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Awareness and Knowledge of Burning Mouth Syndrome among Dental Practitioners and Students: A Cross-Sectional Survey Study

Dr. Gayathri P. S[1], Dr. Priya Ramani[2], Aashifa S[3], Adithya S. N[4], Abitha R[5], Dr. Sree Devi[6]
[1]Professor, [2]Professor and Head, [3, 4, 5]House surgeon, [6]Reader, Dr. MGR Educational and Research Institute

Abstract: ***Burning Mouth Syndrome (BMS) is a chronic oral pain disorder characterized by a burning sensation of the oral mucosa without visible lesions or underlying pathology. It affects predominantly peri- and post-menopausal women and has a multifactorial etiology involving neuropathic, hormonal, and psychological components. The present review and survey-based study aimed to assess awareness, clinical understanding, and management approaches related to BMS among dentalpractitioners and dental studends. A structured 15-item questionnaire was administered to 100 participants. Data were analyzed using descriptive statistics and chi-square tests. The results revealed a high level of awareness (77%) and understanding of symptomatology (76%), though knowledge gaps were noted regarding secondary causes and management strategies. Statistical analysis confirmed significant differences across response patterns (p < 0.001). The findings highlight the need for enhanced educational emphasis on the diagnosis and multidisciplinary management of BMS.***

Keywords: ***Burning Mouth Syndrome (BMS); Oral Pain; Neuropathic Disorder; Dysgeusia; Xerostomia; Management Strategies***

I. INTRODUCTION

Burning Mouth Syndrome (BMS) is a perplexing chronic orofacial pain disorder characterized by a burning sensation of the oral mucosa in the absence of clinically detectable lesions[1]. The condition predominantly affects middle-aged and postmenopausal women, with a global prevalence ranging from 1% to 15%, depending on diagnostic criteria and population studied[2]–[5]. Despite being a relatively common complaint in oral medicine, BMS remains under-recognized in general dental and medical practice, often leading to diagnostic delays and patient frustration[6].

Clinically, patients with BMS report persistent burning, stinging, or scalding sensations— commonly involving the anterior two-thirds of the tongue, lips, and palate[7]. Accompanying symptoms such as xerostomia and taste disturbances (dysgeusia or metallic taste) are frequent and contribute to the disease burden[8]. Typically, pain intensifies throughout the day, while eating or drinking may provide transient relief[9]. These hallmark characteristics assist in distinguishing BMS from other oral mucosal pathologies.

Pathophysiologically, current evidence supports a neuropathic origin, involving both peripheral and central mechanisms[10]–[13]. Small-fiber neuropathy of the trigeminal system and central hyperexcitability have been demonstrated in clinical and neurophysiologic studies[12],[14]. The condition may present as primary (idiopathic) BMS, often linked to sensory neuropathy, or secondary BMS, where local or systemic factors such as endocrine imbalances, nutritional deficiencies, or medication reactions are implicated[15].

Beyond the sensory component, psychological and psychosocial dimensions play a pivotal role in the onset and perpetuation of symptoms. High rates of anxiety, depression, and sleep disturbances have been documented among BMS patients[16]–[18]. These factors are not only consequences of chronic pain but may also influence central pain modulation, suggesting a biopsychosocial model of disease[13],[17].

Effective management requires a comprehensive, multidisciplinary approach encompassing identification of underlying causes, patient education, and symptomatic relief through pharmacologic and behavioral therapies[9],[19],[20]. Pharmacologic options such as antidepressants and clonazepam have shown efficacy in modulating neuropathic pain pathways, while salivary stimulants like pilocarpine aid in managing concurrent xerostomia[19],[20]. As complete remission remains rare, long-term follow-up and patient reassurance are critical components of care. Despite advances in understanding its neurobiological basis, awareness of BMS among clinicians remains inconsistent, emphasizing the need for ongoing educational and surveybased research to improve diagnostic accuracy and treatment outcomes[6],[7]. The present study aims to evaluate professional awareness, symptom recognition, and management perspectives regarding BMS, thereby identifying existing knowledge gaps and reinforcing evidence-based clinical practice.

