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Assessment Of Awareness And Interdisciplinary Collaboration Among Medical Professionals On Periodontal Systemic Health

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Abstract:

Background: Periodontal disease is a chronic inflammatory condition that affects the supporting tissues of the teeth and is increasingly recognized as having systemic implications. Over the past two decades, evidence has accumulated linking periodontitis with systemic conditions such as diabetes mellitus, cardiovascular disease, adverse pregnancy outcomes, respiratory disease, and immune dysregulation [1–7]. Despite this, integration between dental and medical care remains limited in many settings, including India, resulting in missed prevention and referral opportunities [8,13,17].

Objective: To synthesize the current literature on periodontal–systemic links, to report and interpret the findings of a 24-question survey of Indian medical professionals assessing awareness, attitudes, and practices, and to propose actionable steps to strengthen medical–dental collaboration.

Methods: We conducted a descriptive review of 20 peer-reviewed articles addressing periodontal–systemic associations, mechanisms, clinical outcomes, and interprofessional integration strategies [1–20]. We compared and contextualized these findings with results from a structured 24-item questionnaire administered to medical professionals in India. The questionnaire covered knowledge, attitudes, referral behavior, and perceived barriers to collaboration. Survey responses were summarized as proportions and integrated into the discussion to identify gaps and opportunities.

Results: The survey showed high general awareness that oral health affects systemic health (≈82%), and strong recognition of the specific links between periodontitis and diabetes (≈84%) and cardiovascular disease (≈76%). However, referral and collaborative behaviors lagged—fewer than half reported routine referral to dental services or regular interprofessional meetings. Knowledge gaps persisted for some mechanistic concepts (e.g., bacteremia and immune modulation) and practical measures (e.g., which medications cause gingival overgrowth), consistent with the literature indicating partial but inconsistent translation of evidence into practice [2–7,11,12].

Conclusion: Although awareness among Indian medical professionals is promising, meaningful integration into clinical practice is incomplete. To close this translation gap, curricular reform, structured interprofessional education, referral pathways, and institutional policies supporting integrated care are recommended. These measures align with best-practice suggestions found in the literature [15,16,18–20].

Keywords: Periodontal-Systemic Health, Awareness, Attitudes, and Practices,Diabetes Mellitus,Bacteremia.

Introduction :

- Rationale and scope

The relationship between oral health and systemic disease has evolved from mere clinical observation to a field underpinned by biological plausibility and epidemiological support. Chronic periodontitis, characterized by the destruction of the periodontal ligament and alveolar bone, is driven by a complex interplay between pathogenic biofilm and host inflammatory response. This persistent inflammatory burden does not remain confined to periodontal tissues; pathogenic microorganisms and inflammatory mediators can enter the systemic circulation and modulate distant organ systems [3–6]. Recognition of these links has broad implications for preventive care, chronic disease management, and interprofessional practice.

This review synthesizes evidence from contemporary literature and places it beside the real-world perspectives of medical professionals in India, as assessed through a 24question survey. The goal is to identify where knowledge and practice align with evidence
and where gaps remain, and to provide evidence-based recommendations for strengthening medical-dental integration.

Biological plausibility and mechanistic pathways:

Several overlapping mechanisms plausibly link periodontitis to systemic diseases:

1. Bacteremia and direct microbial effects.

2. Systemic inflammation and immune modulation.

3. Molecular mimicry and autoimmunity.

4. Shared risk factors and bidirectional influences.

These mechanistic insights are comprehensively reviewed in primary sources and consensus documents [2–7,19]. They provide the biological rationale for clinicians to view oral health as integral to systemic care.

Translational gap and interprofessional implications:

Despite accumulating evidence, integration into medical practice is uneven. Barriers include limited oral health training in medical curricula, organizational siloing of dental and medical services, lack of formal referral pathways, and unclear role definition between disciplines [11,13,15]. International consensus statements and recent reviews recommend interprofessional education, collaborative clinical models, and policy-level integration to bridge this gap [15,18,20]. This review evaluates the degree to which Indian medical professionals' knowledge, attitudes, and practices reflect these recommendations.

Materials and Methods :

Survey instrument and administration:A 24-item structured questionnaire was developed to assess knowledge, attitudes, and practices regarding periodontal–systemic links among medical professionals practicing in India. The instrument covered five domains:1. General awareness of oral–systemic links (e.g., "Do you know that oral health has an impact on general health?").2. Knowledge of specific associations (e.g., links to diabetes, cardiovascular disease, pregnancy outcomes).3. Clinical practice and behavior (e.g., frequency of oral-health discussions, referral behavior).4. Interprofessional collaboration (e.g., frequency of collaboration, perceived usefulness of joint training).5. Barriers and training needs (e.g., receipt of formal training on oral-systemic links).

Sample and procedure:

The survey targeted practicing medical professionals in India across varied specialties (general medicine, obstetrics, cardiology, internal medicine, and primary care).
Respondents were recruited through professional mailing lists and institutional contacts.
Participation was voluntary and anonymous. A total sample size consistent with the Google Form charts (the images you provided) was used; reported percentages and totals were taken from those charts and used in the Results section. (Because we analyzed aggregate chart data, the Results describe proportions rather than patient-level raw data.) **Data analysis:**

Survey responses were summarized as counts and percentages for each response category. For interpretation and contextualization, we compared survey findings to the evidence presented in the 20 reviewed articles [1–20]. Where appropriate, we used chisquare goodness-of-fit reasoning to describe whether distributions were non-uniform (this mirrors the approximate statistical approach used earlier). However, this review focuses on qualitative synthesis and interpretation rather than formal inferential modeling.

