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Knowledge, Attitude and Practice in Management of Atypical Odontalgia among Dentists

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ABSTRACT

Introduction
Atypical odontalgia (AO) is one of the representatives of medically unexplained oral symptoms (MUOS) and are often associated with neuropathic, vascular or psychiatric disorders. It is frequently misdiagnosed leading to unnecessary treatments. This study assesses knowledge, attitude, and practices regarding AO among dentists.

Methods
In this descriptive cross-sectional study, a set of 20 questions was developed and used. Pretesting was done on 10% of the sample (N=181), and necessary modifications were made. The final questionnaire was distributed via Google Forms, and 181 responses were collected. Data were analyzed using SPSS v20.

Results
Among 181 study participants, 176 (97.2%) actively practiced dentistry to date, and 129 (71.3%) encountered patients with atypical odontalgia. More than half of them, 104 (57.5%) used the term atypical odontalgia, followed by other terminologies like psychogenic pain (23, 12.7%) and chronic idiopathic pain (26, 14.4%). Most of them (93, 51.4%) thought that atypical odontalgia may be of neuropathic, psychological, or vascular in origin. At least once in every six months, or once during their practice, atypical odontalgia was encountered by 35 dentists (19.3%). Out of 181 dentists, 53 (29.3%) have confidence in the management of AO. However, most of them referred to an oral medicine specialist.

Conclusion
Although atypical odontalgia was commonly encountered in dental practices, notable gaps in attitude, knowledge and management or treatment practices was seen.

Keywords
Atypical odontalgia; chronic orofacial pain; comorbid factors; dental practitioners; psychiatric disorders

INTRODUCTION

In recent years, there has been an increase in chronic orofacial pain conditions without identifiable clinical or radiographic abnormalities.[1,2] Patients often present with persistent dental pain, burning sensations, or bite discomfort, despite no detectable pathology. These are now grouped under medically unexplained oral symptoms (MUOS), a term preferred over "oral psychosomatic disorders" due to psychogenic implications that patients often resist. MUOS includes conditions such as burning mouth syndrome (BMS), atypical odontalgia (AO), phantom bite syndrome (PBS), oral cenesthopathy, olfactory reference syndrome (ORS), and odontophobia. [3-5] Patients frequently undergo multiple invasive procedures with limited success.[3,4]

AO stands out among MUOS because of its idiopathic nature and significant physical and psychological burden. AO presents with persistent localized pain at extraction site or particular tooth, in absence of any known pathology. It is classified as a subtype of persistent idiopathic facial pain condition where symptoms often arise after initiation or completion of dental treatments.[5-9] Certain comorbid conditions like BMS, temporomandibular joint (TMJ) dysfunction, and chronic headaches have shown association with AO.[7,10] In case of nerve injuries, central or peripheral sensitization has also been reported.[7-9] These chronic pain conditions are predominantly found in females (80-90% of diagnosed cases) and most common in maxilla than mandible (8:2) and molar region compared to anterior area (5:3).[7] It occurs in 3-6% of post endodontic treatment cases and 12% reported persistent pain even after successful root canal treatment.[7-12]

Psychosomatic dentistry and its components are although recognized globally[1,4,10,2] awareness of AO remains limited in Nepal. Unlike countries like Japan where psychosomatic dentistry is an established specialty and is integrated, Nepalese clinicians often lack training in these chronic pain conditions.[2,3,7] Hence, this study aims to assess the knowledge, attitude, and practice regarding AO among dentists with an objective of emphasizing gaps and promoting the psychosomatic approaches in dental care.

METHODS

This is a descriptive cross-sectional study done on the basis of a set of 20 structured questions. Face validity of the questionnaire was assessed by the principal investigator herself while content validity was evaluated by the subject experts. A pretest was conducted on 10% of the target sample (N = 181; n = 19) in order to confirm reliability. The questionnaire was again redistributed to the same participants within a two weeks interval. The responses were collected and based on these responses; questions were modified in order to improve the clarity and relevance.

The modified questionnaire was digitized using Google Forms and was distributed randomly to dental practitioners across Nepal. The eligible participants were both general dentists and specialists from various disciplines with Nepal Medical Council (NMC) registration and who were actively practicing dentistry in Nepal. Dentists who were not currently practicing dentistry were excluded from the study. At the end of the study, a total of 181 responses were received that exceeded the minimum required sample size of 176, hence enhancing the reliability of the study outcomes.

