Treatment of periodontal diseases: Latin America and the Caribbean Consensus 2024

Abstract

The prevalence of periodontitis in Latin American and Caribbean countries (LACC) underscores a significant public health issue exacerbated by socio-economic disparities. This consensus paper, grounded in the European Federation of Periodontology (EFP) S3 level clinical practice guidelines, proposed a multifaceted approach to periodontal healthcare. It highlighted the critical need for holistic, population-wide health policies and underscored the current literature's lack of documented community interventions. The consensus advocated for a patient-centered approach to periodontal care, blending risk factor management with non-surgical and surgical interventions, and a long-term commitment to Supportive Periodontal Care (SPC). It highlighted the importance of patient engagement in biofilm control through home-care and professional interventions for long-term periodontal health. The paper also stressed that subgingival instrumentation benefits even severely compromised teeth, significantly reducing probing depths and gingival inflammation. Additionally, it emphasized the importance of personalized, long-term SPC for maintaining oral health post-treatment, highlighting the need to identify factors influencing patient adherence. This report aimed to provide actionable guidance for clinicians and policymakers, focusing on improving periodontal health outcomes and quality of life in LACC.

Keywords: Periodontal Diseases; Dental Care, Public Health; Latin America, Caribbean Region

Introduction

The dynamic and diverse panorama of periodontal healthcare in Latin America and the Caribbean countries (LACC) reflects this region's multifaceted cultural and geographical mosaic. Within this context, periodontal disease emerges as a substantial health concern, commanding a comprehensive approach that spans every facet of periodontal treatment, from the initial stages of active therapy to the pivotal phase of Supportive Periodontal Care (SPC). Building upon this framework, this paper synthesizes current scientific knowledge and the EFP S3 level clinical practice guideline (Sanz et al., 2020) to support clinical decisions and shape cost-effective public policies. We examined the comprehensive spectrum of periodontal therapy, addressing the initial phase of risk factor control, non-surgical subgingival instrumentation, subsequent reinterventions, and SPC for patients with Stages I-III periodontitis. Our focus is on guiding practitioners and policymakers toward evidence-based treatments, with a special emphasis on the role of Primary Health Care and the unique challenges faced within this region. This investigation aims to provide valuable insights and practical guidelines specifically designed for the needs of LACC to improve periodontal health and quality of life across the region.

Periodontal Treatment: First Step

The first phase of periodontal therapy is crucial for motivating patients to change behaviors, especially in effectively removing supragingival biofilm and managing risk factors, and is applicable to all stages and grades of periodontitis (Sanz et al., 2020).

Home-care treatment

Effective control of supragingival biofilm hinges on guiding patients towards improved oral hygiene and behavioral changes (Sanz et al., 2020). Brushing twice daily for at least two minutes is essential, although the best technique and duration are still under debate (Sälzer et al., 2020; Valkenburg et al., 2019). An 11-year study demonstrated

that brushing twice daily significantly reduced the number of teeth with probing depths (PD) ≥ 4 mm (Joshi et al. 2018). However, minimizing excessive brushing force is important to avoid gingival recession and dental wear (Sälzer et al., 2020). While powered toothbrushes may enhance patient compliance (Hellstadius et al., 1993), two studies from Brazil found no significant differences among ultrasonic, electric, and manual brushes in clinical and microbiological outcomes (Costa et al., 2007; Costa et al., 2010). However, systematic reviews have indicated that powered toothbrushes are generally more effective in reducing gingivitis and biofilm (Thomassen et al., 2022; Yaacob et al., 2014), leading to an 11% additional reduction in gingivitis and a 21% additional reduction in supragingival biofilm (Yaacob et al., 2014). Interdental brushes are preferred for interproximal cleaning, significantly reducing gingival inflammation (Chapple et al., 2015; Sanz et al., 2020; Haas et al., 2019). According to a Brazilian study, patients not performing interproximal cleaning are 2.19 times more likely to develop gingivitis (Haas et al., 2019). Psychological interventions like cognitive behavioral therapy and motivational interviewing have shown limited effectiveness in improving oral hygiene habits (Carra et al., 2020; Sanz et al., 2020).

Professional treatment

Professional supragingival biofilm removal (PSBR) and management of biofilm retentive factors are essential for the primary and secondary prevention of periodontal diseases (Sanz et al., 2020). A split-mouth clinical trial in Brazil revealed that PSBR reduced the need for subgingival procedures by 48% (Gomes et al., 2014). PSBR also helps maintain periodontal stability during SPC (Ximénez-Fyvie et al., 2000).

