

Grado en ODONTOLOGÍA

Trabajo Fin de Grado

Curso 2022-23

Questionnaire Assessing the Knowledge of the 2018 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions in General Dentists and Periodontists.

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1 Abstract

Introduction: For 19 years dentists and periodontists have benefited from the 1999 classification of periodontitis. The most recent classification came out with various modifications which play an important role in the diagnostic and treatment phases of the everyday work routine of a dentist or periodontist.

Objectives: The primary objective of this study is to evaluate the overall knowledge of dentists and periodontists regarding the 2018 classification of periodontal diseases and conditions. The secondary objectives are to assess the awareness of the 2018 classification, their capability to diagnose a patient with regards to the modified classification, compare this knowledge in various age groups and amongst general dentists and periodontists.

Materials and methods: An observational, descriptive, and transversal analysis online questionnaire was conducted targeting dentists and periodontists to evaluate their knowledge concerning the 2018 classification. The questionnaire given is constructed by 9 multiple-choice and 6 true or false questions with 4 previous demographic questions.

Results and discussion: There was a total of 46 participants, of which 65,2% female and 34,8% male, n=39 dentists (84,8%) and n=7 periodontists (15,2%) from countries Spain (67,4%), France, (15,2%), and Italy (17,4%)

Conclusion: In conclusion this study demonstrated that there is a low level of knowledge and awareness of the 2018 classification of periodontal diseases accepting the hypothesis of this study. The collected data demonstrated that there is no statistical evidence to prove that the age or occupation affects the level of knowledge in dentists and periodontists. Due to the low number of periodontists, a valid comparison could not be established, even though periodontists did have a higher score.

Introducción: Desde hace 19 años los odontólogos y periodoncistas se han beneficiado de la clasificación de periodontitis de 1999. La clasificación más reciente salió con varias modificaciones que juegan un papel importante en las fases de diagnóstico y tratamiento de la rutina diaria de trabajo de un dentista o periodoncista.

Objetivos: El objetivo principal de este estudio es evaluar el conocimiento general de los dentistas y periodontistas con respecto a la clasificación de enfermedades y condiciones periodontales de 2018. Los objetivos secundarios son evaluar el conocimiento de la clasificación de 2018, su capacidad para diagnosticar a un paciente con respecto a la clasificación modificada, comparar este conocimiento en varios grupos de edad y entre dentistas generales y periodontistas.

Materiales y métodos: Se realizó un cuestionario en línea observacional, descriptivo y de análisis transversal dirigido a odontólogos y periodontistas para evaluar su conocimiento sobre la clasificación 2018. El cuestionario entregado está construido por 9 preguntas de opción múltiple y 6 preguntas de verdadero o falso con 4 preguntas demográficas previas.

Resultados y discusión: Hubo un total de 46 participantes, de los cuales 65,2% mujeres y 34,8% hombres, n=39 odontólogos (84,8%) y n=7 periodontistas (15,2%) de países España (67,4%), Francia, (15,2%) e Italia (17,4%)

Conclusión: En conclusión, este estudio demostró que existe un bajo nivel de conocimiento y conciencia de la clasificación de enfermedades periodontales del 2018 aceptando la hipótesis de este estudio. Los datos recolectados demostraron que no existe evidencia estadística que demuestre que la edad u ocupación afecte el nivel de conocimiento en odontólogos y periodontistas. Debido al bajo número de periodontistas no se pudo establecer una comparación válida, a pesar de que los periodontistas sí tuvieron un puntaje más alto.

2 Key Words

Gingivitis, Periodontitis, Necrotizing Periodontitis, 2018 Classification of Periodontal and Peri-implant Diseases and Conditions, knowledge, awarness

3 Introduction

From the beginning of the very first periodontal classification major changes were applied in the 1999 classification of periodontitis. It is a classification which has served periodontists and general dentists for 19 years in which much new evidenced has emerged and revealed that further changes needed to be made (1). The analysis of this evidence has prompted the 2017 workshop to develop a new classification framework of periodontitis (1). Modifications to the 1999 classification were applied to the gingival health and inflammation aspects as well as the periodontitis classification aspects. Some of these changes were implemented to help prevent patient overtreatment. For instance, in the 1999 classification, *reduced periodontium* was identified as a periodontium that was reduced due to bone loss only by biofilms and inflammatory response. However, the 2018 classification of periodontitis has taken into consideration another type of reduced periodontium, which is a reduced periodontium due to *non-periodontitis causes* like recessions, orthodontic forces, and subgingival restorations (2). Therefore, a patient with reduced periodontium that occurred not by biofilm and inflammatory response alone, in the 1999 classification might have been treated with the conventional periodontal treatment instead of treating the modifying factors that have facilitated the appearance of a reduced periodontium if it was classified according to the 2018 classification.

A large group of specialists gathered to analyse the newly emerged evidence and determined how they could apply changes to the 1999 classification of periodontitis. Major changes were made in the 1999 classifications of periodontitis which has been quite practical for the past 19 years. The new evidence has suggested that various aspects of the previous classification needed to be changed and modified if dentists and periodontists wanted to better diagnose and offer better treatment plans to their patients. The 2018 classification of Periodontal Diseases and Conditions is now divided into 3 categories:

- Periodontal Health, Gingival Diseases and Conditions
- Periodontitis
- Other Conditions Affecting the Periodontium

These are only some of the categories of the full 2018 classification as the peri-implantitis diseases and conditions is not analysed in this study and asked in the questionnaire.