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II. MATERIALS AND METHODS

A cross-sectional, questionnaire-based online survey was conducted among 100 participants, comprising dental practitioners and dental students from academic and clinical settings. The study aimed to assess the level of awareness, knowledge, and understanding regarding the awareness, symptomatology, etiology, diagnosis, and management of Burning Mouth Syndrome (BMS). A structured 15-item multiple-choice questionnaire was developed based on current literature and validated through expert review for content relevance and clarity. The questionnaire was distributed electronically via Google Forms, ensuring voluntary and anonymous participation. The survey remained open for two weeks, allowing sufficient time for responses.Collected data were downloaded and organized using Microsoft Excel for data entry and coding. Statistical analysis was performed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics, including frequency and percentage distributions, were calculated to summarize participant responses. The Chi-square (χ^2) goodness-of-fit test was applied to determine the statistical significance of variations in response patterns. A p-value of less than 0.05 ($p < 0.05$) was considered statistically significant.Ethical considerations were maintained throughout the study. Informed consent was obtained from all participants prior to submission of responses, and participation was entirely voluntary and confidential. No personal identifiers were collected, ensuring compliance with ethical standards for survey-based research.

III. RESULTS

A total of 100 dental professionals and students participated in the survey assessing awareness and understanding of Burning Mouth Syndrome (BMS). Overall, awareness levels were high, with 77% of respondents familiar with the condition, indicating strong professional knowledge. Regarding symptom recognition, 76% accurately identified hallmark features such as a burning sensation, dry mouth, and altered taste, consistent with established clinical profiles ($p < 0.001$). Most participants (77%) also understood BMS as a chronic neuropathic pain disorder characterized by oral burning without visible mucosal lesions, reflecting accurate conceptual understanding ($p < 0.001$). A majority (63%) correctly reported that eating or drinking relieves symptoms, aligning with classical clinical patterns, whereas 24% believed symptoms worsen with food intake ($p < 0.001$). With respect to symptom laterality, 67% recognized bilateral presentation as the most typical, consistent with existing evidence on tongue and mucosal involvement ($p < 0.001$).The anterior two-thirds of the tongue, lips, and palate were identified as the most commonly affected sites by 73% of respondents, while fewer selected gingiva or buccal mucosa ($p < 0.001$). Concerning pain characteristics, 73.5% described BMS pain as persistent and intensifying throughout the day, confirming good understanding of its progressive nature ($p < 0.001$). Nearly 80% recognized dysgeusia—manifesting as metallic, bitter, or salty taste alterations—as the predominant sensory change, indicating sound clinical awareness ($p < 0.001$). In identifying etiology, 63.6% attributed BMS primarily to idiopathic neuropathy, reflecting accurate knowledge of its neuropathic basis ($p < 0.001$). Regarding secondary causes, 72.7% correctly excluded temporomandibular joint dysfunction, identifying instead systemic and nutritional deficiencies as common contributors ($p < 0.001$).

A strong understanding of systemic associations was observed, with 62.2% linking BMS to hypothyroidism as the most relevant endocrine disorder ($p < 0.001$). In managementrelated questions, 83.7% emphasized the importance of identifying and managing underlying causes as the first step in treatment ($p < 0.001$). Pharmacologically, 65.3% selected antidepressants as the first-line agents for primary BMS, aligning with established guidelines for neuropathic pain control ($p < 0.001$). For cases associated with xerostomia, 72.5% chose pilocarpine as the preferred salivary stimulant, demonstrating strong pharmacologic understanding ($p < 0.001$). Finally, 68.7% highlighted long-term follow-up and patient reassurance as essential components of effective BMS management, underscoring awareness that treatment is supportive rather than curative ($p < 0.001$).

Collectively, these findings reveal a high level of awareness and sound understanding of BMS among dental practitioners and students, particularly regarding its neuropathic etiology, symptom pattern, and evidence-based management. However, minor gaps persist in differential diagnosis and recognition of atypical presentations, indicating the need for continued education and clinical training in BMS recognition and care.

IV. DISCUSSION

The present study evaluated the awareness, understanding, and management approaches to Burning Mouth Syndrome (BMS) among dental practitioners and students. The findings revealed high awareness and comprehension levels, consistent with global data emphasizing the growing recognition of BMS as a complex neuropathic pain condition rather than a purely psychosomatic or local mucosal disorder. Awareness of BMS was noted in 77% of participants, aligning closely with prior studies that reported moderate to high professional familiarity, particularly among dental students and clinicians exposed to oral medicine curricula[1–3]. Wu et al.[1] and Kohorst et al.[3] found comparable awareness levels in community-based populations, underscoring that education and clinical exposure enhance diagnostic recognition. However, the 23% lacking awareness suggests a persistent educational gap, emphasizing the need for integrated clinical teaching modules[4–6].