Tooth splinting (TS) and occlusal adjustment (OA) can be implemented in all phases of periodontal therapy, especially for patients with periodontitis and masticatory dysfunction (Herrera et al., 2022). Although TS may not significantly prolong the survival of mobile teeth, it improves biting and chewing functions (Dommisch et al., 2022). OA can enhance clinical attachment levels (CAL) in hypermobile teeth with

premature contact (Dommisch et al., 2022). Therefore, temporary TS and selective OA of hypermobile teeth are recommended to increase patient comfort and aid in the periodontal treatment of stage IV periodontitis (Dommisch et al., 2022; Herrera et al., 2022). TS also serves as a preparatory step for periodontal regenerative surgery (Cortellini et al., 2001).

Risk factor control

Effective risk management, especially targeting tobacco smoking and diabetes, is crucial for periodontal health (Sanz et al., 2020). Smoking cessation strategies such as the '5 A's' model and '5 R's' approach are effective (Murray et al., 2008). Economic analysis in Brazil has shown the cost-effectiveness of smoking cessation programs for periodontitis patients, highlighting their role in preventing tooth loss and enhancing quality of life (Souto et al., 2021). A two-year longitudinal study in Brazil indicated that smoking cessation led to gains in CAL and reduced PD (Rosa et al., 2014). A systematic review of longitudinal studies revealed that the risk of tooth loss for former smokers was similar to non-smokers (Relative Risk [RR]=1.15, 95% CI=0.98-1.35), in contrast to current smokers who faced a significantly higher risk (RR=2.60, 95% CI=2.29-2.96) (Souto et al., 2019). The length of smoking cessation is key in mitigating risks (Souto et al., 2019; Warnakulasuriya et al., 2010). Successful smoking cessation predictors in Brazilian periodontitis patients include being male, not living with smokers, and showing low nicotine dependence (Inoue et al., 2016).

Diabetes management is also crucial for enhancing periodontal treatment outcomes and ensuring long-term stability in periodontitis patients (Ramseier et al., 2020). Educational interventions, dietary counseling, and referrals for blood glucose management are essential (Sanz et al., 2020; Ramseier et al., 2020). While no direct evidence links physical activity and weight loss to periodontal outcomes, such lifestyle changes may indirectly benefit periodontal health through inflammation reduction,

improved bone density, increased insulin sensitivity, and obesity management (Chan et al., 2023).

Periodontal Treatment: Second Step

The second stage of periodontal treatment emphasizes removing calculus and subgingival biofilm through meticulous subgingival instrumentation (Sanz et al., 2020; Herrera et al., 2022). This technique is effective even for severely compromised teeth and aims to reduce PD, gingival inflammation, and the number of diseased sites (Smiley et al., 2015; Van der Weijden & Timmerman, 2002; Cortellini et al. 2020; Cobb et al., 2002). This typically results in a 2.2 mm PD reduction and a 0.5 - 2 mm gain in CAL in deep sites (Van der Weijden & Timmerman, 2002; Smiley et al., 2015). A recent meta-analysis reported an increase from 39.1% to 64.1% in sites with PD < 3mm post-treatment, reflecting a rise in healthier sites (Citterio et al., 2022). Studies by Suvan et al. (2019) and Tomasi et al. (2007) support these findings, with pocket closure in 74% and 62.4% of sites, respectively. However, the treatment's efficacy varies depending on factors like tooth type, extent of periodontal destruction, local factors, and patient age, with non-molars showing better response than molars (Graziani et al., 2017). While 75% of all pockets resolve in patients with stage II periodontitis, the closure rates were approximately 66% and 50% in localized and generalized stage III–IV periodontitis, respectively. Nevertheless, the success of this stage heavily depends on the successful implementation of the first step of the periodontal treatment (Sanz et al., 2020).

Current guidelines do not specify the number of sessions for subgingival instrumentation but caution against potential systemic risks with full-mouth disinfection (Sanz et al., 2020). Both hand instruments and sonic/ultrasonic devices, used individually or in combination, are recommended for effective subgingival instrumentation (Suvan et al., 2020).

