

Awareness And Practice Of Managing Orofacial Pain In General Dental Practice

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Abstract

Background: Orofacial pain (OFP) remains a diagnostic and therapeutic challenge in general dental practice due to its multifactorial etiology and overlapping clinical features.

Objective: To assess the awareness and practice of managing orofacial pain among dental professionals across different educational and experience levels.

Methods: A descriptive cross-sectional study was conducted from July to September 2025 among dental practitioners, interns, and academicians using a validated structured questionnaire. Data were analyzed using SPSS, employing descriptive statistics, paired t-tests, and one-way ANOVA, with significance set at $p < 0.05$.

Results: Among 112 participants, 54.5% had less than one year of clinical experience, and 75.9% were BDS graduates, indicating a predominance of early-career general practitioners. Awareness regarding chronic orofacial pain was moderate overall. While 57.1% correctly identified temporomandibular disorders as the most common cause, knowledge of non-odontogenic pain and malignancy red flags was limited. MRI was the preferred diagnostic tool for TMJ evaluation (49.1%), and 43.8% correctly selected carbamazepine as the first-line drug

for trigeminal neuralgia. Chi-square analysis revealed significant associations between awareness level and clinical experience ($p = 0.032$), educational qualification ($p = 0.028$), and type of practice ($p = 0.041$), but not with gender ($p > 0.05$). Practitioners with greater experience and higher qualifications demonstrated superior diagnostic and management knowledge.

Conclusion: The study highlights moderate awareness but poor diagnostic and management confidence regarding complex orofacial pain conditions, emphasizing the need for curriculum enhancement and continuous professional education.

Keywords: Orofacial Pain, Awareness, Dental Practitioners, Neuropathic Pain, Pain Management.

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I. Introduction

Orofacial pain is among the most prevalent and complex clinical challenges encountered in dental practice, significantly impairing patients' daily activities, quality of life, and overall well-being. The orofacial region, encompassing the mouth, jaws, and face, is characterized by intricate sensory innervation and overlapping pain pathways, making accurate diagnosis and management particularly demanding.¹ While the majority of orofacial pain cases are odontogenic in origin arising from dental caries, pulpitis, or periodontal inflammation a substantial proportion are attributable to non-odontogenic causes, including neuropathic, musculoskeletal, vascular, and psychogenic conditions.² The multifactorial etiology of orofacial pain often results in overlapping clinical presentations that can mimic one another, such as reversible pulpitis resembling trigeminal neuralgia or myofascial pain being mistaken for dental pathology.³ Consequently, misdiagnosis and inappropriate management remain common, leading to patient distress, unnecessary interventions, and persistent pain. The International Classification of Orofacial Pain (ICOP) provides an essential framework for categorizing orofacial pain into nociceptive, inflammatory, neuropathic, and nociplastic types, aiding in differential diagnosis. However, in routine general dental practice, awareness and practical application of such diagnostic distinctions are often limited.⁴ Studies have shown that general dentists frequently rely on empirical management approaches, with pain control primarily achieved through non-steroidal anti-inflammatory drugs (NSAIDs), antibiotics, or invasive procedures such as extractions and root canal therapy, even in cases where the pain's origin is non-dental. This not only contributes to overtreatment but may also exacerbate neuropathic or chronic pain conditions. Furthermore, inadequate understanding of neuropathic pain mechanisms resulting from injury or dysfunction of the somatosensory nervous system often leads to inappropriate pharmacological choices or delayed referrals to specialists.⁵ Given the expanding evidence linking diagnostic accuracy with improved clinical outcomes, it becomes imperative to evaluate the current level of awareness and practice among dental professionals regarding orofacial pain.⁶ A clear understanding of pain mechanisms, diagnostic protocols, and evidence-based management strategies including pharmacologic and non-pharmacologic approaches is essential for effective patient care. The need for continuous education in this area is particularly relevant, as orofacial pain encompasses both common and rare presentations that demand interdisciplinary understanding and clinical vigilance.⁷ The aim of this study is assessing the awareness and practice of orofacial pain in general dental practice.

