GRADUATION PROJECT

Degree in Dentistry

AS A DENTIST, HOW HAS YOUR CRITERIA FOR THE SUCCESS OF PERI-IMPLANT HEALTH IN IMPLANT SUPPORTED RESTORATIONS EVOLVED OVER THE YEARS?

Madrid, academic year 2024/2025

Identification number: 110

RESUMEN

Introducción: La salud periimplantaria es fundamental para el éxito de las restauraciones implantosoportadas, métricas convencionales omiten: estabilidad de los tejidos blandos, éstetica, diagnóstico, clasificaciones, mantenimiento preventive y el paciente. **Objetivos:** El estudio evaluó cómo habían evolucionado con el tiempo los criterios de éxito de cada odontólogo en relación con salud periimplantaria. **Metodología:** Se presentó una encuesta, **(OD.044/2425),** a 120 clinicos, 54 respondieron y 43 cumplían (≥2 años de experiencia). El cuestionario tenía 6 apartados: demografia, criterios de práctica, comprensión de la enfermedad, reflexiones y expectativas futuras. **Resultados:** Los encuestados eran principalmente dentistas generals (65%) y 42% ejercía > 20 años. Criterios originales: supervivencia de los implantes (93%) y las radiografías (98%). Criterios modernos: ausencia de inflamación (98%), estabilidad de los tejidos blandos (86%) y los resultados estéticos (74%). La mayoria utiliza imagen digital y análisis de frecuencias de resonancia. El 95% distingue correctamente la mucositis de la periimplantitis. Desgraciadamente, 30% selecciona intervención quirúgica para mucositis. 93% afirma haber obtenido mejores resultados gracias a los protocolos de mantenimiento, enfoque en los tejidos blandos y la formación de los pacientes. Retos: coste, formación y estandarización de protocolos. Futuro: IA y más investigación. **Conclusiones:** Los criterios de éxito de los dentistas en cuanto a la salud periimplantaria se han ampliado a enfoques holísticos; salud de tejidos duros y blandos, tecnología y satisfacción del paciente. Para optimizar los resultados, son fundamentales la estandarización de los diagnósticos, los protocolos de tratamiento, acceso a herramientas digitales y formación continua específica.

PALABRAS CLAVE

Odontología, Peri-Implantitis, Mucositis Peri-Implantaria, Salud Peri-Implantaria, Clasificaciones Peri-Implantarias.

ABSTRACT

Introduction: Peri-implant health is critical for the long-term success of implant supported restorations, conventional metrics don't cover the full range of emerging priorities in soft tissue stability, aesthetics, diagnostics, classifications, preventive maintenance and patient contributions. **Objectives:** this study aimed to evaluate how individual dentists' success criteria for peri-implant health had evolved by examining changes in clinical measures, diagnostic tool adoption and the integration of patient centred outcomes over time. **Methods:** A survey, **(OD.044/2425),** was distributed via Microsoft Forms to 120 clinicians. 54 responded and 43 met inclusion criteria (≥2 years' experience). They completed a 24 item 6 domain questionnaire: demographics, early vs. modern practice criteria, disease understanding, reflections and future expectations. **Results:** Respondents were predominantly general dentists (65%), with 42% practising over 20 years. Early criteria prioritized implant survival (93%) and basic radiographs (98%). Modern criteria prioritise absence of inflammation (98%), soft tissue stability (86%) and aesthetic outcomes (74%). Majority routinely use digital imaging and resonance frequency analysis. While 95% correctly distinguish mucositis from peri-implantitis. Unfortunately, 30% still favour surgical intervention for mucositis. 93% report improved outcomes due to maintenance protocols, soft tissue focuses and patient education. Challenges: cost, training and protocol standardisation. Future: AI and more research. **Conclusions:** Dentists' peri-implant health success criteria have broadened to holistic approach's; hard and soft tissue health, technology and patient satisfaction. To optimize outcomes; standardization of diagnostics, treatment protocols, improving access to digital tools and targeted continuing education are critical.

KEYWORDS

Dentistry, Peri-Implantitis, Peri-Implant Mucositis, Peri-Implant Health, Peri-Implant Classifications.

ABBREVIATION INDEX

Peri-Implant Health - PIH

Peri-Implantitis - PI

Peri-Implant Mucositis – PIM

Implant Supported Restoration - ISR

Soft Tissue - ST

Bleeding On Probing - BOP

Patient Centred Outcome/Care – PCO/PCC

Cone-Beam Computed Tomography - CBCT

Computer-Aided Design/ Computer-Aided Manufacturing - CAD/CAM

Resonance Frequency Analysis - RFA

Digital Radiograph/ Image/ Workflow – DR/ DI/ DWF

Artificial Intelligence - AI

European Federation of Periodontology - EFP

International Team for Implantology - ITI

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1. INTRODUCTION

Implant dentistry has undergone significant and remarkable advancements over the decades, which has led to an evolution in defining the criteria for the success of peri-implant health (PIH) in implant supported restorations (ISR). This paper discusses, defines and examines peri-implant health (PIH), peri-implant mucositis (PIM), peri-implantitis (PI), classification systems and their evolution throughout the years. Originally ~~i~~mplant success was measured by survival rates, osseointegration, stability, absence of infections and function of the prosthesis. (1–5)

1.1. Peri-Implant Health

Peri-implant health today refers to the condition and dimensions of the soft and hard tissues surrounding dental implants. Parameters have been extended to incorporate additional metrics and criteria; such as biologic stability of hard and soft tissues, absence of sufficient dimensional architecture of the periodontium, functionality, Inflammation, aesthetic harmony, absence of; BOP and suppuration, maintenance of alveolar bone levels, patient-centred outcomes and the effective preventative management of peri-implant disease. (2,3,6–10)

This evolution also reflects the advancements being made in; diagnostic tools, globally accepted classification systems, and a deeper understanding of the mechanisms and process of diseases. (1–5)

Implants, unlike natural teeth face unique challenges due to the lack of a periodontal ligament and its diverse protective mechanisms, making implants more susceptible to biofilm-related diseases and complications.(1)

Due to the growing prevalence and commonality of peri-implant diseases there has been significant affectation on long-term outcomes. Studies show variability in how these conditions are managed across practices, influenced by individual clinician criteria and their adoption of preventive or therapeutic strategies. Assessing these variations will aid in identifying gaps and opportunities for standardization and improvements.(4,11)

Contemporary practice focuses on long-term maintenance and prevention of biological and mechanical complications. This shows the need to explore how individual dentists' criteria have adapted to prioritize longitudinal outcomes.(1,12,13)

1.1.1. Peri-Implant Mucositis and Peri-Implantitis

PIM and PI are both inflammatory conditions that pose threats that could affect the longevity of an implant. Historically, there was limited attention paid to the early stages of peri-implant disease and minimal differentiation was made between the two inflammatory diseases. (1–3,14,15).

PIM has been defined as a reversible inflammatory condition that is confined to the ST surrounding an implant, which necessitates early non-surgical interventions. Whereas PI is a pathological condition involving inflammation of the ST and progressive bone loss, requiring more complex management and if left untreated can result in implant failure. (1,3,6,14,16–20)

Studies have demonstrated that PIM is a precursor to PI and that timely intervention can stop progression, showing the importance of early detection and management.(2,6,17)

The management of peri-implant diseases continues to be a challenge despite advancements. PI affects approximately 20% of patients and progresses non-linearly, particularly after a decade of placement and function. (8,18–21)

Variability in diagnostic criteria and treatment outcomes has led to a call for greater standardization in clinical practice. (4,9,19,21).

