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Survey on Management of Trigeminal Neuralgia by Dental Professionals: A Questionnaire Based Study

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Abstract

Aims: Trigeminal Neuralgia (TN) is a neurological disorder characterized by severe facial pain, often mistaken for dental conditions. This survey aims to understand how dental professionals approach the diagnosis, management, and referral practices related to TN.

Objectives

- To assess the awareness and knowledge of dental professionals regarding the diagnosis and management of trigeminal neuralgia (TN).
- To evaluate the clinical approaches used by dental professionals in diagnosing TN and differentiating it from other orofacial pain conditions.
- To analyze the treatment modalities preferred by dental professional.
- To determine the challenges faced by dental professionals in diagnosing and managing TN in clinical practice.
- To assess the need for further education and training among dental professionals regarding TN to improve patient outcomes.

Methods: This cross-sectional study involves dentists who participate voluntarily through an online questionnaire. The questionnaire form contains demographic data, TN treatment, and diagnosis consisting of 15 questions.

Results: The survey highlights data of 150 dental professionals. While 54.8% were familiar with TN, only 33.1% had diagnosed cases. Key symptoms included sharp facial pain (93.2%) and pain triggered by touch/chewing (71.6%). Diagnosis relied on history, examination, and imaging (85.1%), with 35.8% referring

to neurologists. Management favored collaboration (47.6%), with Carbamazepine (82.2%) as the most known treatment. Challenges included inadequate training (61.4%) and diagnostic difficulty (51.7%). Most (72.8%) sought clinical guidelines, and 95.9% emphasized the dental role in TN, particularly in pain management (78.9%) and patient education (77.6%).

Conclusion: The survey highlights the crucial role of dental professionals in identifying and referring trigeminal neuralgia but reveals gaps in knowledge and confidence. Improved education, interdisciplinary collaboration, and standardized guidelines are essential for better patient outcomes.

Keywords: Dental professionals, Management, Trigeminal Neuralgia (TN).

Introduction

Trigeminal neuralgia (TN) is regarded as one of the most excruciating conditions an individual can experience. The pain is typically described as electric shock-like or lancinating, usually lasting only a few seconds but sometimes persisting for several minutes. Attacks may occur spontaneously; however, they are often triggered by tactile stimulation of the trigger zone, orofacial movements, or changes in temperature. The pain is predominantly unilateral, affecting one or more branches of the trigeminal nerve, most commonly the second or third division. These episodes rarely occur during sleep, and each attack is followed by a refractory period (lasting from seconds to hours) during which additional attacks cannot occur [3,4].The most recent International Headache Society (IHS) classification defines Classical TN (previously known as Idiopathic TN) as TN caused exclusively by neurovascular compression. It is further categorized into two subtypes: [1] Classical TN, purely paroxysmal, and [2] Classical TN with concomitant persistent facial pain, both of which will be discussed in this review. When TN-like pain is associated with an underlying pathology such as tumors, trauma, viral infections, or multiple sclerosis, it is classified as Secondary TN. While Secondary TN shares clinical similarities with Classical TN, it may exhibit distinctive or additional features. For example, TN linked to multiple sclerosis can present bilaterally, whereas TN associated with tumors frequently shows abnormalities in electro physiological tests, such as trigeminal brainstem reflex studies [5].The estimated annual incidence of TN ranges from 4 to 13 cases per 100,000 individuals [4]. Women are affected more frequently than men, with a male to-female ratio of approximately 1:1.7 [6]. Prevalence studies suggest a TN incidence rate between 0.03% and 0.3% in the general population [5]. The higher incidence in women may be partially attributed to their greater life expectancy compared to men. However, the exact pathophysiology of TN remains unclear. Among the various proposed mechanisms, the microvascular compression hypothesis is the most widely accepted, though the etiology and pathogenesis of TN remain subjects of ongoing debate [7–9].To facilitate early detection, the Trigeminal Neuralgia Questionnaire (TNQ)was developed, providing a structured tool for dentists to identify potential TN cases. Since no single symptom or test can definitively diagnose TN, a comprehensive understanding of pain characteristics is crucial for accurate screening. This study assesses the diagnostic utility of the TNQ and explores potential early detection strategies for TN to dental professionals, particularly from a neurosurgical perspective [2].

Material and Methods

This study is a cross-sectional questionnaire-based survey conducted among dental professionals to assess their knowledge, diagnostic approach, and management

strategies for trigeminal neuralgia (TN).The questionnaire consists of 15 questions covering demographic data, TN diagnosis, and treatment approaches. The survey targets 150 dental professionals. The survey will be distributed electronically (Google Forms) to dental professionals. The collected data will be analyzed statistically using software such as SPSS. Ethical approval obtained from the institutional ethics committee. Informed consent had taken from participants before data collection. Descriptive statistics (frequencies, percentages) summarized responses.

