

Insight Into Dental Practitioners' Knowledge And Awareness Of Oral Diseases Management - A Cross-Sectional Questionnaire Study

Dr. Sarumathi T¹, Dr. Niveditha B², Dr. Vigneshwaran J³, Dr. Kavitha M⁴, Dr. Samu Fathima A I⁵, Dr. Arivuselvi M⁶

¹Dr. Sarumathi T, MDS, M.Sc, PhD, Professor, Department of Oral Medicine and Radiology, Sree Balaji Dental College and Hospital, Chennai-100. Email ID: drcharumathi@gmail.com, <https://orcid.org/0000-0003-2909-0997>

²Dr. Niveditha B, MDS, Reader, Department of Oral Medicine and Radiology, Madha Dental College and Hospital, Chennai-69. Email ID: bniveditha14980@gmail.com, <https://orcid.org/0000-0002-8918-6619>

³Dr. Vigneshwaran J, Postgraduate student, Department of Oral Medicine and Radiology, Madha Dental College and Hospital, Chennai-69. Email ID: vigneshvicki14@gmail.com, <https://orcid.org/0009-0003-9131-1612>

⁴Dr. Kavitha M, MDS, Professor and Head of the Department, Department of Oral Medicine and Radiology, Madha Dental College and Hospital, Chennai-69. Email ID: kavitha.srnvsn@gmail.com <https://orcid.org/0009-0004-6070-9377>

⁵Dr. Samu Fathima A I, MDS, Senior Lecturer, Department of Oral Medicine and Radiology, Madha Dental College and Hospital, Chennai-69. Email ID: samufayaz@gmail.com , <https://orcid.org/0009-0003-7457-5675>

⁶Dr. Arivuselvi M, MDS, Senior Lecturer, Department of Oral Medicine and Radiology, Madha Dental College and Hospital, Chennai-69. Email ID: arivuselvi.m@gmail.com

*Corresponding Author:

Dr. Sarumathi T

MDS, M.Sc, PhD, Professor, Department of Oral Medicine and Radiology, Sree Balaji Dental College and Hospital, Chennai-100.

Email ID: drcharumathi@gmail.com, <https://orcid.org/0000-0003-2909-0997>

Cite this paper as: Dr. Sarumathi T, Dr. Niveditha B, Dr. Vigneshwaran J, Dr. Kavitha M, Dr. Samu Fathima A I, Dr. Arivuselvi M, (2025) Insight Into Dental Practitioners' Knowledge And Awareness Of Oral Diseases Management - A Cross-Sectional Questionnaire Study. *Journal of Neonatal Surgery*, 14 (15s), 974-982.

ABSTRACT

Background: Dentists play a crucial role in healthcare by offering guidance on oral health and performing both preventive and restorative treatments. In contemporary clinical practice, dentists determine the necessary investigations or tests to establish a diagnosis and manage the subsequent treatment of dental issues. Recently, there has been a growing focus on assessing the appropriateness of healthcare practices, which extends to the evaluation of protocols and procedures within the field of dentistry.

Aim and objective: The aim of this study was to assess the appropriateness of diagnostic exams, treatments, and procedures among dental practitioners. The objective of the study was to assess the knowledge and awareness of dental practitioners about dental practice.

Material and methods: 171 dental specialists were included in the study. The questionnaire included 12 closed-ended, multiple choice questions. The questions were related to topics in general dentistry. Descriptive statistics were applied.

Results: The survey respondents are Dentists with or without specialty in dentistry (39.4% were undergraduates while 60.8% were postgraduates). The results were statistically significant for all 12 questions and the study highlights the imperative need for the advancement of the educational initiatives centered on fundamental treatment concepts within the field of dentistry.

Conclusion: Specialty dentists who operate within their specific fields are required to possess a fundamental understanding of general dental practice. Regular participation in continuing education programs focused on the diagnosis of dental issues, antibiotic prescription protocols, and emerging treatment techniques can significantly enhance practitioners' ability to deliver comprehensive care to their patients.