A non-probability convenience sampling method was used to select the participants in the study. We calculated the sample size by using the following formula:

Sample size (n) = z^2pq/d^2

Where:

p = estimated proportion of dentists using the term "atypical facial pain" (126 out of 141 specialists) = 89.36%. [13]

q = 100 - p

d = margin of error = 5%

Z = standard score at 95% confidence level = 1.96

Substituting the values:

$n = (1.96)^2 \times 89.36 \times (100 - 89.36) \div (5)^2 \approx 146.10$

$= (1.96)^2 \times 0.8936 \times 0.1064 \div (0.05)^2$

$= 146$

Adding a 20% buffer for non-response,

20% of 146= 29.2

146+29.2=175.2≈176

The total sample size was adjusted to 176.

In this study, we used emails and social media platforms to invite the participants. The follow-up reminders were sent every 3-4 days using same platforms. At the end of 4 weeks, all the responses collected (181) were compiled, coded and entered into Microsoft Excel sheet. Statistical analysis was performed using SPSS version 20 software. Descriptive statistics including mean, standard deviation, frequency, and percentage were then calculated.

RESULTS

Out of 181 participants, 176 (97.2%) were actively practicing dentistry. Among the total respondents, the term atypical odontalgia was found to be the most frequently used term (104 participants; 59.1%)

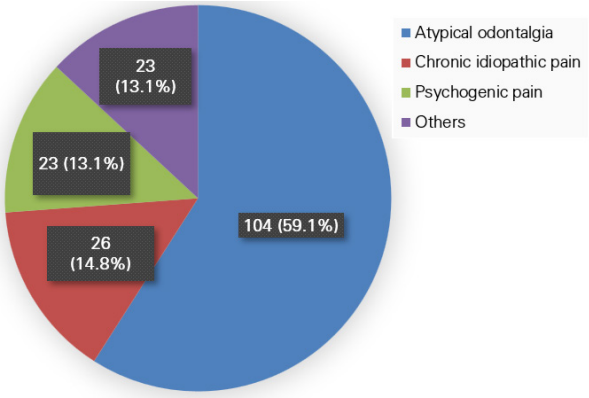

Figure 1. Terminologies used by practicing dentists (N=176)

to describe chronic pain conditions on orofacial region. This was followed by chronic idiopathic pain used by 26 participants (14.8%), while both psychogenic pain and other terms were reported by 23 participants each (13.1%) (Figure 1).

More than half of the participants (93, 52.8%) believed that atypical odontalgia could arise from a combination of neuropathic, psychological, and vascular origins. A smaller proportion attributed it to a single cause, neuropathic (43, 24.4%), psychological (29, 16.5%), or vascular (1, 0.6%). A few respondents either selected "others" (2, 1.1%) or indicated they were not sure (8, 4.5%) about its origin.

A significant majority (130, 73.9%) of the dental professionals reported having encountered cases of atypical odontalgia in their clinical practice. Among these cases, the most frequently reported chief complaint was pain (78, 60%), followed by burning sensations (23, 17.7%) and pain/burning sensations associated with comorbid factors (29, 22.3%) (Figure 2). .

When rating the overall symptom and their severity among patients, most dentists (60, 46.15%) categorized the symptoms as moderate. Others

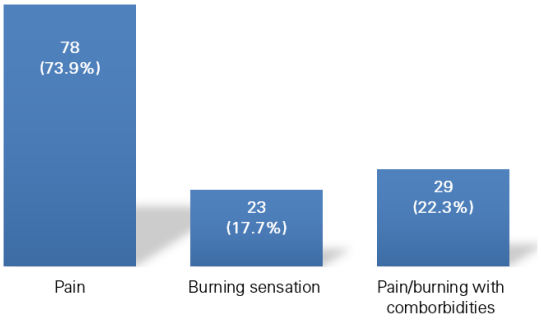

Figure 2. Chief complaints among encountered cases

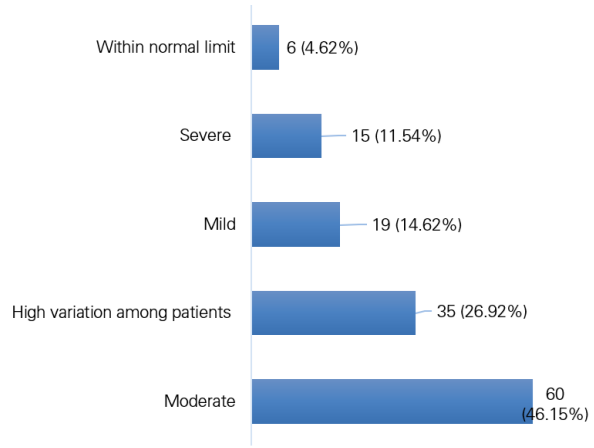

Figure 3. Intensity of symptoms by study participants who encountered AO (N=130)