Current adjunct methods to improve the outcomes of subgingival instrumentation include:

1. Physical Agents: Despite potential benefits, including for patients with diabetes (Claudio et al., 2021), the EFP advises against the combined use of lasers and antimicrobial photodynamic therapy (aPDT) with subgingival instrumentation due to limited evidence (Salvi et al., 2020).

2. Local Antiseptics: The adjunctive use of sustained-release chlorhexidine can yield an additional 10% reduction in PD without impacting CAL. Its implementation, however, requires consideration of cost and the lack of standard protocols (Herrera et al., 2020; Sanz et al., 2020).

3. Antiseptic Mouthwashes: Chlorhexidine-based mouthwashes, when used adjunctively and temporarily, can decrease PD without affecting CAL (da Costa et al., 2017). Nonetheless, their use should only be considered in patients with adequate plaque control and must account for potential side effects and costs (Sanz et al., 2020).

4. Antibiotics: Local sustained-release antibiotics containing doxycycline, tetracycline, and minocycline enhance PD reduction by 10% to 30%. (Herrera et al., 2020; Sanz et al., 2020; Gegout et al., 2023). However, while compelling, these findings are based on limited studies and require cautious interpretation. Systemic antibiotics are particularly effective in young patients with generalized Stage III or IV periodontitis (Sanz et al, 2020). Research indicates that a combination of adjunct metronidazole (MTZ) and amoxicillin (AMX) significantly reduces PD in 40% to 50% of sites exceeding 5 mm and improves CAL (Feres et al., 2012; Mestnik et al., 2012; Teughels et al., 2020; Sanz et al., 2020). However, the routine adjunctive use of systemic antibiotics in periodontal treatment is discouraged due to health risks and antibiotic resistance concerns (Teughels et al., 2020; Retamal-Valdes et al., 2022).

5. Host Modulating Agents: Despite showing some clinical benefits, the use of agents like statins, probiotics, sub antimicrobial doxycycline, bisphosphonates, non-steroidal anti-inflammatory drugs (NSAIDs), omega-3 polyunsaturated fatty acids, and metformin is not recommended due to limited evidence and potential biases in studies (Sanz et al., 2020, Donos et al., 2019; Gegout et al., 2023).

In summary, while subgingival instrumentation is pivotal in periodontal therapy, the efficacy of adjunct methods needs thorough evaluation for risks, benefits, and evidence quality.

Periodontal Treatment: Third Step

After the second step of periodontal treatment, the periodontal re-evaluation will evaluate the individual tissue response. The proposed endpoint to consider a successful treatment includes no periodontal pockets ≥ 4 mm with bleeding on probing (BOP) or no periodontal pockets ≥ 6 mm. If these endpoints are not achieved, a third step of therapy may be considered to gain access to subgingival instrumentation, regeneration, or resection of these lesions, especially in furcation and intra-bony defects.

According to Sanz et al. (2020), the third step may include repeated subgingival instrumentations with or without adjunctive therapies, access flap surgery, and regenerative and resective therapies. When there is an indication for surgical interventions, these should be subject to additional patient consent, and specific evaluation of risk factors or medical contraindications should be considered.

Although it is an interesting target to consider a successful periodontal treatment, it should be realized that it is not always as predictable as it may appear and may not be achievable in all teeth in severe Stage III periodontitis patients. Many aspects, including risk factors such as smoking and diabetes, age, plaque control, and tooth morphology of the defects, may influence the healing process.

The success of periodontal treatment may be evaluated using (1) clinical improvement, such as reduction of plaque index and BOP, PPD reduction, and CAL gain, (2) histological evaluation, (3) long-term results in terms of tooth loss and furcation improvement or bone gain in intrabony defects. For controlled clinical trials, changes in direct bone measurements (horizontal probing bone level, at surgery and during re-entry, open measurements) serve as primary outcome variables for evaluating clinical success. In contrast, closed measurements such as clinical attachment level gain (horizontal/ vertical probing attachment level), probing depth reduction (horizontal/vertical), and radiographic assessments may serve as secondary outcomes. However, the true endpoint and best-expressed definition of success would be preserving the natural teeth associated with the patient´s well-being (Pini-Prato et al., 2019). The rate of tooth loss should be as low as possible.