Keywords: *appropriateness, clinical practice, evidence-based dentistry, oral health, treatment protocol.*

1. INTRODUCTION

Dentistry, as a branch of healthcare, plays a critical role in maintaining and improving oral health, which is essential for overall well-being. Oral health is a significant component of general health and quality of life, influencing physical, psychological, and social aspects of a person's life.^[1,2] Dental diseases, if untreated, can lead to pain, infection, and loss of function, affecting an individual's ability to eat, speak, and socialize normally.^[2]

Dentists are at the forefront of providing oral health guidance, preventive care, and restorative treatments. They perform a variety of procedures, from routine cleanings and exams to complex surgical interventions. The decisions made by dentists regarding diagnostic tests and treatment plans are crucial in ensuring effective and efficient patient care. Accurate diagnosis and appropriate treatment are fundamental to preventing complications and promoting optimal oral health outcomes.^[3,4]

In recent years, there has been a growing emphasis on evaluating the appropriateness of healthcare procedures, including those in dentistry. The appropriateness of a healthcare procedure refers to the extent to which it is suited to the clinical condition of the patient, based on the best available evidence. This concept is vital in dentistry due to the diverse range of diagnostic and therapeutic options available. Ensuring that dental procedures are appropriate can lead to better health outcomes, reduced costs, and increased patient satisfaction.^[5,6]

Analyzing the appropriateness of dental procedures involves assessing whether the right tests and treatments are chosen for the right patients at the right time. This process requires a thorough understanding of evidence-based guidelines, clinical expertise, and patient preferences. Inappropriate procedures can result from overuse, underuse, or misuse, each of which can have significant implications for patient health and healthcare resources.^[7]

Several studies have highlighted the variability in dental practice and the need for more standardized protocols. For instance, inappropriate use of antibiotics and radiographs in dental practice has been documented, raising concerns about patient safety and public health. Furthermore, the choice of restorative materials and techniques can vary widely among practitioners, reflecting differences in training, experience, and access to resources. Such variability underscores the importance of continuous education and adherence to clinical guidelines to ensure high-quality care.^[8,9]

The study focuses on testing the hypothesis "Do dental practitioners having adequate awareness and knowledge regarding the appropriateness of diagnostic examinations, treatments, and procedures". By evaluating the knowledge and awareness of dental practitioners regarding current best practices, this study seeks to identify areas where improvements can be made. Understanding the factors that influence decision-making in dental practice can help in developing strategies to promote more consistent and evidence-based care

2. MATERIALS AND METHODS

This study was a cross-sectional investigation among dental specialists, including postgraduate students, faculty members, and general dental practitioners working in various fields of dentistry. The study was carried out from September 2024 to November 2024 during which the questionnaire was distributed via Google Forms. Informed consent was obtained from each participant before responding to the questions. No personal identification was requested. Participants were informed about the study's purpose. The anonymity and confidentiality of respondents were maintained throughout the study.

The sample includes 171 dental specialist participants. The questionnaire used for this study is illustrated in figure 1. The survey consisted of 12 closed-ended, multiple-choice questions and validated by three dental faculties from different department. Apart from these 12 questions, general information such as educational qualifications, specialty field and years of clinical experience were collected. The questionnaire was developed to assess the knowledge and awareness of appropriate dental practices. These questions were framed and standardized by two experienced dental faculty members in the Department of Oral Medicine and Radiology to ensure relevance and clarity.

Figure 1: Questionnaire used for this study

1. Appropriate time for prescription of X-ray (IOPA or OPG)?
 - A. Before dental examination.
 - B. After dental examination.
 - C. If there exists an actual diagnostic suspect.
2. Do you regularly prescribe Antioxidant as treatment modality in management of leukoplakia and Tobacco pouch keratosis?
 - A. Always
 - B. Yes, but not for all cases
 - C. Never
3. What is your follow up time period in management of leukoplakia and Tobacco pouch keratosis?
 - A. Every One month
 - B. Every Three months
 - C. Every two weeks