Additionally, the intricate anatomy of implant surfaces and the variability in prosthetic designs complicate optimal biofilm control. (9,13,18–21)

1.2. Evolution

Evolution in classification terminology, criteria, protocols and systems along with advancements in technology, have expanded the scope of evaluation. These new protocols emphasis the importance of regular maintenance, risk factor management and patient education to prevent peri-implant disease.(1,3,7,11,12)

Recent studies have highlighted the role of tailored maintenance protocols and long term follow ups in achieving favourable outcomes. These points acknowledge the importance of peri-implant health not only in clinical success but also in enhancing the overall patient experience. (1,3,6,7)

1.2.1. Classifications

The evolution of classification systems has greatly influenced the management of peri-implant disease diagnosis and treatment. The publication of the 2017 World Workshop Classification system of Periodontal and Peri-Implant Diseases remains a standard reference in current practice and a critical metric for evaluating long term implant success. (2,15,16,22,23)

It categorised peri-implant diseases into; health, mucositis and peri-implantitis. This framework provides clinicians with clear diagnostic criteria based on clinical

and radiographic parameters, promoting consistency in diagnosis and treatment

planning.(2,6,14)

This system not only defines peri-implant health and diseases but also emphasises the role of early intervention and regular maintenance protocols in halting disease progression.(2)

Earlier classification systems were limited and focused primarily on survival or aesthetic outcomes. In 2017 there was a shift to a more holistic approach, this incorporated patient-specific risk factors, such as smoking, drug intake and interactions (that can interfere with bone healing and remodelling), systemic health, metabolic conditions and history of periodontal disease. It reflected development in the understanding of peri-implant disease aetiology and progression. These guidelines integrated a multidisciplinary approach to maintaining PIH.(1,3,14,24)

The European Federation of Periodontology (EFP) has also reinforced the importance of individualized risk assessments, particularly in high risk populations such as smokers or patients with a history of periodontal disease.(2,15,22)

This also encourages the need for regular monitoring, a preventive care protocol and evaluation criteria to help preserve tissues. Not only clinically and radiographically but to perform maintenance programs to prevent and suppress the progression, leading to the creation of the personalised evaluation criteria of success.(2,14)

Evidence-based clinical guidelines have prioritised proactive management of PIM to prevent transformation into PI, through professional cleaning, adjunctive antimicrobial therapies and patient education on oral hygiene practices.(3,17)

There hasn’t been a completely new update that has been globally accepted since 2017, but additions and revisions are constantly being evaluated and researched. These new protocols emphasise the importance of regular maintenance, risk factor management and patient education to prevent peri-implant disease.(1–3,7,15,22)

1.2.2. Diagnostic Tools and Techniques

Advancements in diagnostic tools have transformed how PIH is assessed and monitored. This is in response to a greater understanding of the histological limitations of the peri-implant tissues and the integration of the new criteria for current assessment and modified techniques for maintenance.(1–3)

New imaging techniques, such as CBCT as well as enhanced software on digital x-rays, provide detailed evaluations of bone levels, densities and volume as well as implant positioning, which are critical for prevention and early detection of peri-implant disease.(11) Additionally, digital workflows including intraoral scanners like CAD/CAM systems, allow for precise monitoring of peri-implant soft tissue contours and prosthetic fit.(1,11) Resonance frequency analysis (RFA) offers a non-invasive method to evaluate implant stability and osseointegration facilitating evidence-based clinical decisions.(12,22)

Clinical markers such as bleeding on probing (BOP) and probing depths, remain important to assessing PIH, although their reliability in differentiating health from disease has been a topic of debate. Recent studies suggest combining clinical parameters with radiographic assessments for a more comprehensive evaluation.(13)

With the distinction between the two diseases it has now enabled targeted and specific therapeutic strategies to be performed thus improving the outcomes for ISR's.(1–3,14)

While the foundational concepts of PIH, modern dentistry emphasizes evidence-based interventions and individualised care strategies to help ensure long term success.(1–4,16,22) However, the degree to which these technologies are adopted and incorporated into practice remains inconsistent. Understanding how these tools have shaped success criteria will provide insights into the practical impact of technological advancements.(1,22,25)

1.2.3. Patient Centred Outcomes

While traditional measures such as implant survival and stability remain important, satisfaction, functionality, comfort and aesthetics, have become integral to defining implant success. This acknowledges the psychological and social dimensions of implant therapy, emphasizing alignment with patient expectations to enhance patient long-term compliance.(3,6) Personalized maintenance programs tailored to individual risk profiles, including monitoring systemic conditions such as diabetes and behavioural factors like smoking, are now critical to preserving PIH.(1,25,26)

Patient management in the context of systematic diseases and drug interactions is vital for the success of dental implants and the maintenance of PIH. Building on the patient-centred approach, effective management of systemic diseases and medication interactions is essential for optimizing implant outcomes. Conditions such as diabetes mellitus, particularly when poorly controlled, are associated with an increased risk of PI and compromised healing. Similarly, commonly prescribed medications like proton pump inhibitors (PPI's) and selective serotonin reuptake inhibitors (SSRI's) have been shown to negatively impact osseointegration and elevate the risk of early implant failure. Therefore, comprehensive preoperative assessments that include medical history, medication use, and metabolic control are indispensable. These allow clinicians to implement targeted strategies that mitigate risks and support long-term implant success within the broader framework of individualised care.(24,27,28)

Evaluating how individual dentists integrate these patient-centred outcomes into their definitions of success will reveal the evolving trends in patient care.(3,22)

1.3. Future Directions

Research continues to explore innovative technologies, such as artificial intelligence (AI) and machine learning, to increase diagnostic accuracy and predictive analytics in PIH. AI-driven tools, including deep learning algorithms, show promise for automating implant diagnostics and personalizing treatment strategies.(10,22,25) The assimilation of these technologies into clinical practice is expected to further develop and improve outcomes and standardisation in this field.(5,10,11,22,25) It is also important to note that continuous professional development is essential to keep pace with evolving guidelines and technologies.(14) Such as innovations in prosthetic design, platform-switching abutments and novel biomaterials, which offer promising avenues to enhance peri-implant tissue preservation. (10,12,26,29–31).

1.4. Justification

Despite existing standardised protocols, there is limited insight into how individual dentists define and apply success criteria in their daily practices. The variability in interpretation of individual criteria, application of clinical measures, diagnostic tools and PCO's, along with prosthetic design complexities brings to attention the ongoing challenges and the need for an in-depth evaluation. This research will hopefully help bridge the gap between established guidelines and real-world practices, providing a clearer understanding of how criteria have evolved over time. It will contribute to optimizing PIH outcomes and aligning clinical practices with patient expectations. (2,4,14–16,18,21,29)

1.5. Research Question:

What changes have occurred In Individual dentists' criteria for defining PIH success in ISR's, and how have advancements in diagnostic tools, clinical measures and PCC influenced their practices over time?

1.6. Hypothesis: Null and Alternative

1.6.1. Null Hypothesis:

There has been no significant evolution in the criteria that individual dentists use to define success in peri-implant health in implant supported restorations, including clinical measures, diagnostic tools and patient centred outcomes over time

1.6.2. Alternative Hypothesis:

There has been a significant evolution in the criteria that individual dentists use to define success in peri-implant health in implant-supported restorations, influenced by advancements in clinical measures, diagnostic tools and the integration of patient centred outcomes over time.

2. OBJECTIVE

2.1. PICO Question

How have advancements in diagnostic tools, clinical measures and patient-centred outcomes influenced individual dentists' criteria for defining success in peri-implant health for implant-supported restorations compared to traditional criteria used in earlier practices?
From this PICO question, the objective was determined.

2.2. Objective

The Objective of this study is to assess the evolution in criteria for individual dentists defining success in peri-implant health in implant-supported restorations by examining changes in the adoption and adaptation of clinical measures, advancements in diagnostic tools and the integration of patient-centred outcomes over time.

3. MATERIALS AND METHODS

3.1. Literary Review

A survey and literature review were carried out. Extensive research using scientific databases; PubMed, Wiley, Journal of Clinical medicine, Journal of oral and maxillofacial surgery, Central and Medline. The search included keywords such as “Peri-Implant Health” “Peri-Implantitis” “Peri-Implant Mucositis” “Peri-Implant Classifications” “Peri-Implant Health Criteria” “Mucositis” “Peri-Implant Disease” “Implant Supported Restorations” and “Implant Health”. These words and phrases were used in different combinations for a more precise and efficient search. The search excluded articles from over 10 years old.

3.2. Type of Study and Ethical Approval

The surveys (ANNEX 9.1) were reviewed, approved and assigned this code: **OD.044/2425,** by the Ethics Research Committee of the University.
The type of study was a Cross-sectional descriptive study with a mixed-methods design.
It consisted of documenting the evolution of past and present practices of peri-implant health evaluation in implant supported restorations. There was no manipulation of variables, no cause or effect that was performed. It is noteworthy, that due to the self-evaluation, the responses will vary depending on the clinician’s knowledge, confidence and accuracy at the time of completion.

