



Original Research Article

Awareness and knowledge of diagnosis and treatment modalities of periodontal diseases amongst general dental practitioners of Ahmedabad: A questionnaire based survey

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Abstract

Introduction: The field of periodontology has significantly advanced in various areas including diagnostic tools, treatment modalities and techniques for periodontal regeneration leading to remarkable progress within the specialty. Additionally, due to technological advancements, periodontal treatments are now more accessible to general dental practitioners. However, the understanding of periodontal diagnosis and treatment often remains confined to undergraduate education, resulting in private practices focusing primarily on addressing the patient's chief complaint rather than comprehensive periodontal care.

Aim and Objective: The survey aimed to assess the knowledge of general dentist's perspective on diagnosis and treatment modalities of periodontal diseases and to examine the decision criteria of general dentists to refer their patients to a periodontist.

Materials and Methods: The study involved a survey for 119 practicing general dentists in Ahmedabad city with qualification of Bachelor of Dental Surgery. A pre-tested questionnaire was distributed via online mode comprising of 20 questions. Percentage-wise distribution of responses to various questions was used.

Results: The responses indicate that in private dental clinics in Ahmedabad, 43.6% dentists consulted periodontists, while 18% conducted periodontal treatments themselves. Furthermore, 41% dentists referred patients for complex periodontal and implant cases, highlighting that periodontists primarily focus on managing these intricate situations.

Conclusion: In conclusion, the survey reflects a moderate level of awareness regarding periodontal health among the respondents. Nonetheless, there are significant inadequacies in their understanding of advanced diagnostic techniques and treatment options.

Keywords: General dentist, Periodontal referral, Awareness of Periodontal diseases

Received: 20-05-2025; **Accepted:** 18-06-2025; **Available Online:** 07-07-2025

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1. Introduction

Oral health is an integral part of overall well-being, as underscored by the Surgeon General's report, which emphasizes that "the mouth serves as a mirror of health or disease, as a guard or warning signal, and as a potential source of pathogens that can affect other bodily systems."¹

The field of periodontology is rapidly evolving with advancements in diagnostics and innovative treatment that not only focus on restoration of the periodontium but concern the aesthetics of it as well.² Tools like Cone Beam Computed Tomography (CBCT) and salivary biomarkers improve

diagnostic accuracy. As primary dental care providers, general dentists who are equipped with AI tools can deliver more accurate diagnoses, initiate timely interventions, and collaborate effectively with specialists. Staying relevant regarding AI advancements ensures that they can leverage these technologies to enhance patient care, improve practice efficiency, and remain competitive in an evolving dental landscape.³ These evidence-based advancements have notably improved the predictability of periodontal diagnosis and treatment, and high-quality dental institutions are incorporating these innovations into their programs, paving

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the way for a promising future for periodontology as a recognized specialty.⁴

Early intervention by a general dentist is essential to prevent further periodontal destruction and improve the patient's oral health. If, the patient is diagnosed with advanced-stage periodontitis. The severity of the condition necessitates specialized care. Therefore, a referral to a periodontist has been recommended. This specialist will provide targeted treatment to manage and control the disease effectively.⁵ Therefore, it's important for general dentists to recognize early signs of periodontal disease during routine checkups, which should include a thorough examination of all teeth. If any periodontal issues are identified, a timely referral to a periodontist for further evaluation and treatment is essential for optimal patient outcomes.⁶

To address the need for improved periodontal care, it's essential to assess the attitudes and perceptions of general dental practitioners. They play a very important role in educating patients about periodontal disease, conducting regular screenings, and referring patients to periodontists when necessary.⁷ By identifying risk factors and providing initial treatments, they empower patients to manage their oral health. Through community initiatives and regular oral care, general dentists significantly contribute to preventing and managing periodontal disease.⁸

This study investigates general dentists' perspectives on diagnosing and managing periodontal diseases. It aims to understand their criteria for referring patients to periodontists, and assess current practices and awareness levels regarding periodontal care. The study was conducted using a questionnaire and contributed to improving patient outcomes and collaborative practices between general dental practitioners and periodontists.⁹