4. Do all patients with an ulcerative lesion require biopsy?
 - A. Always.
 - B. Never.
 - C. Only after two-three weeks, after removing traumatic factors.
5. Do all premalignant lesions require vital staining procedure before biopsy?
 - A. Always.
 - B. Never.
 - C. If necessary
6. When is the prescription of systemic antibiotics after an oral biopsy appropriate?
 - A. Before the biopsy.
 - B. After the biopsy.
 - C. Only if there exists the risk of temporary bacteraemia.
7. Appropriate time of prescription of topical or systemic anti-fungal drugs in dental practice?
 - A. Always, when the patient claims to have burning of the mouth.
 - B. Never.
 - C. Only after fungal infection (tested by qualitative and quantitative investigations).
8. Oral cancer preventive measures are targeted to which population?
 - A. The whole population.
 - B. At least once a year all individuals over 40-years-old.
 - C. All individuals over 50-years-old.
9. Are managing the TMD disorders with occlusal splint and advised soft diet good enough?
 - A. Yes
 - B. Never
 - C. Not sure
10. Do you feel 2D radiograph is appropriate for TMJ disorders?
 - A. Always with different projection
 - B. Never, and refer to advanced imaging techniques
 - C. Not sure
11. In your opinion, is sialography absolutely a necessary investigation modality in sialadenitis?
 - A. Always.
 - B. Never.
 - C. If necessary.
12. Is nerve block test essential in the diagnosis of Trigeminal neuralgia?
 - A. Yes
 - B. Never
 - C. Not sure

Data collection was carried out through an online survey using Google Forms, which included sections for demographic details and the questionnaire. Postgraduate students in dentistry, General dental practitioners, and Faculty members in dental schools were included in the study. Bachelor of Dental Surgery (BDS) students (first to final year) and students in Compulsory Rotatory Residential Internship (CRRI) were excluded from the study.

3. STATISTICAL ANALYSIS

Scores were calculated based on the responses given by participants and the individual scores were summed up to calculate the number of correct/incorrect answers. Statistical analysis was done using SPSS software (version 23.0; IBM, Armonk, NY, USA).

4. RESULTS

A questionnaire containing 12 closed-ended, multiple-choice questions was filled out by 171 dental professionals. The majority of the study participants 56.1% (96) were aged between 20 and 30 years; 37.4% (64) of them were aged between 31 and 40 years, 5.3% (9) were aged between 41-50 years; and 1.2% (2) were aged greater than 50 years.

Out of which 171 participants, 39.4% were undergraduates while 60.8% were postgraduates. Table-1 summarizes the participant's responses regarding the questions related to the appropriateness of diagnostic examinations, treatments, and procedures among dental practitioners.

Table 1: Responses of the participants to the questionnaire

S.NO	QUESTIONS	CHOICE	RESPONSES IN %	CHI-SQUARE TEST VALUE	P-VALUE
1	Appropriate time for prescription of X-ray (IOPA or OPG)?	Before dental examination	7.6	25.739 ^a	0.002*
		After dental examination	23.4		
		If there exists an actual diagnostic suspect	69		
2	Do you regularly prescribe Antioxidant as treatment modality in management of leukoplakia and Tobacco pouch keratosis?	Always	32.7	18.604 ^a	0.029*
		Yes, but not for all cases	62.6		
		Never	4.7		
3	What is your follow up time period in management of leukoplakia and Tobacco pouch keratosis?	Every One month	36.3	30.541 ^a	0.000*
		Every Three months	11.7		
		Every two weeks	52		
4	Do all patients with an ulcerative lesion require biopsy?	Always	9.4	23.266 ^a	0.006*
		Never	13.5		
		Only after two-three weeks, after removing	77.1		