Results: A total of 150 participants responded to the survey. The survey results provide valuable insights into dental professionals' knowledge, experience, and challenges related to trigeminal neuralgia (TN). The majority of respondents had postgraduate education (56.7%), with a significant proportion specializing in Oral Medicine and Radiology (32.2%). Most participants had less than five years of experience(64.9%).Treatment approaches varied, with 48% directly managing TN and 32% adopting a collaborative approach (fig.1) .Regarding TN familiarity, 53.7% were very familiar, and 64.9% had diagnosed a patient with TN. Key symptoms such as sharp, shooting pain (93.4%) and pain triggered by touch or chewing (72.2%) were well recognized . Diagnosis relied primarily on patient history and clinical examination (both 85.4%), with MRI/CT scans used by 51.7%.

Table 1: Summary of calculations made for all variables

Questions	Responses (Count & Percentage)
Education Level	Graduate 85 (43.3%) Postgraduate 65 (56.7%)
Designation	General Dentist 23 (15.8%) Dental Intern 29 (19.9%) (MDS) Oral Medicine and Radiology 47 (32.2%) (MDS) Prosthodontics Crown and Bridge 12 (8.2%) (MDS) Oral and Maxillofacial Surgery 4 (2.7%) (MDS) Conservative Dentistry and Endodontics 7 (4.8%) (MDS) Periodontology 4 (2.7%) (MDS) Orthodontics and Dentofacial Orthopaedics 12 (8.2%)
	(MDS) Oral Pathology and Microbiology 6 4.1% (MDS) Pedodontology and Preventive Dentistry 1 (0.7%) (MDS) Public Health Dentistry 1 ()0.7%)
Years of Practice	Less than 5 years 96 (64.9%) 5-10 years 21 (14.2%) 10-15 years 2 (1.3%) More than 15 years 0 (0%)
Familiarity with Trigeminal Neuralgia	Very familiar 67 (53.7%) Somewhat familiar 80 (45%) Not familiar at all 2 (1.3%)
Have you diagnosed a patient with TN?	Yes 98 (64.9%) No 49 (32.5%) Not sure 4 (2.6%)
Key TN Symptoms	Sharp, shooting pain in the face 141 (93.4%) Pain triggered by touch or chewing 109 (72.2%) Unilateral pain 99 (65.6%) Numbness or tingling 43 (28.5%) Other 4 (2.6%)
Diagnostic Tools	Patient history 129 (85.4%) Clinical examination 129 (85.4%) MRI or CT scan 78 (51.7%) Referral to a neurologist 54 (35.8%) Other 0 (0%)
TN Management	Direct management (medications, nerve bloc) 72 (48%)

Approach	Referral to a neurologist 22 (14.7%) Collaborative management 48 (32%) Observation and monitoring 7 (4.7%) Medications and follow-up 1 (0.7%)
Familiar TN Treatments	Carbamazepine (Tegretol) 123 (82.6%) Gabapentin (Neurontin) 83(55.7%) Baclofen 37 (24.8%) Botox injections 17 (11.4%) Microvascular decompression surgery 27 (18.1%) Radiofrequency ablation 12 (8.1%) Other 4 (2.7%)
Challenges in Managing TN	Difficulty in diagnosing TN 79 (52.7%) Limited treatment options 76 (50.7%) Lack of specialized knowledge 97 (64.7%) Difficulty in patient referrals 38 (25.3%) Financial constraints 14 (9.3%)
Adequate Training in TN Management	Yes 31 (20.9%) No 91 (61.5%) Not sure 26 (17.6%)
Reasons for Specialist Referral (n=146)	Severe symptoms: 95 (65.1%) Unclear diagnosis: 83 (56.8%) Non-responsive to treatment: 80 (54.8%) Need for surgery/nerve block: 79 (54.1%)
Preferred Additional Training (n=147)	Clinical guidelines: 107 (72.8%) Workshops: 89 (60.5%) Case studies: 87 (59.2%) Online courses: 62 (42.2%)
Importance of Dental	Very important: 141 (95.9%)
Role in TN (n=147)	Somewhat important: 6 (4.1%) Not important: 0 (0%)
Role of Dental Professionals in TN (n=147)	Pain management: 116 (78.9%) Early identification/referral: 103 (70.1%) Collaborative care: 92 (62.6%) Patient education: 114 (77.6%)

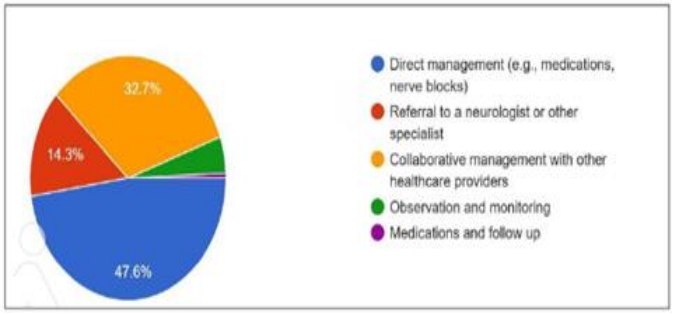

Figure 1: Dental Professionals approach to managing a patient with suspected Trigeminal Neuralgia