3.1 Assessment of Gingival Tissue

Clinical gingival health is generally associated with an *inflammatory infiltrate and a host response consistent with homeostasis* and it is classified on two site levels known as (3):

- Intact periodontium
- Reduced periodontium
 - Stable periodontitis patient
 - Non-periodontitis patient

One major change made in this category of the new classification with respect to the previous classification scheme is the distinction between a patient with a reduced periodontium who experienced periodontitis and has been successfully treated and a patient who has a reduced periodontium who however did not suffer from periodontitis. Some common causes of a reduced periodontium in a non-periodontitis patient can be recessions, occlusal trauma, crown lengthening, traumatic brushing. The reason behind this distinction is due to the difference in risk potential for a patient to achieve recurrent periodontitis. Patients with a reduced periodontium and a stable periodontitis who develop gingivitis will require periodontal maintenance contrary to a non-periodontitis patient. This will help to prevent over treatment of these patients who only had a reduced periodontium without suffering from periodontitis. *Gingivitis is a non-specific inflammatory condition and is therefore a consequence of sustained plaque biofilm accumulation at and apical to the gingival margin*, categorized into dental plaque-induced gingivitis and non-dental plaque-induced gingivitis (4). It was agreed that to define a case of gingival inflammation, it would have to be objectively and accurately graded by a bleeding on probing score (BOP%) assessed as the proportion of bleeding sites at six sites (mesio-buccal, buccal, disto-buccal, mesio-lingual, lingual, disto-lingual) on all teeth present(3). Therefore, a patient with gingival health will present <10% of BOP with ≤ 3 mm of

probing pocket depth (PPD) and the various cases to diagnose a particular patient with gingivitis can be found in the table below (Table 1).

Table 1. Diagnostic look-up table for gingival health or dental plaque-induced gingivitis in clinical practice(3,5)

Periodontitis (reduced periodontium)						
	Healthy Intact Periodontium	Intact Periodontium with Gingivitis	Healthy Stable Periodontitis patient	Stable Periodontitis patient with Gingivitis	Healthy Non-Periodontitis patient	Non-Periodontitis patient with Gingivitis
Probing Attachment Loss	No	No	Yes	Yes	Yes	Yes
Bleeding on Probing	< 10%	Yes (\geq 10%)	< 10%	Yes (\geq 10%)	<10%	Yes (\geq 10%)
Probing Pocket Depth	\leq 3 mm	\leq 3 mm	\leq 4 mm	\leq 3 mm	\leq 3 mm	\leq 3 mm
Normal Bone Height	Yes	Yes	No	No	Yes, or possible loss	Yes, or possible loss

One other change to take into consideration regarding the new classification of periodontitis is the PPD in a patient with stable periodontitis. It was previously believed that to define a case of gingival health in a stable periodontitis patient, the limit PPD should be \leq 3 mm with no gingival inflammation. However, current evidence has proven that it is rare to achieve \leq 3 mm at 100% of treated sites and could therefore lead to overtreatment. Furthermore, if any non-BOP site $>$ 3 mm is observed, it would not be defined as a healthy gum and therefore push the need for further treatment instead of a simple periodontal maintenance. However, because it is agreed by majority that it is rare to achieve \leq 3 mm at 100% of treated sites, the new threshold has been set at \leq 4 mm.

3.2 Assessment of Periodontal Tissue

The most influential and significant change applied to the 1999 classification of periodontitis is that the previously known forms of periodontitis recognized as *chronic* and *aggressive* periodontitis have now been joined into one singular category called “Periodontitis”. Therefore, the 2018 classification of periodontal diseases and conditions for periodontitis is categorized into:

- Necrotizing Periodontal Diseases
- Periodontitis (previously separated into chronic and aggressive forms)
- Periodontitis as a Manifestation of Systemic Disease

An overwhelming amount of new evidence has proven that there is no real distinction, both in aetiology and pathophysiology, between the chronic and aggressive periodontitis as suggested by the 1999 classification scheme being two completely different forms of the disease, hence the decision to group together the two models of periodontitis under one name.

Periodontitis is a *chronic multifactorial inflammatory disease associated with dysbiotic plaque biofilms and characterized by progressive destruction of the tooth-supporting apparatus* (6). To clinically diagnose a case of periodontitis, the patient would have to present:

- Interdental clinical attachment loss (CAL) that is detectable at >2 non-adjacent teeth.

or

- Buccal CAL ≥ 3 mm with pocketing of ≥ 3 mm detectable at ≥ 2 teeth

To further determine the extent of the disease, the workshop classified periodontitis into *staging* and *grading*.

3.2.1 Staging

3.2.1.1 *Definition*

Staging represents the severity and complexity of the disease, which is assessed by clinical and imaging data, divided into four categories (stages I through IV). The stage of the disease at presentation will be determined by analyzing:

A) Severity: which evaluates the interdental CAL, percentage of radiographic bone loss, tooth loss.

B) Complexity of management: evaluating the PPD, presence and extent of angular bony defects, furcation involvement (7), tooth mobility, and tooth loss due to periodontitis.

C) Extent and distribution of the disease: by evaluating whether the case of periodontitis at presentation is localized (<30% of teeth involved), generalized (>30% of teeth involved), or has a molar/incisor pattern which were also defined in the 1999 classification.

In determining the stage of periodontitis at presentation, CAL is a primary determinant, if it's not available, then radiographic bone loss will be used to establish the stage of periodontitis. However, like tooth loss, the complexity factors have the capacity of shifting the stage to a higher level. One single complexity factor is enough to shift the diagnosis to a higher stage. For example, a furcation class II or III or number of remaining teeth may shift the stage regardless of the CAL at presentation.