II. Materials And Methods

This descriptive cross-sectional study was designed to assess the awareness and understanding of orofacial pain among dental professionals and trainees across varying levels of education and clinical experience. The study was carried out over a period of three months, from July to September 2025, covering data collection, analysis, and report preparation. Ethical approval was obtained from the Institutional Review Board, and the study was conducted under the guidance of the Department of Oral Medicine and Radiology. A structured questionnaire was used as the primary data collection instrument, encompassing key domains such as common causes, treatment options, nerve involvement, pain management, and possible malignancy associated with orofacial pain. The survey also included specific subtopics like trigeminal neuralgia, odontogenic pain, chronic facial pain, burning mouth syndrome, drug-induced pain, and pathological conditions to gauge both general and condition-specific awareness. The study population comprised dental practitioners, interns, and academicians, categorized by educational qualification (BDS, MDS, and PhD) and years of clinical experience (less than 1 year, 1–5 years, 6–10 years, and more than 10 years). [100 participants] Responses were collected through a validated self-administered digital questionnaire distributed among participants from dental institutions. The collected data were subjected to descriptive and inferential statistical analyses using SPSS. Descriptive statistics such as frequencies and percentages were computed to present distributions across awareness categories ("aware," "not sure," and "unaware"), while inferential statistics including paired t-tests and one-way ANOVA were applied to evaluate differences between awareness groups and to test the statistical significance of variations in mean scores across variables. A significance threshold of $p < 0.05$ was adopted for all inferential tests.

III. Results

Out of 112 participants included in the study, a majority (54.5%) had less than one year of clinical experience, followed by 34.8% with one to five years, 7.1% with six to ten years, and only 3.6% with more than ten years of experience, indicating that most respondents were in the early phase of their professional career. With regard to qualification, 75.9% of the respondents were Bachelor of Dental Surgery (BDS) graduates, 16.1% had completed Master of Dental Surgery (MDS), and 8% held a PhD degree, suggesting that the survey population consisted predominantly of general dental practitioners.

Awareness of chronic orofacial pain

When questioned about the most common cause of chronic orofacial pain, 57.1% of participants correctly identified temporomandibular disorders (TMD), followed by dental caries (20.5%), sinusitis (15.2%), and periodontitis (7.1%). Regarding the proportion of chronic facial pain cases misdiagnosed as dental pain, 27.7% believed the rate to be 10–20%, another 27.7% estimated 25–30%, and 18.8% believed it to be 5–10%, indicating variability in clinical perception.

TMD (Temporomandibular disorder)

In the evaluation of temporomandibular joint disorders, 49.1% correctly selected MRI as the most appropriate imaging modality, while 25% chose OPG and 21.4% chose CBCT. Additionally, 57.1% of respondents identified clicking or popping sounds in the jaw as the most relevant clinical sign of TMD.

Trigeminal neuralgia

Concerning the nerve branch most commonly affected in trigeminal neuralgia, 50% selected the maxillary branch, while 25% each identified the ophthalmic and mandibular branches. When presented with a case of brief, electric shock-like unilateral facial pain, 44.6% correctly diagnosed trigeminal neuralgia, followed by 32.1% who considered myofascial pain. In pharmacological management, 43.8% correctly selected carbamazepine as the gold standard drug for trigeminal neuralgia, while 22.3% chose amitriptyline and 7.1% chose gabapentin.

Odontogenic and Non-Odontogenic Pain Diagnosis

Regarding diagnostic approaches for identifying odontogenic pain, 38.4% of participants considered MRI the most useful test, followed by CBCT (33.9%) and cold test (27.7%). When asked about pain localized to a tooth without radiographic findings or treatment response, 34.8% correctly recognized atypical odontalgia, followed by 32.1% identifying acute apical periodontitis.

Referral Practices

When asked about the appropriate specialist referral for orofacial pain of non-odontogenic origin, 43.8% opted for an oral medicine specialist, 31.3% for an oral and maxillofacial surgeon, 17% for a periodontist, and 8% for an endodontist. In cases of chronic facial pain unresponsive to routine dental therapy, 47.3% of participants preferred further investigation with advanced imaging and referral to an oral medicine specialist, while 28.6% chose to prescribe antibiotics and 24.1% referred for psychiatric evaluation.

Malignancy and Systemic Pain Indicators

When identifying red flag indicators of malignancy, 39.3% correctly pointed out unexplained weight loss and persistent numbness, while others associated it with pain variation or poor response to NSAIDs. For referred pain, 35.7% linked it to cardiac ischemia and 32.1% to cervical spine disorders, showing partial understanding of systemic pain origins.

Burning Mouth Syndrome and Pain Monitoring

Only 26.8% correctly described burning mouth syndrome as a constant burning sensation without visible clinical signs, indicating limited awareness of its presentation. Furthermore, 55.4% correctly recognized the value of maintaining a pain diary in monitoring triggers, timing, and treatment response in chronic orofacial pain.