2. Materials and Methods

The study included participants who showed interest and willingness to participate. The data collection was performed by distributing a questionnaire through Google Forms. The sample consisted of 119 general dental practitioners who held a Bachelor of Dental Surgery degree and had a minimum of one year of experience in a private practice. A carefully structured and pretested questionnaire, consisting of 20 questions, was used to evaluate awareness about diagnosis of periodontal diseases and treatment modalities of periodontal diseases. Section 1 includes questions 1 to 5 concerning demographic information; Section 2 covers questions 1 to 8 related to awareness about the diagnosis of periodontal disease; and Section 3 comprises questions 1 to 12 focused on awareness of treatment modalities and strategies for managing periodontal disease. The reliability of the questionnaire was checked with the pretested questionnaire. The validity of the questions was established through expert evaluation. Reliability was assessed via Cronbach's Alpha in a pilot study involving 25 participants and reviewed by five general dentist experts, yielding an

overall score of 0.832, which indicates good reliability. The results were subjected to statistical analysis and a percentage-wise distribution of the responses to various questions was used. Statistical analyses were performed using Microsoft Excel and SPSS version 20. (**Table 1, Table 2**)

Section 1: Demographic information

1. Name
2. Age
3. Gender
4. Practicing years in dentistry

Section 2: Awareness about diagnosis of periodontal disease

1. Instruments used for checking periodontal health
2. Most frequently observed periodontal sign
3. Usage of any special instrument for detection of furcation and mobility
4. Usage of any advanced diagnostic aids

Section 3: Awareness about treatment modalities and strategy of periodontal disease

1. Referral to periodontist for specific periodontal problems
2. Line of treatment for Grade I, Grade II and Grade III mobility of teeth.
3. Line of treatment in patients with periodontal pockets
4. Indications of various mucogingival surgeries
5. Coeffectiveness of the periodontal treatment

3. Results

The current survey provides insights into general dentists' understanding and views on periodontal treatment, as well as examining the referral dynamics between them. However, among the participants who enrolled in this study, no questions were left unanswered. Bleeding on probing (BOP) is a vital clinical indicator used in periodontal assessment because it indicate inflammation and active tissue destruction. It helps clinicians detect early signs of periodontal disease, evaluate disease activity, and monitor treatment outcomes. Despite its importance, a study of 119 general dental practitioners revealed that 38.5% rely solely on BOP to assess periodontal disease, which may overlook other critical diagnostic factors. Therefore, understanding the significance of BOP and its role within a comprehensive periodontal evaluation is essential for accurate diagnosis and effective management of periodontal health. 56.4% identified poor oral hygiene as the primary cause of periodontal disease. Naber's probe is a specialized periodontal instrument used to detect furcation involvement. Proper detection of furcation involvement is important for accurate diagnosis, prognosis and treatment planning in periodontal therapy. (**Figure 1**)

A survey of dental practitioners revealed that 39.3% used Naber's probe for this purpose, indicating awareness of its importance (**Figure 4**). However, a significant majority (57.3%) did not register any index or use specific diagnostic

criteria for furcation involvement, which could lead to under diagnosis or inconsistent assessment of furcation defects. Additionally, 65.8% understood different patterns of bone loss, but 34.2% did not (**Figure 2**). Notably, 44.4% were unaware of the bidirectional relationship between systemic and periodontal diseases, and 40.2% lacked knowledge of medications that can cause gingival enlargement. Despite these, 51.3% were familiar with advanced diagnostic aids for assessing periodontal health.

A commendable 72.6% of dentists actively incorporate chlorhexidine mouthwash into their postoperative periodontal care, reflecting a good level of awareness regarding its benefits. While only 22.4% prescribe it for the ideal duration of 15 days, many practitioners are utilizing it effectively, with some prescribing for 7 days, 10 days, or up to a month, demonstrating flexibility in patient management. Furthermore, 40.2% of dentists recognize the vital role of the maintenance phase in ensuring long-term periodontal health, which is a promising foundation for improving overall treatment outcomes. These insights show a positive trend toward periodontal awareness that can be further strengthened through continued education and adherence to best practices. Additionally, 37.6% did not know the appropriate pocket depth for local drug delivery systems, while 47% agreed on the significance of a healthy periodontium for successful endodontic, prosthodontic, and orthodontic procedures. Despite recognizing these factors, only 43.6% consulted with periodontists, and 15.4% performed most periodontal surgeries themselves, which included various advanced techniques like minor surgery, flap surgery, laser surgery, mucogingival surgery and implants. In private dental clinics in Ahmedabad, 41% of dentists referred patients to specialists solely for grafting, ridge augmentation, and dental implant procedures, indicating a focus on complex treatments by periodontists. For managing grade II mobile teeth, only 18.8% recommended periodontal flap surgery, while 29.3% suggested extraction, and 15.8% were unaware of appropriate treatment options; 31.6% inadequate knowledge regarding mucogingival surgery indications. (**Figure 3**) In terms of graft materials, 20.5% preferred alloplastic bone grafts, and 51.3% opted for non-resorbable membranes. Additionally, 42.7% were uninformed about microscope use, but 70.1% acknowledged the role of periodontists in smile design and cosmetic dentistry. Notably, 70.1% faced challenges in convincing patients to undergo periodontal surgery due to a lack of understanding of the procedures.