In a randomized multi-center study evaluating the effectiveness of NST in general practice, the pocket closure rate was between 69% and 72% after six months. Treatment outcomes at the patient level may be associated with disease severity (staging). While about 75% of all pockets resolved in patients with stage II periodontitis, the respective proportions of pocket closure were about 66% and 50% in patients with localized and generalized stage III–IV periodontitis, respectively.Therefore, NST eradicates approximately 2/3 of the pockets. This further shows that NST may be ineffective in achieving periodontal stability over time in severe periodontitis (Citterio et al., 2022).

Since NST may not be ineffective in reducing PPD ≥ 6 mm, how effective are access flaps (AFs) as compared to subgingival debridement in attaining probing depth (PD) reduction? AF and subgingival scaling significantly reduced PD in moderately deep pockets (4-6 mm). However, the short-term PPD reduction was significantly greater in the access flap group. This additional reduction in PPD for AFs over subgingival debridement amounted to 29.6%. The subgingival debridement group showed significant CAL gain in the short term, but the changes were not significant in the surgery group. The use of AFs provided a significant increase of 9.5% in the frequency

distribution of moderately deep pockets in the long term (Sanz-Sanches et al., 2020). In deep pockets (PPD > 6 mm), the reduction was significantly higher in areas receiving surgery in the short and long terms. The additional PPD reduction for AFs over subgingival debridement amounted to 27.5% in the short term and 25.3% in the long term. As it happened with moderately deep pockets, the differences tended to be smaller with time. The percentage of residual sites with PD > 3 mm after treatment varied from 17% to 49% in the access flap group and 20%–62% in the subgingival debridement group (Becker et al., 2001; Lindhe & Nyman, 1985; Lindhe et al., 1982a; Serino et al., 2001; Wennström et al., 1986).

Pocket reduction/elimination techniques were superior to access flap approaches 6–12 months post-surgery, particularly in sites with initial PPD ≥ 6 mm. However, longer-term follow-up (36–60 months) was not able to find significant differences between the two surgical approaches (Polak et al. 2020)

Common complications during follow-up are further attachment loss and the need for re-treatment. The percentage of patients or teeth in need of re-treatment during the study follow-up varied between 0% and 14% in the access flap group and from 8% to 29% in the subgingival debridement group (Kaldahl et al. 1988; Pihlstrom et al., 1984; Ramfjord et al., 1987; Serino et al., 2001). The challenge for the clinician is making decisions to carry out a treatment capable of modifying the prognosis of such teeth or extracting or enrolling them into the SPC phase, accepting very high odds of tooth loss over time. Even if one does not observe an optimal result after active periodontal treatment, high adherence to an SPC appears to weaken the association between an unstable PPS at baseline and an increase in the number of diseased teeth and tooth loss due to periodontitis. An 11-year longitudinal study observed that tooth loss due to periodontitis is a rare event during SPC (0.035 teeth/patient/year) and occurs only in a small fraction of the population (i.e., 76% did not lose a single tooth due to periodontitis). On the contrary, patients failing to achieve a stable PPS after active periodontal treatment present a statistically significantly higher risk of increased number of diseased teeth and tooth loss in the long term. A perfect adherence during

SPC appeared to successfully compensate for a less-than-optimal result after active periodontal treatment, especially in terms of tooth loss due to periodontitis. The negative effect of not achieving a stable PPS at baseline disappeared when evaluating only the highly adherent patients (Bertl et al. 2022). In a 30-year longitudinal study of SPC after active periodontal therapy, only 201 teeth (5.1%) were lost (39 for periodontal reasons). Periodontitis stage III or stage IV periodontitis was associated with more significant tooth loss during SPC compared to stage I or stage II (OR = 2.10; p = 0.048). Generalized periodontitis showed a statistically significant OR = 3.24 (p = 0.016) compared to the localized one (Agudio et al 2023). Other studies reported a higher % of tooth loss in 10 years, 6.7% (Eickholz et al., 2008) and 7.2% (Matuliene et al., 2010) and in 20 years, 12.3% (Rahim-Wöstefeld et al. 2020). However, even teeth with an initial bone loss of over 60% could be retained in approximately two-thirds for 20 years (Rahim-Wöstefeld et al. 2020). These studies showed that irregular compliance with SPC is correlated with a higher incidence of tooth loss (Eickholz et al., 2008; Matuliene et al., 2010). The issue of time is not irrelevant because the progression of periodontal destruction and the consequent potential loss of teeth may be a function of time (Matuliene et al., 2008).

