

A Clinical Study to Assess the Prevalence and Severity of Chronic Periodontitis Among Senior Citizens

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ABSTRACT

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Chronic inflammation in the gums, periodontal ligament, cementum, and alveolar bone is known as periodontitis. It may lead to tooth loss, difficulty chewing food, a lower quality of life in relation to oral health, and more difficult treatments; it is most common among the elderly. In order to determine the frequency and severity of periodontitis in the elderly, this article offers a research strategy that is focused on clinical practice. Participants in the prospective cross-sectional study are adults (60 and up) who will undergo a battery of exams, including a dental exam, a periodontal exam, a plaque and gingival assessment, a measurement of the depth of the probing pocket, the presence or absence of bleeding during the probing process, the degree to which clinical attachment loss has occurred, the mobility of the teeth, and, when necessary, radiographic evaluation. Periodontitis is now classified according to the 2017 World Workshop criteria, which eliminates the distinction between chronic and aggressive forms and instead employs staging and grading. This is in contrast to the previous usage of the term ‘chronic periodontitis’ [1,2]. Factors that increase the likelihood of adverse events as people age include smoking, diabetes, poor oral hygiene, side effects of medications, inability to perform daily tasks, and lack of access to dental care. Individualized risk assessments, teaching in proper oral hygiene, professional management of plaque above and below the gum line, instrumentation of the gums, control of risk factors, periodontal surgery where needed, and supportive periodontal care are the cornerstones of periodontal treatment.

1. INTRODUCTION

Deterioration of the tissues that support teeth occurs over time in periodontitis, an inflammatory disease linked to biofilms. Untreated periodontal disease can cause pockets to form, loss of clinical attachment, and loss of alveolar bone, all of which can cause teeth to shift or even fall out [3]. Because of variables like as smoking, decreased manual dexterity, changes in saliva, systemic disorders, and medication use, as well as cumulative exposure to microbial plaque, periodontal disease is more problematic in the elderly. Periodontitis is more prevalent in older adults, according to population surveillance [4].

Historically, people would be seen with a periodontal condition known as ‘chronic periodontitis,’ which gradually worsens and causes inflammation. These terms now reflect the more modern periodontal categorization system, which established a multidimensional staging and grading system and merged the old chronic and aggressive groups into periodontitis during the 2017 World Workshop. Grading takes information regarding progression rate, risk of progression, and projected treatment outcomes into account, whereas staging signifies severity and treatment complexity. So, even tho the clinical diagnosis is reported using the current approach, a modern clinical study that answers the original research question may still use the term “chronic periodontitis” in the title.

The field of periodontal research has seen significant changes in the language used to describe periodontal disease throughout the years. An earlier way of classifying periodontitis distinguished between ‘aggressive’ and ‘chronic’ varieties, the latter of which progresses at a faster rate. For instance, aggressive periodontitis and chronic periodontitis were kept apart in the 1999 classification. The difference was not strong enough to capture the intricate biochemical behavior of periodontal disease, as later studies proved. Therefore, periodontitis was created

by merging the old chronic and aggressive groups at the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions. Staging and grading are used by the current system to characterize patients. Disease progression, risk factors, and expected biological behavior can be learned from grades A–C, whereas stages I–IV indicate escalating severity and complexity [5,6].

Researchers in the field of periodontics paid close attention to the interplay between dental plaque, calculus, inflammation of the gums, and the deterioration of periodontal tissues during the 1900s. Significant advancements in preventive dentistry and periodontal care were made when the idea of bacterial plaque as a key starting factor was put forward. Successive studies have shown that bacterial presence alone is insufficient to account for tissue damage; rather, the interplay between the microbial biofilm and the immune-inflammatory response of the patient is crucial.

Research on periodontal disease should prioritize older adults since periodontal disease can progress over a long time. The natural process of aging is not necessarily a factor that causes periodontitis. Instead, periodontal risk factors such as smoking, insufficient plaque control, systemic diseases that alter periodontal inflammation, and prior untreated illness may have been present for a longer time in older persons. Reduced salivary flow due to medicine, poor vision, cognitive difficulties, diminished hand dexterity, and trouble keeping regular dental checkups are additional issues that older patients may face.

Periodontal pockets, gingival recession, root exposure, tooth mobility, root caries, poor restorations, dentures, and implant-supported prostheses are some of the oral diseases that a senior individual may experience all at once.