Recognition of hallmark symptoms—burning sensation, xerostomia, and taste alteration— was accurately identified by 76% of respondents. This finding supports the observations of Adamo et al.[2] and López-Jornet et al.[10], who highlighted the triad of burning pain, dysgeusia, and dryness as the clinical foundation for diagnosis. Misinterpretation of isolated symptoms, as seen among a minority of respondents, has also been reported in Egyptian and European cohorts[6],[15], indicating variability in symptom perception across professional levels.

Understanding of BMS as a neuropathic disorder without visible lesions was high (77%), mirroring evidence by Lauria et al.[14] and Albuquerque et al.[12], who demonstrated smallfiber neuropathy and central hyperexcitability as core mechanisms. Such findings affirm the shift from psychogenic to neurobiological conceptualization, which recent reviews strongly advocate[2],[7],[8].

Most participants (63%) accurately identified symptom relief upon eating or drinking, consistent with classical clinical descriptions[5],[9]. This characteristic distinguishes BMS from inflammatory or infectious mucosal conditions, reinforcing the diagnostic value of symptom modulation[4],[15]. Regarding laterality, 67% correctly identified bilateral presentation—typically involving the anterior two-thirds of the tongue—consistent with the distribution described by Bergdahl and Bergdahl[5] and supported by de Moraes et al.[11].

Symptom site awareness was strong, with 73% identifying the tongue, lips, and palate as commonly affected areas, similar to findings by Mignogna et al.[13] and López-Jornet et al.[15]. Pain characterization was also accurately perceived, as 73.5% noted its progressive daily intensity, confirming alignment with global clinical profiles[13],[16]. Dysgeusia recognition (80%) matched findings from López-Jornet et al.[17] and Ghalwash et al.[6], where altered taste perception was among the most frequently reported sensory complaints.

Regarding etiology, 63.6% attributed BMS to idiopathic neuropathy, consistent with literature describing it as a primary idiopathic pain condition[14],[19]. A strong understanding of secondary causes was also evident, with most excluding TMJ dysfunction and instead acknowledging systemic and nutritional contributors, paralleling results from Rodríguez de Rivera-Campillo and López-López[15]. Awareness of hypothyroidism as a related endocrine condition (62.2%) aligns with the findings of Mock and Chugh[19] and Scala et al.[20], highlighting the influence of endocrine dysregulation in symptom persistence.

Management understanding was notably high, with 83.7% identifying treatment of underlying causes as the initial step, in agreement with evidence-based approaches emphasized by Klasser et al.[9] and Adamo et al.[2]. Pharmacologic awareness was similarly robust—65.3% selected antidepressants as first-line agents—reflecting clinical recommendations for neuromodulatory therapy using tricyclics and SSRIs[19],[20]. Pilocarpine was correctly identified by 72.5% for xerostomia management, supporting reports of its salivary-stimulating efficacy in BMS care[10]. Long-term follow-up and reassurance were also widely emphasized (68.7%), consistent with findings by Miziara et al.[18] and López-Jornet et al.[16] that underline the chronic, multifactorial, and often refractory nature of BMS.

Collectively, the high levels of awareness, accurate symptom recognition, and understanding of management approaches found in this study reflect commendable professional competency among dental practitioners and students. However, small gaps in recognizing secondary etiologies and atypical presentations highlight areas for curricular enhancement. Comparative analysis with international literature affirms the global need for improved diagnostic standardization, interdisciplinary collaboration, and patientcentered education in BMS management.