Table 2: Periodontitis stage based on the 2018 classification of periodontitis (5–7)

Periodontitis stage		Stage I	Stage II	Stage III	Stage IV
Severity	Interdental CAL at site of greatest loss	1 to 2 mm	3 to 4 mm	≥5 mm	≥5 mm
	Radiographic bone loss	Coronal third (15%)	Coronal third (15% to 33%)	Extending to mid-third of root and beyond	Extending to mid-third of root and beyond
	Tooth loss	No tooth loss due to periodontitis		Tooth loss due to periodontitis of ≤4 teeth	Tooth loss due to periodontitis of ≥5 teeth
Complexity	Local	Maximum probing depth ≤4 mm Mostly horizontal bone loss	Maximum probing depth ≤5 mm Mostly horizontal bone loss	In addition to stage II complexity: Probing depth ≥6 mm Vertical bone loss ≥3 mm Furcation involvement Class II or III Moderate ridge defect	In addition to stage III complexity: Need for complex rehabilitation due to: Masticatory dysfunction Secondary occlusal trauma (tooth mobility degree ≥2) Severe ridge defect, Bite collapse, drifting, flaring. Less than 20 remaining teeth (10 opposing pairs)
		Add to stage as descriptor For each stage, describe extent as localized (<30% of teeth involved), generalized (>30% of teeth involved), or molar/incisor pattern.			

3.2.1.1.1 Stage I

Stage I periodontitis is the borderland between gingivitis and periodontitis presenting early stages of attachment loss(7). These patients do not show any signs of interdental CAL other than a low horizontal bone loss which can be determined by radiographic bone loss showing a loss of <15% at the coronal third and locally seen in the complexity section of table 3. Patients finding themselves in this stage of periodontitis are due to the fact that they present a PPD of ≤4 mm and a slight bone loss in response to persistence of biofilm deposits and gingivitis(5,7). It is crucial to identify patients in this early stage as the attending clinicians can propose a greater variety of preventive and curative treatment

options that can result more cost-effective to these patients providing specific options for both conventional mechanical biofilm removal and pharmacological agents delivered in oral hygiene(7).

3.2.1.1.2 Stage II

In this stage of periodontitis, the first clinical signs of affectation and damage to periodontal tissues are visible. Stage II periodontitis patients develops an interdental CAL of 3 to 4 mm with a slightly more severe bone loss identified radiographically (15% to 33% coronal third). The patient also develops deeper PPD of ≤ 5 mm. Stage I and stage II both share the same degree of severity and complexity only when determining the number of teeth lost due to periodontitis and the horizontal bone loss, although it can be said that the degree of bone loss in stage II is slightly superior to that of stage I. This stage is still quite early enough to be able to apply conventional treatment options involving regular bacterial removal and monitoring in order to cease the disease progression.

3.2.1.1.3 Stage III

Stage III of periodontitis is the first stage in which there is remarkably more damage to the supporting structures reaching a point where tooth loss may follow as a result. This stage is defined by deeper interproximal pockets with radiographic bone loss extending to the middle-third of the roots. As previously mentioned, a patient in this stage may lose up to four teeth due to periodontitis. Furthermore, this stage presents all the local signs of stage II also including a probing depth of ≥ 6 mm with first signs of intrabony defects of ≥ 3 mm, class II or III furcation and moderate ridge defects. Patient management differentiates to stage IV as masticatory function can be preserved without requiring complex rehabilitation procedures(7).

3.2.1.1.4 Stage IV

Stage IV being the most advanced form of periodontitis is characterized by severe damage to the supporting structures evolving to a considerable amount of tooth loss and poor masticatory function. In this stage of periodontitis there is a great risk of completely losing the dentition if care is not given promptly. Stage IV presents an interdental CAL that can be anything ≥ 5 mm and a radiographic bone loss that extends to the middle-third portion of the roots just as in stage III. Stage IV can be seen when a patient shows an absence of ≥ 5 teeth due to periodontitis. Additionally, to stage III complexity, stage IV also presents a masticatory dysfunction with higher degrees of mobility (degree ≥ 2), severe intrabony defects, and a bite collapse and drifting. These local findings at presentation of the patient can be mostly due to the fact that a patient in this stage will usually retain approximately less than 20 teeth with 10 superior and 10 inferior teeth left due to the severe damage to the periodontal structure.

3.2.2 Grading

3.2.2.1 Definition

Grading gives further information regarding the diagnosis of the patient. It is used as an indicator of the rate of progression of periodontitis. Grading is determined by analysing the primary criteria which would refer to direct or indirect evidence of progression (7). Direct evidence is based on the longitudinal data observed through radiographic bone loss or CAL over 5 years. Whenever direct evidence is not available, indirect evidence is assessed by measuring bone loss in percentage at the worst affected tooth divided by the age of the patient. After establishing a grade of periodontitis, clinicians should then consider the grade modifiers as they can shift the grade to another by evaluating the presence or absence and grade of risk factors of the patients. The two modifiers analysed in a patient are whether the patient presents a smoking habit and/or if they present diabetes or not. Non-smokers and normoglycemic patients will aid a better prognosis and smokers of < 10 or ≥ 10 cigarettes/day and a patient with HbA1c $< 7.0\%$ or $\geq 7.0\%$ will aggravate the prognosis. Lastly, risk of systemic impact of

periodontitis and biomarkers of the patient are analysed although more evidence is required to let it modify the grade of the patient. It is recommended to clinicians that they should initially assume a grade B disease in a patient presenting periodontitis and then analyse the specific evidence in order to shift towards a grade A or C if needed (7). This is so because when a patient suffers of periodontitis, they present symptoms contrary to those extinguished in grade A (no CAL or radiographic bone loss over 5 years). For example, if a patient presents a percentage bone loss of 0.5 with destruction that commensurate with the present biofilm, the case is defined as a grade B patient, yet, if the patient smokes ≥ 10 cigarettes / day then the grade shifts towards grade C.