2. LITERATURE SURVEY

For periodontitis stages I–III, the European Federation of Periodontology (EFP) created an evidence-based S3 clinical practice guideline. Patient education, behavioral and risk factor control, and professional plaque removal are the first steps in the guideline's sequential approach. Subgingival instrumentation and other periodontal procedures, including surgery, are performed when necessary. Following active therapy, periodontal supportive care is necessary [7,8].

Instead of recognizing diabetes and tobacco smoking as distinct periodontal illnesses, the 2017 World Workshop acknowledged them as significant modifiers of periodontitis. Because older persons often have multiple medical conditions and take multiple medications, this is of particular importance to geriatric research [9].

This difference is significant for the planned study of the elderly. A 70-year-old patient's periodontal attachment loss could be the result of years of smoking, poor periodontal care, diabetes, or plaque buildup. Therefore, the patient's risk profile and medical history should be considered when interpreting the clinical results. As a result, it's better to do an organized periodontal examination instead than assuming that gum disease is a natural part of becoming older.

Periodontal stability over the long run cannot be assured by active periodontal treatment alone, according to the literature. Periodontal monitoring, reinforcement of good oral hygiene habits, and prevention of recurring plaque and calculus buildup are all goals of supportive periodontal treatment. Supportive periodontal treatment is a crucial part of long-term periodontal management, according to the EFP recommendations [10]. Additional treatment may be necessary for sites that have deep pockets or ongoing periodontal inflammation. Periodontal surgery, regenerative techniques, extra nonsurgical therapy, and the degree of remaining disease are all possibilities. Instead of recommending emergency surgery, the EFP guideline suggests a progressive therapeutic approach [11].

3. METHODOLOGY AND INSPECTION

To find out how common and bad periodontitis is among the elderly, the suggested research should be a cross-sectional observational clinical study. To evaluate periodontal findings and possible risk factors within a defined study group over a specific time period, a cross-sectional design is the way to go. Using a well-defined and repeatable periodontal diagnostic technique is important for this investigation because prior epidemiological research has shown that prevalence estimates might differ greatly according on the case definition and examination protocol [12].

Individuals who go to a dental clinic, dental school, community dental health center, geriatric clinic, or oral health screening program who are 60 years old or older should make up the study population. When planning a community-based study, participants might be enrolled in a sequential fashion throughout the duration of the study or chosen using a suitable probability-sampling method.

● **Criteria inclusion in this treatment:**

To fully understand any potential disparities in periodontal findings between demographic groupings, it is important to conduct studies with both males and females in the population. Instead of simply labeling people as 'elderly,' accurate age information should be collected.

It is expected that participants will meet the following requirements:

- Who must be at least 60 years old.
- The availability of sufficient natural teeth to provide a thorough periodontal assessment.
- Participation in the research is voluntary.
- Clinical periodontal examination available, please.
- Individuals who are in a stable enough medical condition to conduct a standard dental checkup.

Extensive tooth loss is not always a sign of periodontal disease, so patients with this condition shouldn't be automatically disregarded. It is important to document the reason for tooth loss whenever feasible, nevertheless.

The significance of uniform technique has been shown by prior epidemiological research. Substantial variance in reported prevalence was observed according to the periodontal case definition employed in a 2023 systematic review and meta-analysis of 55 epidemiological studies. When more certain case criteria were used, the pooled estimate was around 61.6%, while the pooled estimate was greater for people aged 65 and up [13].

Systematic periodontal charting should follow a comprehensive oral cavity examination as the first step of the clinical assessment. The dentist should check the gums for inflammation, redness, swelling, recession, and changes in color and shape. It is therefore necessary to determine whether plaque and calculus are present. The next step of the examination is to check for periodontal pockets, bleeding, loss of attachment, tooth mobility, and involvement of the furcation. For epidemiological studies, it is best to do a systematic full-mouth inspection rather than rely on partial-mouth methods, which could lead to missing afflicted areas. Mesiobuccal, mid-buccal, distobuccal, mesiopalatal, mid-palatal, and distopalatal are the six probing sites that are often recorded in a periodontal examination protocol per tooth [14].