3.3. Inclusion Criteria

The survey was open to dentists and oral specialists who place, maintain or are regularly involved with implants. They had to speak either English or Spanish, as well as have been practising for more than 2 years. Final criteria: consent and complete the survey, within the given time frame which consisted of 1 month and 2 weeks (the last week of January 2025, full month of February 2025 and the first week of March 2025).

3.4. Exclusion Criteria

Responses attempted after the deadline were not accepted. Participants who had been practicing for less than 2 years were excluded. No students or non-active dentists. Participants who wished to be excluded after completion were permitted to withdraw at any time without consequence.

3.5. Ethical Points

There could be a design flaw leading to a bias. Such as failing to include an adequate number or the appropriate group of dentists. There may be fear from participants at the risk of professional repercussions from responses negatively impacting their reputation; especially if they are one who deviates from the established guidelines. Enforcing the need for anonymity. The data was only used for this study and nothing else. Upon request, the final and completed findings will be provided to show that interpretations and conclusions are accurate and unbiased.

3.6. Method of Data Collection and Questionnaire Content

How a dentists' criteria for the success of peri-implant health in implant supported restorations evolved over the years, was investigated via questionnaire. The survey was designed and developed in Microsoft Forms using a university student ID account. It was distributed throughout the western world to English and Spanish speaking dentists via, email, QR code, WhatsApp, Instagram and email. It was sent by student and tutor to colleagues and friends within this profession. They were then asked to complete it within a given time frame with 1-2 gentle reminders. The survey contained a detailed summary about the study as well as a mandatory consent form along with tutor contact information.

It contained quantitative components: multiple-choice and yes or no questions resulting in measurable data. As well as qualitative components: open-ended questions which lead to a deeper understanding and exploration of experiences and perspectives.

It consisted of 24 questions including weather they consented or not.

There were then 6 sections:

1) Demographics and Professional Background:
    - 3 questions identified weather the participants were within the inclusion or exclusion criteria.
2) Early Practice and Past Criteria
    - 4 questions, to identify diagnostic tools used, indicators of success and evaluation methods
3) Current Practise and Modern Criteria
    - 4 questions, to analysis what's done now and whether they are changing, evolving and progressing, or remaining the same.
4) Understanding of PIH

- 6 questions that had right and wrong answers, indicating knowledge that should be known in this field. This helps evaluate whether there are standardised criteria and teaching across the board when working with implants and PIH.

5) Comparisons and Reflections:
   - 5 questions that were; Yes / No and open-ended questions: they were non-compulsory requirements for completion.
6) Standardised Criteria and Future Practice
   - a singular multiple-choice question with the option of adding additional ideas and thoughts on what they thought the future of this area of work will consist of and hold.

4. RESULTS

4.1. Section 1: Demographics and Professional Background

A total of about 120 dentists were offered participation, with a goal of obtaining 100 responses, of which 54 responded. Of these, 11 were excluded (20% of the total responses were excluded) leaving 43 (80%) valid surveys left for analysis. Majority were General Dentists (65%) and the distribution of years in practice showed that 42% had more than 20 years of experience. (Table.1.)

Table.1. Participants Demographic Data collected through the online questionnaire (n ≈ 43)

Speciality	*Number*	*Percentage*
General Dentist	28	65%
Periodontist	3	7%
Prosthodontist	15	35%
Oral Surgeon	7	16%
Implantologist	14	33%
Maxillofacial surgeon	1	2%
Other	4	9%
Years of Practice		
3-5 yrs	9	21%
6-10yrs	8	19%
11-20 yrs	8	19%
>20yrs	18	42%

4.2. Section 2: Early Practice and Past Criteria

In the early stages of their careers, most dentists primarily evaluated implant success based on survival and osseointegration (93%), only a small percentage (7%) considered aesthetic outcomes as an early indicator of success (Table.2.).

Early diagnostic tools dominantly included conventional radiographs (98%) and manual probing (60%). (Table.3.)

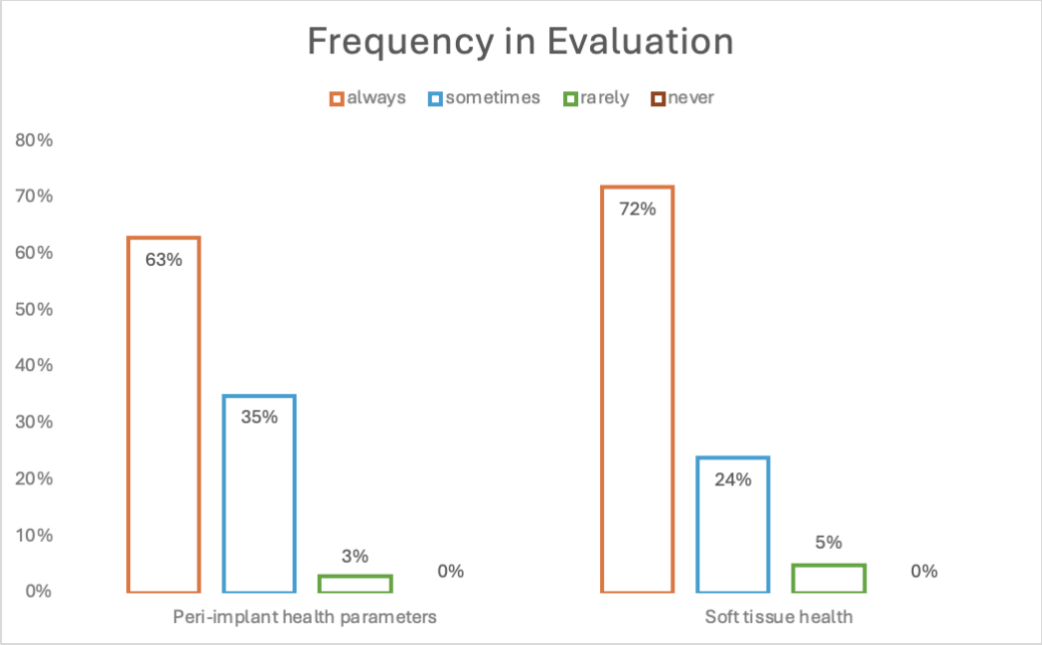
Soft tissue health assessments were routinely performed by 72% and 63% always evaluated peri-implant health. (Fig.1)

Tables.2. &.3. Comparisons of Past and Present Criteria

Topics

	Early/ Past (%)	**Current/ Modern (%)**
Table.2. Indicators of Success		
Implant Survival and Osseointegration/ Maintenance of Bone Levels	93%	91%
Absence of Inflammation/ Infection	67%	98%
Functional Stability / Stable Probing and BOP	56%	86%
Aesthetic Outcomes	7%	74%
Table.3. Diagnostic Tools used		
Conventional/ Digital Radiographs	98%	84%
Periodontal Probing / BOP	60%	86%
Clinical Observation	91%	86%
Digital Workflows	0%	30%
Resonance Frequency Analysis	0%	14%
Other	0%	12%

Figure 1. Frequency in Evaluation of Peri-Implant and Soft Tissue Health Parameters



4.3. Section 3: Current Practice and Modern Criteria

Current criteria for PIH success have broadened significantly. Most participants currently prioritize the absence of inflammation and infection (98%), maintenance of bone levels (91%) and stable probing depths (86%). Additionally, aesthetics and functional integration with adjacent teeth is now considered important by 74% of participants (Table.2.&.3.) .

Majority (58%) admit that technologies influence PIH. They all follow one or more of the following methods to ensure long term success; monitoring risk factors (72%), follow ups and maintenance programs (95%), standard protocols (51%) and patient education (95%) (Table.4. & .5.).

Table.4. Technological Influence on Peri-Implant Health

	Yes	*NO*	*Somewhat*
Percentage (%)	58%	30%	12%

Table.5. Methods of Ensuring Long Term Success

	Percentage (%)
Regular Follow Ups and Maintenance Programs	95%
Patient Education on Hygiene	95%
Standardised Clinical Protocols	51%
Monitoring Risk Factors	72%

4.4. Section 4: Understanding of Peri-Implant Health

79% of participants routinely incorporate patient medical history into treatment planning. (Table.6.) A strong awareness of peri-implant disease and knowledge was shown. A majority (95%) correctly identified that PI involves irreversible and progressive bone loss. (Fig.2.)