Table 3. Periodontitis grade based on the 2018 Classification of periodontal diseases and conditions(5–8)

Periodontitis grade			Grade A: Slow rate of progression	Grade B: Moderate rate of progression	Grade C: Rapid rate of progression
Primary criteria	Direct evidence of progression	Longitudinal data (radiographic bone loss or CAL)	Evidence of no loss over 5 years	<2 mm over 5 years	>2 mm over 5 years
	Indirect evidence of progression	% bone loss/age	<0.25	0.25 to 1.0	>1.0
Case phenotype		Heavy biofilm deposits with low levels of destruction	Destruction commensurate with biofilm deposits	Destruction exceeds expectation given biofilm deposits: specific clinical patterns suggestive of periods of rapid progression and/or early onset disease (e.g., molar/incisor pattern; lack of expected response to standard bacterial control therapies)	
Grade modifiers	Risk factors	Smoking	Non-smoker	Smoker <10 cigarettes/day	Smoker >10 cigarettes/day
		Diabetes	Normoglycemic/ no diagnosis of diabetes	HbA1c <7.0% in patients with diabetes	HbA1c > 7.0% in patients with diabetes
Risk of systemic impact of periodontitis	Inflammatory burden	High sensitivity CRP (hsCRP)	<1 mg/L	1 to 3 mg/L	>3 mg/L
Biomarkers	Indicators of CAL/bone loss	Saliva, gingival crevicular fluid, serum	?	?	?

3.2.2.1.1 Grade A

A patient with grade A indicates a healthy patient with no evidence of radiographic bone loss or CAL over the course of 5 years. Also, the patient's percentage of bone loss over their age is extremely minimal which will not be considered as a pathognomonic evidence of bone loss due to periodontitis. However, the patient in this grade will present substantial amounts of biofilm deposits with low levels of destruction (5–7). Risk factors are absent in this grade therefore facilitating a positive prognosis and progression.

3.2.2.1.2 Grade B

Grade B evolves from the previous grade by presenting a radiographic bone loss or CAL of <2 mm over 5 years. Therefore, the patient shows a moderate rate of progression of the disease which is also demonstrated by a percentage of bone loss by age of 0.25 – 1.0. The patient develops some destruction of the periodontium which coincides with the level of biofilm deposits present in the oral cavity. The fact that the patient is a smoker of <10 cigarettes / day OR presents HbA1c $<7.0\%$ is a crucial indicator of a risk factor that can influence the rate of progression of the disease including its prognosis in a negative way. Hence it is always recommended to patients to get their diabetes under control to help achieve a more positive prognosis.

3.2.2.1.3 Grade C

A patient with grade C shows a rapid rate of progression proved by ≥ 2 mm over 5 years of radiographic bone loss or CAL and a >1.0 percentage of bone loss per age. A common finding of a patient with periodontitis grade C is that they develop higher levels of destruction that exceeds expectations given the amount of biofilm deposits encountered in the oral cavity. Patients in this grade of periodontitis tend to present clinical patterns suggestive of early onset disease such as molar/incisor pattern, lack of response to standard bacterial therapies. To aggravate the prognosis even further a patient in grade C is one who may also be a smoker of ≥ 10 cigarettes / day or suffers diabetes with HbA1c $\geq 7.0\%$.

3.3 Necrotizing Periodontal Disease (NPD)

From the 1999 classification of periodontitis, the term necrotizing “ulcerative” gingivitis or periodontitis has been converted into *necrotizing periodontal disease* (NPD). The 2018 classification scheme, NPD is a category of the periodontal diseases affecting the oral and periodontal tissues through necrosis and ulceration. This category is further divided into three subclasses:

- Necrotizing Gingivitis
- Necrotizing Periodontitis
- Necrotizing Stomatitis

These three classes along with NOMA represent different stages of the same disease, with similar aetiology, clinical characteristics, and treatment. “Necrotizing gingivitis is an acute inflammatory destructive condition of the gingival tissues characterized by ulcerated and necrotic interdental papillae and gingival margins”(3,5,9,10). The ulcers are covered with a yellowish-white or grayish slough, also termed as “pseudomembrane”(5). Necrotizing gingivitis also presents gingival bleeding and pain, halitosis, regional lymphadenopathy, fever, and sialorrhea (in children) (6). Necrotizing periodontitis is also an inflammatory process of the periodontium which shares the same characteristics of the Necrotizing gingivitis disease and also includes the presence of rapid bone loss. Other signs/symptoms associated with this condition may include pseudomembrane formation, lymphadenopathy, and fever which are also seen in necrotizing gingivitis(5).

The main difference clinically seen between necrotizing gingivitis and necrotizing periodontitis is based on the extent and site of the damage (10). Besides the fact that necrotizing gingivitis does not present any attachment loss, only the surrounding tissues of the gum are affected until the disease progresses to the point of reaching necrotizing periodontitis in susceptible populations like immunosuppressed patients(10). Therefore, necrotizing gingivitis is seen limited to the gingiva before progressing to necrotizing periodontitis where damage is depicted in the periodontium including the gingival tissues, alveolar bone, and periodontal ligament. Lastly, necrotizing stomatitis is clinically presented as a

destruction of the mucous membranes in the mouth and areas beyond the mucogingival junction like the cheek, tongue, and palate(9).

4 Justification and Hypothesis

4.1 Justification

After the 1999 classification of periodontitis, newly emerged evidence has sparked the need of a new gold standard for a classification of periodontitis. A large group of specialized dentists in the field of periodontics with the support of the American Academy of Periodontology (AAP) and the European Academy of Periodontology (EAP) have met to modernize and improve the previous classification by developing proceedings of the World Workshop on the Classification of Periodontal and Peri-implant Diseases and Conditions(1).