Measurement of plaque

A validated scoring system or standardized plaque index should be used to evaluate plaque accumulation. In order to generate a participant-level score, the examiner must detect visible plaque on specific tooth surfaces. In order to compare the patient's oral hygiene at baseline and after successive visits, it is necessary to conduct a plaque assessment.

Parameter	Measurement
Plaque	Plaque index/percentage
Gingival inflammation	Gingival index
BOP	Present/absent
PPD	mm at six sites/tooth
Gingival recession	mm

Parameter	Measurement
CAL	mm
Tooth mobility	Clinical mobility grade
Furcation	Furcation involvement grade
Tooth loss	Number and suspected reason
Radiographic bone loss	Pattern and severity
Periodontitis	Present/absent
Stage	I–IV
Grade	A–C
Risk factors	Tobacco, diabetes, etc.

4. CLINICAL PROTOCOL

Reduce examiner variability by standardizing the examination protocol. It is recommended that examiners be calibrated prior to the study and that a subset of subjects undergo repeat measures in order to evaluate the reliability within each examiner. In order to determine CAL, it is necessary to document PPD and recession. Following systematic, gentle probing, the BOP should be documented. Documentation of tartar buildup, calculus, suppuration, tooth movement, and furcation involvement is essential. Clinical periodontal measures should be supplemented with radiographic findings.

Periodontitis should be diagnosed according to the 2017 World Workshop framework for contemporary diagnosis. This includes grading it based on stage when enough information is available. Although the term "chronic periodontitis" should be used in the text to keep it consistent with previous works, it should be clearly stated that aggressive periodontitis and chronic periodontitis are no longer distinct diagnostic categories.

Patient Registration and Pre-examination Assessment

Before anything else, all participants must be enrolled and given a distinct research ID if they are 60 years old or older. Details pertinent to the participant's demographics, such as their age, sex, educational status, current or past employment, and contact information, should be included. The patient should be informed of the study's purpose and the examination methods in a language they can comprehend prior to the clinical evaluation. It is recommended to acquire written informed consent.

Include any pertinent medical conditions in the medical history, such as diabetes mellitus, cardiovascular disease, hypertension, osteoporosis, and respiratory disease. Medicines that affect the mouth, saliva production, or gingival tissues need special consideration. Because tobacco has a significant moderating role in the course of periodontal disease [15], it is necessary to document tobacco use and other tobacco exposure.

Extraoral Examination

An extraoral evaluation should initiate the clinical examination. It is important to assess for facial symmetry, swelling, enlarged lymph nodes, changes in the skin, and symptoms of acute infection. While most periodontitis cases occur within the mouth, referral-worthy diseases such as acute periodontal or odontogenic infections might be better understood with extraoral evidence.

Intraoral Soft-Tissue Examination

The next step is to do a thorough evaluation of the mouth inside and out. Prior to focusing on the periodontal tissues, the dentist should examine the following areas: lips, buccal mucosa, tongue, floor of the mouth, palate, and oropharyngeal region.

Assessment of Tooth Mobility

The use of suitable clinical equipment for the evaluation of tooth mobility is essential. There has to be a uniform system for recording teeth with greater mobility based on their level of mobility. Occlusal trauma, periodontal disease, and other causes can all contribute to increased mobility. Thus, it is important to consider mobility alongside CAL, radiographic bone loss, periodontal pocket depth, and tooth prognosis while making an interpretation.