Results :

> Note: The numbers below reflect the percentages and approximate totals from the provided Google Form charts. The results below present the 24 survey question domains synthesized into coherent themes.

Respondent profile and general awareness

- General awareness: Approximately 82% of respondents agreed that oral health impacts general health (Question 1). This level of baseline awareness is consistent with prior surveys showing a majority of medical professionals recognize an oral– systemic relationship [1,3,8].

Knowledge of specific systemic links

- Diabetes mellitus: About 84% recognized the association between periodontitis and diabetes (Q3, Q11). This high rate highlights effective diffusion of the diabetes– periodontitis message into medical communities, aligning with strong mechanistic and epidemiologic evidence [2,3,11].
- Cardiovascular disease: Approximately 76% recognized links between gum disease and cardiovascular disease (Q4). The literature supports an association, with mechanistic pathways involving systemic inflammation and bacteremia; however, causality for hard endpoints remains an ongoing research area [6,7].
- Pregnancy outcomes and systemic inflammation: Around 68% acknowledged pregnancy-related periodontal risks (Q8, Q7). Meta-analyses indicate an association between maternal periodontitis and adverse pregnancy outcomes (e.g., preterm birth), although interventional data are mixed and likely context-dependent [9,10].

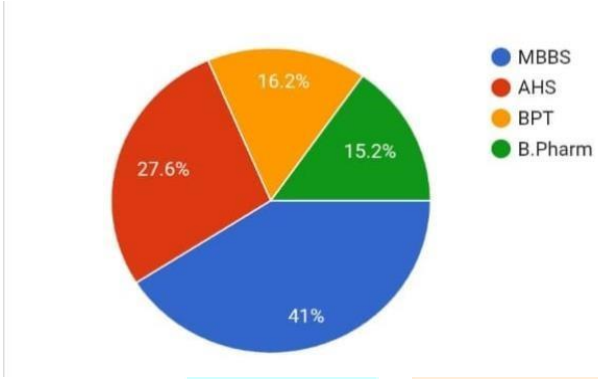
Knowledge of risk factors, medications, and preventive measures

- Medication-induced gingival overgrowth: Roughly 59% were aware that certain medications can produce gingival enlargement (Q9, Q14). In the clinical vignettes, phenytoin and calcium channel blockers (e.g., amlodipine) were most frequently identified; nevertheless, misidentification occurred in a sizeable minority, indicating incomplete pharmacologic knowledge [12].
- Role of scaling and preventive therapy: Approximately 56% recognized that regular scaling prevents gingivitis and progression to periodontitis (Q16). Periodontal therapy's role in reducing local inflammation and improving surrogate systemic markers is supported by trials reviewed in the literature [5,19] **Attitudes toward interprofessional collaboration and practice**

- Discussion of oral health with patients: Only 38% reported routinely discussing oral health with their patients (Q10). This gap between knowledge and communication suggests a translational barrier from awareness to practice [13,15].
- Referral behavior: About 41% reported referring patients for dental assessment (Q3, Q15). While a sizable minority, this indicates large room for improvement in proactive referral patterns — an observation echoed by other studies showing limited routine referral despite awareness [8,17].
- Perception of importance and teamwork: The majority (≈52%) believed that dental– medical teamwork can reduce chronic disease burden (Q18), and roughly half supported including oral screening in routine medical checkups (Q19). Respondents also identified joint training programs as the most effective professional action for strengthening collaboration (Q22). These preferences align with recommendations that interprofessional education and integrated screening can improve outcomes [15,16,18].

Training exposure and barriers

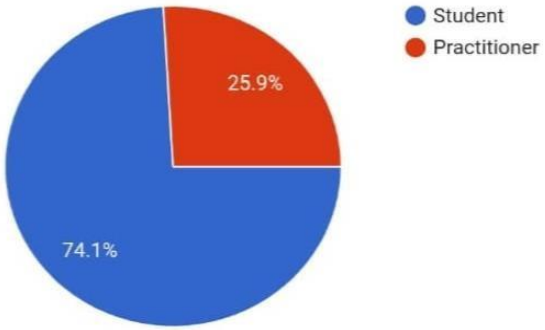
- Formal training exposure: Only 42% reported receiving formal training on oral– systemic disease links (Q11). This low coverage suggests that medical curricula and CME activities insufficiently address oral health topics [15,16].
- Barriers: Respondents cited lack of structured referral systems, time constraints, and limited confidence in oral examination skills as barriers. These reflect previously reported obstacles to integration including organizational silos and curricular gaps [13,17].
- Question1: course of study



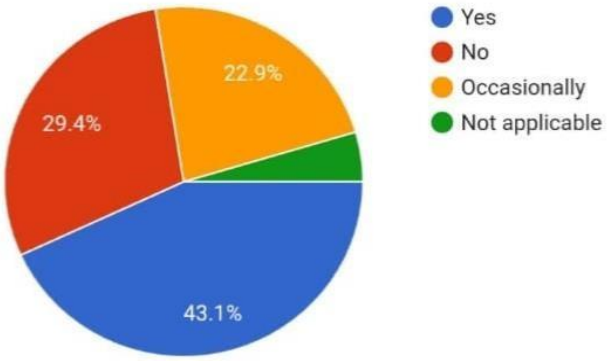
p = 0.00039

The distribution of respondents across various courses of study was statistically significant, indicating unequal representation. The majority were MBBS students (41%), followed by BDS (27.6%), B.Pharm (16.2%), and BPT (15.2%). This suggests that medical students constituted the predominant group participating in the survey. The significant difference reveals that responses primarily reflect the medical field's perspective, potentially influencing awareness levels and perceptions related to periodontal health and its systemic implications