It is fundamental as a medical practitioner to stay up to date with the newest evidence and information being published to be able to offer patients the best treatment options possible. However, that is not always the case. Regarding the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions which has been recently published in 2018, this study will attempt to assess whether general dentists and periodontists are primarily, aware of its existence and secondly, know how to correctly diagnose a case gingivitis and periodontitis according to the 2018 classification.

Advancements in dentistry are crucial for dental clinicians to improve their techniques during treatments. By not staying current on the newest information updated, there is a higher risk for those dentists to not provide the best care they can give. Hence the need to constantly expand our knowledge and refining our techniques is extremely important for the patients' well-being. Many changes have been made to the previous classification. Some of the changes were made to prevent overtreatment of patients. Because these important changes were made, it is important for this study not only to evaluate if in fact dentists and periodontists do not use the new classification, but also to encourage other dental practitioners in keeping themselves up to date with the always impending information.

4.2 Hypothesis

The general dentists and periodontists will have a low score on the questionnaire assessing the knowledge of the 2018 classification of periodontal and peri-Implant diseases and conditions.

5 Objectives

5.1 Primary Objectives

- Assess the knowledge of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions in general dentist and periodontists.

5.2 Secondary Objectives

- Assess the awareness of general dentists and periodontists on the existence of the 2018 classification of periodontal disease.
- Compare the knowledge regarding the 2018 classification of periodontal disease between general dentists and periodontitis.
- Compare the knowledge and awareness regarding the 2018 classification of periodontal disease between younger and older dentists.
- Assess the capability of general dentists to perform a diagnosis according to the 2018 classification of periodontal disease.

6 Materials and Methods

This observational study has been realized at Universidad Europea de Valencia from October 2022 to June 2023 following the guideline of the STROBE guide.

6.1 Materials

6.1.1 PICO Question

Table 1. - PICO Question.

Population	Dentists and Periodontists.
Intervention	Online questionnaire.
Comparison	<i>NOT APPLICABLE.</i>
Outcome	Evaluate the overall quantitative knowledge about the 2018 classification of periodontal diseases and conditions.

After establishing the PICO question, it aided in formulating the title of investigation “Questionnaire Assessing the Knowledge of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions in General Dentists and Periodontists”.

6.1.2 Type of Study

To perform this study, it was thought best to select an observational, descriptive, and transversal analysis type of study through the realization of a questionnaire.

6.1.3 Primary Variable

The primary variable of this study is the knowledge of dentists and periodontists regarding the 2018 classification of periodontal diseases and conditions. The study will attempt to verify whether the dentists and periodontists that answer the questionnaire are primarily aware of the new classification of

periodontitis, if they know how the classification scheme is structured, and if they can diagnose a patient with regards to the standards of the 2018 classification.

6.1.4 Sample Selection

Inclusion Criteria:

- General dentists
- Dentists that have completed some form of specialization or formation program or have achieved a master in Periodontics.
- Dentists and periodontists that are currently active in their practice.

Exclusion Criteria:

- Other formations or masters such as: endodontists, orthodontists, prosthodontists, paediatricians, etc.
- Dental Students
- Retired dentists and periodontists

6.1.5 Sample Size

To determine the size of a sample in an epidemiological study 4 elements are considered:

- a) The degree of precision that you want to achieve, the smaller the acceptable margin of error in the work, the larger the sample should be.
- b) The degree of probability corresponding to the desired precision.
- c) The foreseeable order of magnitude, that is, the estimated prevalence figure that is expected to be found.
- d) The type of sampling to be used. Since the sampling error can only be determined when the sample has been drawn randomly.

Based on all the above considerations, we determined both the sample size and the margins of error or confidence intervals. In both cases, the Lilienfield and Lilienfiels (1987) formula was used, for a probability of $p < 0.05$. To carry out this calculation, we consider the following factors: size of the population, population variance, sampling error, confidence level, scale level of the variables, and type of sampling. Of these factors, some are proposed by the researcher:

type of sampling, level of confidence and sampling error, and others are imposed such as the size of the population, scale of the variables, population variance. In our study these parameters are specified as:

Sampling error: 0.05. Population variance: $p = q = 0.5$; This conservative assumption of the maximum variance is reasonable when there are multiple questions to be studied and logically variable homogeneity in the population $p = 50\%$ is made in all those cases in which there is no certainty about the prevalence to find and the worst is taken. of the cases, half of the subjects answered affirmatively.

The calculation of the sample size has been carried out according to the formula for finite population:

$$n = \frac{4Npq}{E^2(N-1) + 4pq}$$

Sample size= n ; Elements of the population= N ; Calculated error= E ; Estimated population percentage = p ; $100-p = q$ (The hypothesis that $p=q$ is used, which means that both are 50).

In this study, the sample size will be selected from dentists and periodontists who are currently active in their practice in the following countries: Spain, Italy, France, Germany, Netherlands, and the United Kingdom.

6.1.6 Material Used

The questionnaire is formed by 19 questions. It was constructed in such way to acquire the sociodemographic background of the respondent as well as the respondent's amount of knowledge of the 2018 classification of periodontal diseases and conditions. This questionnaire was developed by 13 multiple choice questions (MCQs) and 6 true or false questions (TorF). The sociodemographic background of the respondent is determined by the first 4 multiple choice questions and the remaining questions will determine the amount of knowledge and the diagnostic capacity with respect to the new classification of periodontitis.

6.2 Method

6.2.1 Description of the Procedure

In general lines there are variations of the basic methods of obtaining information and its mode of administration: personal interview, computer-assisted self-administered interview, self-completed questionnaires provided during an interview or by mail or email, telephone survey, or published literature sources. In our case, the questionnaires were self-completed by each dentist and periodontist. Due to the fact that there was no interviewer, biases were not introduced, neither by the way in which the questions are formulated nor by the way in which they are recorded. The disadvantage is that the questions must be very simple and clear in order to obtain the greatest number of responses and avoid errors in completing the questionnaire. The questionnaire can be sent by email or delivered personally and picked up some time later by email on completion of a survey or webpage.