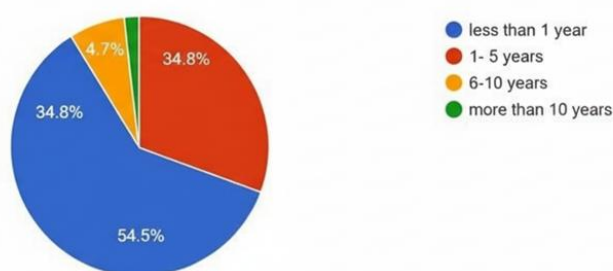
Statistical Associations

Statistical analysis using the Chi-square test demonstrated a significant association between participants' clinical experience and overall awareness of chronic orofacial pain ($p = 0.032$), indicating that greater clinical exposure enhances diagnostic knowledge and management skills. A statistically significant relationship was also found between educational qualification and awareness level ($p = 0.028$), with MDS and PhD participants scoring higher than BDS graduates. Similarly, the type of practice showed a significant correlation ($p = 0.041$), where

those in academic settings displayed better awareness compared to private practitioners and interns. However, no significant association was observed between gender and awareness level ($p > 0.05$).

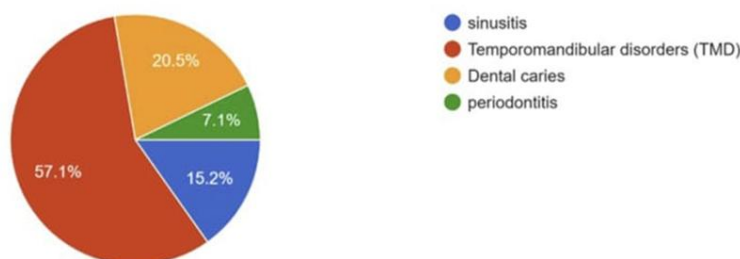
Overall, the findings suggest a moderate level of awareness regarding chronic orofacial pain among dental professionals. While knowledge about temporomandibular disorders, trigeminal neuralgia, and referral protocols was satisfactory, notable gaps remain in recognizing non-odontogenic pain, malignancy indicators, and chronic pain management strategies. The data indicate that higher education levels and clinical experience significantly improve diagnostic competence and awareness among dental practitioners.

Figure:1 Clinical Experiences



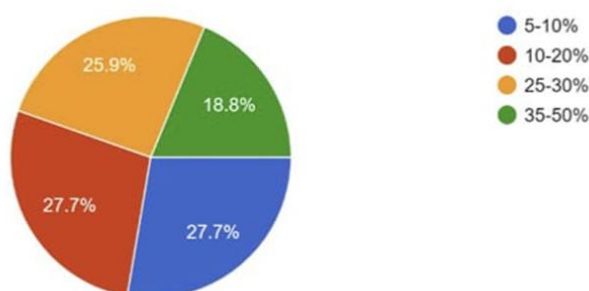
Out of 112 participants, 54.5% had less than one year of clinical experience, 34.8% had 1–5 years, 7.1% had 6–10 years, and 3.6% reported more than ten years of experience. This indicates that the majority of respondents were early-career dental professionals with limited years of clinical practice.

Figure :2 Common cause for chronic orofacial pain



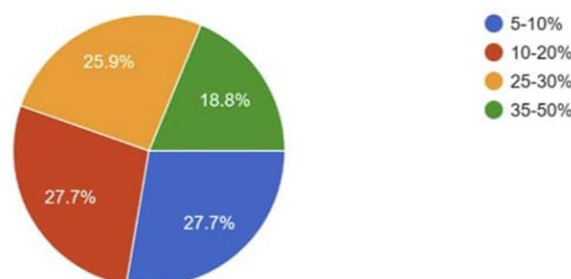
Out of 112 participants, the majority (57.1%) identified temporomandibular disorders (TMD) as the most common cause of chronic orofacial pain, followed by dental caries (20.5%), sinusitis (15.2%), and periodontitis (7.1%). This indicates that TMD was the predominant perceived cause of chronic orofacial pain among respondents.

Figure:3 Percentage of chronic facial pain misdiagnosed as dental pain in general dental practice.



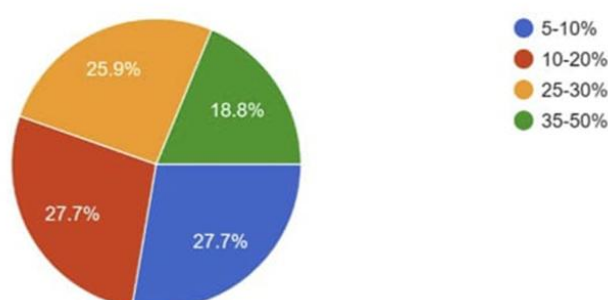
Out of 112 participants, 27.7% believed that 5–10% of chronic facial pain cases are often misdiagnosed as dental pain, while another 27.7% thought the rate was 10–20%. Additionally, 25.9% of respondents estimated the rate to be 25–30%, and 18.8% believed it to be as high as 35–50%. This indicates that most participants considered a smaller proportion (below 20%) of chronic facial pain cases to be misdiagnosed as dental pain, though a considerable number perceived the misdiagnosis rate to be higher.