reported high variation (35, 26.92%), or mild (19, 14.62%), severe (15, 11.54%), or within normal limits (6, 4.62%) of pain intensity among patient suffering from chronic pain conditions like AO (Figure 3).

Among the study participants, the predominance of atypical odontalgia was most frequently observed in females (86, 66.15%), with only a small proportion identifying a predominance in males (5, 3.85%). Regarding the affected region, the lower jaw (49, 37.69%) was more commonly reported than the upper jaw. Molars (83, 63.85%) were identified as the most commonly involved teeth, while premolars and incisors were less frequently mentioned (Figure 4 (a,b,c)).

Among 130 dentists, 67 (51.5%) reported an association between atypical odontalgia (AO) and prior dental treatment, followed by previous painful dental experiences (27, 20.8%), psychiatric treatment (23, 17.7%), and surgical treatment (13, 10%). Of those reporting AO and its association to dental treatment, 38 (56.7%) noted pain onset after the procedure, 18 (26.9%) before procedure and 11 (16.4%) reported spontaneous onset.

Among the 130 dentists surveyed, 48 (36.9%) reported no associated co-morbidity with atypical odontalgia (AO). However, several co-morbid conditions were identified by the remaining respondents, with headaches being the most frequently reported comorbid factor (36 participants, 27.7%), followed by burning mouth syndrome (29 participants, 22.3%) and temporomandibular joint disorders (TMJDs) (17 participants, 13.1%). Out of 120 respondents, the majority (67.5%, n = 81) perceived diagnosing atypical odontalgia as difficult, followed by moderately easy (17.5%, n = 21), very difficult (14.2%, n = 17), while only one participant (0.8%) rated it as very easy.