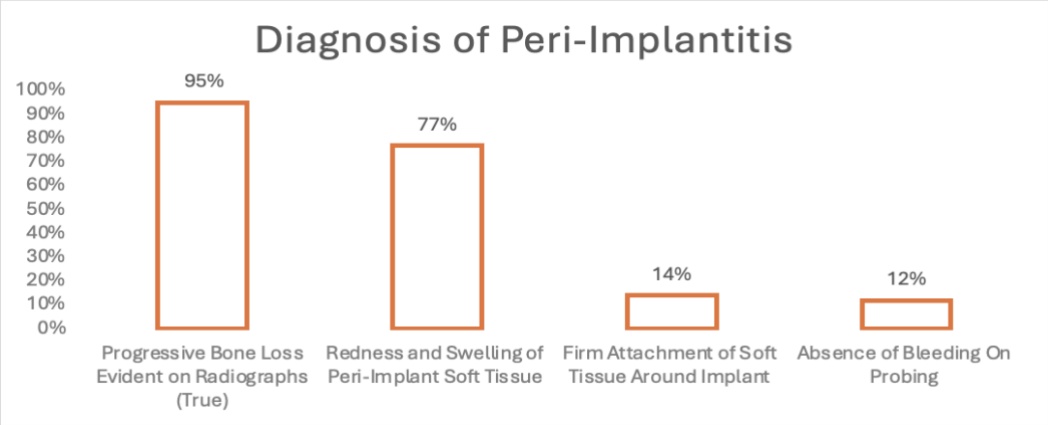
The majority accurately differentiated PIM (84%) as reversible and that biofilm accumulation was its main cause (84%). (Fig.3. & Table.7.)

Regarding intervention and treatment of mucositis 30% choose incorrectly with surgical intervention. (Fig.4.)

Table.6. Consideration Of Medical History in Treatment Planning

	Always	*Often*	*Sometimes*
Percentage (%)	79%	16%	5%

Figure.2.



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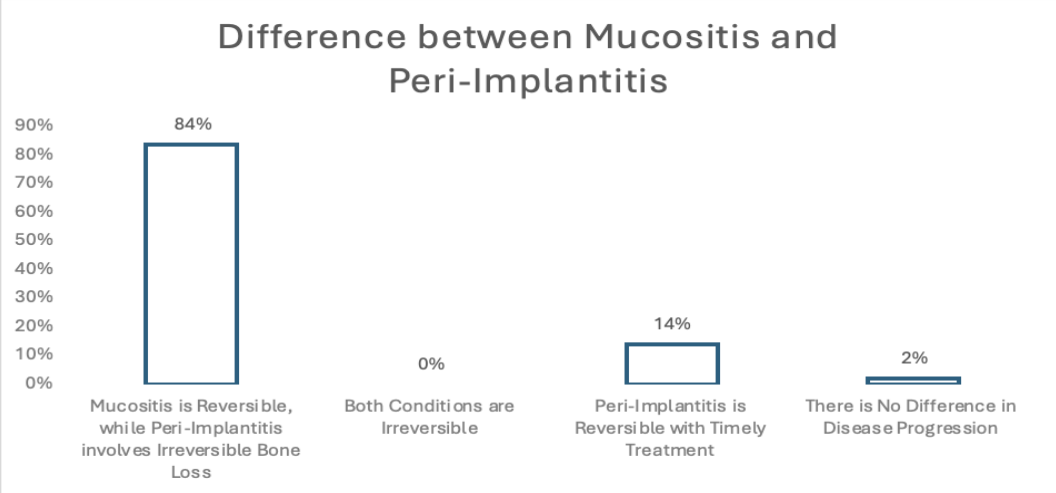
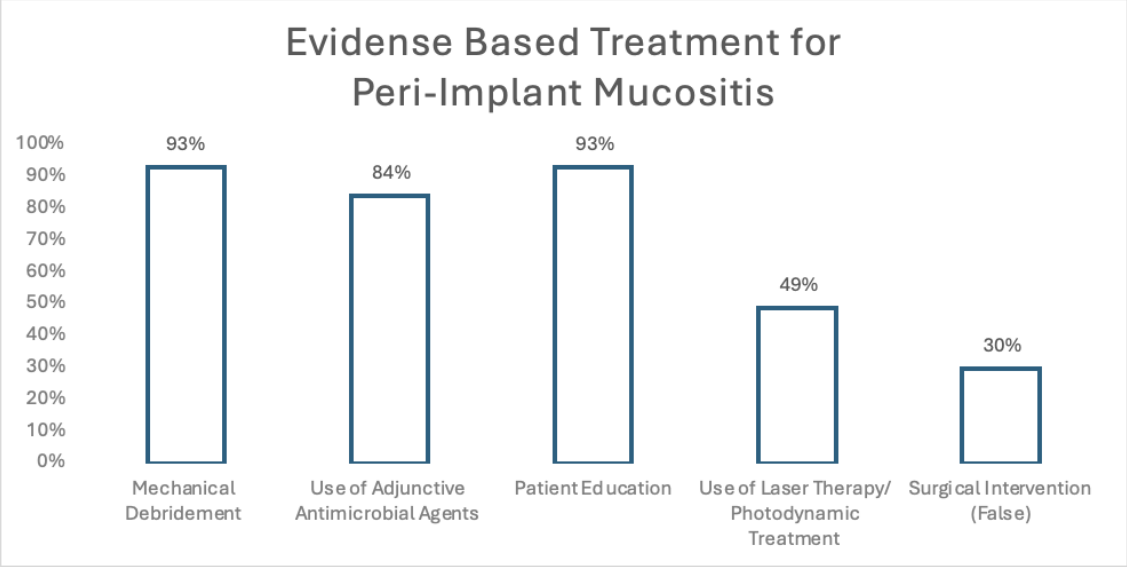


Table .7. What are the Common Causes of PIM and PI

	Mucositis	*Peri-Implantitis*
Biofilm Accumulation	84%	-
Mechanical Overload	7%	-
Poor surgical Technique	7%	-
Implant Surface Contamination	2%	-
Persistent Biofilm and Untreated Mucositis	-	91%
Systemic Conditions	-	42%
Smoking	-	47%
Excessive occlusal loading	-	44%

Figure.4.



4.5. Section 5: Comparisons and Reflections

A significant 93% of participants reported that their success and failure rates have improved over time due to evolving protocols. New clinical guidelines from organisations such as EFP and ITI have influenced 67% of participants with emphasis on long-term maintenance protocols (70%) and ST health (75%). (Fig.5. & .6.)

Open-ended responses indicated a shift from solely focusing on implant stability to a more encompassing approach. Many participants mentioned advancements in digital diagnostics and the increased role of patient education and hygiene in maintaining PIH. (Table.8.)

Challenges that were also mentioned included cost, accessibility, educational and integration troubles and a lack of universally accepted guidelines. (Table.9.)

Figure.5.

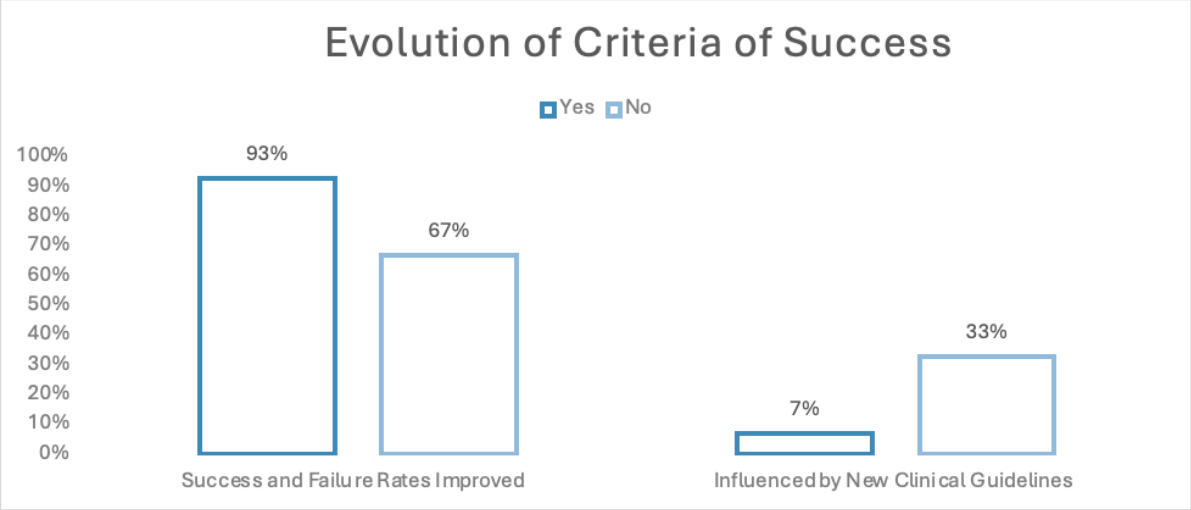


Figure.6.