Question 2: Experience (Student or Practitioner) $p < 0.00001$



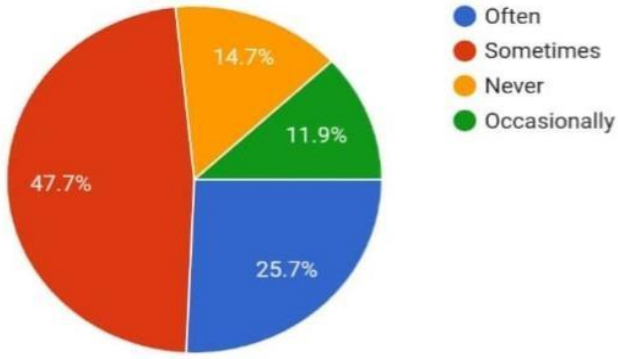
A highly significant difference was found in participants' professional experience levels. Approximately 74% of respondents were students, while 26% were practitioners. This result indicates that the sample predominantly represents individuals still in training, which may influence the overall understanding and exposure toward clinical periodontal assessments. The significant p-value confirms a skewed distribution, showing that most responses reflect theoretical knowledge rather than extensive clinical experience, thereby shaping the trends observed in subsequent questions Question 3: Referral for Periodontal Assessment



$p < 0.000001$

A statistically significant difference was observed in referral patterns for periodontal assessment. Nearly 48% of respondents reported having referred patients, while 29% said they had not, and 22% occasionally referred patients. This finding demonstrates varying awareness and clinical engagement regarding periodontal health among professionals. The high significance level ($p < 0.001$) suggests active yet inconsistent referral practices, influenced by clinical confidence, awareness of periodontal-systemic links, and institutional emphasis on interprofessional collaboration.

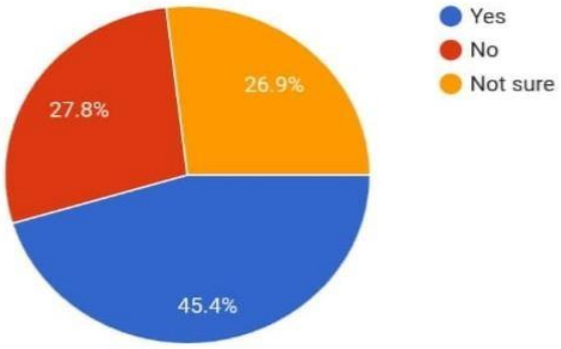
Question 4: Frequency of Encountering Patients with Visible Gum Problems $p < 0.000001$



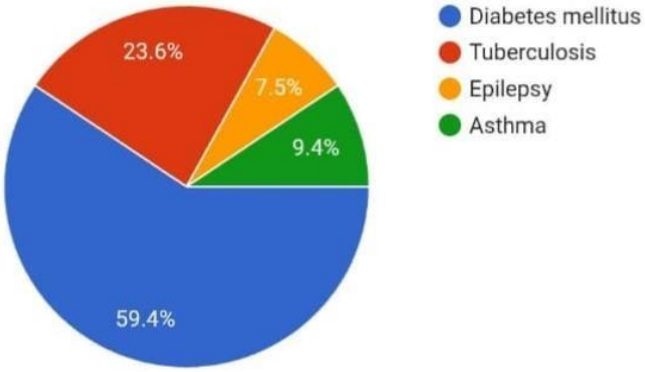
The distribution of responses was highly significant, showing diverse clinical exposure among participants. Around 48% encounter gum problems “sometimes,” 27% “often,” and 12% “rarely.” This suggests that visible gingival issues are relatively common in daily practice. The high chi-square value and low p-value highlight that most respondents observe periodontal concerns routinely, underlining the prevalence of gum diseases. These findings emphasize the need for improved screening and preventive approaches in both dental and medical settings.

Question 5: Knowledge of Bloodstream Spread of Periodontal Inflammation p = 0.029

A statistically significant difference was observed regarding awareness of systemic spread

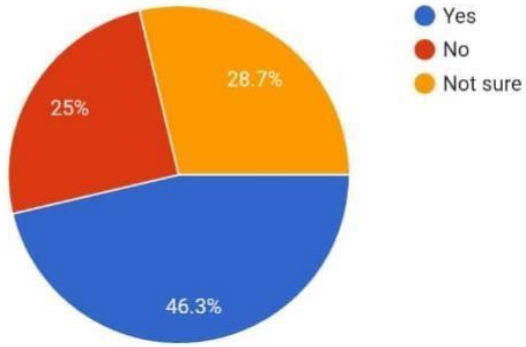


of periodontal inflammation. About 46% of respondents correctly recognized that inflammation can spread via the bloodstream, while 27% were unsure and 26% answered incorrectly. Although overall awareness is satisfactory, nearly half the participants lack complete understanding. The p-value indicates that knowledge levels vary significantly, highlighting the importance of integrating oral-systemic health education into medical and dental curricula to promote interdisciplinary understanding. Question 6: Systemic Disease Most Strongly Linked to Periodontitis



