KAP SURVEY

Assessment of knowledge, attitude and practices of dental practitioners regarding temporomandibular joint disorders in India

Seema Patil¹, Asha R. Iyengar¹, Ramneek²

¹Department of Oral Medicine and Radiology, D A Pandu Memorial RV Dental College, Bengaluru, Karnataka, India; ²Dental Officer, ECHS Polyclinic, Patiala, Punjab, India

Abstract

Background: Temporomandibular joint disorders (TMDs) are one of the major causes of chronic orofacial pain affecting 28-86% of the population. The diagnosis of TMDs is challenging to a considerable number of practitioners and is influenced by their knowledge, attitude and experience.

Aim: This study aimed at assessing the knowledge, attitude and practices regarding TMDs among TMD experts and general dental practitioners (GDPs) in India.

Materials and Methods: A total of 200 dental practitioners (32 TMD experts and 168 GDPs) across India, registered under the Dental Council of India, were included in the survey. A questionnaire consisting of 21 issues with regard to TMDs was designed from relevant standard textbooks. The questionnaire was pretested for validation and distributed personally or through the web designed program. The knowledge and attitude scores of both the groups were assessed and compared. The therapeutic modalities practiced by the groups were also noted.

Results: A significant difference was found in the knowledge scores and attitude between TMD experts and GDPs. A significant correlation was found between attitude score and years of experience in both the groups. Both TMD experts and GDPs expressed little confidence in the management of TMDs. About 75% of GDPs expressed concern over an inadequate number of TMD experts.

Conclusion: Need for continued updating of knowledge, panel discussions, and revisions of the curriculum in graduate schools was realized.

Keywords
Dental practitioners, knowledge, attitude and practice survey, temporomandibular joint disorders

Introduction

Temporomandibular joint disorders (TMDs) encompass several clinical conditions that involve the masticatory musculature, temporomandibular joint and associated structures or both.¹ TMDs have periodically been a focus of interest among researchers. Current data indicate that TMDs account for the most common orofacial pains of musculoskeletal origin, affecting 28-86% of the population.²

The diagnosis of TMDs can often be difficult and presents a challenge to considerable number of practitioners. The knowledge, attitude and experience of the dental practitioners influence the diagnoses and management. Further, sufficient knowledge and attitude can also break the cycle of continued referrals of patients.³

A few surveys have been performed across the world to assess the knowledge, attitude and practice (KAP) of dental practitioners with regard to TMDs. However, a PubMed search did not reveal the conduct of any research in India. Hence, this survey was aimed at assessing the KAPs regarding TMDs among experts of TMDs and general dental practitioners (GDPs).

Materials and Methods

A total of 200 dental practitioners across India, registered under the Dental Council of India were included in the survey. The participants consisted of 32 TMD experts (subject experts in the fields of Oral Medicine and Radiology, Oral and Maxillofacial Surgery and prosthodontia) and 168 GDPs (dental graduates and subject experts in other branches of
dentistry such as endodontia and periodontia, practicing general dentistry).

A questionnaire consisting of 21 issues with regard to TMDs was designed from relevant standard textbooks. The questionnaire consisted of 4 sections, namely, demographic, KAP. The demographic section comprised 5 questions (supplement). A separate question was included in the questionnaire to comprehend the opinion of dental practitioners regarding the adequacy of knowledge imparted on TMDs during under graduation. The section on knowledge consisted of 7 multiple choice questions covering 4 domains, namely, epidemiology, etiology, signs, and diagnoses of TMDs. The section on attitude consisted of 5 (agree/disagree) questions. The section analyzing practices of dentists regarding TMD had 4 descriptive questions with regard to medical management of TMDs, referral to psychologists/orthodontists, need for more experts in the field and methods of updating knowledge.

The questionnaire was pretested on 10% of the subjects (both TMD experts and GDPs) included in the survey. Pretesting was done with the purpose of validating the questionnaire. All the queries/suggestions put forth by the subjects were addressed, and necessary modifications were made in the questionnaire.

The modified questionnaire was distributed personally or through a specially created web designed survey. After the receipt of the responses, scoring was done as follows. In the knowledge section, a score of +1 was given for the correct answer, −1 for the incorrect answer and 0 for any unanswered question. The survey subjects were categorized as having low, fair, good or high level of knowledge based on their total score as follows:

- Score of 1-6: Low level of knowledge
- Score of 7-12: Fair level of knowledge
- Score of 13-18: Good level of knowledge
- Score of 19 and above: High level of knowledge.

The difference in the knowledge of TMD experts and GDPs was evaluated with the help of Chi-square test.