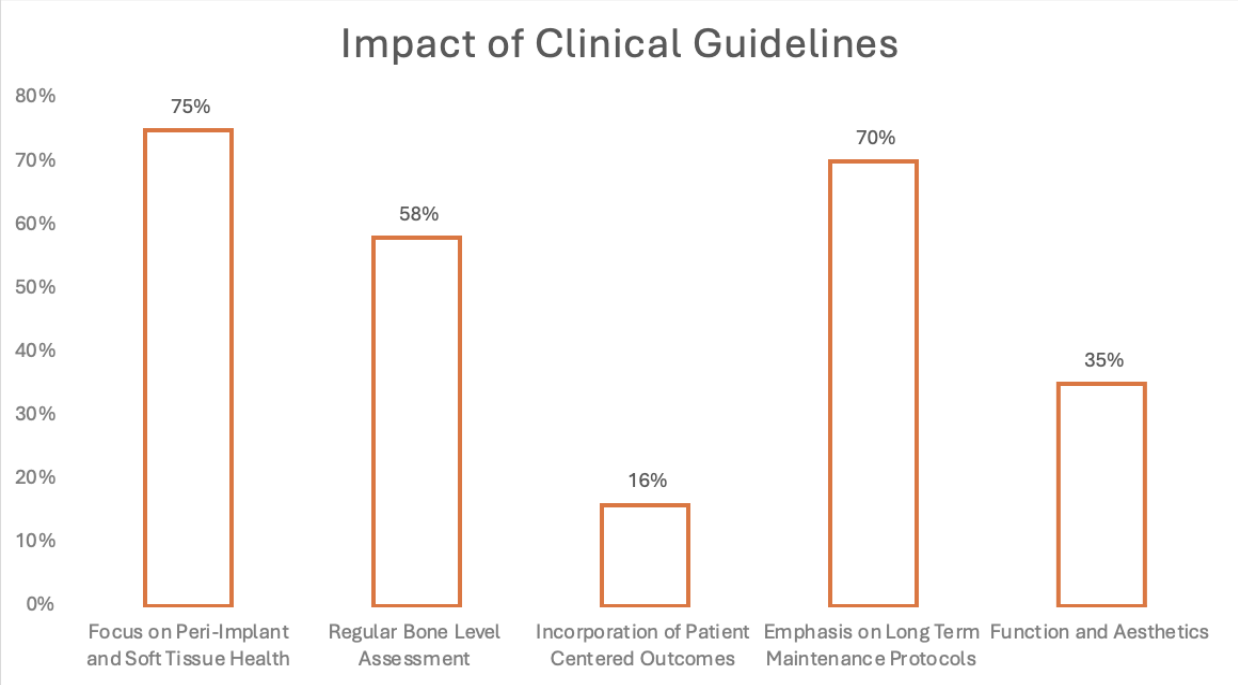


Table.8. Open-ended question with optional response to: How Personal Criteria Has Evolved

Evolution Themes	
Theme	*Representative quote or Repeated point*
Digital Diagnostics	○ "More common use of CBCT, CAD/CAM, intraoral scanners to improve assessment of implants and restorations." ○ "Complete studies with photographs, periodogram, CBCT and digital scans for case preparation, along with periodontal and occlusal stabilization before starting, with a systematic guided implantation to reduce load."
Tissue Evaluation (Hard and ST)	○ "Increased focus on keratinized ST evaluation pre- and post-op; planning implant positions based on ST contours." ○ Width and thickness to be considered
Prosthetic Design	○ "Adoption of platform-switching abutments and customs healing abutments to preserve peri-implant tissues." ○ Cleanability and accessibility ○ Monitoring of occlusal forces due to changes ○ Delayed vs. Immediate occlusal loading ○ Attention and planning due to design
Surgical Protocols	○ "Use of modified flap designs and immediate placement protocols to enhance tissue outcomes." ○ Partial socket shields, Periodontal grafting and the use of PRF
Risk Factor Management	○ "Less treatment approval for smokers and uncontrolled diabetics; increased testing for systemic conditions." ○ Monitoring use and type of drugs and medications
Maintenance & Follow-Up	○ "Insistence on regular check-ups every 4-5 months, strict hygiene protocols and more detailed consent forms." ○ Set up/ creation of specific personal / published protocols: maintenance and follow up
Implant	○ Positioning and depth of placement, type, width, material, bevelled shoulder on crest
Patient	○ Management of long-term expectations, Hygiene education, Overall health education
Staff	○ Consistent and trained auxiliary staff and environment

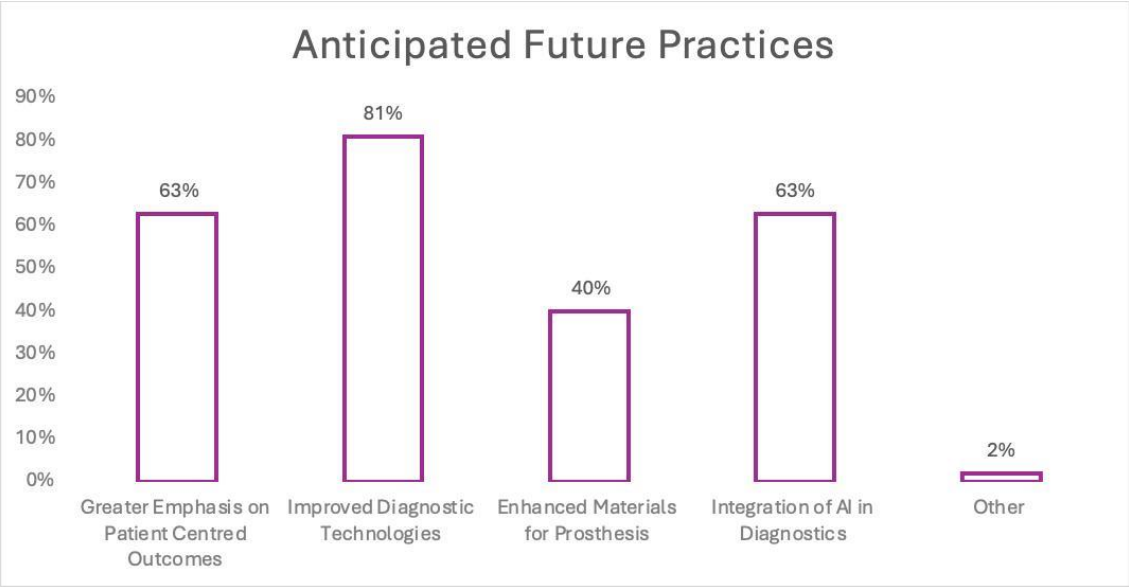
Table.9. Open-ended question with optional response to: Challenges in Adopting Modern Tools and Criteria

Adoption & Adaption Challenges	
Theme	*Representative quote or Repeated point*
Cost & Accessibility	○ "Affordability and availability of CBCT scans in my region." ○ Cost of: Course, systems, tools and machines along with their availability ○ Price increases may also deter some patients
Training & Learning Curve	○ "Learning curves for intraoral scanners and new prosthetic classifications." ○ Keeping up to date
Standardization	○ "Lack of universally accepted consensus on implant success criteria."
Patient Communication	○ "Challenges explaining revisions in treatment to long-term patients when guidelines shift."
Technology Adoption	○ "Technological advancements that clinicians find difficult to adapt to, due to both workflow integration and costs." ○ Integration of some systems not being compatible in program or not being able to apply it into physical practice

4.6. Section 6: Standardised Criteria and Future Practice

Participants anticipate and expect significant advancements in PIH evaluation and management thru the adoption of; improved diagnostic technologies (81%), along with the integration of AI (63%) and emphasis on PCO (63%). Enhanced prosthetic materials (40%) are also expected to play a role.

Figure.9.



