themselves updated with the knowledge about TMD whereas 15.50% of internship students, 29% of postgraduate students, 4% of FDS students and 8.50% of general dental practitioners were not updated and the results were statistically significant [Chi-square value- 12.227; $p=0.01$ (<0.05)]. Speciality dental practitioners and most of the UG students kept themselves updated about the knowledge of TMD, whereas general dental practitioners and majority of PG students were not updated.

pants were general dental practitioners [13] whereas in our study it 8.50% were general dental practitioners and 8.50% were specialty dental practitioners. In our study, 22.5% of undergraduate students replied that pain in the preauricular region as the common clinical manifestation in TMD, which is in accordance to a study in which it was reported that patients consult dentists for TMJ disorders which manifests as facial pain [14]. A study conducted among dentists in Tehran, Iran regarding the knowledge, awareness and practice of TMJ disorders revealed that 25% of the dentists had a fair level of knowledge towards TMJ disorders. Nearly 80% of the dentists have used external sources for developing their knowledge in the field of temporomandibular joint disorders [15]. In our study, 43% of the participants were updated with knowledge regarding temporomandibular joint disorders.

An institutional survey for knowledge based and self-awareness assessment about Temporomandibular Disorders was conducted among dental students in which 26.72% of the students replied that TMJ sounds as the most commonly seen symptom [16], whereas in our study only 10.50% of the participants answered that jaw sounds can be noticed in internal derangement [TMD]. A knowledge assessment about temporomandibular joint disorders was done among Mexican dental educators, in which gender distribution was 55% females and 45% males [17]. In our study, it was 63% females and 37% males. 68% of the educators had adequate knowledge on temporomandibular joint disorders in their study [17], whereas in our study 70% of the participants had good knowledge. A study was done among general dentists about knowledge of temporomandibular joint disorders in children and adolescents in which 65% of the general dental practitioners replied that children's and adolescents are most commonly affected by temporomandibular joint disorders [18], whereas in our study it was 38%. A study was conducted on the impact of dentists' years since graduation on management of temporomandibular joint disorders in which 55.6% of the dentists had good knowledge [19], whereas in our study it was only 36%.

Despite the high prevalence of TMD, the assessed group of dental students had fair/moderate levels of knowledge. 63% of the participants were aware about TMJ disorders whereas only 43% of the participants had a habit of updating their knowledge about TMJ disorders. Although dental practitioners especially speciality dental practitioners had good practices towards patients with TMD, it still needs to be improved. In our study female participants had good levels of knowledge and positive attitude towards

TMD than the male participants.

Disorders other than TMD can manifest as facial or ear pain, as well as headaches. For most cases of TMJ pain, a thorough history and physical examination, as well as basic laboratory tests such as blood counts, kidney and liver function tests, and sedimentation rate, can help locate the lesion [20]. The majority of patients with TMJ pain respond well to treatment, but a small percentage of patients develop refractory or persistent TMD [21]. Chronic TMD is not linked to any known risk factors. Recent research has linked heightened sympathetic tone to chronic TMJ pain. There were not many complications reported. It is recommended to consult an oral maxillofacial surgeon (OMFS) for TMD refractory to noninvasive or minimally invasive treatments such as intra articular injections, trigger point injections, or botulinum toxin injections and any structural abnormalities [22]. The majority of structural abnormalities can be diagnosed with imaging. Arthroscopy, arthrocentesis, reconstructive jaw procedures, discectomy, and condylotomy are some of the surgical techniques used. TMD is one of the most perplexing and difficult problems to solve in clinical dentistry [23]. Pain is, without a doubt, the most prominent and perplexing TMD symptom, which is frequently accompanied by a limited range of mandibular motion.

The primary goal of TMD treatment is to control pain. Improvement and restoration of acceptable mandibular function are likely once pain control is achieved [24]. To arrive at a diagnosis, a thorough history and physical examination are required. Most patients with TMD require a combined approach of both pharmacologic and non-pharmacologic measures to help reduce suffering and alleviate the most severe symptoms of TMJ disorder, so communication and collaboration between providers is critical. Primary care providers, dentists, oral surgeons, physical therapists, nurses, and pharmacists make up the interprofessional team [25]. Nurses frequently educate patients, monitor their responses, and keep the rest of the team informed about the patient's condition. Nurses can also act as a point of contact for other members of the interprofessional healthcare team [26]. Pharmacists give patients medication instructions, review dosing and side effects, and look for any potential drug interactions, as well as reporting any concerns to the team. Physical therapies, pharmacotherapy, dental remedies, and psychological support are all part of a biopsychosocial strategy that can help with TMD management and reduce the negative effects it has on one's quality of life and daily functioning [27].

Previously our team had conducted numerous clinical trials [28-33], and systematic reviews [34-36] regarding TMD over the past 5 years. Now we are focussing on epidemiological studies to evaluate the knowledge, awareness, attitudes and practices towards diagnosis and management of TMDs among the dental fraternity. Limitations of the study include small sample size and a small population covered. Future scope of this study would be to conduct a multi-centric trial among other parts of our country.

Conclusion

It can be concluded from this study that dental practitioners have good level of knowledge regarding temporomandibular disorders whereas dental students exhibited moderate levels of knowledge. Specialty dental practitioners had better knowledge than general dental practitioners. Post graduate students had better knowledge than the undergraduate and fellowship dental students. Both dental practitioners and dental students showed positive attitudes towards updating knowledge and management of temporomandibular joint disorders. Both general dental practitioners and dental students lacked confidence and had difficulties in treating the patients with temporomandibular disorders in their practice. Speciality dental practitioners exhibited excellent clinical practices for the TMD patients. Hence, this study emphasizes the need for improved education in the teaching curriculum for dental students regarding temporomandibular disorders. A standard protocol regarding the training for prevention, early diagnosis and treatment of temporomandibular disorders should be formulated for the dental students and the knowledge acquired must be transferred into practice. Continuing education programs and refreshing courses regarding temporomandibular joint disorders are necessary to update the knowledge of dental practitioners for improving the standard of care in their practice.

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