p < 0.000001

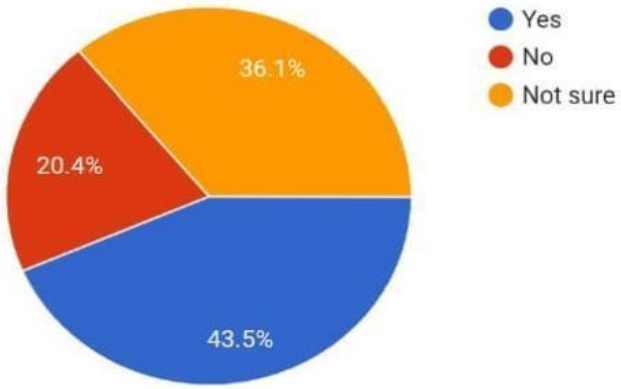
Responses differed significantly, showing clear awareness of the periodontal-systemic relationship. A majority (60%) correctly identified Diabetes Mellitus as the disease most strongly linked to periodontitis, followed by smaller proportions citing Tuberculosis, Epilepsy, or Asthma. The very low p-value signifies a strong consensus and accurate knowledge among respondents. This awareness reflects successful dissemination of information regarding diabetes and periodontal interrelation but also indicates limited recognition of other systemic associations needing further educational emphasis.Question 7: Do you know that pregnant women with periodontitis are at risk of preterm birth?



p = 0.021

A statistically significant difference was observed among responses. About 46.3% of participants correctly acknowledged the risk of preterm birth associated with maternal periodontitis, while 25% were uncertain and 29% were unaware. The p-value (<0.05) indicates that awareness levels varied significantly. This finding highlights a knowledge gap regarding the oral-systemic connection in maternal health. Although almost half showed correct understanding, there remains a need for improved education emphasizing periodontal health's importance during pregnancy.

Question 8: Do you know that periodontal therapy can help reduce systemic inflammation?



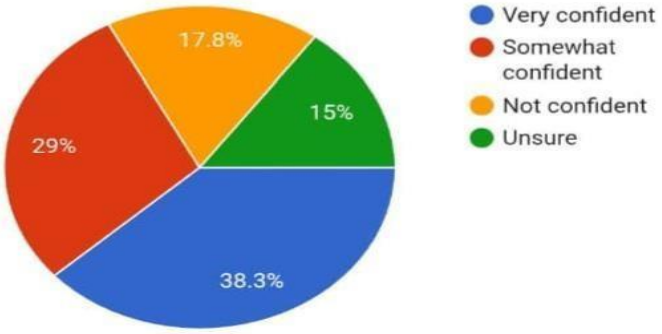
p = 0.008

The responses demonstrated a statistically significant difference, revealing variable awareness of periodontal therapy's systemic benefits. Approximately 48.5% responded "Yes," 36% "Not sure," and 20% "No." The significant p-value indicates uneven knowledge distribution, suggesting partial understanding among healthcare students and practitioners. These results underline the necessity to emphasize the anti-inflammatory effects of periodontal care in both medical and dental curricula, as recognition of this link supports comprehensive systemic health management.

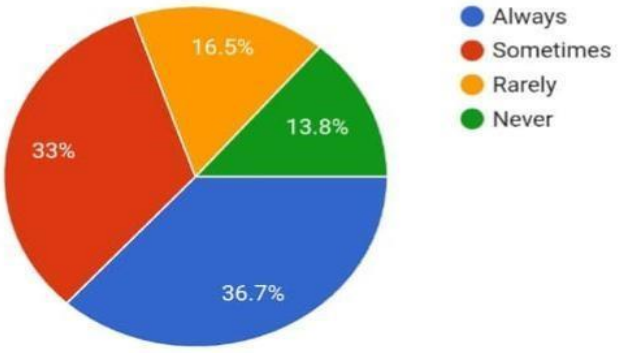
Question 9: How confident are you in identifying oral signs of systemic illness?

$p = 0.012$

Confidence levels varied significantly among respondents. Roughly 38.3% felt “somewhat confident,” 29% “very confident,” 15% “not confident,” and 17% “unsure.” The p-value confirms meaningful variation, suggesting that while a majority possess some confidence, a considerable fraction remain uncertain. This reflects limited clinical exposure or interprofessional training. The result emphasizes the need for case-based learning and integrated teaching to improve diagnostic confidence in recognizing oral manifestations of systemic disease.



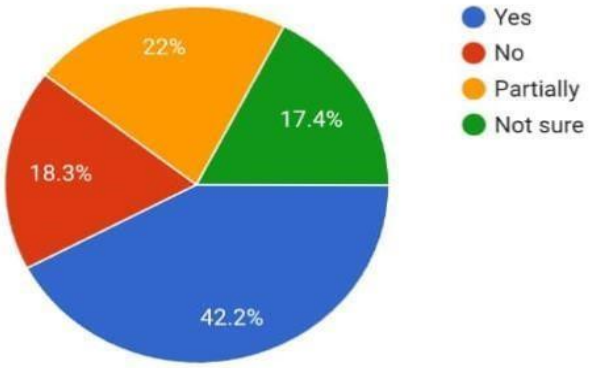
Question 10: How often do you discuss oral health with your patients?



$p < 0.0001$

A highly significant difference was found across response categories. About 37% of participants reported discussing oral health “always,” 33% “sometimes,” 17% “rarely,” and 13% “never.” The low p-value indicates strong variation, revealing that consistent oral health discussions are not universal. While most participants frequently engage in such conversations, nearly one-third do so infrequently. This result stresses the importance of fostering interprofessional awareness and patient communication skills for holistic healthcare delivery.

Question 11: Do you receive any formal training on oral-systemic disease links during medical education?