5. DISCUSION

5.1. Interpretation of Key Findings

The survey of 43 dentists revealed a clear shift from survival-based metrics toward a multifaceted conception of peri-implant success. Notably, the cohort included both early career dentists (21%) and experienced dentists (42%), providing a semi-balanced perspective on how criteria have evolved across different levels of clinical experience.

Comparing section 2 (early practice) and section 3 (modern/ Current practice) underlines a paradigm shift. Early practice predominantly relied on implant survival and osseointegration (93%), absence of infection (67%) and the use of basic radiographs (98%). Whereas current criteria now prioritise soft tissue stability (86%), absence of inflammation (98%), aesthetic integration (74%) and advanced imaging in over half of the clinicians.(1,2,4) While early criteria focused on hard tissue stability, modern practice embraces a wider range approach, integrating PCO and DWF. (3,11) This evolution shows a matured understanding of peri-implant biology and that advances in diagnostic modalities are now embraced by over half of respondents and emphasises the professions recognition that long term implant health depends on both hard and ST dimensions.(4,11)

Section 4 revealed universal recognition for the distinction between PIM and PI (95% correct) suggesting effective dissemination of the 2017 world workshop definitions.(2,15) However, there were also persistent misconceptions; 30% would still choose surgical intervention for PIM, indicating a gap between theoretical knowledge and evidence based practice, as non-surgical management, such as mechanical debridement, antimicrobial adjuncts and patient driven plaque control is recommended as first line of treatment.(17)

Additionally, 79% consistently consider systemic factors like diabetes and smoking, indicating room to strengthen risk factor integration into clinical decision making.(9,28)

While classification schemes have been widely adopted, these gaps suggest a need for targeted education on conservative management and comprehensive pre-treatment assessment.

Regarding section 5, participants reported a 93% improvement in personal success rates over times, attributing this to maintenance protocols (70%), ST health focus (75%) and patient education (16%). (3,7) This self-reported gain highlights the tangible benefits of evolving practice patterns, mostly, that preventive care, patient engagement, and risk factor monitoring, deliver measurable improvements in outcomes. Furthermore, the noticeable shift towards holistic treatment accentuates the recognition of quality of life as an essential component of peri-implant success, complementing traditional clinical metrics.

Platform-switching abutments emerged as a key prosthetic innovation, reducing crestal bone loss by shifting the implant abutment interface inward.(12,30,31) Adoption of this design has contributed to improved bone preservation and ST stability, demonstrating how focused material and design modifications can enhance biological outcomes.

5.2. Clinical Implications

The broadening of success criteria has several practical consequences. Clinicians should now routinely assess keratinized tissue, monitor probing depths, BOP and incorporate DI for early detection of bone changes.(1,11) Professional maintenance programmes are now at the forefront. The more consistent use of CBCT and intraoral scanners, (CAD/CAM) technologies being used routinely enable early detection and prompt intervention.(7,22) Protocols should integrate personalized maintenance schedules based on individual risk profiles (e.g. smoking and diabetes) and leverage non-invasive tools such as RFA for stability checks.(12,22,28)
The strong endorsement of PCO (95% value education and hygiene) suggests that communication skills, motivational interviewing techniques and patient education resources are essential competencies.(7) By framing peri-implant care as a partnership, clinicians can improve adherence to maintenance regimens and reduce the incidence of disease progression.(3,7) Also, there is more focus now on prosthetic factors such as emergence profiles and occlusal loading due to influence on PIH stability.(18)

5.3. Challenges and limitations

The cross-sectional survey design, while efficient in capturing a snapshot of evolving criteria, is limited by self -selection and recall biases. Participants were mainly general dentists (40%) and Implantologists (25%), potentially underrepresenting specialists in periodontology and prosthodontics.(14) Exclusion of non-English/Spanish speakers and geographical distribution may further constrain generalizability. Self-reported improvements in success rates and adherence to protocols were not corroborated by objective clinical data, leaving open the possibility of overestimation. Additionally, the lack of universally accepted consensus on success definitions, complicates comparisons between practices and pinpoints the need for standardized metrics and registries.(14,15) Continued education is essential to maintain high clinical standards amid evolving protocols.(14)

Despite enthusiasm for new technologies, cost barriers were frequently cited as obstacles to adopting CBCT, digital workflows and Ai platforms, particularly in resource limited settings. Investments must be weighed against practice budgets and patient affordability. Future research should address the economic feasibility of these modalities to support broader implementation.(18,19,25,32)

5.4. Future Directions

Building on Section 6, the integration of AI (63%) and enhanced diagnostic tools (81%) offers potential for predictive analytics and early intervention.(10,25,26)

The integration of AI for predictive analytics and automated diagnostic support offer a promising future, it could; automate detection of marginal bone changes, make tailored maintenance schedules and may optimize long term outcomes. Preliminary interest was high amongst participants.(10,25)

Development of international registries with standardized data collection across regions and practice types, will facilitate real world evidence generation of emerging diagnostic technologies and non-surgical interventions.(21) Longitudinal and multicentred studies should track objective clinical outcomes, alongside patient reported measures to validate the impact of expanded criteria and maintenance protocols.(3,33,34)

Research into biomaterials and prosthetic designs such as platform switching abutments, customized healing components and minimally invasive surgical techniques, should continue with an emphasis on sustainability and resource optimization to ensure equitable access to advanced peri-implant care.(12)

6. CONCLUSIONS

This study was conducted with the objective to assess how individual dentists' criteria for defining and assessing peri-implant health in implant -supported restorations had evolved over time, specifically examining clinical measures, diagnostic tools and the integration of patient centred outcomes.

By systematically comparing early and present practices, analysing knowledge gaps and exploring potentials and challenges, this paper has addressed its primary objective.

There has been a clear progression from traditional survival and osseointegration focused metrics towards a holistic approach. Dentists are prioritizing preventive care, soft and hard tissue stability, long term sustainability, aesthetic integration and patient satisfaction. Majority of participants now routinely use CBCT, digital radiographs and RFA, reflecting the influence of technological innovations described in the introduction. A pronounced emphasis on PCO, education and maintenance protocols align with the growing importance of quality of life and long-term sustainability.

However, despite widespread awareness of peri-implant disease definitions, knowledge gaps remain in non-surgical management of PIM and consistent integration of systemic risk factors, indicating areas for further education. As well as standardisation in diagnostics and treatment protocols, are critical for further enhancing and achieving optimal PIH outcomes.

In conclusion, this research not only meets its stated goal, the findings affirm that criteria for PIH have evolved significantly, but also implies that, as diagnostic tools and clinical measures advance, so too must the continuing education, standardized protocols targeted training and evidence based PCO. Future work should extend these insights with longitudinal data and international registries to further refine PIH assessments.

7. SUSTAINABILITY

Sustainability in PIH in ISR's is significantly related to the long-term management and preservation of PIH, as well as resource efficiency and economic viability. This study highlighted sustainability thru the adoption of evidence-based practices that help prolong implant longevity, minimise complications and optimize the use of resources, thereby conserving time and materials. Over time the increased focus on preventive care strategies reduces the need for invasive treatments or implant replacements. The adoption of digital diagnostics and innovative prosthetic solutions enhances diagnostic precision and preserves peri-implant tissues. However, these advancements require upfront costs, energy use and a learning curve/ adaptation time for clinicians. To achieve sustainability in PIH practice, it is essential to; optimize the use of resources; use of preventive protocols, minimally invasive interventions to extend implant longevity and reduce procedural redundancies, evaluate technology advancements by cost-benefit analysis without compromising care quality, ensuring that there is support, accessible training programs and shared learning networks to lower barriers in adopting new technologies and protocols, and to promoting patient engagement by encouraging self-care behaviours and adherence to recall visits, which are critical for maintaining PIH and reducing the ecological footprint of repeated treatments. By balancing clinical efficacy with economic and environmental partnership, clinicians can provide sustainable treatments and care for PIH.