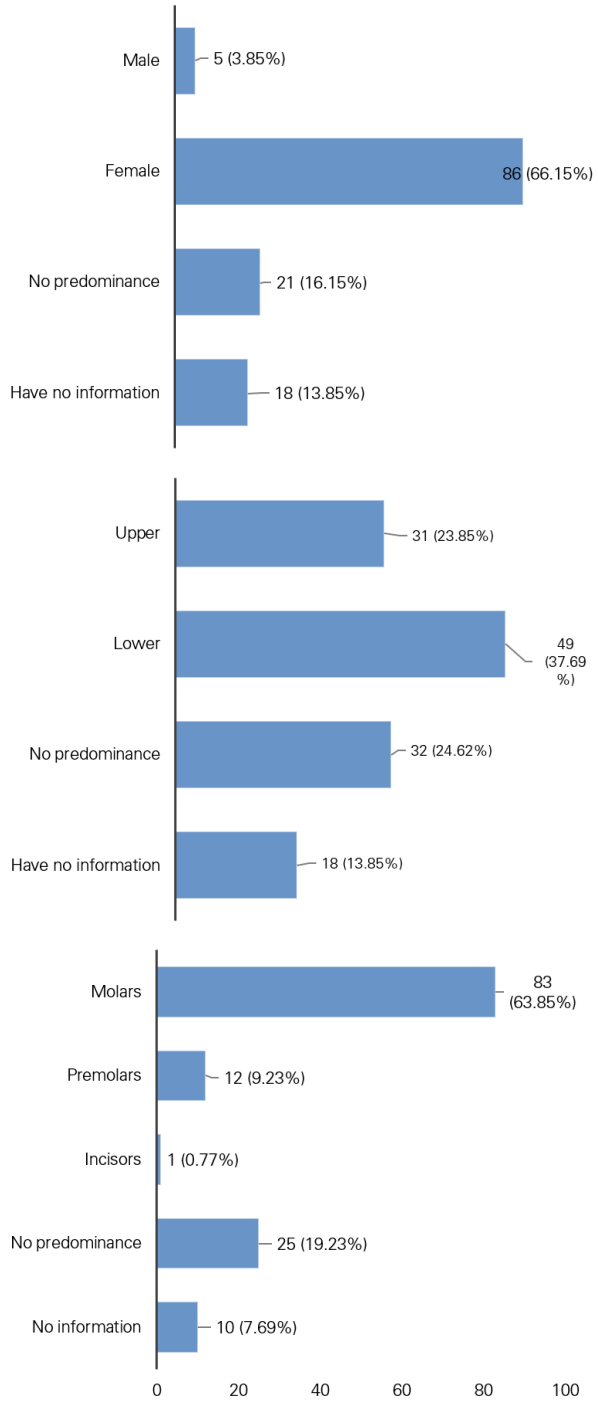

Figure 4. *Predominance of atypical odontalgia observed by study participants (n=130)* ***4a.*** *Sex wise distribution (n=130)* ***4b.*** *Jaw-wise distribution (n=130)* ***4c.*** *Tooth-wise distribution (n=130)*

A total of 130 participants responded to the question on diagnostic practices for atypical odontalgia, with 120 selecting multiple diagnostic tests. The most frequently used tests were the cold test, percussion test, intra oral periapical radiograph (IOPA), and bite test, each reported by 120 participants (92.3%). Cone beam computed tomography (CBCT) was used by 90 participants (69.2%), while the heat test and anesthetic test were employed by 97 (74.6%) and 80 (61.5%) respondents respectively. Surgical exposure was performed by 57 (43.8%) participants and 9 (6.9%) reported using hematological investigations. None of the participants reported of not using any diagnostic tools, signifying the fact that some tools were used. Among twenty nine participants who reported that they used psychological assessment methods for AO, 24.1% (n = 7) used the hospital anxiety and depression scale (HADS), 10.3% (n = 3) used the perceived stress scale (PSS) while 65.5% (n = 19) referred patients to a psychiatrist.

Among 130 participants who reported encountering the cases of atypical odontalgia in their practice, 53 (40.8%) managed the cases themselves while a larger proportion, 82 (63.1%), did not treat the patients directly. Among those who did not treat the condition directly (n = 82), chose to refer the patients. Variations exists while referring the cases as the majority, 68.3% (n = 56) referred the patients to an oral medicine specialist while 19.5% (n = 16) referred the cases to a pain specialist and 8.5% (n = 7) opted for referral to a psychiatrist. Moreover, a smaller proportion 2.4%, (n = 2) either did refer the patients anywhere or kept the patient under observation without treatment or referral (1.2%, n = 1). These findings suggest that although notable number of dentists prefers to manage cases of AO independently, most chose to refer the patients to either to Oral Medicine or Pain specialist. This fact highlights the clinical uncertainty as well as interdisciplinary nature required to manage these chronic pain conditions

Among 53 participants, who treated the cases of atypical odontalgia (AO) themselves, a multimodal approach was commonly used. The drugs that were commonly used by participants for the management of pain in AO includes potent analgesics and anti-inflammatory drugs (n = 50), neuralgic agents (n = 40), anti-anxiety (n = 27), antidepressants (n = 17), and anticonvulsants (n = 10). Some participants reported of providing procedures, with 47 dentists doing routine dental treatments and follow up, and 27 even performing extractions of the symptomatic tooth. These findings suggest that dentists used both pharmacological measures and procedures in the management of AO.

While talking about the durations of the treatment, dentists commonly took 1-3 months followed by 3 to 6 months (n = 10), 6 months to 1 year (n = 8), and 2 weeks to 1 month (n = 6) to treat the cases of AO. Treatment durations lasting more than 1 year, (n = 6), 2 weeks (n = 4), or 1 week (n = 2) has also been reported in a smaller number of participants. Moreover, two participants reported alternative durations also.

When talking about the treatment outcomes, 20 participants (37.7%) reported that the pain symptoms in patients with AO were reduced to a satisfactory tolerable level with 19 (18.9%) reported the complete remission of the symptoms. Twelve dentists (22.6%) noted slight but insufficient improvement while, 8 (15.1%) observed no change, and 3 (5.7%) reported worsening of the symptom after treatment. These findings are suggestive that although short term relief can be achieved with short term treatment but for an effective management of the symptoms of AO, prolonged multimodal management is needed.