Costs

An important issue would be the extra cost to perform any surgery during periodontal therapy. Surgery imposed an additional 746 Euro on the patient for up to 6 months compared to SRP. At 12 months, 46 euros of this amount could be offset because of a reduced need for supportive care. Only 6 patients in the surgery group needed systemic antibiotics, whereas 14 patients in the SRP needed such additional treatment. Although 700 Euros could be saved on average by performing SRP instead of surgery, the latter significantly reduced the need for supportive care and systemic antibiotics (Miremadi et al. 2014). However, it's important to note that we do not have similar data for the LACC. Differences in healthcare systems, economic conditions, and patient demographics might mean that the cost-effectiveness and clinical outcomes observed in other regions may not directly translate to the LACC context.

Further research specific to LACC countries is necessary to understand the economic and clinical implications of periodontal therapy choices in these diverse healthcare environments.

A key challenge in LACC is the cost barrier to accessing dental services, particularly for low-income families. Dental care is often available mainly through Universities or the military's dental services. In Brazil, for instance, some specialized clinics known as Dental Specialties Centres (DSC) provide periodontal surgeries after a referral from the Family Health Strategy (FHS) (Pelucio et al. 2020). A major issue with this system is the inadequate periodontal diagnosis at the FHS level, leading to overbooking at DSCs. Laroque et al. (2015) indicated that DSC needed to meet the Ministry of Health's required productivity parameters and increase production. Additionally, the appointment control center lacks protocols for care prioritization, and there is a scarcity of DSCs throughout the country. A study published by The Economist, analyzing European countries, provided evidence that professionally managed periodontitis is cost-effective and, therefore, public coverage of dental care for periodontitis deserves a review from policymakers and commissioners Europe-wide, not just in Europe but potentially as a model for LACC countries.

Supportive Periodontal Care

SPC is essential in maintaining oral health post-active periodontal therapy. Both dentists and patients need to understand the significance of SPC, as it is key in preventing the recurrence of periodontal disease and in promoting long-term oral wellness. It involves updating medical and dental histories, managing risk factors like smoking and diabetes, and promoting behavioral changes for good oral hygiene and maintenance schedule adherence (Sanz et al., 2020). Clinical examinations assess periodontal and peri-implant conditions, and allow for tailored oral hygiene instructions (OHI). SPC also includes removing plaque-retention factors and supragingival biofilm, polishing, and subgingival instrumentation for moderate and deep sites. A Brazilian study highlighted that oral prophylaxis, combined with OHI and subgingival

instrumentation, is more effective in reducing probing depths ≥ 5 mm than OHI and prophylaxis alone during SPC (Angst et al., 2019).

Home-care therapy during SPC

In specific cases, antiseptic mouthwashes and dentifrices are recommended to control gingivitis during SPC. Mouthrinse options include those with essential oils, chlorhexidine, and cetylpyridinium chloride. For dentifrices, formulations with triclosan-copolymer, chlorhexidine, and stannous fluoride-sodium hexametaphosphate are considered effective (Sanz et al., 2020). A Brazilian randomized controlled trial (RCT) with a 2-year follow-up demonstrated that dentifrice containing 0.3% triclosan + 2.0% PVM/MA copolymer was more effective than regular fluoride dentifrice in reducing BOP, plaque index, and the percentage of sites with PD greater than 4 mm during the SPC (Stewart et al., 2020).

Determining SPC Frequency

The ideal frequency for SPC is subject to debate, with recommended intervals ranging from two weeks to 18 months. Longitudinal studies aiming to tailor SPC frequency to individual risk profiles have yielded mixed results. For example, Matuliene et al. (2010) categorized 160 patients into risk categories, suggesting annual sessions for low-risk patients and up to four sessions yearly for high-risk patients. Despite increased SPC frequency, higher risk was associated with more tooth loss. Similarly, Trombelli et al. (2017) observed varying tooth loss rates across risk groups despite comparable SPC schedules. A Brazilian study (Ueda et al., 2014) found monthly visits improved plaque scores but did not significantly alter other periodontal measures compared to three-month intervals. Recent research by Ravidà et al. (2021) suggested SPC visit frequencies based on periodontitis severity: every 7.4 months for stages I-II, 6.7 months for III-IV, 7.2 months for grade B, and 6.7 months for grade C, with shorter intervals recommended for smokers, diabetics, and the elderly.