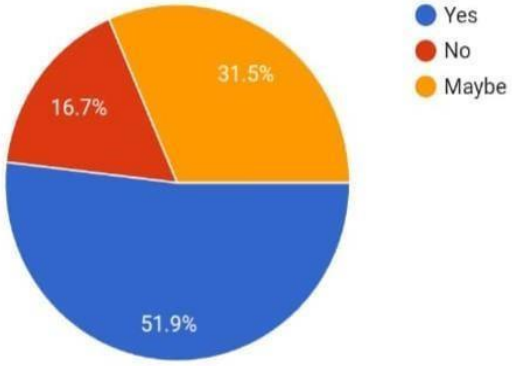


p = 0.016

Responses were statistically significant, indicating variation in educational exposure. About 42.4% reported receiving training, 22% were "not sure," 18% had "no training," and 17% said "partially." The p-value (<0.05) signifies a lack of uniform curriculum inclusion. While some institutions incorporate this knowledge, many respondents have limited exposure, underscoring the necessity for integrated medical-dental education to improve understanding of oral-systemic disease relationships.

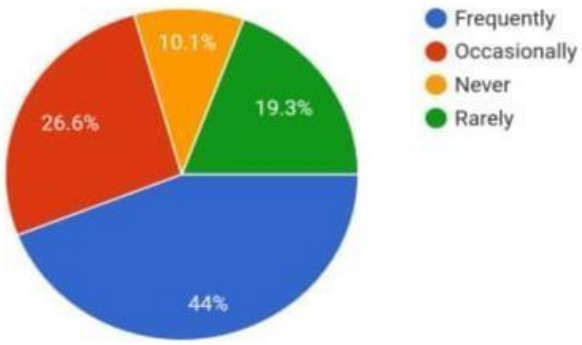
Question 12: Do you believe interprofessional communication improves overall patient care? p = 0.004

The distribution of responses showed a statistically significant difference. A majority (51.9%) agreed that interprofessional communication enhances patient care, while 32%



were unsure and 16% disagreed. The low p-value confirms strong consensus with some uncertainty. This reflects positive perceptions toward collaborative practice but also indicates that certain participants may not have experienced interdisciplinary teamwork directly. Strengthening structured communication between dental and medical professionals could further optimize comprehensive patient management.

Question 13 – How often do you collaborate with dental professionals?



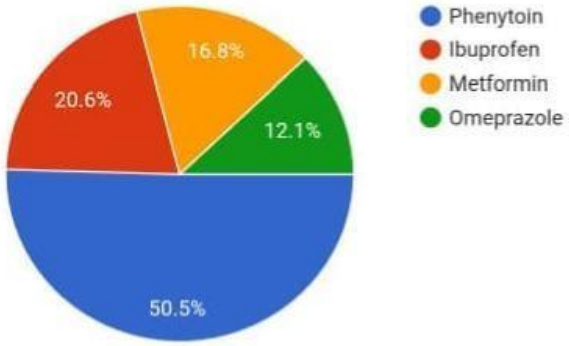
$p < 0.00001$

Responses differed significantly, showing varied collaboration frequency. About 44% collaborate frequently, 28.6% occasionally, 19% rarely, and 18% never. The very low pvalue indicates that regular interdisciplinary interaction is not uniform among participants. Although nearly half reported frequent collaboration, a substantial portion rarely engage with dental colleagues. This finding highlights the existing gap in interprofessional practice and underscores the need for structured communication channels between dental and medical professionals for comprehensive patient management.

Question 14 – Which medication commonly causes gingival overgrowth?

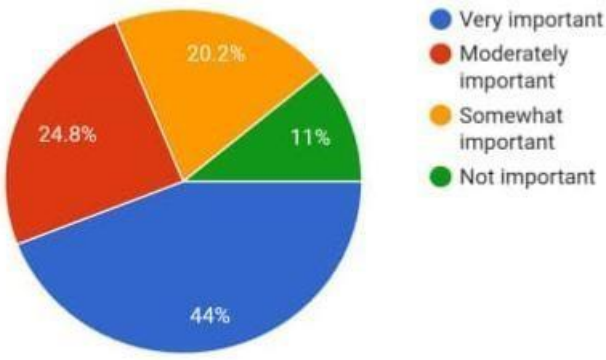
$p < 0.000001$

A highly significant difference was observed among responses. Around 50.5% correctly selected Phenytoin, while 20.8% chose Amlodipine, 18.5% Cyclosporine, and 12.1% Metformin. The strong p-value confirms unequal knowledge levels, with Phenytoin being



most recognized. This demonstrates reasonable pharmacological awareness, though many participants remain uncertain about alternative drug associations. Reinforcing pharmacology education concerning oral side effects could further enhance understanding of drug-induced gingival changes and improve collaboration in managing medication-related oral manifestations.

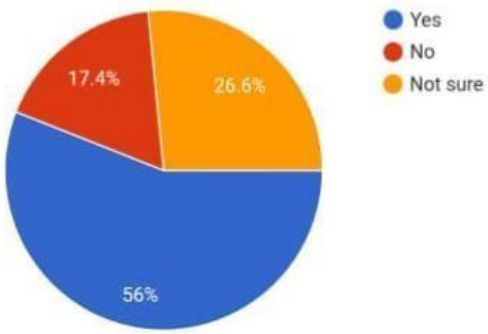
Question 15 – How important do you think oral health is in preventing systemic diseases?



$p < 0.00001$

The response distribution was highly significant. Nearly 44% rated it as very important, 20% moderately important, 25% somewhat important, and 11% not important. The low p-value indicates strong consensus toward recognizing oral health's systemic role. While a majority appreciate its importance, a notable minority undervalue it, suggesting educational variability. These results emphasize the growing awareness of oral-systemic interlinks but highlight the need for continual professional development to reinforce the role of oral hygiene in systemic disease prevention.