3.1. Participant questionnaire

Date:

1. Full Name:

2. Age (years):

3. Years of practice

☐ 0-5 ☐ 6-10 ☐ >11

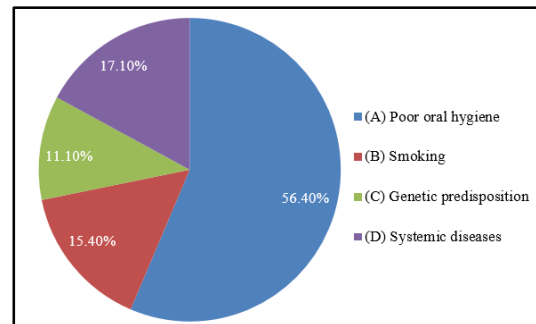


Figure 1: Q. What is the primary cause of periodontal disease?

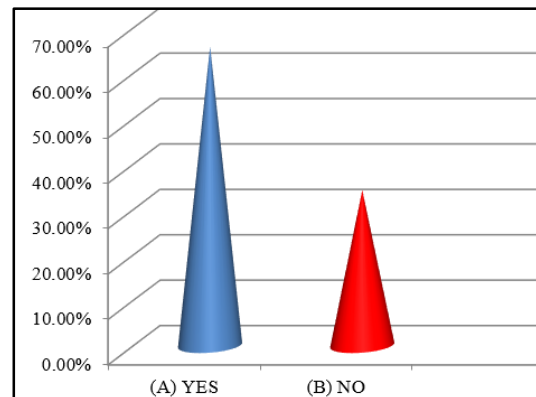


Figure 2: Q. Are you aware about various bone loss patterns?

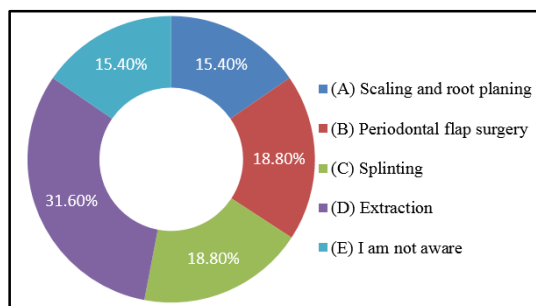


Figure 3: Q. What is the treatment modality for a grade II mobile tooth?

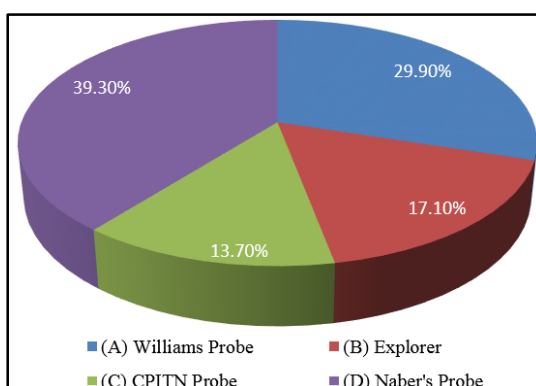


Figure 4: Q. Instrument used to detect furcation?

Table 1: Percentage-wise distribution of study participants based on their responses to the questions

	Groups	Number	Percentage
Age	20-25	28	23.9
	26-30	18	15.4
	31-35	50	42.7
	36-40	14	11.1
	>40	09	6.8
		119	100.0
Gender	Male	64	53.8
	Female	55	46.2
		119	100
Years of Practice	1-5	107	91.5
	6-10	4	02.6
	>11	8	06
		119	100

Table 2: Percentage-wise distribution of study participants based on their responses to the questions regarding awareness about diagnosis