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9. ANNEXES

9.1. Questionnaires

Criteria of success for Peri-Implant Health over Implant Supported Restorations

An evolution of criteria for success over the years

A TFG survery for a 5th year Dental student

INFORMED CONSENT

This survey is part of the Graduation Project in Dentistry at Universidad Europea of Madrid titled: "As a Dentist, How has your criteria for the success of peri-implant health in implant supported restorations evolved over the years?", directed by **REDACTED**. The purpose of this work is: "to assess the evolution in criteria for individual dentists defining success in peri-implant health in implant-supported restorations by examining changes in the adoption and adaptation of clinical measures, advancements in diagnostic tools and the integration of patient-centred outcomes over time". The information will be collected through a brief survey. Your participation in this study is voluntary. You may request to be withdrawn from the study without prior justification or prejudice to you. The information collected will be kept confidential and will not be used for any other purpose outside this research and research dissemination purposes. The data collected will be completely anonymous. No personal identifying information will be requested. Information collected in the survey will be treated in accordance with the provisions of Organic Law 3/2018, of December 5, Protection of Personal Data and Guarantee of Digital Rights. Do you give your consent to participate in the survey as a volunteer for the results to be used in the Final Degree Project: "As a Dentist, How has your criteria for the success of peri-implant health in implant supported restorations evolved over the years?"?

For the purposes of the provisions of the regulation of the Organic Law 3/2018, of 5 December, on the Protection of Personal Data and Guarantee of Digital Rights, you are informed and expressly consent that the data provided in the survey may be used for the aforementioned purposes. This consent is granted without prejudice to all the rights that you have in relation to the aforementioned regulations, with the possibility of accessing the information provided, rectification, cancellation and opposition at any time you wish. For such purposes, you must write to the tutor **REDACTED**

1. Do you give your consent to participate in the survey as a volunteer for the results to be used in the Final Degree Project: "As a Dentist, How has your criteria for the success of peri-implant health in implant supported restorations evolved over the years?"? *

   ◯ Yes, I accept to participate in the study

   ◯ No, I do not accept to participate in the study

Demographics and Professional Background

2. Date/Year of graduation and university *

3. What is your area of work/speciality *

- [ ] General Dentist
- [ ] Periodontist
- [ ] Prosthodontist
- [ ] Oral surgeon
- [ ] Implantologist
- [ ] Maxillofacial surgeon
- [ ] Other

4. How many years have you been practising implant dentistry? *

- ◯ 1-2yrs
- ◯ 3-5yrs
- ◯ 6-10yrs
- ◯ 11-20yrs
- ◯ more than 20yrs

Early Practises - Past Criteria

5. What were the most important indicators of implant success early in your career? (select all that apply) *

- ☐ Survival of the implant / osseointegration
- ☐ Absence of pain or infection
- ☐ Functional stability of the restoration
- ☐ Other

6. Which diagnostic tools or methods did you primarily use in your early career? (select all that apply) *

- [ ] Clinical observation (visual inspection)
- [ ] Manual probing
- [ ] Conventional radiographs
- [ ] None

7. How frequently did you evaluate key peri-implant health parameters (E.g: BOP, probing depths, radiographic bone levels in the past? *

- ◯ Always
- ◯ Sometimes
- ◯ Rarely
- ◯ Never

8. How often did you evaluate soft tissue health around implants in the past? *

- ◯ Routinely
- ◯ Occasionally
- ◯ Rarely
- ◯ Not at all

Current Practices - Modern Criteria

9. Which of the following are now part of your criteria for peri-implant health success? (select all that apply) *

- ☐ Stable probing dpeths and BOP
- ☐ Maintenence of bone levels
- ☐ Lack of inflammation, suppuration or infection
- ☐ Aesthetic and functional integration with adjacent teeth
- ☐ None of the above

10. What tools or methods do you currently use to help assess peri-implant health? (select all that apply) *

- [ ] Digital Radiographs (CBCT)
- [ ] Periodontal probing and BOP assessment
- [ ] Resonance frequency analysis (e.g Osstell)
- [ ] Digital workflows (e.g CAD/CAM, intraoral scanners)
- [ ] None
- [ ] Other

11. Have advancements in technology influenced how you assess peri-implant health? *

- ◯ Yes
- ◯ No
- ◯ Somewhat

12. How do you currently ensure long-term peri-implant health and prosthetic success? *

- [ ] Regular follow-up and maintenance programs
- [ ] Patient education on implant hygiene
- [ ] Use of standardised clinical protocols
- [ ] Monitoring patient risk factors (e.g smoking , diabetes)

Understanding of Peri-Implant Health

13. How often do you consider a patient's medical history (e.g diabetes, smoking, systemic diseases) when evaluating peri-implant health or planning implant supported restorations? *

- ◯ Always
- ◯ Often
- ◯ Sometimes
- ◯ Rarely
- ◯ Never

14. Which of the following is a diagnostic feature of peri-implantitis ? *

- ☐ Redness and swelling of peri-implant soft tissues
- ☐ Progressive bone loss evident on radiographs
- ☐ Absence of BOP
- ☐ Firm attachment of soft tissue around the implant

15. How do peri-impalnt mucositis and peri-implantitis differ in disease progression? *

- ◯ Mucositis is reversible, while peri-implantitis involves irreversible bone loss
- ◯ Both conditions are irreversible
- ◯ Peri-implantitis is reversible with timely treatment
- ◯ There is no difference in disease progression

16. Which of the following is a common cause of peri-implant mucositis ? *

- ◯ Biofilm accumulation around implant
- ◯ Mechanical overload
- ◯ Poor surgical technique
- ◯ Implant surface contamination

17. Which of the following factors are most commonly associated with the development of peri-implantitis? *

- ☐ Persistent biofilm and untreated peri-implant mucositis
- ☐ Systemic conditions such as diabetes
- ☐ Smoking
- ☐ Excessive occlusal loading

18. Which of the following are evidence-based treatments for peri-implant mucositis? (select all that apply) *

- [ ] Mechanical debridement of biofilm from the implant surface
- [ ] Use of adjunctive antimicrobial agents (chlorhexidine, antibiotics)
- [ ] Surgical intervention to regenerate lost bone
- [ ] Patient education and reinforcement of oral hygiene practices
- [ ] Use of laser therapy or photodynamic treatment

Comparisons and Reflections

19. Do you think that your success and failure rates have improved over the years due to an evolving personal protocol ? *

- ◯ Yes
- ◯ No

20. Have new clincal guidelines (e.g : from EFP or ITI) influenced your approach? *

- ◯ Yes
- ◯ No

21. If YES , which aspects have been most impactful? (select all that apply)

- [ ] Focus on peri-implant soft tissues health
- [ ] Standardised and regular assessment of bone levels
- [ ] Incorporation of patient-reported outcomes
- [ ] Emphasis on long-term maintenance protocols
- [ ] Function and aesthetics

22. Comparing past and present practices, how has your criteria for peri-implant health and implant supported restorations evolved? - described key changes in evaluation methods and priorities over time

23. What challenges have you faced in adopting modern diagnostic tools and criteria ?- please share any difficulties or barriers you encountered while transitioning to updated practices

Standardised criteria and future practices

24. How do you anticipate criteria for peri-implant healh success evolving in the next 5-10years? *

- [ ] Greater emphasis on patient-centric outcomes
- [ ] improved diagnostic technologies
- [ ] enhanced materials for prostheses
- [ ] integration of Artificial Intelligence in diagnostics
- [ ] Other

Criterios de Éxito para La Salud Periimplantaria Sobre Restauraciones Implantosopotadas

Evolución de los criterios de éxito a lo largo de los años

Un TFG para un estudiante de 5º de Odontología

Consentamiento Informado

El presente cuestionario forma parte del Trabajo de Fin de Grado en Odontología de la Universidad Europea de Madrid titulado: "Como odontólogo, ¿cómo ha evolucionado a lo largo de los años su criterio para el éxito de la salud periimplantaria en restauraciones implantosoportadas?" y dirigido por el Profesor/a **REDACTED** El propósito del presente trabajo es "evaluar la evolución de los criterios con los que los odontólogos definen el éxito de la salud periimplantaria en las restauraciones implantosoportadas, examinando los cambios en la adopción y adaptación de medidas clínicas, los avances en las herramientas de diagnóstico y la integración de los resultados centrados en el paciente a lo largo del tiempo" y la información será recogida a través de una breve encuesta. Su participación en este estudio es de carácter libre y voluntario, pudiendo solicitar ser excluido del mismo, sin justificación previa ni perjuicio para usted. La información recogida será confidencial y no se usará para ningún otro propósito fuera de esta investigación y derivados de la divulgación investigativa. Los datos recogidos serán completamente anónimos. No se solicitarán datos personales identificativos. Los datos que se recojan en la encuesta se tratarán de acuerdo con lo establecido en la Ley Orgánica 3/2018, de 5 de diciembre, de Protección de Datos Personales y garantía de los derechos digitales. A los efectos de lo dispuesto en el reglamento de la Ley Orgánica 3/2018, de 5 de diciembre, de Protección de Datos Personales y garantía de los derechos digitales, queda informado y es expresamente consiente de la utilización de los datos proporcionados en la encuesta, con los fines anteriormente indicados. El presente consentimiento se otorga sin perjuicio de todos los derechos que le asisten en relación con normativa anteriormente citada, existiendo la posibilidad de acceder a la información proporcionada, rectificación, cancelación y oposición en cualquier momento que lo desee. Para ello debe dirigirse por escrito al tutor **REDACTED**