DISCUSSION

This questionnaire based study tried to propose complete insight on chronic pain conditions like AO addressing the awareness, diagnostic practices and treatment approaches among dentists as AO is usually understudied outside high income countries.[14]

In accordance with prior studies, a significant proportion of participants (67.5%) found diagnosing AO to be challenging as it has been described as a condition with "nothing the matter", leading to multiple invasive treatments without relief of the symptoms.[15]Most of the participants showed high dependence on conventional neural sensitivity tests like thermal tests or electric pulp taste (EPT), bite and percussion tests and Intra Oral periapical radiograph (IOPA) and low utilization of neuropathic screening tools that is recommended in psychosomatic disorders like AO. Many dental practitioners perceived AO in association with prior dental treatment (51.5%). Practitioners also experienced varied progressive relations between dental treatment and the onset of pain, emphasizing that these facts, helped to underscore the complexity of AO as both a post-traumatic neuropathy and a psychosomatic disorder.

In our study we found that several comorbidities such as headaches (27.7%), Burning Mouth Syndrome (22.3%) and Temporomandibular Disorders (13.1%) frequently co-occur with AO. These findings are similar to existing literature which also indicates that the strong psychiatric correlation exists in approximately half of patients suffering from AO.[16]It has also been found that the use of formal psychological tools likes HADS and PSS were limited among the dental practitioners. Referrals to psychiatrists were prevalent which highlights both awareness as well as systemic gaps in psychosomatic integration in dental practice.[17]

The findings of this study showed that the participants often implemented multimodal treatment strategies, combining pharmacological and procedural interventions. This supports the systematic evidences that recognize antidepressants particularly tricyclic as first line agents along while adjunctive therapy with neuralgic agents, anticonvulsants, and NSAIDs also plays a crucial role.[18] However the continued use of invasive and irreversible dental treatments like extractions, multiple root canals although provide temporary relief will eventually lead to worsening of the symptoms.[18-19]The treatment durations in this study varied most frequently from 1-6 months which is similar to the timelines of other case literature, which ranges from weeks to years.[10, 12, 20] A recent systematic review highlighted the effectiveness of pharmacological agents like antidepressants, anticonvulsants, and analgesics in the effective management of the symptoms in atypical odontalgia cases, emphasizing that they are often used in case report and clinical observations.[20]

Although approximately 37.7% of the participants reported partial relief of the symptoms while 18.9% achieved complete remission, a notable percentage (20.8%) experienced limited or even worsening of the symptoms. These result is consistent with a seven-year follow-up study where, only a small fraction of patients with AO, achieved complete remission and about 1/3rd of the patients showed significant improvement.[21] These findings signify the chronic, treatment resistant nature of AO and emphasizes on the favorable but limited efficacy of current pharmacological drugs.[20,22,23]

While atypical odontalgia (AO) is well documented and familiar to practitioners in the United States, Denmark, Japan and other countries, our study found that dentists are generally less familiar with it. Due to lack of standardized diagnostic criteria, lack of sufficient knowledge and trainings on psychosomatic dentistry, clinicians are relying on trial and error strategies leading to multiple unnecessary irreversible invasive treatments. Such challenges have also been documented partly due to financial and systemic barriers.[23] In order to address these gaps, practitioners are advised to use established first line drugs like tricyclic antidepressants and neuralgic agents.[24] Additionally, incorporating brief psychological screening using standardized and inexpensive tools like HADS or PSS will help practitioners to streamline their referrals.

CONCLUSION

Although awareness on AO was seen among dentists, many still do not fully understand it or follow the evidence based management of the cases. Hence, they need focused education, regular trainings and clear guidelines to improve their skills in diagnosing and managing such cases. This will results in better results and avoidance of unnecessary treatments. Collaboration between dental institutions and professional bodies is thus crucial to address these gaps and endorse

best practices in managing chronic orofacial pain conditions like atypical odontalgia.

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CONFLICT OF INTEREST

The author(s) declare that they do not have any conflicts of interest with respect to the research, authorship, and/or publication of this article.

AUTHOR CONTRIBUTIONS

All authors contributed significantly to the development of this article. They participated in the conception and design of the study, data collection and analysis, and interpretation of the results. Each author was involved in drafting, reviewing, and refining the manuscript to ensure its accuracy and quality. All authors approved the final version of the article and take full responsibility for its content.

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