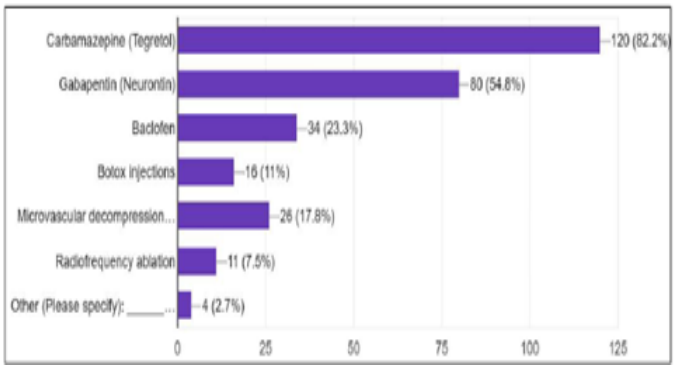

Figure 2: Medications or treatments dental professionals familiar with for managing Trigeminal Neuralgia.

Horizontal bar graph depicts that carbamazepine (82.2%) was the most familiar treatment (Fig.2). followed by Gabapentin (55.7%). Challenges included a lack of specialized knowledge (64.7%) and difficulty in diagnosis (52.7%). Only 20.9% felt they had adequate training in TN management, emphasizing the need for further education, particularly through clinical guidelines (72.8%) and workshops (60.5%).Dental professionals acknowledged their critical role in TN, with 95.9%considering it very important. Their main contributions included pain management (78.9%), early identification and referral (70.1%), and patient education (77.6%), highlighting the necessity for enhanced training and interdisciplinary collaboration.

Discussion

Trigeminal neuralgia (TN) is a rare and painful disorder that demands continuous treatment and often necessitates frequent neurosurgical interventions [14,26]. The first thorough description of TN was provided in 1773 by John Fothergill, who detailed the characteristic symptoms, including anxiety-induced paroxysms of unilateral facial pain, often triggered by activities such as eating, speaking, or touch [14,27]. TN remains primarily a clinical diagnosis, relying on a patient's history of sharp, sudden pain that occurs in paroxysms or as isolated sensations, with intervals of pain-free periods in

between. Ideally, patients should independently provide this description. However, many individuals suffering from facial pain find it challenging to articulate their experiences precisely. In these cases, the investigator should minimize prompts and provide descriptive adjectives to aid in capturing the patient's sensations [14,25].The data gathered from this cross-sectional, questionnaire-based study provided valuable insights into the knowledge and practices of dental professionals. Overall, it was observed that approximately 54.8% of participants had some familiarity with trigeminal neuralgia (TN), while 43.8% exhibited a solid foundational understanding of the disease's epidemiology, pathophysiology, and initial management [2,10,15]. TN is a rare and painful condition that demands continuous treatment and often necessitates frequent neurosurgical intervention [1,2,14]. While most types of pain can be temporarily alleviated, TN presents a unique challenge in that the affected area may become desensitized, yet the pain remains unresolved—unless nerve blocks are administered. In this study, 85.1% of dental professionals diagnosed TN primarily through patient history and clinical examination. Direct management was undertaken by 47.6% of participants, with 82.2% prescribing carbamazepine. Generally, most participants demonstrated a reasonable understanding of the disease's epidemiology, pathophysiology, and initial management. However, challenges emerged when attempting to establish stable pain control regimens. This difficulty led to a significant number of referrals to specialists. Our study found that MDS Oral Medicine &Radiology postgraduate students (31.5%) or specialists demonstrated a comprehensive understanding of TN diagnosis and management. This finding contrasts with Dossery, Faten, and Mutlaq et al., who discovered that, among 202dental practitioners, the majority were dental interns (96%), followed by oral maxillofacial surgeons (3%) and oral medicine specialists (1%) [15].The most significant challenge identified in our study was a lack of specialized knowledge (64.7%), followed by diagnostic difficulties (52.7%) and limited treatment options (50.7%). Additionally, 25.3% of respondents noted challenges in referring patients, indicating barriers to accessing specialized care. Only 20.9% of participants felt adequately trained in TN management, highlighting the need for enhanced education and training programs. As TN is a painful, uncommon condition that requires ongoing therapy and frequent neurosurgical intervention [26], it is essential for dental professionals to receive adequate training.TN remains a clinical diagnosis, typically based on the patient's history of sudden, sharp pain that appears in paroxysms or isolated episodes, separated by pain-free intervals. Ideally, the patient should provide this description. However, many individuals suffering from facial pain find it difficult to articulate their sensations accurately. In such cases, the investigator should limit prompts and provide descriptive adjectives to aid in diagnosis [25]

Limitations

The current study had limitations with respect to delayed response and lack of responsiveness towards the online survey on the part of those approached. In person surveys were submitted and collected within 1 week.

Conclusion

The survey findings indicate that while dental professionals play a crucial role in the early identification and referral of trigeminal neuralgia cases, there are notable gaps in knowledge and confidence in managing the condition. Enhanced educational programs and interdisciplinary collaboration with neurologists and pain specialists are essential to improving patient outcomes. The study underscores the importance of

continued professional development and the integration of standardized guidelines for the dental management of trigeminal neuralgia.

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