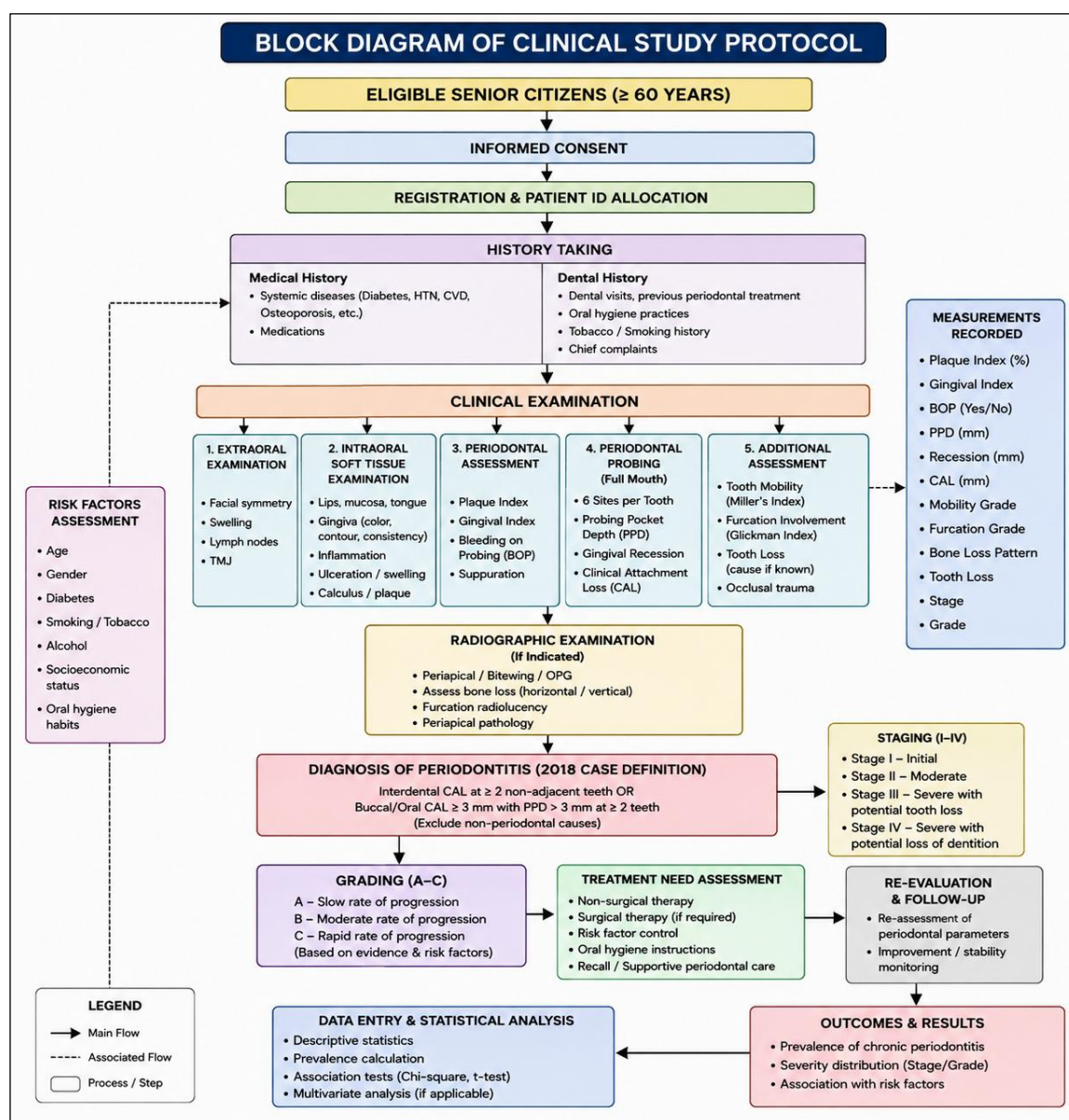


Fig.1 clinical study protocol

An organized clinical protocol for evaluating periodontitis in the elderly is shown in the block diagram. Patient registration and informed permission come after the selection of participants aged 60 and up. This makes sure that

the clinical examination is done in an ethical manner and that everyone involved knows what they're getting into. Gathering medical and dental records is the second step. Age, systemic disorders (such as diabetes), medication use, smoking habits, dental treatment history, tooth loss, oral hygiene routine, and periodontal complaints are all part of the data collected. Systemic and behavioral factors can impact the severity and course of periodontal disease, thus understanding these aspects is crucial.

The next step is to conduct both an oral and a full-mouth evaluation. Before examining the oral mucosa, gingiva, and teeth, the dentist checks for edema, facial symmetry, and other extraoral findings. They record anomalies such as changes in gingival color, edema, recession, plaque, calculus, bleeding, and more. After that, the periodontal clinical measurements are shown in the diagram. Ideally, six locations per tooth are probed during a full-mouth periodontal evaluation. It is documented the probing pocket depth (PPD), bleeding on probing (BOP), gingival recession, and clinical attachment loss (CAL). Periodontal suppuration, tooth mobility, and furcation involvement are additional factors that are also assessed. These parameters are essential for current periodontal diagnostics because they quantify the damage of periodontal tissues [16].