1. ¿Da su consentimiento de participación en la encuesta como voluntario/a para que los resultados en la encuesta se utilicen en el Trabajo Fin de Grado: "Como odontólogo, ¿cómo ha evolucionado a lo largo de los años su criterio para el éxito de la salud periimplantaria en restauraciones implantosoportadas?"? *

   ◯ Si

   ◯ No

Datos demográficos y antecedentes profesionales

2. Fecha / año de graduacion y universidad *

3. Cuál es su área de trabajo/especialidad? *

- [ ] Odontólogo general
- [ ] Periodoncista
- [ ] Prostodoncista
- [ ] Cirugía oral
- [ ] Implantólogo
- [ ] Cirujano Maxilofacial
- [ ] Other

4. Cuántos años lleva practicando la implantología? *

- ◯ 1-2 años
- ◯ 3-5 años
- ◯ 6-10 años
- ◯ 11-20 años
- ◯ Mas de 20 años

Primeras prácticas (criterios anteriores)

5. Cuáles fueron los indicadores más importantes del éxito de un implante al principio de su carrera? (seleccione todos los que procedan) *

- ☐ Supervivencia del implante/ oseointegración
- ☐ Ausencia de dolor o infección/ salud de los tejidos blandos
- ☐ Estabilidad funcional de la restauración
- ☐ Other

6. Qué herramientas o métodos de diagnostico utilizó principalmente al principio de su carrera? (seleccione todos los que procedan) *

- ☐ Observación clínica (inspección visual)
- ☐ Palpación manual
- ☐ Radiograías convencionales
- ☐ Ninguno

7. Con qué frecuencia evaluaba en el pasado los parámetros clave de salud peri-implantaria (por ejemplo: BOP, profundidades de sondaje, niveles óseos radiograficos? *

- ◯ Siempre
- ◯ A veces
- ◯ Raramente
- ◯ Nunca

8. Con qué frecuencia evaluaba la salud de los tejjidos blandos alrededor de los implantes en el pasado? *

- ◯ Rutinariamente
- ◯ Ocasionalmente
- ◯ Raramente
- ◯ En absoluto

Prácticas actuales (criterios modernos)

9. Cuáles de los siguientes puntos forman parte ahora de sus criterios la salud peri-implantaria? (seleccione todo lo que corresponda) *

- [ ] Profundidades de sondeo y BOP estables
- [ ] Mantenimiento de los óseos
- [ ] Ausencia de inflamación, supuración o infección
- [ ] Integración estetica y funcional con los dientes adyacentes
- [ ] Ninguna

10. Qué herramientas o métodos de diagnóstico utiliza actualmente para evaluar la salud periimplantaria ? (seleccione todos los que procedan) *

- [ ] Radiografías digitales
- [ ] Sondaje periodontal y evaluación de la BOP
- [ ] Análisis de la frecuencia de resonancia (e.g Osstell)
- [ ] Flujos de trabajo digitales (e.j, escáneres intraorales, CAD/CAM)
- [ ] Ninguna
- [ ] Other

11. Han influido los avances tecnológicos en su forma de evaluar la salud peri-implantaria ? *

- ◯ Sí
- ◯ No
- ◯ Algo

12. Cómo garantiza actualmente la salud peri-implantaria y el éxito protésico a largo plazo? *

- [ ] Programas regulares de seguimiento y mantenimiento
- [ ] Educacción del paciente sobre la higiene de los implantes
- [ ] Utilización de protocolos clínicos normalizados
- [ ] Control de los factores de riesgo del paciente (e.j. tabaquismos, diabetes)

Compresión de la salud peri-implantaria

13. Con qué frecuencia tiene en cuenta el historial medico del paciente (e.j. diabetes, tabaquismos o enfermedades sistemicas) al evaluar la salud peri-implantaria o planificar restauraciones implantosoportadas? *

- ◯ Siempre
- ◯ A menudo
- ◯ A veces
- ◯ Raramente
- ◯ Nunca

14. Cuál de las siguientes es una característica diagnóstica de la peri-implantitis? *

- [ ] Enrojecimiento e hinchazón de los tejidos blandos peri-implantarios
- [ ] Pérdida ósea progresiva evidente en las radiografías
- [ ] Ausencia de hemorragia al sondaje
- [ ] Fijación firme del tejido blando alrededor del implante

15. En qué se diferencian la mucositis periimplantaria y la periimplantitis en la evolución de la enfermedad? *

- ◯ La mucositis es reversible, mientras que la periimplantitis implica una pérdida ósea irreversible
- ◯ Ambas condiciones son irreversibles
- ◯ La periimplantitis es reversible con un tratamiento a tiempo
- ◯ No hay diferencias en la progresión de la enfermedad

16. Cuál de las siguientes es una causa frecuente de mucositis periimplantaria ? *

- ◯ Acumulación de biofilm alrededor del implante
- ◯ Sobrecarga mecánica
- ◯ Mala técnica quirúrgica
- ◯ Contaminación de la superficie del implante

17. Seleccione , Cuál de los siguientes factores se asocia con mayor frecuencia al desarrollo de periimplantitis? *

- [ ] Biopelícula persistente y mucositis periimplantaria no tratada
- [ ] Afecciones sistemicas como la diabetes
- [ ] Fumar
- [ ] Carga oclusal excesiva

18. Cuáles de los siguientes son tratamientos basados en la evidencia para la mucositis periimplantaria ? (seleccione todos los que procedan) *

- [ ] Desbridamiento mecánico del biofilm de la superficie del implante
- [ ] Uso de agentes antimicrobianos complementarios (e.j. clorhexidina o antibióticos)
- [ ] Intervención quirúrgica para regenerar el hueso perdido
- [ ] Educación del paciente y refuerzo de las prácticas de higiene bucodental
- [ ] Uso de terapia láser o tratamiento fotodinámico
- [ ] Total
- [ ] Ninguna

Comparaciones y Reflexiones

19. Cree que sus índices de éxito y fracaso han mejorado con los años debido a la evolución de su protocolo personal? *

- ◯ Sí
- ◯ No

20. Han influido en su enfoque las nuevas directrices clínicas (e.j. de la EFP o la ITI)? *

- ◯ Sí
- ◯ No

21. En caso afirmativo, qué aspectos han sido los más impactantes? (seleccione todos los que procedan)

- ☐ Atención a la salud de los tejidos blandos periimplantarios (inflammación y BOP)
- ☐ Evaluación normalizada y periódica de los niveles óseos
- ☐ Incorporación de resultados comunicados por los pacientes
- ☐ Énfasis en los protocolos de mantenimiento a largo plazo
- ☐ Función y estética

22. Comparando prácticas pasasas y actuales, cómo hab evolucionado sus criterios sobre la salud periimplantaria y las restauraciones implantosoportadas.- Describa los principales cambios en sus métodos y prioridades de evaluación a lo largo del tiempo.

23. A qué retos se ha enfrentado a la hora de adoptar herramientas y criterios de diagnóstico modernos? - Por favor, comparta cualquier dificultad o obstáculo que haya encontrado durante la transición a las prácticas actualizadas.

Criterios normalizados y prácticas futuras

24. Cómo prevé que evolucionen los criterios de éxito sanitario periimplantario en los próximos 5-10 años? *

- [ ] Mayor énfasis en los resultados centrados en el Paciente
- [ ] Mejores tecnologías de diagnostico
- [ ] Materiales mejorados para prótesis
- [ ] Integración de la inteligencia artificial en el diagnóstico
- [ ] Other