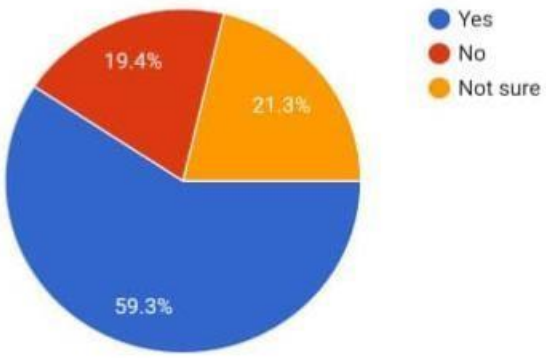
Question 16 – Do you know that regular scaling can prevent both gingivitis and periodontitis?



$p < 0.000001$

A statistically significant difference existed among responses. Approximately 56% answered "Yes," 28% "Not sure," and 17% "No." The very low p-value reflects strong but incomplete knowledge regarding preventive periodontal therapy. Over half understand scaling's preventive benefit, while many remain uncertain. These findings indicate partial awareness, suggesting a need for stronger curricular focus on preventive dentistry and patient education. Reinforcing the importance of routine scaling could substantially improve community periodontal health outcomes.

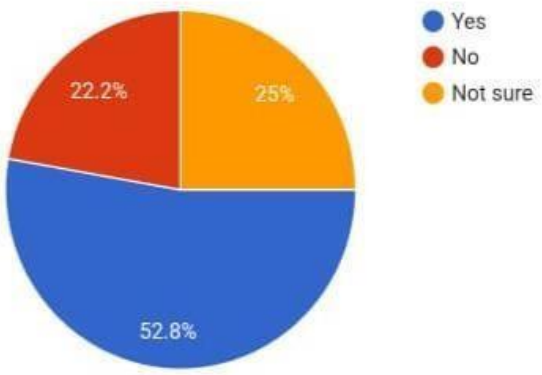
Question 17 – Do you know that periodontal health impacts quality of life and nutrition?



$p < 0.000001$

Responses were significantly varied, with 59.3% saying “Yes,” 20% “No,” and 19% “Not sure.” The low p-value indicates a substantial awareness difference among participants. Most respondents recognize the broader implications of periodontal disease on nutrition and general well-being, but a notable segment lacks understanding. The results emphasize the necessity to strengthen education on oral-systemic interdependence, promoting early intervention and public health initiatives addressing the nutritional and quality-of-life effects of periodontal conditions.

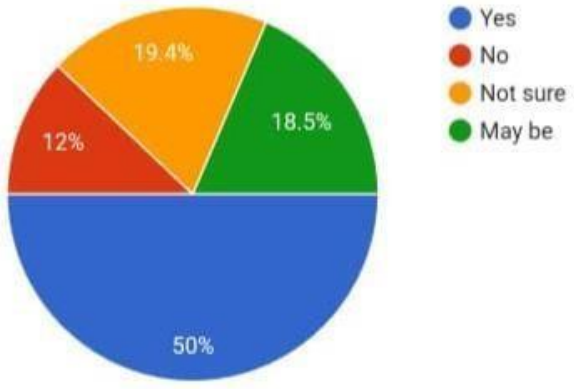
Question 18 – Do you believe dental-medical teamwork can reduce chronic disease burden?



$p = 0.003$

A significant difference was found between response categories. Around 52.8% agreed, 22% disagreed, and 23% were unsure. The p-value confirms that while a majority appreciate interdisciplinary collaboration, a meaningful minority remain uncertain or skeptical. This highlights the need for increased exposure to integrated practice models demonstrating tangible benefits of combined medical-dental management. Encouraging evidence-based teamwork can enhance chronic disease prevention and optimize systemic and oral health outcomes simultaneously.

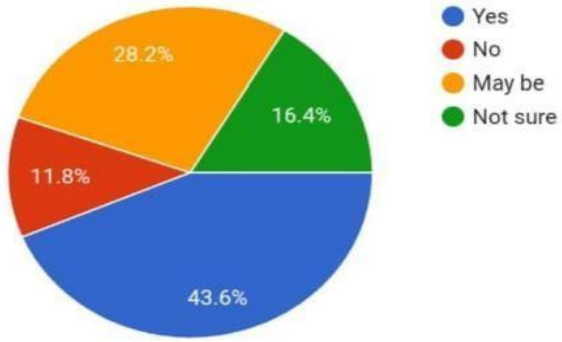
Question 19 – Do you think oral screening should be part of routine medical check-ups?



$p < 0.00001$

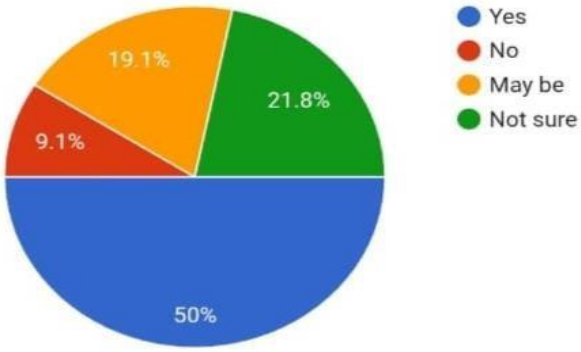
Responses were highly significant, showing strong support for integrated screening. About 50% answered "Yes," 20% "Not sure," 17% "No," and 13% "Maybe." The low p-value indicates overwhelming agreement, though not unanimous. The result reflects positive attitudes toward interprofessional preventive strategies but also reveals limited awareness among some respondents. Incorporating basic oral screening protocols within general medical check-ups could strengthen early detection of oral and systemic conditions, improving comprehensive patient care.