When it's clinically necessary, radiographic examination is the next block. For the purpose of diagnosing dental pathology such as alveolar bone loss, vertical deformities, furcation involvement, and bitewing or panoramic radiographs can be utilized. Instead of using radiographic data as a standalone diagnostic tool, they are evaluated in conjunction with clinical measurements. The patient is assessed using the most up-to-date periodontitis case definition after a thorough clinical and radiographic evaluation. Stages I–IV indicate escalating severity and treatment complexity, while Grades A–C indicate expected progression and pertinent risk factors for patients with periodontitis.

Assessing risk factors, developing a treatment strategy, and conducting follow-up are the last steps. We treat identified risk factors, such as tobacco use and poor plaque control. Management options may involve educating the patient, removing plaque professionally, using subgingival instruments, providing additional periodontal therapy, or, in extreme cases, performing surgery. The next step is for patients to enroll in a periodontal care program that will provide them with ongoing support and monitoring [17].

5. CLINICAL AND SURGICAL INSTRUMENTS

Common diagnostic tools consist of a mirror for the mouth, a probe for the gums, cotton pliers, and light. Measurements of pocket depth and attachment can be taken with a periodontal probe of the UNC-15 type. For the removal of calculus, one can use either a sickle scaler or an area-specific curette; for professional debridement, ultrasonic scalers can be helpful.

Periodontal surgical knives, periosteal elevators, tissue forceps, surgical curettes, needle holders, periodontal scissors, sutures, and scalpel handles and blades are some of the instruments that may be used during surgery when nonsurgical care has been adequate. The specific set is procedure-specific and can include regenerative periodontal surgery, relevant therapy, or access flap surgery. After a proper diagnosis, medical evaluation, and informed permission, only dental experts with the proper training should do surgical procedures.

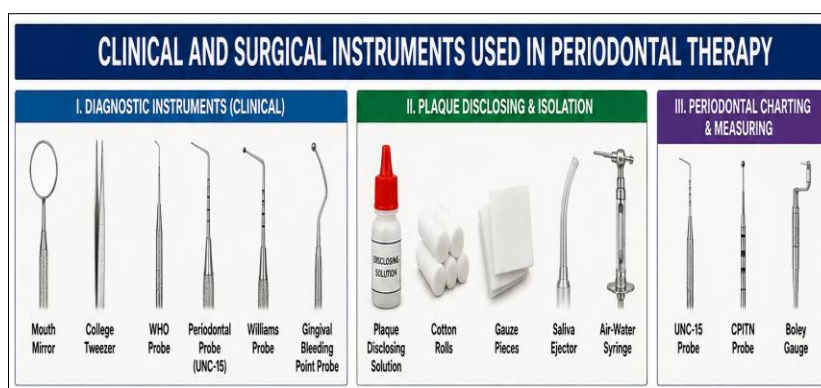


Fig.2 Surgical instruments-1



Fig.3 Surgical instrument for scaling

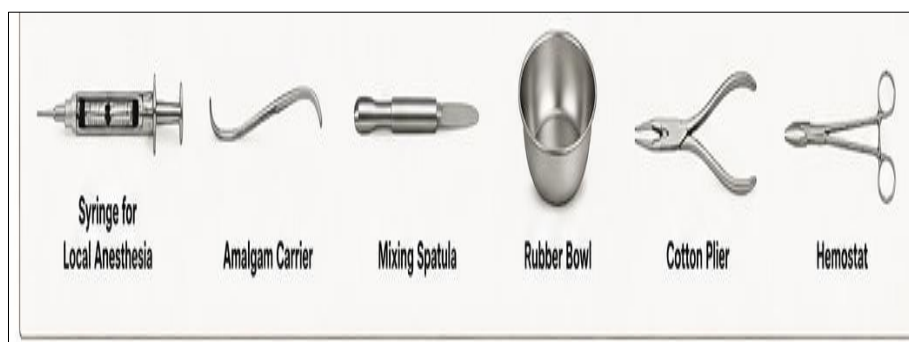


Fig.4 Other requirement of instruments while treatment



Fig.5 Post treatment care instrument

6. DISEASE FEATURES IN SENIOR CITIZENS

Periodontal pockets, bleeding upon probing, reddening or swelling of the gums, deposition of calculus and plaque, recession of the gums, loss of clinical attachment, movement of the teeth, involvement of the furcation, and radiographic loss of alveolar bone are all common clinical findings. It is vital to do a thorough examination on older persons because they may also exhibit symptoms such as tooth loss, exposed roots, root cavities, flawed restorations, dentures, or implants. Oral hygiene performance and maintenance attendance might be affected by reduced manual dexterity, visual difficulties, dependence on caretakers, and access restrictions.