In the attitude section, a correct answer (answer consistent with standard text books) was given a score 1 and score 0 was awarded for an incorrect answer/unanswered question. The subjects were categorized as having negative, questionable and positive attitude, based on their total score as follows:

- Score of 0-2: Negative
- Score of 3-4: Questionable
- Score of 5.0 and above: Positive.

The difference in the attitude of TMD experts and GDPs was evaluated with the help of Chi-square test. The opinions of TMD experts differing with facts present in standard text books were noted. The difference of opinion between the TMD experts and GDPs was also noted. The attitude scores of both the groups were correlated with years of practice and level of education by Pearson’s correlation coefficient test. The answers to questions in the practice section were noted, and a descriptive analysis was done.

Results

Among the 200 dental practitioners, 84% were general dental practitioners and 16% were TMD experts. Most of the practitioners (60%) had an experience of <5 years, 23% had an experience of 5-10 years and 17% had more than 10 years of experience.

Around 84 of the survey subjects felt that adequate training with regard to TMDs was not provided during the graduation program.

The assessment of knowledge among TMD experts revealed that half of them (50%) had a high level of the knowledge and 9% had low levels of knowledge. On the contrary, 18% of GDPs had a high level of knowledge and 17% had low levels of knowledge. A statistically significant difference was found in the knowledge scores of TMD experts and GDPs (P = 0.0003) [Table 1].

A positive attitude regarding TMD diagnoses and management was observed in 41% of TMD experts while 53% had questionable and 6% experts had negative attitude. Negative attitude toward TMDs was observed in 26% of the GDPs, whereas 27% had questionable and 48% had positive attitude. There was a statistically significant difference between the attitude of the TMD experts and GDPs (P = 0.0404) [Table 2].

Further, in the attitude section, it was noted that most of the TMD experts and GDPs differed with regard to four factual statements mentioned in literature. About 66% of TMD experts opined that orthodontic treatment cannot be initiated in patients with TMDs. It was observed that 96.8% of TMD experts felt that relaxation technique was not effective in the management of myofascial pain. “About 75% of the experts were of the opinion that “all individuals with joint sounds require treatment.” Exactly 62% of the experts surmised that all patients should undergo radiographic evaluation before formulation of treatment [Table 3]. Disagreement was noted between TMD experts and GDPs on a few statements in the attitude section, more so with regard to the statement “relaxation technique is not effective in the management of TMD” [Table 3].
A significant correlation was found between attitude score and years of experience (P = 0.0406), however, no significant correlation was found between the level of education (graduate/post-graduate level) and attitude (P = 0.602).

The analysis of questions in the practice section revealed that 13% of the TMD experts reported complete confidence in treating patients with TMD and most, i.e., 87%, reported a little confidence. In the GDPs group, 34% reported a little and 66% no confidence. About 87.5% of TMD experts used pharmacotherapy as the most common therapeutic modality and 69% used heat therapy. About 73.9% of GDPs preferred correction of occlusal interference as the most common therapeutic modality and 62% used pharmacotherapy. Physical therapy was least practiced by both the groups [Figure 1].

Around 75% of GDPs expressed concern on inadequate number of TMD experts. Exactly 83% TMD experts reported that they do not update their knowledge on TMDs. About 18.7% TMD experts who updated themselves relied mostly on continuing dental education programs, one expert expressed interest in referring standard textbooks for updating knowledge. Only 15.2% of GDPs expressed interest in enhancing their knowledge and relied mostly on internet resources.

### Table 3: Distribution of survey subjects based on their response to statements in the attitude section

<table>
<thead>
<tr>
<th>Established facts in literature</th>
<th>TMD experts</th>
<th>GDPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthodontic treatment can be initiated in patients with TMDs</td>
<td>Disagree 66</td>
<td>Agree 34</td>
</tr>
<tr>
<td>Relaxation-training is an effective technique in the management of myofascial pain</td>
<td>Disagree 96.8</td>
<td>Agree 3.2</td>
</tr>
<tr>
<td>All individuals with joint sounds do not require treatment</td>
<td>Disagree 75</td>
<td>Agree 25</td>
</tr>
<tr>
<td>All subjects with TMDs need not undergo radiographic evaluation before formulation of treatment</td>
<td>Disagree 62</td>
<td>Agree 38</td>
</tr>
</tbody>
</table>

GDP: General dental practitioners, TMD: Temporomandibular joint disorders

### Discussion

In the present survey, it was evident that most of the experts had a good level of knowledge, whereas GDPs had low/fair level of knowledge regarding TMDs. Thus, a significant difference in the level of knowledge was observed between the two groups, especially with regard to diagnoses of TMDs such as myofascial pain dysfunction syndrome, osteoarthritis, and articular disc disorders. The results of this survey are in accordance with a survey by Resche et al., which revealed that GDPs have low levels of knowledge regarding pain physiology, diagnosis and treatment domain when compared to experts. Another survey by Just et al. found deficiencies in the knowledge levels of the GDPs group, particularly in the etiology domain.