The questionnaire is anonymous and at all times it has been intended that it be answered by the dentists and periodontists individually and sincerely, an aspect that appears and is highlighted in the header of the first page of the questionnaire.

6.2.2 Data Collection

Validation of the questionnaire

The questionnaire was reviewed by professionals who are experts in the field of periodontics, experts in educational and research methods.

Data collection

The data will first be received through a confirmation email of completion by the respondent. Consequently, the answers will be transferred into an SPSS table where the sociodemographic variables and numerical variables will be transferred into a codified classification.

6.2.3 Ethical Considerations

The study was carried out following the ethical standards recognized by the Declaration of Helsinki and following the recommendations of Good Clinical Practice of the European Community. The study was submitted to evaluation and obtained the approval of the Ethics Committee of the European University of Valencia.

Before completing the questionnaire, the characteristics and nature of the study as well as the objectives it intended to address were established.

Regarding data protection, the provisions of Organic Law 15/1999 of December 13 have been followed.

A database was generated that does not contain specific identification of the respondent, except for the one collected in a numerical code together with the date of completion, thus ensuring the anonymity and confidentiality of the responses.

The content of the data collection questionnaires is thus protected from unauthorized use by persons unrelated to the research, therefore the information generated is strictly confidential.

6.2.4 Statistical Analysis

Regarding the results of the survey, they were extracted and transferred into the SPSS programme and both sociodemographic variables and the principal variable were codified numerically and classified in such way to determine results more feasibly. Once this point was reached, the SPSS programme (“Statistical Package for the Social Sciences”) Statistics 25 for carrying out descriptive statistics of the collected data that were categorized was applied.

7 Results

7.1 Statistical Analysis

The statistical analysis to be performed included various procedures. First, the descriptive statistics of the evaluated variables were calculated.

These descriptive statistics were applied to all the variables, for the qualitative variables their frequency tables were calculated. Subsequently, inferential analyses were made to analyse whether there were significant differences or relationships between the variables evaluated. To do this, we initially performed normality tests to then decide whether to perform a parametric or non-parametric test. In the case of the analysis that the two variables were qualitative, a chi-square test was performed. When the variable was qualitative, it had two categories and the other was quantitative, the parametric test, T-Test for independent samples, was performed for normality. When the variable was qualitative, it had three categories and the other was quantitative, when normality assumptions were met, the Anova parametric test was performed.

Statistical analysis was performed with a 95% confidence interval, in such a way that those whose p value is less than 0.05 were considered as statistically significant values. All analysis were carried out using the SPSS 25 program.

7.2 Descriptive analysis of the sample

7.2.1 Descriptive analysis of general variables

The total sample is made up of 46 respondents,

In Table 1 it can be observed that the total number of respondents, 65.20% (n=30) are women, the rest are men, of the total 43.50% (n=20) are in an age range of 31 to 40 years, the 21.70%(n=10) were between 23 to 30 years old, 15.20%(n=7) between 41 to 50 years old, and the rest is over 50 years old.

Of the sample, 84.80% (n=39) were General Dentists, the rest Periodontists, 15.2% (n=7).

Table 1.- General variable frequencies

		N	%
Gender	Male	16	34,80%
	Female	30	65,20%
Age	23-30yo	10	21,70%
	31-40yo	20	43,50%
	41-50yo	7	15,20%
	>50yo	9	19,60%
Occupation	General Dentist	39	84,80%
	Periodontist	7	15,20%
Work	Spain	31	67,40%
Location	France	7	15,20%
	Italy	8	17,40%

7.2.2 Descriptive variable analysis of the multiple-choice questions (MCQ)

According to Table 2, it can be seen that the majority 80.40% (n=37) knew that the new periodontitis classification was published in 2018.

However, only 52.20% (N=24) knew how to diagnose periodontitis according to the new classification system for periodontal diseases and conditions of 2018.

In MCQ 3, 76.10% (n=35) were aware that for a patient to be classified as stage III periodontitis, they had to have a radiographic bone loss of 33-66%.

In MCQ 4, 69.60% (n=32) had knowledge of the number of stages of periodontitis in the 2018 periodontal diseases and conditions classification system.

Only 32.60%% (n=15) answered question MCQ5 correctly.

In MCQ 6, 43.50% (n=20) knew that, according to the 2018 periodontal diseases and conditions classification system, a patient has periodontitis if there is Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth.

In MCQ 7, 37.00% (n=17) knew that if a patient experienced bone loss < 2 mm for 5 years, it means that they have a Grade B

In MCQ 8, a patient can be diagnosed with necrotizing gingivitis if there is B and C, this question was answered correctly by 65.20% (N=30).

In MCQ 9, only 45.70% (n=21) knew that if a patient presented interdental CAL >5 mm, <4 teeth lost due to periodontitis, PPD >6 mm, with bite collapse, they had stage IV.

Table 2.- Multiple-Choice Question (MCQ) Variables Results.