Adherence to SPC

Adherence to SPC is vital to prevent tooth loss and periodontitis recurrence. Non-adherence leads to a 26% higher risk of tooth loss (Campos et al., 2021) and an increased risk of periodontitis progression (Costa et al., 2011). Regular SPC adherence in Brazil significantly reduced annual tooth loss from 0.36 to 0.12 teeth/year (Costa et al., 2014). Adherence rates vary widely, ranging from 11% to 88%. A Brazilian study indicated only 26% of patients consistently returned for SPC, with 40% doing so irregularly (Novaes Jr et al., 1996). SPC discontinuation is more common in the first few years (Checchi et al., 2002). Factors influencing discontinuation include age, female gender, personality traits like anxiety, dental fear, systemic health conditions, smoking, socio-economic status, and lack of information (Checchi et al., 2002; Echeverría et al., 2019). A Brazilian study noted women under 30 or over 51, particularly those undergoing non-surgical therapy, were more likely to be non-compliant (Novaes and Novaes, 2001). However, factors such as smoking cessation, older age, low percentage of BOP, severe periodontal disease, longer active treatment duration, and extended SPC intervals improve adherence (Echeverría et al., 2019). Regional differences, across Brazil, Venezuela, Chile, and Argentina, emphasize the impact of cultural and socio-economic conditions, and oral hygiene knowledge on SPC adherence (Novaes et al., 1999), highlighting the need for tailored approaches in SPC adherence strategies.

Long-term periodontal outcomes during SPC

The average annual tooth loss among SPC patients ranges from 0.1 to 0.2 teeth, with significant patient-specific variations (Carvalho et al., 2021). A small group of SPC patients accounts for most tooth losses, influenced by factors such as age, gender, smoking, diabetes, advanced periodontitis, and adherence to SPC, as well as specific tooth characteristics like maxillary and molar teeth, initial PD, number of sites with PD ≥5 mm and furcation involvement (Carvalho et al., 2021; Ravidà et al., 2021; Siow et al., 2023). In Brazil, aspects such as gingival bleeding, advanced furcation lesions, and patient characteristics such as age over 50, male gender, diabetes, smoking, and

non-compliance have been significant predictors of molar loss during SPC (Costa et al., 2022).

A correlation has also been observed between the duration of SPC follow-up and clinical attachment loss. Specifically, patients with follow-ups longer than 10 years exhibited a slightly higher incidence of attachment loss (26.3%) compared to those with 5 to 10 years of SPC (22.1%) (Leow et al., 2022). This highlights the progressive nature of periodontal disease over time and the importance of long-term maintenance. Brazilian studies link tooth loss and periodontitis recurrence during SPC to male gender, periodontitis severity, surgical therapy, and lifestyle factors like irregular SPC adherence, poorly controlled diabetes, smoking, intense alcohol use, poor oral hygiene, and depressive disorders (Lorentz et al., 2010; Costa et al., 2013; Costa et al., 2014; Costa et al., 2015; Costa et al., 2020a; Costa et al., 2020b).

Compliance to SPC is crucial in preventing tooth loss, though it may not be cost-effective for all patients. Compliant patients in more advanced stages of periodontitis (Stage III/IV and Grade B/C) incur lower cumulative costs for relapse treatments (Saleh et al., 2024). On the other hand, patients diagnosed with stage I/II, grade A periodontitis might benefit financially from fewer SPC visits, with a minimum of 1 visit/year (Saleh et al., 2024). Additionally, there has been a disparity in periodontitis progression and tooth loss between private and public academic patients in Brazil, with lower rates in private settings (Costa et al., 2012). These findings emphasize the complexity of periodontal disease progression and the necessity for tailored, comprehensive SPC strategies that consider oral and systemic health.

Social perspectives and challenges of treating periodontitis in LACC

In LACC, the management of periodontitis is inextricably linked to the region's complex socio-economic landscape. Despite modest regional Gross Domestic Product (GDP) growth, averaging around 2% (World Bank, 2023), the region grapples with extreme poverty and income inequalities, which profoundly affect public health initiatives, including the management of periodontal diseases. Stark income inequality, where the wealthiest 10% of the population earns 55% of total income, while the

poorest 50% earns just 10% (CAF, Banco de Desarrollo de América Latina), intensifies these disparities in healthcare access. Consequently, periodontal diseases not only represent a public health challenge but also serve as indicators of deeper socio-economic inequalities, with a notably higher prevalence in lower socioeconomic groups. Healthcare spending in LACC, at approximately 6.9% of GDP in 2019, is below the OECD (Organization for Economic Co-operation and Development) countries average of 8.5%, and the allocation for dental care is even more constrained. This limited budget inadequately addresses the needs of the entire population, particularly those in lower-income brackets, where the burden of periodontal diseases is most significant. Addressing periodontitis in these regions calls for interventions that are both cost-effective and accessible, focusing on preventive strategies and early interventions.