Question	Response	Number	Percentage
1. Which signs do you check clinically when assessing the status of the periodontium in your patient?	A) Bleeding on probing	46	39.3
	(B) Probing pocket depths	13	11.1
	(C) Mobility	7	6.0
	(D) Furcation involvement	4	3.4
	(E) Mucogingival defects	5	4.3
	(F) Gingival status	12	10.3
	(G) Trauma from occlusion	5	3.4
	(H) All of the above	27	22.2
	Total	119	100.0
2. What is the primary cause of periodontal disease?	(A) Poor oral hygiene	66	56.4
	(B) Smoking	18	15.4
	(C) Genetic predisposition	14	11.1
	(D) Systemic diseases	21	17.1
	Total	119	100.0
3. Which instrument do you use to detect furcation involvement?	(A) Williams Probe	35	29.9
	(B) Explorer	19	16.2
	(C) CPITN Probe	17	13.7
	(D) Naber's Probe	48	39.3
	Total	119	100
4. Do you register any index for diagnosis of periodontal disease?	(A) Yes	73	61.5
	(B) No	46	38.5
	Total	119	100
5. Are you aware about various bone loss patterns?	(A) Yes	78	65.8
	(B) No	41	34.2
	Total	119	100
6. Are you aware of the bidirectional relationship between systemic and periodontal diseases?	(A) Yes	66	55.6
	(B) No	53	44.4
	Total	119	100
7. Are you aware about certain drugs which influence gingival enlargement?	(A) Yes	72	60.7
	(B) No	47	39.3
	Total	119	100
8. Are you aware about any advanced diagnostic aids for evaluation of periodontal health?	(A) Yes	62	52.1
	(B) No	57	47.9
	Total	119	100

Table 3: Percentage-wise distribution of study participants based on their responses to the questions regarding awareness about periodontal disease, treatment protocol and strategy.

Question	Response	Number	Percentage
1. Do you think usage of chlorhexidine mouthwash immediately after periodontal surgery is recommended for optimum advantage?	(A) Yes (B) No Total	86 33 119	72.6 27.4 100
1(a) How many days do you usually prescribe chlorhexidine mouthwash?	(A) 7 days (B) 10 days (C) 15 days (D) 1 month Total	40 23 26 30 119	34.2 19.7 21.4 24.8 100.0
2. To what extent do you agree that maintenance phase is important for successful periodontal treatment?	(A) Strongly Agree (B) Agree (C) Disagree (D) I am not aware Total	49 42 10 17 119	41.9 35.0 7.7 14.5 99.1
3. What should be the pocket depth for local drug delivery system?	(A) 4-6mm (B) 6-8 mm (C) 8-10 mm (D) I am not aware Total	31 22 21 45 119	26.5 18.8 17.1 37.6 100
4. To what extent do you agree that healthy periodontium is essential for successful endodontic, prosthodontic and orthodontic procedures?	(A) Strongly Agree (B) Agree (C) Disagree (D) I do not know Total	55 30 12 22 119	47.0 25.6 9.4 17.9 100.0
5. According to you, what is the treatment modality for a grade 2 mobile tooth?	(A) Scaling and root planing (B) Periodontal flap surgery (C) Splinting (D) Extraction. (E) I am not aware Total	18 22 22 38 19 119	15.4 18.8 18.8 31.6 15.4 100.0
6. Do you have knowledge about indications of various mucogingival surgeries?	(A) Yes (B) No Total	71 48 119	59.8 40.2 100
7. Do you call a periodontist at your clinic or refer the patient to periodontist ?	(A) I call periodontist at my clinic (B) I refer the patient to periodontist (C) I do treatment by myself Total	52 49 18 119	44.4 41.0 14.5 100.0
7 (a) For which procedure, do you call periodontist at your clinic?	(A) Minor surgery (B) Flap surgery (C) Laser surgery (D) Mucogingival surgery (E) Implants (F) All of the above Total	10 26 18 21 7 37 119	8.5 22.2 15.4 17.9 5.1 30.8 100.0
8. Which type of bone graft do you often prefer?	(A) Autogenous graft (B) Allograft (C) Xenograft (D) Alloplastic graft Total	52 25 17 25 119	44.4 21.4 13.7 20.5 100.0
9. Which membranes do you prefer for guided tissue regeneration?	(A) Non-resorbable membranes (B) Resorbable membranes Total	64 55 119	53.8 46.2 100

10. Are you aware about the use of microscope in periodontal surgery?	(a) Yes	51	42.7
	(b) No	68	57.3
	Total	119	100
11. Do you agree a periodontist plays an important role in smile designing and cosmetic dentistry?	(a) Yes	83	70.7
	(b) No	36	23.3
	Total	119	100
12. Do you face any difficulty in convincing a patient to undergo periodontal surgery?	(a) Yes	84	70.9
	(b) No	35	23.1
	Total	119	100
IF YES, 12 (a) What is the most common reason?	(A) Lack of understanding of the benefits of the procedure	56	47.0
	(B) Fear of pain and discomfort	29	23.9
	(C) Concern about the length of the procedure	20	17.1
	(D) Concern about the cost of the procedure	14	12.0
	Total	119	100.0