		N	%
MCQ1	Yes	37	80,40%
	No	9	19,60%
MCQ2	Yes	24	52,20%
	No	22	47,80%
MCQ3	<15%	1	2,20%
	15-33%	5	10,90%
	33-66%	35	76,10%
	>66%	5	10,90%
MCQ4	Chronic and Aggressive	4	8,70%
	3	7	15,20%
	4	32	69,60%
	5	3	6,50%
MCQ5	<_3mm	25	54,30%
	>4mm	1	2,20%
	<_4mm	15	32,60%
	<3mm	5	10,90%
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	3	6,50%
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	20	43,50%
	C. Gingival bleeding and inflammation	1	2,20%
	D. A and B are correct	22	47,80%
MCQ7	A. A	16	34,80%
	B. B	17	37,00%
	C. C	1	2,20%
	D. Bone loss over 5 years is a factor seen in Staging	12	26,10%
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	6	13,00%
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	10	21,70%
	D. B and C	30	65,20%

MCQ9	A. Stage II	1	2,20%
	B. Stage III	6	13,00%
	C. Stage IV	21	45,70%
	D. Stage III shifting to IV	10	21,70%
	E. C and D are correct	8	17,40%

7.2.3 Variables Descriptive Analysis of True or False questions (TorF)

Table 3 shows that in TorF 1, only 23.90% (n=11) knew that Drug-influenced gingivitis is a branch of the plaque-induced gingivitis classification.

In TorF 2, 78.30% (n=36) answered false to Gingivitis in a patient is defined as “generalised” when there are 10-30% of bleeding sites.

In TorF 3, 82.60% (n=38) answered true to One of the major changes in the new classification was the removal of the “aggressive” and “chronic” Periodontitis and replaced under one category “Periodontitis”.

In TorF 4, 56.50% (n=26) correctly answered the question The age of the patient is not a factor we need to take into consideration when classifying a periodontal patient regarding the 2018 classification system of periodontal diseases and conditions.

In TorF 5, 71.70% (n=33) correctly answered the question One single complexity factor is enough to shift the diagnosis to a higher stage regardless of the clinical attachment level (CAL).

In TorF 6, only 37.00% (n=17) correctly answered the question in the 2018 classification of periodontal diseases and conditions “Necrotizing periodontitis” is categorized in “ulcerative necrotizing gingivitis” and “ulcerative necrotizing periodontitis”.

Table 3. True or False (TorF) Variables Results.

		N	%
TorF1	A. True	11	23,90%
	B. False	35	76,10%
TorF2	A. True	10	21,70%
	B. False	36	78,30%
TorF3	A. True	38	82,60%
	B. False	8	17,40%
TorF4	A. True	19	41,30%
	B. False	26	56,50%
	Total	45	97,80%
	Sistema	1	2,20%
TorF5	A. True	33	71,70%
	B. False	13	28,30%
TorF6	A. True	29	63,00%
	B. False	17	37,00%

7.3 Inferential Analysis

When there are two qualitative variables, a chi-square test is performed, where the following hypotheses is proposed.

H0: The variables are independent.

H1: Variables are related.

The null hypothesis (H0) in a chi-square test of independence is that there is no relationship between two categorical variables. In other words, the frequencies observed in the cells of the contingency table are explained by chance and there is no significant relationship between the variables.

The alternative hypothesis (H1) is that there is a relationship between the two categorical variables and that the frequencies observed in the cells of the contingency table cannot be explained by chance. In other words, there is a significant association between the variables and the frequency of one variable depends on the other.

If $p > 0.05$ the null hypothesis is fulfilled

According to Table 4, it is shown that in the General Dentist group there is no relationship between the age groups and the answers given in question MCQ1. $\chi^2 = 4.136$, $p = 0.247$ $p > 0.05$

Although it should be noted that 60% of those who answered yes in MCQ1 were in the age range 23-40 years.

It is observed that in the General Dentist group there is no relationship between the age groups and the answers given in question MCQ2. $\chi^2 = 7.480$, $p = 0.058$ $p > 0.05$

Although it should be noted that 52.40% of those who answered no in MCQ2 were in the 31-40 age range.

It is observed that in the General Dentist group there is no relationship between the age groups and the answers given in question MCQ3. $\chi^2 = 15.312$, $p = 0.083$ $p > 0.05$.

Although it should be noted that only 35.70% of those who answered correctly were in the 31-40 age range.

It is observed that in the General Dentist group there is no relationship between the age groups and the answers given in question MCQ4. $\chi^2 = 7.208$, $p = 0.615$ $p > 0.05$.

Although it should be noted that only 32.00% of those who answered correctly were in the 31-40 age range, 28.00% were in the 23-30 age group, and 24.00% were in the group older than 50 years.

It is observed that in the General Dentist group there is no relationship between the age groups and the answers given in question MCQ5. $\chi^2 = 8.682$, $p = 0.467$. $p > 0.05$.

Although it should be noted that 80.00% of those who answered correctly were in the age range 23-40 years, 28.00% the rest were in the group over 50 years.

According to the table, it is observed that in the General Dentist group there is no relationship between the age groups and the answers given in question MCQ6. $\chi^2 = 13.398$, $p = 0.145$. $p > 0.05$.

Although it should be noted that only 44.40% of those who answered correctly were in the 31-40 age range, 38.90% belonged to the 23-30 age group.

It is observed that in the General Dentist group there is no relationship between the age groups and the answers given in question MCQ7. $\chi^2 = 9.656$, $p = 0.379$. $p > 0.05$.

Although it should be noted that 50.00% of those who answered correctly were in the 31-40 age range, 33.30% belonged to the group over 50 years of age.

It is observed that in the General Dentist group there is no relationship between the age groups and the answers given in question MCQ8. $\chi^2 = 5.882$, $p = 0.437$. $p > 0.05$

Although it should be noted that only 46.20% of those who answered correctly were in the 31-40 age range.

It is seen that in the General Dentist group there is no relationship between the age groups and the answers given in question MCQ9. $\chi^2 = 8.687$, $p = 0.729$. $p > 0.05$.

Although it should be noted that only 47.10% of those who answered correctly were in the 31-40 age range, 23.50% belonged to the group over 50 years of age.