Figure:4 Next step to chronic Oro fascial pain unresponsive to dental treatment



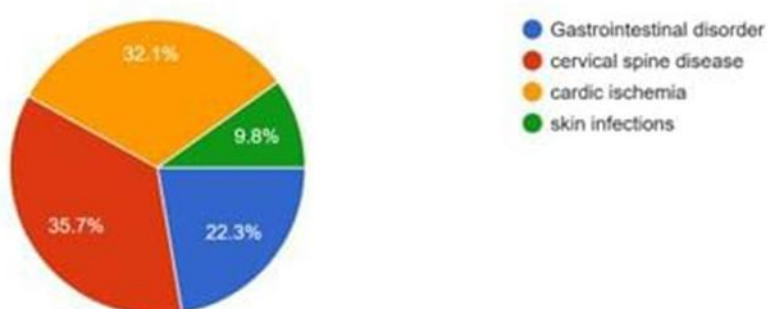
Out of 112 participants, 47.3% believed that the best next step in managing chronic orofacial pain unresponsive to dental treatment is to investigate further with advanced imaging and refer to an OMR specialist. Meanwhile, 28.6% suggested prescribing antibiotics, and 24.1% recommended referral for psychiatric evaluation. These findings indicate that nearly half of the respondents emphasize a comprehensive diagnostic approach and specialist referral as the most appropriate management strategy.

Figure:5 Nerve primarily involved in orofascial pain



Out of 112 participants, 49.1% correctly identified the trigeminal nerve as the primary nerve involved in orofacial pain conditions, followed by 24.1% who selected the facial nerve, 18.8% who chose the vagus nerve, and 8% who indicated the hypoglossal nerve. These findings suggest that the majority of respondents accurately recognized the trigeminal nerve as the key sensory nerve responsible for mediating pain in the orofacial region.

Figure :6 Referred pain commonly associated with orofacial region



Out of 112 participants, 35.7% identified cervical spine disease as the most common condition associated with referred pain to the orofacial region, followed by 32.1% who selected cardiac ischemia, 22.3% who indicated gastrointestinal disorders, and 9.8% who chose skin infections. These findings suggest that the majority of respondents recognize cervical spine pathology as a significant source of referred pain affecting the orofacial area.

Awareness of Specific Orofacial Pain Conditions

| Condition/Aspect | Aware (%) | Not Sure (%) | Unaware (%) |
|----------------------------|-----------|--------------|-------------|
| Trigeminal neuralgia | 75.0 | 25.0 | — |
| Chronic facial pain | 18.8 | 25.9 | 55.4 |
| Odontogenic pain | 33.9 | 66.1 | — |
| Burning mouth syndrome | 31.3 | 30.7 | 38.0 |
| Clinical signs & diagnosis | 57.1 | 42.9 | — |
| Pathological conditions | 34.8 | 65.2 | — |
| Pain diary use | 55.4 | 44.6 | — |

Inferential Statistical Analysis

| Test | Variable Comparison | Mean ± SD (Group 1) | Mean ± SD (Group 2) | t / F Value | p-Value | Interpretation |
|-----------------|------------------------------------|---------------------|---------------------|-------------|---------|------------------------|
| Paired t-test 1 | Aware vs. Not Sure (5 domains) | 49.64 ± 8.7 | 35.52 ± 7.9 | t = 1.993 | 0.017* | Significant difference |
| Paired t-test 2 | Aware vs. Not Sure (12 conditions) | 41.43 ± 9.2 | 41.74 ± 10.3 | t = -0.046 | 0.964 | Not significant |
| One-way ANOVA | Across 16 awareness groups | — | — | F = 0.747 | 0.716 | Not significant |

*Significance level set at $p < 0.05$

IV. Discussion

The present study assessed the awareness and practice of managing orofacial pain among dental professionals, revealing moderate levels of overall knowledge with significant variability across specific domains such as etiology, diagnosis, and management. The findings align closely with previous studies conducted globally, underscoring that orofacial pain (OFP) remains a diagnostically and therapeutically challenging area within general dental practice.