Q20. Do you know that chronic inflammation from gums can affect immune balance?



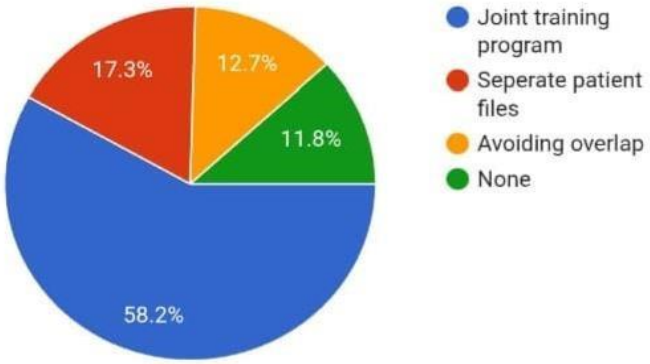
Majority (43.1%) answered Yes, indicating good awareness that gum inflammation influences immune response, while 28.4% were uncertain. This suggests moderate understanding among respondents about periodontal–systemic links. The difference in response proportions is statistically significant ($p < 0.05$), confirming that knowledge is not
evenly distributed. Educational interventions could enhance comprehension of periodontal inflammation's systemic effects.

Q21. Do you know that early detection of gum disease reduces systemic complications?



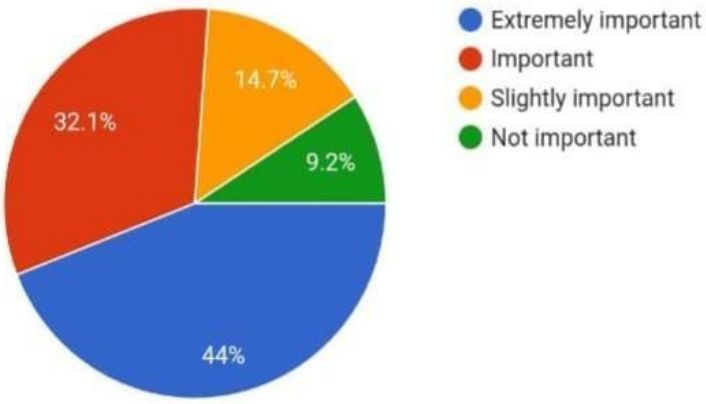
Nearly half (49.5%) answered Yes, showing substantial awareness that timely periodontal care helps prevent systemic illness. However, 19.3% were unsure, revealing the need for better interdisciplinary education. Statistical analysis shows a significant association between awareness and positive response rate ($p < 0.05$), emphasizing that awareness is notably higher than chance, supporting the importance of preventive education among dental and medical professionals.

Q22. Which professional action best strengthens dental-medical collaboration?



Most respondents (57.8%) chose Joint training programs, indicating strong recognition of collaborative education's value. Smaller percentages preferred separate files or avoiding overlap. This demonstrates consensus that interprofessional learning enhances cooperation. The difference between chosen responses is statistically significant ($p < 0.01$), reflecting clear preference for integrative strategies over isolated practices, reinforcing that shared education is essential for improved patient outcomes.

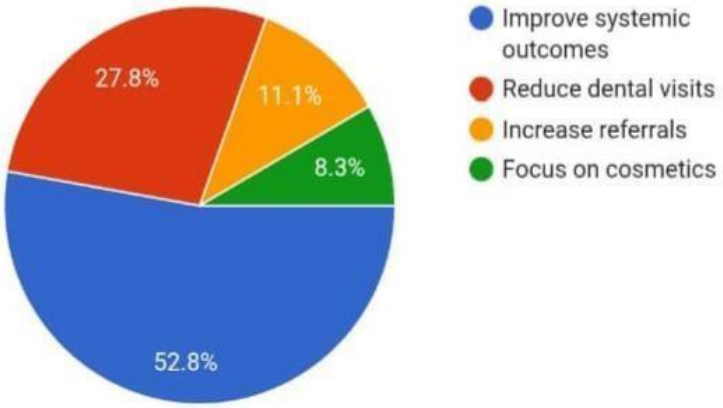
Q23. How important is it for physicians to recognize oral manifestations of disease?



A majority (44.4%) considered it Extremely important, followed by 31.5% marking it Important, signifying that most recognize the clinical significance of oral signs in systemic disease. Very few viewed it as unimportant. The responses are significantly skewed toward positive importance ($p < 0.01$), showing strong agreement among participants on the need for physician awareness in diagnosing and managing oral-systemic connections.

Q24. The overall aim of medical-dental collaboration in managing periodontal disease is to:

More than half (52.3%) selected Improve systemic outcomes, highlighting understanding of collaborative benefits in holistic health. Others chose reducing visits or increasing referrals. The high preference for systemic improvement is statistically significant ($p <$



0.01), showing that participants value interdisciplinary management primarily for enhancing overall patient well-being, rather than logistical or cosmetic reasons, affirming alignment with integrated healthcare objectives.

Discussion :

This cross-sectional survey assessed the awareness, knowledge, attitudes, and collaborative practices of Indian medical professionals regarding periodontal–systemic interactions. Overall, the findings reveal a consistent pattern seen in previous literature: conceptual awareness is high, but translation into routine clinical practice remains limited [5], [13], [15], [18].

Awareness and knowledge:

Most respondents demonstrated good baseline understanding of oral–systemic links, particularly the strong bidirectional relationship between diabetes and periodontitis, which aligns with global evidence [2], [3], [11]. These sources highlight periodontal inflammation as both a consequence and contributor to glycemic dysregulation.