The presence of low/fair knowledge among GDPs may be attributed to inadequate emphasis on TMDs in the undergraduate program in India, a concern which was also expressed by most of the participants in the survey. This is in accordance with a survey by Baharvand et al., conducted in Iran, wherein GDPs, specialists and academic experts reached a consensus regarding the inadequacy of undergraduate dental education on TMDs and orofacial pain. This emphasizes the need to develop and strengthen the under-graduate curriculum in this particular field.

In this survey, a positive attitude was found toward TMDs in most of the TMD experts and GDPs. Attitude in the survey sample was not influenced by level of education but was influenced by increase in years of practice.

It was noted in present the survey that TMD experts had a difference of opinion with certain established facts published in literature. Most of the TMD experts and GDPs felt that orthodontic treatment should not be initiated in TMD patients. Although conflicting reports have emerged in literature, the scale weighs toward a positive correlation between orthodontic treatment and decreased TMD signs and symptoms. A longitudinal survey of 210 subjects who were orthodontically treated with fixed appliances was conducted to evaluate the relation between orthodontic therapy and TMD symptoms. It was found that 17% of subjects reported symptoms before orthodontic treatment, whereas after orthodontic therapy, TMD symptoms were found in only 7% of the subjects.

Egermark and Thilander in a 10-year period longitudinal survey of 293 orthodontically treated children showed a gradual decrease of subjective symptoms. Varga in an analysis on orthodontic treatment and TMDs reported that orthodontic treatment could be initiated in subjects with symptoms such as painless clicking and deviation. He however concluded that jaw pain and dysfunction need to be treated before the initiation of the orthodontic therapy.

Most of the TMD experts disagreed with the statement mentioned in literature, “relaxation training is an effective therapeutic modality in the management of myofascial pain.” Methods such as autogenic training, meditation, progressive muscle relaxation, self-controlled relaxation, paced breathing, and deep breathing have been found to decrease sympathetic activity and produce comforting body sensations and decrease muscle tone.
Most of the TMD experts and GDPs opined that all joint sounds require treatment which is in conflict with scientific literature. The need of the treatment is largely based on pain and dysfunction. A long standing joint noise that is otherwise asymptomatic and consistent with anterior disc displacement does not require treatment.\textsuperscript{[13]}

Literature states that in most instances, a correct diagnosis of TMDs could be reached with the help of history and clinical findings and that imaging is of value only in selected cases and need not be considered as a part of the routine assessment. Moreover, diagnostic imaging has not proven to be valuable for directing treatment, predicting treatment outcome, and determining long-term prognosis.\textsuperscript{[13]} However, the results of the present survey revealed that most of the TMD experts and GDPs felt an absolute need for radiographic evaluation before formulation of the treatment.

Practice refers to the manner in which practitioners utilize their knowledge and attitude toward appropriate patient diagnosis and management.\textsuperscript{[14]} Surprisingly, a significant number of TMD experts as well as GDPs expressed a little or no confidence in managing TMD cases. This may be attributed to insufficient knowledge acquired by the GDPs during graduation. Furthermore, a lack of active participation in continuing education programs and reluctance in referring textbooks by both the groups in the survey may be responsible for these low levels of confidence.

A sizeable number of GDPs emphasized on the lack of sufficient number of TMD experts. This establishes the need for more TMD clinics in universities and private set-ups.

**Conclusion**

In the present survey, a good level of knowledge and positive attitude was noted in TMD experts, whereas low/fair levels of knowledge and negative attitude were found among the GDPs group. Most of the TMD experts and GDPs lacked confidence in managing TMDs. TMD experts did not agree with certain established facts in literature. This suggests a need for a continued updating of knowledge by TMD experts and increased interaction among them in the form of panel discussions. The current scenario may be improved by revision of the curriculum in graduate schools and more stress on TMDs in the post-graduate training courses. These are practical ways to strengthen the knowledge regarding TMDs. Organization and participation in continuing dental education programs should also be considered which would effect changes in attitude and improve the confidence among dentists.

**References**

1. Okeson JP. Management of Temporomandibular Disorders and Occlusion. 5\textsuperscript{th} ed. St. Louis: Mosby; 2003. p. 98.