V. CONCLUSION

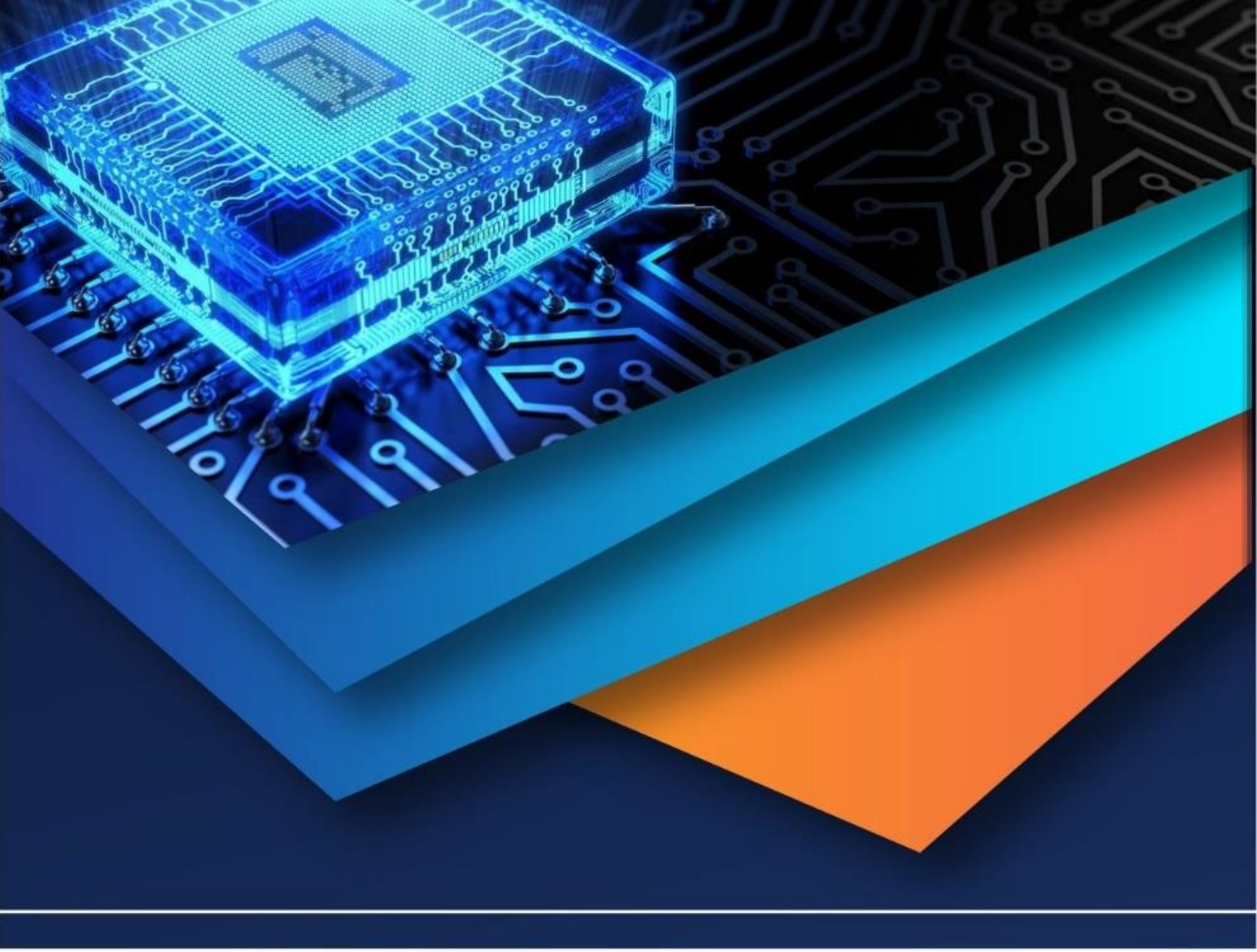
The present survey demonstrates that dental practitioners and students possess a commendable level of awareness and understanding of Burning Mouth Syndrome (BMS), particularly regarding its neuropathic etiology, clinical features, and evidence-based management. Most respondents accurately recognized hallmark symptoms such as burning sensations, dry mouth, and altered taste, and correctly associated the condition with idiopathic neuropathy and bilateral presentation. Their responses reflected strong alignment with international research on BMS pathophysiology, symptom recognition, and therapeutic strategies.Despite this encouraging awareness, the persistence of partial misconceptions—especially concerning secondary etiologies and systemic associations— highlights the ongoing need for enhanced educational integration of oral medicine topics into dental curricula and clinical training programs. Continuous professional development and exposure to interdisciplinary management approaches are essential to ensure early diagnosis, accurate differentiation from other oral pain disorders, and improved patient outcomes.

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