Addressing periodontitis in LACC also requires a paradigm shift in dental academic institutions, clinical practices, and national dental associations toward adopting evidence-based, feasible, and cost-effective strategies. This shift involves focusing on not just isolated treatment options, but also on structured preventive programs that promote healthy lifestyles. These programs are likely the most cost-effective method for optimal periodontal care. Such a transformative approach necessitates ongoing education and regular updates in clinical training to accurately reflect the unique realities of the region. Moreover, the diversity of oral healthcare systems across LACC, influenced by varied economic and political factors, poses challenges to the uniform implementation of these strategies. While many LACC have established national oral health policies focusing on the prevention, diagnosis, treatment, and maintenance of periodontal diseases (as detailed in Table 1), the effectiveness of these policies in real-world practice remains largely unexplored. The management of periodontitis should follow clinical protocols that are not only tailored to local social and oral health conditions but also to resource availability. These strategies must be both clinically effective and economically viable, with the goal of ensuring equitable access to oral health services.

Table 1: Oral health policies with periodontal treatment strategies implemented in LACC countries.

Country	Access link
Argentina	https://www.sssalud.gob.ar/pmo/res_s_02_201.pdf
Bolívia	https://www.minsalud.gob.bo/images/Descarga/saludOral/2010-Normas_Salud_Oral-6316.pdf
Brasil	https://aps.saude.gov.br/noticia/22036
Chile	https://www.minsal.cl/wp-content/uploads/2022/02/PLAN-NACIONAL-DE-SALUD-BUCAL-2021-2030.pdf
Costa Rica	https://www.ministeriodesalud.go.cr/index.php/biblioteca-de-archivos-left/documentos-ministerio-de-salud/ministerio-de-salud/planes-y-politicas-institucionales/politicas-en-salud-1/5753-politica-nacional-de-salud-bucal-2022-2032/
Ecuador	https://www.salud.gob.ec/wp-content/uploads/2016/09/Protocolos-Odontol%C3%B3gicos.pdf
El Salvador	https://www.transparencia.gob.sv
Honduras	https://secretariadesaludhn.wordpress.com/programas-de-la-secretaria-de-salud/
México	https://minsa.gob.pa/programa/programa-de-salud-bucal
Panamá	https://minsa.gob.pa/programa/programa-de-salud-bucal
Paraguai	https://www.gub.uy/ministerio-salud-publica/comunicacion/publicaciones/programa-nacional-de-salud-bucal
Peru	https://cdn.www.gob.pe/uploads/document/file/306236/Resoluci%C3%B3n_Ministerial_N__324-2019-MINSA.PDF
República Dominicana	https://sns.gob.do/cartera-servicios-niveles-atencion/
Uruguai	https://www.gub.uy/ministerio-salud-publica/comunicacion/publicaciones/programa-nacional-de-salud-bucal
Venezuela	https://www.sld.cu/galerias/pdf/uvs/saludbucal/presenvenez.pdf

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Conclusions, research gaps, and future needs

Conclusions:

1. Holistic Approach: The consensus emphasizes a comprehensive approach to periodontal healthcare, integrating individual risk factor management with a combination of non-surgical and surgical treatments, and a long-term commitment to SPC (Figure 1).
2. Patient Involvement: It highlights the necessity of patient engagement in biofilm control through home-care and professional interventions for long-term periodontal health.

3. Tailored SPC Programs: The need for personalized long-term SPC programs that integrate oral and systemic health, focusing on identifying and addressing factors affecting patient adherence, is underscored.
4. Education and Clinical Practices: The consensus calls for updates in dental education and clinical practices in LACC, advocating for the adoption of evidence-based, cost-effective, and feasible periodontal care strategies.
5. Public Health Policies: A strong advocacy for comprehensive public health policies is made, emphasizing preventive measures, early interventions for periodontal health, and integration of oral health within overall health and healthy lifestyles.