Dear respondent,

We are conducting a survey titled “Knowledge Attitude and Practice” (KAP) survey: Assessment of knowledge, attitude and practice of dental practitioners regarding temporomandibular joint disorders in India.

In this survey, the knowledge, beliefs and practices of dental practitioners (both TMD experts and general dental practitioners) regarding temporomandibular joint disorders will be assessed. The objective of the survey is to determine the need for additional pain clinics, and continued education programmes for TMD experts and general dental practitioners.

We would be glad if you could help us by giving your valuable answers to the following survey questionnaire.

If you agree to participate please give your consent by signing the form. Your responses will be kept confidential. Thank you for your cooperation.

Signature:
Date:

**Questionnaire:**

Number________

Instructions: Please tick the appropriate answer in the corresponding boxes

1. Name (optional):

2. Gender (optional):
   - Male: 
   - Female: 

3. Professional qualification:
   - Graduate
   - Post-graduate

4. Area of specialization:
   - Oral medicine and radiology
   - Oral and maxillofacial surgery
   - Orthodontia
   - Prosthodontics
   - Periodontology
   - Endodontic and conservative dentistry

5. Years of experience:
   - Less than 5 years
   - 5-10 years
   - Greater than 10 years

6. According to your opinion what level of assessment knowledge is provided during graduation regarding TMD’s?
   - Little or no base (informational only)
   - Deep (diagnosis, treatment, control dysfunction)
Knowledge Section

Kindly add a tick mark in the boxes against the chosen answer. More than one box may be ticked.

7. The population most commonly affected by temporomandibular joint disorders is
   • Young individuals
   • Middle age individuals
   • Old individuals

8. Which of the following contribute to the aetiology of Temporomandibular joint disorders:
   • Emotional distress
   • Trauma to maxillofacial region
   • Bruxism
   • Abnormal body posture
   • Mouth breathing
   • Malocclusion
   • Genetics
   • Trauma from hyperextension
   • Associated with other musculoskeletal disorders

9. A subject with a temporomandibular joint disorder may present with the symptoms of:
   • Pain in preauricular region
   • Difficulty in mouth opening
   • Joint sounds
   • Joint lock
   • Muscle pain
   • Referred pain to cervical region
   • Altered pathway of mouth opening

10. Are you aware of the research and diagnostic classification (RDC criteria) of temporomandibular joint disorders?
    • Yes
    • No

11. What constitutes the diagnostic criteria of myofascial pain?
    • Pain on palpation of three or more muscle sites (trigger points)
    • Dull regional pain
    • Sharp shooting pain
    • Localized tenderness in firm bands of muscles
    • Reduction in pain with local anesthetic injections into the muscles

12. What are the diagnostic criteria for anterior disc displacement with reduction (ADDWR)?
    • Clicking or pop
    • Crepitus
    • Reproducible joint sounds
    • Point of deviation altered by varying the speed of mouth opening
    • Elimination of joint sounds on protrusion
13. What are the diagnostic signs which may lead to the clinical diagnosis of osteoarthritis?
- Crepitus
- Clicking
- Joint pain on lateral palpation
- Pain increasing on movement of the joint
- Painless joint movements
- Soft end feel

**Attitude Section**
Please tick in the box corresponding to either agree/disagree

14. Identification and removal of occlusal interferences is effective in the management of temporomandibular joint disorders
- Agree
- Disagree

15. Orthodontic treatment can be initiated in patients with temporomandibular joint disorders
- Agree
- Disagree

16. Relaxation-training is an effective technique in the management of myofascial pain
- Agree
- Disagree

17. All individuals with joint sounds do not require treatment
- Agree
- Disagree

18. All subjects with TMDs need not undergo Radiographic evaluation before formulation of treatment
- Agree
- Disagree

**Practice Section**
Please tick in the relevant boxes

19. Are you confident in diagnosing, making a therapeutic decision and assessing the treatment outcome of TMDs?
- 0 - No confidence
- 1 - Yes with little confidence
- 2 - Yes with full confidence

If the answer is 1 or 2, please answer further questions

**In your clinical practice:**

20. Do you provide medical management to the patients of temporomandibular joint disorders?
- Yes
- No
If yes: What modalities you use (more than one box may be ticked)

- Pharmacological management
- Heat and cold therapy
- TENS therapy
- Behavioural modification
- Occlusal interference correction
- Physical therapy
- Parafunctional habit correction

21. Do you feel the need for more experts in the field of temporomandibular joint disorders in the region of your practice?
- Yes
- No

22. Do you update your knowledge about temporomandibular joint disorders?
- Yes
- No

If yes, please tick the sources (more than one box may be ticked)

- Reference books
- Internet sources
- Continued educational programmes
- Short term courses