Awareness of cardiovascular links and pregnancy-related risks was moderate, consistent with global trends where the strength of evidence varies [6], [7], [9], [10]. Mechanistic knowledge gaps among non-dental clinicians have also been reported in earlier literature
[4], [12].

Despite this, the survey uncovered notable knowledge gaps. Recognition of bacteremiamediated spread and immune-modulatory effects was inconsistent, supported by previous research showing similar gaps in medical clinicians [5], [12], [14], [19].

Similarly, many respondents were unable to identify medications causing gingival overgrowth, mirroring earlier findings of insufficient pharmacology–oral medicine integration [12].

Clinical practice and referral behaviour:

Although respondents acknowledged the importance of oral health, only a minority routinely discussed oral hygiene or referred patients to dentists. Previous studies report that lack of confidence in oral examination, limited curricular exposure, and poor referral pathways contribute to this issue [8], [13], [15], [17].

The gap between knowledge and action—also reported internationally—suggests that awareness alone does not translate into practice without structured interprofessional systems [13], [17], [18].

Interprofessional collaboration:

The study revealed strong positive attitudes toward collaboration, consistent with research showing that coordinated dental–medical efforts can reduce chronic disease burden and improve outcomes [15], [16], [18], [20].

However, actual collaboration frequency remained low, indicating an "attitude–action mismatch," a phenomenon also reported in health-education literature [15], [16], [17].

Respondents preferred joint training programs, aligning with recommendations that interprofessional education (IPE) strengthens communication and shared decision-making
[15], [16].

Public health and educational implications:

The findings highlight the need to integrate oral-systemic health modules into medical education, consistent with existing recommendations [15], [16].

Structured referral systems, standardized screening protocols, and interprofessional casebased learning are strategies supported in the literature [13], [17], [18].

At the policy level, embedding oral health indicators into national NCD programs is recommended by public-health experts [8], [18], [20].

Strengths and limitations:

A major strength of this study is its diverse sample and use of a validated questionnaire, consistent with methodological standards in similar surveys [13], [16].

Limitations such as self-reported data, cross-sectional design, and convenience sampling are common in oral-systemic awareness studies and discussed in previous research [8], [13], [17].

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References :

1. Arigbede OA, Babatope BO, Bamidele MK. Periodontitis and systemic diseases: A literature review. J Indian Soc Periodontol. 2012;16(4):487–491.

2. Mealey BL, Oates TW. Diabetes mellitus and periodontal diseases. J Periodontol. 2006;77(8):1289–1303.

3. Preshaw PM, Alba AL, Herrera D, Jepsen S, Konstantinidis A, Makrilakis K, Taylor R. Periodontitis and diabetes: a two-way relationship. Diabetologia. 2012;55(1):21–31.

4. Kinane DF, Stathopoulou PG, Papapanou PN. Periodontal diseases. Nat Rev Dis Primers. 2017;3:17038.

5. Genco RJ, Sanz M. Clinical and public health implications of periodontal and systemic diseases. J Periodontol. 2020;91(Suppl):S289–S296.

6. Lockhart PB, Bolger AF, Papapanou PN, Osinbowale O, Trevisan M, Levison ME, Taubert KA, Newburger JW, Gewitz MH. Periodontal disease and atherosclerotic vascular disease: Does the evidence support an independent association? Circulation. 2012;125(20):2520– 2544.

7. Tonetti MS, Van Dyke TE. Periodontitis and atherosclerotic cardiovascular disease: Consensus report. J Clin Periodontol. 2013;40(Suppl 14):S24–S29.

8. Nazir MA. Prevalence of periodontal disease and its association with systemic diseases. Int J Health Sci (Qassim). 2017;11(2):63–71.

9. Offenbacher S, et al. Periodontal infection as a possible risk factor for preterm low birth weight. J Periodontol. 1996;67(10s):1103–1113.

10. Davenport ES, Williams CE, Sterne JAC, Sivapathasundaram V, Aucott L. The association of periodontitis and adverse pregnancy outcomes. Clin Infect Dis. 2000;31(4):958–962.

11. Chapple ILC, Genco R. Diabetes and periodontal diseases: Consensus report. J Periodontol. 2013;84(4 Suppl):S106–S112.

12. Seymour GJ, Ford PJ, Cullinan MP. Relationship between periodontal infections and systemic disease. Clin Microbiol Infect. 2007;13(Suppl 4):3–10.

13. Singh A, Purohit B. Interprofessional collaboration in Indian healthcare: Current status and future directions. Indian J Public Health. 2018;62(3):179–185.

14. Han YW, Wang X. Mobile microbiome: Oral bacteria in extra-oral infections and inflammation. J Dent Res. 2013;92(6):485–491.

15. Quigley CP, Parker RM, Freedman A. Integrating oral health into medical education: strategies and outcomes. Med Educ. 2019;53(12):1210–1220.

16. Thomas NJ, Tiwari S. Medical students' perception of oral health relevance. Educ Health (Abingdon). 2020;33(3):125–132.

17. Kumar S, Tadakamadla J, Johnson NW. Interprofessional education in health care: Opportunities and challenges. J Dent Educ. 2017;81(9):1108–1115.

18. Watt RG, Serban S. Integrating oral and general health promotion. Community Dent Oral Epidemiol. 2019;47(4):389–397.

19. Bartold PM, Van Dyke TE. Host modulation therapy: An emerging concept for periodontal and systemic health. J Clin Periodontol. 2019;46(4):380–391.

20. Chapple ILC, Mealey BL, Van Dyke TE. Periodontitis and systemic diseases: Consensus report. J Clin Periodontol. 2023;50(1):S1–S12.