Research gaps and future needs

1. Patient Education and Motivation Strategies: There is a critical gap in understanding the best patient education and motivation strategies for effective oral hygiene maintenance in LACC. Current research indicates a need for more innovative approaches beyond traditional methods. Future research should explore interdisciplinary strategies, incorporating insights from psychology, sociology, and education, to develop more effective patient communication and education models tailored for LACC. This could include digital health interventions, community-based programs, and culturally tailored educational materials that resonate with diverse populations.
2. Long-Term Outcomes of Periodontal Treatment in LACC: There is also a significant lack of data regarding the long-term outcomes of various periodontal treatments, especially in diverse socioeconomic and cultural settings. This gap hinders the development of tailored treatment protocols and public health policies. Future research should focus on longitudinal studies that track the efficacy of different periodontal interventions in LACC over extended periods. These studies should consider a range of variables, including patient demographics, socio-economic status, access to healthcare, and cultural attitudes toward oral health.

3. Socio-Economic Disparities in LACC Periodontal Healthcare: Lastly, there's an urgent need to address the socio-economic disparities that affect periodontal healthcare and its outcomes in LACC. Research should explore how these disparities influence access to and the efficacy of periodontal care. This includes understanding barriers to accessing care, such as cost, availability of services, and patient awareness, and developing strategies to overcome these challenges.

Recommendations

Implement Comprehensive Care: Adopt a holistic approach to periodontal treatment, tailored to each patient, integrating individual risk factor management with non-surgical and surgical treatments - the latter as required, and ongoing SPC.

Enhance Patient Involvement: Foster a deeper engagement of patients in their periodontal treatment, underscoring the essential role of managing biofilm effectively and controlling risk factors. This should involve a synergistic approach that combines home-care practices with professional dental interventions.

Personalize SPC Programs: Develop tailored, long-term SPC programs that integrate oral and systemic health, focusing on identifying and addressing factors that affect patient adherence.

Revamp Education and Clinical Practices: Call for updates in dental education and clinical practice in LACC to reflect the region's specific needs and realities. This includes adopting evidence-based, cost-effective, and feasible periodontal care strategies.

Enhance Public Health Policies: Strongly advocate for developing and enhancing comprehensive public health policies. These policies should be broad-ranging and inclusive, focusing on preventive measures and early interventions for periodontal health and integrating oral health within the broader context of overall health and healthy lifestyles.

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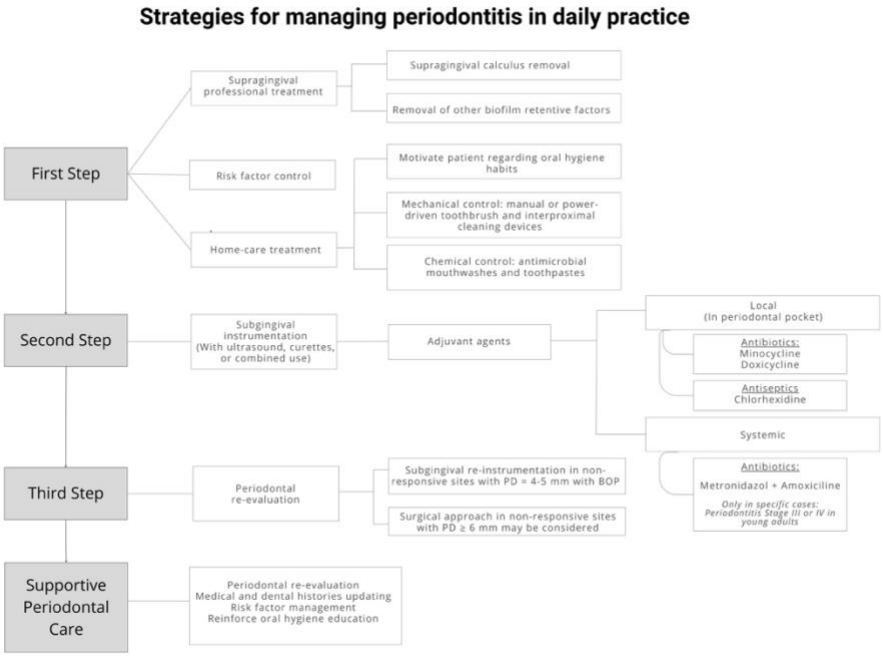

Figure 1. Strategies for managing periodontitis.