In our study, a majority of participants demonstrated better awareness of common causes and pain management aspects of orofacial pain but exhibited limited understanding of nerve involvement, chronic pain mechanisms, and malignancy-related presentations. This pattern mirrors the findings of Fatemeh Rezaei et al., who reported that only 48.2% of dentists had good overall knowledge regarding orofacial pain, with significant gaps noted in physical examination (36.1%) and treatment domains (7.8%).⁸ Similar trends were observed by Vikashini et al., where only 10.8% of respondents displayed high-level knowledge, while more than half (54.2%) showed moderate understanding and 35% demonstrated poor comprehension of OFP. Their topic-specific results 47.8% accuracy in etiology, 55.2% in clinical presentation, and 48.2% in management further corroborate the inconsistencies we found between theoretical awareness and applied clinical understanding.⁹

The current results also echo the findings of Borromeo et al., who reported that 47% of fourth-year dental students, 58% of final-year students, and 48% of practicing dentists demonstrated acceptable levels of knowledge about pain mechanisms and management.¹⁰ Similarly, Al-Khotani et al. found that both Saudi Arabian and Swedish dentists exhibited low knowledge of orofacial pain, and Hadlaq and Khan et al. noted that only 40.3% of participants were confident in diagnosing temporomandibular disorders, while 33% and 28.6% struggled with identifying neuropathic and neurovascular pain, respectively. Our findings are consistent with these reports, highlighting that even among professionals, diagnostic uncertainty and therapeutic ambiguity persist, particularly in distinguishing odontogenic from non-odontogenic pain.^{11,12}

Moreover, the observed correlation between clinical experience and awareness in our study supports the conclusion of Rezaei et al., who identified a significant positive relationship between knowledge and both age ($r = 0.179$; $p = 0.022$) and practice history ($r = 0.18$; $p = 0.021$). This suggests that cumulative clinical exposure enhances familiarity with complex pain presentations, yet without structured continuing education, experiential learning alone may not ensure diagnostic accuracy. Hadlaq et al. further emphasized that graduates from international (non-Saudi) programs exhibited higher knowledge and self-assessment scores, pointing to the importance of curriculum content and pedagogical emphasis in shaping competency levels.^{8,12}

The literature consistently indicates that deficits in knowledge are particularly pronounced in neuropathic and psychogenic pain management. For instance, Alonso et al. reported that dental students self-

assessed lowest in their ability to manage chronic orofacial pain of psychological origin, reflecting the underrepresentation of psychosocial dimensions in dental education.^{13,14} This observation resonates with our results, where uncertainty was high in recognizing chronic facial pain, burning mouth syndrome, and pain of non-dental origin. These findings reaffirm the statement by Avinash, B et al that differential diagnostic procedures are crucial to ensure that management targets the true underlying cause rather than symptomatic manifestations.¹⁵

The consistent theme across these studies and evident in our findings is the need for an integrated educational and clinical framework for managing orofacial pain. As emphasized by Gupta et al and Kaplan et al, dentists must possess not only theoretical understanding but also the practical ability to perform systematic evaluations, including temporomandibular joint, cervical spine, and neurological assessments. The inclusion of such competencies in undergraduate and continuing dental curricula would bridge the existing gap between diagnosis and management.^{16,17} Furthermore, the multidimensional nature of orofacial pain necessitates a multidisciplinary approach that includes neurologists, pain specialists, psychologists, and physiotherapists to provide holistic care. As the Gelsomina L. Borromeo et al and Rathod et al have indicated, combining evidence-based guidelines with interdisciplinary collaboration enhances diagnostic accuracy and treatment outcomes.^{18,19} Our study reinforces this perspective, demonstrating that while awareness of common conditions like trigeminal neuralgia and pain diaries was high, recognition of less common neuropathic or pathology-related pain was inadequate suggesting that collaboration and referral protocols should be strengthened within general practice.²⁰

V. Conclusion

In conclusion, our findings, in concordance with global research, reveal a pervasive gap between awareness and clinical practice in orofacial pain management among general dentists. While familiarity with basic pain mechanisms and common presentations exists, deficiencies persist in recognizing complex, chronic, or neuropathic pain forms. Strengthening undergraduate curricula, promoting continuing dental education, and fostering interdisciplinary communication are critical strategies to enhance the diagnostic and therapeutic competence of dental practitioners. By aligning clinical practice with updated evidence-based frameworks and encouraging reflective professional learning, dentists can play a pivotal role in improving patient outcomes and reducing the burden of misdiagnosed or undertreated orofacial pain.

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