		traumatic factors.			
5	Do all premalignant lesions require a vital staining procedure before biopsy?	Always	30.4	17.814 ^a	0.037*
		Never	3.5		
		If necessary	66.1		
6	When is the prescription of systemic antibiotics after an oral biopsy appropriate?	Before the biopsy	17	17.814 ^a	0.037*
		After the biopsy	36.8		
		Only if there exists the risk of temporary bacteraemia.	46.2		
7	Appropriate time of prescription of topical or systemic anti-fungal drugs in dental practice?	Always, when the patient claims to have burning of the mouth	21.6	21.600 ^a	0.010*
		Never	4.1		
		Only after fungal infection (tested by qualitative and quantitative investigations).	74.3		
8	Oral cancer preventive measures are	The whole population.	52	24.347 ^a	0.004*

	targeted to which population?	At least once a year all individuals over 40-years-old.	41.5		
		All individuals over 50-years-old.	6.4		
9	Are managing the Temporomandibular joint (TMJ) disorders with occlusal splint and advised soft diet good enough?	Yes	56.7	50.270 ^a	0.000*
		Never	14		
		Not sure	29.2		
10	Do you feel 2D radiograph is appropriate for TMJ disorders?	Always with different projection	21.6	29.542 ^a	0.003*
		Never, and refer to advanced imaging techniques	59.6		
		Not sure	18.7		
11	In your opinion, is sialography absolutely a necessary investigation modality in sialadenitis?	Always	45.6	24.192 ^a	0.004*
		Never	3.5		
		If necessary.	50.9		
12	Is nerve block test essential in the diagnosis of Trigeminal neuralgia?	Yes	67.3	22.095 ^a	0.009*

5. DISCUSSION

An accurate diagnosis is the foundation for determining prognosis and appropriate management. To reach an accurate diagnosis in dental practice, adequate knowledge and awareness of the dental professional is essential. In recent years, analyzing the appropriateness of healthcare procedures has been attracting considerable attention.

It is also necessary to evaluate the appropriateness of the protocols and procedures in dentistry. However, at present, there are no known studies investigating the appropriateness of diagnostic exams, treatments, and procedures among dental practitioners.

The questionnaire included 12 closed ended questions that were related to general dentistry. The present questionnaire was targeted to the general dentist as most of the conditions treated by the dentist have a significant psychological and physical impact on the Quality of life of patients. Also, they comprehensively provide oral health guidance and instruction to patients in preventive and restorative care.

For the question regarding “appropriate time of prescription of x-ray?”. 69.4% responded that if there exists an actual diagnostics suspect. This was statistically significant. Giacomina Oteri et al shows similar results with 48% of the respondents actually planning for radiographic diagnostic aid only if there is need. This can reduce the unnecessary radiation exposure to the patient and their expense.^[10]

62.9% of the respondents prescribed antioxidants in management of leukoplakia or tobacco pouch keratosis but not in all cases. This was statistically significant. Al-Maweri et al study, revealing promising effects of lycopene in alleviating signs and symptoms of leukoplakia.^[11]

In the patients undergoing medical management of leukoplakia or tobacco pouch keratosis, the partial response to the treatment was evident on clinical examination at the end of 2 weeks.^[12] In the present study 52.4% of the respondents had chosen every two weeks, while 11.8% had chosen every three months. A statistically significant difference was noted.

For the question regarding “Do all patients with an oral ulceration require biopsy?”, statistically significant results in which 77.1% of the respondents chose the option “only after three weeks after removal of the traumatic factors”. Similar to the present study, in Giacomina Oteri et al study 86% respondents chose after removal of the traumatic factors.^[10] In cases of oral ulceration that cannot be diagnosed after collection of clinical medical history and oral examination, especially in those with the course over 2 weeks, or cases which do not respond to 1–2 weeks of treatments, a biopsy should be considered.

The ultimate underlying goal of biopsy is to obtain a representative tissue sample to facilitate histologic interpretation. Winton Kalluvilil et al reported that toluidine blue staining and Lugol’s iodine vital staining showed high sensitivity in diagnosing oral premalignant disorders compared to acetic acid.^[13] Vital staining was performed before biopsy if necessary, according to 68.5% of the respondents in the present study.

Improper prescription of antibiotics can lead to antimicrobial resistance. WHO considers antimicrobial resistance as one of the biggest threats to global health. In the present study, systemic antibiotics were prescribed before biopsy if a risk of transient bacteremia was present, according to 46.5% of respondents, while a higher response of 69% were obtained in Giacomina Oteri et al study.^[10] In our study, the results were statistically significant.