Significant functional repercussions may result from the disorder. When periodontal support is lost, teeth become more mobile and painful, and chewing becomes more of a challenge. Loss of teeth and impaired chewing ability might affect dietary choices and overall satisfaction with dental health. Distinguishing between disease-related consequences and tooth loss due to caries, trauma, or prosthetic causes is important.

Periodontitis can arise for many different reasons. Gingival inflammation begins with dental plaque biofilm, and periodontal tissues are destroyed by vulnerable host reactions and modifying stimuli. If left unchecked, plaque can harden into calculus, which causes inflammation to persist and necessitates the services of a dental professional to remove. Key factors include diabetes and cigaret smoking. Other factors to think about in the elderly include xerostomia caused by medicine, poor diet, diminished oral hygiene skills, difficulty accessing dental care, and complicated prosthetic or restorative issues [18].

7. REMEDIES AND PREVENTIVE MEASURES

Professional periodontal care and daily plaque control are the keys to prevention and control. Each patient needs specific instructions on how to clean their toothbrush, dentures, or oral appliances, as well as recommendations for fluoride toothpaste and instructions for cleaning in between their teeth. It is crucial to get calculus and supragingival plaque removed by a professional. Diabetic patients should be encouraged to maintain adequate medical care and glycemic management, and they should be offered tobacco cessation help when it is appropriate. Assistance from caregivers, powered toothbrushes, modified handles, and streamlined oral hygiene practices may help elderly patients with limited dexterity.

Disease stage, grade, patient choice, overall health, and treatment feasibility should all inform treatment decisions. Patient education and motivation, as well as professional control of supragingival plaque and risk factors, are part of the initial management. The next step is to instrument the areas specified by placing instruments under the gums. We determine the reaction thru re-evaluation. When nonsurgical or surgical periodontal therapy fails to alleviate deep pockets or complicated abnormalities, more sophisticated methods may be necessary. The choice of regenerative methods for certain intrabony lesions is based on their anatomy and prognosis, whereas the therapy of furcation is conditional. Periodontal supportive care, including periodic reassessment, is crucial following active treatment.

8. RESULTS AND DATA ANALYSIS

The proportion of evaluated seniors who fit the study's operational definition of periodontitis should be the primary result. Radiographic bone-loss measurements, including PPD, CAL, BOP, and grade (if appropriate), should be reported to indicate severity. For continuous variables, descriptive statistics can incorporate the mean $\pm$ standard deviation, while for categorical variables, it can contain frequencies and percentages. The use of suitable statistical tests allows for the evaluation of associations between periodontal severity and age group, sex, smoking, diabetes, and oral-hygiene behavior. When there is a large enough sample, multivariate regression can be examined.

There should be no fabrication of numerical clinical results since no original patient dataset was provided for this publication. Statistically significant risk-factor relationships, tooth loss pattern, periodontal measures, prevalence, distribution of stages and grades, and the actual number of investigated subjects should all be reported in the final study. Greater disease severity may be linked to cumulative periodontal deterioration and modifiable risk variables; a realistic investigation is anticipated to show that periodontal disease is a considerable burden among older persons. Having said that, periodontitis is not directly caused by getting older. Access to care, oral-hygiene capacity, smoking, diabetes, and other modifiers should be included in the interpretation, as should the distinction between cumulative exposure and disease history and biological aging.

9. CONCLUSION

The gradual loss of periodontal support, tooth movement, tooth loss, and reduced oral function can result from periodontitis, making it a significant oral-health concern among the elderly. The most accurate data on frequency and severity can be obtained from a well-designed clinical trial that records periodontal conditions, uses radiographs when necessary, reviews medical history, and uses standardized risk factors. Current diagnosis should utilize the 2017 classification with staging and grading, while "chronic periodontitis" is still a valuable phrase for historical study. Professional periodontal debridement, appropriate surgical surgery for selected residual abnormalities, lifelong supportive periodontal care, and behavioral and risk-factor control should all be priorities in evidence-based management. People over the age of 65 should prioritize early screening and routine maintenance.

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