4. Discussion

The concept of specialized dental practice is increasingly gaining recognition, promoting collaboration among the referring dentist, the patient, and the periodontist. This partnership is built on mutual understanding and respect, ensuring comprehensive patient care. Unlike some other dental specialties, periodontal disease often manifests symptoms only in its advanced stages, underscoring the critical need for early detection by general dentists. Therefore, it is essential for general practitioners to perform basic periodontal examinations during routine check-ups and refer patients to periodontists when necessary. Unfortunately, many general dentists tend to manage periodontal issues independently, which can sometimes result in suboptimal care and compromised periodontal health. Emphasizing timely referral and collaborative management is key to maintaining optimal periodontal health and improving patient outcomes.¹⁰⁻¹³

The current study found that 90.4% of general dentists recognize the effectiveness of periodontal treatment and routinely recommend various procedures to their patients. However, only 15.4% of these practitioners perform most periodontal surgeries themselves, such as curettage, depigmentation, flap surgeries, frenectomy, gingivectomy, crown lengthening, and phase I therapy. This trend is largely influenced by the level of periodontal education received during their Bachelor of Dental Surgery (BDS) training. While dental students are introduced to fundamental concepts, their exposure to surgical techniques—especially those required for managing advanced periodontal disease and associated risk factors is often limited at the undergraduate level. Consequently, many general practitioners may feel less confident in performing complex periodontal surgeries independently.

In the study conducted the aim was to evaluate the awareness, behaviour, and motivations concerning periodontal disease among health professionals. The findings

highlight a significant need for comprehensive educational initiatives to promote proper oral health and to offer training on effective oral hygiene practices, thereby supporting the objectives of my research.

Highlighted that patients appreciate general dentists' ability to diagnose periodontal disease early and prefer seeking care from specialists. However, only 41% of dentists referred cases to specialists for advanced procedures like grafting and dental implants. This trend reflects the factors impacting dentists' adoption of comprehensive periodontal treatment and implant therapy in their practice.¹⁴⁻¹⁸

The current study revealed that most general dentists in Ahmedabad prioritize their patients' periodontal health prior to initiating interdisciplinary treatment. However, participation in continuing dental education (CDE) programs focused on periodontal disease within the past year was limited, suggesting only a moderate level of knowledge regarding diagnosis and treatment options. Notably, only 25.6% of dentists routinely included essential assessment parameters—such as bleeding on probing, pocket depth, mobility, furcation involvement, occlusal trauma, and gingival condition—in their evaluations. To improve the inclusion of key periodontal assessments, dentists should attend Continuing Dental Education (CDE) programs that focus on standardized evaluation techniques, proper use of assessment tools, and the importance of comprehensive periodontal exams. These programs can enhance knowledge, skills and awareness, leading to better clinical practices and improved patient care. Additionally, a significant 44.4% did not recognize the connection between systemic diseases and periodontal health, while 59.8% were aware of advanced diagnostic techniques. Moreover, 40.2% expressed uncertainty about the indications for mucogingival surgeries, and a substantial 70.1% faced challenges in convincing patients of the benefits of periodontal procedures. These findings highlight the need for enhanced education and awareness to improve periodontal diagnosis, treatment

planning, and patient communication among general practitioners.^{19,20}

Several factors influence referral patterns to specialists, including proximity to a periodontist, the relationship between general dentists and specialists, patient experiences, and the historical success of treatments. The current survey suggests that in Ahmedabad, the role of periodontists in private dental clinics is largely limited to major periodontal and implant procedures.

According to research by Mali et al. (2008), periodontal interventions for severe disease often produce unpredictable results. Therefore, it is crucial for general dentists to establish a referral practice to a periodontist early in the course of periodontal disease, as the specialized expertise of a periodontist can offer more effective and beneficial treatment for patients.¹¹

5. Conclusion

The current survey revealed a moderate level of awareness among general dentists regarding the diagnosis, treatment modalities and management strategies of periodontal diseases. Amongst the general dentists, the involvement of periodontists was primarily restricted to significant periodontal and implant procedures. Therefore, it is essential to organize more continuing dental education (CDE) programs for general dentist in Ahmedabad city focused on the progression of periodontal disease, its consequences and treatment outcomes at different stages. Such initiatives could help alter the referral patterns among general dentists in providing periodontal care and better outcome.

6. Source of Funding

None.

7. Conflict of Interest

None.

8. Acknowledgements

None.

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Cite this article: Parmar MV, Chaudhary AK, Sathwara J, Gajjar R, Patel V, Chaukar P. Awareness and knowledge of diagnosis and treatment modalities of periodontal diseases amongst general dental practitioners of Ahmedabad: A questionnaire based survey. *IP Int J Periodontol Implantol*. 2025;10(2):61-67.