52% of the respondents chose the option “the whole population” for the question “Oral cancer preventive measures are targeted to which population?”. The whole population need preventive measures because purpose of oral cancer screening to not only detect oral cancer earlier but also detect and manage those patients with Oral Potentially Malignant disorders (OPMDs) who are at risk for developing cancer. In our study, the results were statistically significant.

56.5% of the respondents advised a soft diet with occlusal splint in the management of Temporomandibular Disorders (TMDs). Hamad Albagieh et al concluded that Occlusal splints can treat a wide variety of TMDs. However, the authors concluded that though immediate effectiveness in pain relief in TMDs was observed in physiotherapy as compared to occlusal splints. In the long-term follow-up, occlusal splints were as effective as other therapies.^[14] In the meta-analysis conducted by Chao Zhang et al, they reported that splint therapy effectively reduces pain levels in TMDs patients, and reduces the frequency of pain in patients with TMJ clicking and increases mouth opening.^[15]

59.6% of the respondents chose the option “Never, and refer to advanced imaging techniques” for the question, “Do you feel 2D radiograph is appropriate for TMJ disorders?”. Statistically significant results were obtained. Conventional radiography has significant limitations, however. A thorough understanding of the TMJ and its functional status requires a 3D view.

For the question regarding “In your opinion, is sialography absolutely a necessary investigation modality in sialadenitis?”. Statistically significant results in which 50.9% of the respondents chose the option “If necessary”. Because Sialography is contraindicated in cases of active infection and contrast media allergy. Conducting the procedure during an active infection may exacerbate irritation and increase the risk of rupture in the inflamed gland.^[16]

Statistically significant results was noted for the question, “Is nerve block test essential in the diagnosis of Trigeminal neuralgia?”. 67.3% of the respondents chose the option “yes”. Janani et al.^[17] concluded that conventional extraoral maxillary nerve block could be an effective treatment for recurrent trigeminal neuralgia, focusing on the maxillary division to provide significant pain relief and reduce the reliance on additional pain medications.

A varying response was obtained in the 12 questions from the participants. Noticeably, the responses were statistically significant. The degree of attitude and knowledge about appropriateness of diagnostic exams, treatments, and procedures in

the participants was mainly based on their theoretical background, and clinical experience.

Our study outlines the need to spread more awareness regarding the appropriateness of diagnostic exams, treatments, and procedures. We suggest the need for more lectures and seminar programs for dental practitioners and during college years. This will result in a significant improvement in understanding for observing dental diagnostic procedures fundamental principles.

6. CONCLUSION

Our study results conclude that most of the respondents have fair fundamental knowledge and awareness regarding the appropriateness of diagnostic exams, treatments, and procedures, but with varying degrees. There are differences in participants comprehension of diagnostic exams, treatments, and procedures among the different categories.

These findings suggest that there is a knowledge gap among the dental practitioners. Understanding the knowledge level of the practitioners can aid in identifying the areas of improvement, and help in scientific-based guidance for the implementation of appropriate clinical care for the prevention and treatment of oral diseases and for the promotion of oral health.

Additionally, we noted that specialty dentists practicing their own specialty must also have essential proficiency in general dental practice. Continuing Education programs to update them regularly in diagnosis of dental problems, protocols in antibiotic prescription, and newer treatment modalities might be of great help to the practitioners in providing meticulous care to their patients. A practice-based learning approach where the students get to see, diagnose and put their theoretical knowledge into practice should be adopted for the undergraduate students.

AUTHOR CONTRIBUTION:

All the authors have made substantial contributions to the research design, acquisition and analysis of data and to drafting the paper and revising it critically.

ETHICAL APPROVAL:

This article does not contain any clinical studies with human participants or animals performed by any of the authors.

FUNDING:

This research did not receive any specific funding.

CONFLICTS OF INTEREST:

The authors declare that they have no conflict of interest.

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