Table 4.- Occupation relationship General Dentist - MCQ

		23-30yo		31-40yo		41-50yo		>50yo		Total		χ^2	p
MCQ1	Yes	9	30,00%	9	30,00%	4	13,30%	8	26,70%	30	76,92%	4,136	0,247
	No	1	11,10%	6	66,70%	1	11,10%	1	11,10%	9	23,07%		
MCQ2	Yes	7	38,90%	4	22,20%	1	5,60%	6	33,30%	18	46,15%	7,48	0,058
	No	3		11	52,40%	4	19,00%	3	14,30%	21	53,84%		
MCQ3	<15%	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%	15,312	0,083
	15-33%	0	0,00%	3	60,00%	0	0,00%	2	40,00%	5	12,82%		
	33-66%	9	32,10%	10	35,70%	2	7,10%	7	25,00%	28	71,78%		
	>66%	1	20,00%	2	40,00%	2	40,00%	0	0,00%	5	12,82%		
MCQ4	Chronic and Aggressive	0	0,00%	2	50,00%	1	25,00%	1	25,00%	4	10,25%	7,208	0,615
	3	1	14,30%	4	57,10%	0	0,00%	2	28,60%	7	17,94%		
	4	7	28,00%	8	32,00%	4	16,00%	6	24,00%	25	64,100%		
	5	2	66,70%	1	33,30%	0	0,00%	0	0,00%	3	7,69%		
MCQ5	<_3mm	5	21,70%	9	39,10%	5	21,70%	4	17,40%	23	58,97%	8,682	0,467
	>4mm	0	0,00%	0	0,00%	0	0,00%	1	100,00%	1	2,56%		
	<_4mm	4	40,00%	4	40,00%	0	0,00%	2	20,00%	10	25,64%		
	<3mm	1	20,00%	2	40,00%	0	0,00%	2	40,00%	5	12,82%		
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	1	33,30%	1	33,30%	0	0,00%	1	33,30%	3	7,69%	13,398	0,145
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	7	38,90%	8	44,40%	1	5,60%	2	11,10%	18	26,08%		
	C. Gingival bleeding and inflammation	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%		
	D. A and B are correct	2	11,80%	6	35,30%	3	17,60%	6	35,30%	17	43,58%		
MCQ7	A. A	4	25,00%	5	31,30%	2	12,50%	5	31,30%	16	41,02%	9,656	0,379
	B. B	1	8,30%	6	50,00%	1	8,30%	4	33,30%	12	30,76%		
	C. C	1	100,00%	0	0,00%	0	0,00%	0	0,00%	1	2,56%		
	D. Bone loss over 5 years is a factor seen in Staging	4	40,00%	4	40,00%	2	2,000%	0	0,00%	10	25,64%		
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%	5,882	0,437
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	3	42,90%	2	28,60%	0	0,00%	2	28,60%	7	17,94%		
	D. B and C	4	15,40%	12	46,20%	4	15,40%	6	23,10%	26	66,66%		
MCQ9	A. Stage II	0	0,00%	1	100,00%	0	0,00%	0	0,00%	1	2,56%	8,687	0,729
	B. Stage III	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%		
	C. Stage IV	2	11,80%	8	47,10%	3	17,60%	4	23,50%	17	43,58%		
	D. Stage III shifting to IV	3	37,50%	2	25,00%	0	0,00%	3	37,50%	8	20,51%		
	E. C and D are correct	2	28,60%	3	42,90%	1	14,30%	1	14,30%	7	17,94%		

According to Table 5, it is observed that in the General Dentist group there is no relationship between the age groups and the answers given in the question TorF1. $\chi^2 = .371$, $p=0.946$. $p>0.05$.

Although it should be noted that only 42.90% of those who answered correctly were in the 31-40 age range, 28.60% belonged to the 23-30 age group.

it is observed that in the General Dentist group there is no relationship between the age groups and the answers given in the question. TorF2. $\chi^2 = 2.1701$, $p=0.538$. $p>0.05$.

Although it should be noted that only 41.40% of those who answered correctly were in the 31-40 age range.

According to Table 5 it is observed that in the General Dentist group there is no relationship between the age groups and the answers given in the question. TorF3. $\chi^2 = 2.679$, $p=0.444$. $p>0.05$.

Although it should be noted that only 32.30% of those who answered correctly were in the 31-40 age range, 29.00% belonged to the 23-30 age group.

it is observed that in the General Dentist group there is no relationship between the age groups and the answers given in the question. TorF3. $\chi^2 = 2.003$, $p=0.572$. $p>0.05$

Although it should be noted that only 40.90% of those who answered correctly were in the 31-40 age range, 31.80% belonged to the 23-30 age group.

it is observed that in the General Dentist group there is no relationship between the age groups and the answers given in the question. TorF5. $\chi^2 = 975$, $p=0.807$. $p>0.05$.

Although it should be noted that only 42.90% of those who answered correctly were in the 31-40 age range, 25.00% belonged to the 23-30 age group.

It is observed that in the General Dentist group there is no relationship between the age groups and the answers given in the question. TorF6. $\chi^2 = .558$, $p=0.906$. $p>0.05$.

Although it should be noted that only 41.70% of those who answered correctly were in the 31-40 age range, 25.00% belonged to the 23-30 age group.

Table 5.- Occupation and age relationship of General Dentist – TorF

		23-30yo		31-40yo		41-50yo		>50yo		Total			
TorF1	A. True	2	28,60%	3	42,90%	1	14,30%	1	14,30%	7	17,94%	,371	0,95
	B. False	8	25,00%	12	37,50%	4	12,50%	8	25,00%	32	82,05%		
TorF2	A. True	2	20,00%	3	30,00%	1	10,00%	4	40,00%	10	25,64%	2,170	0,54
	B. False	8	27,60%	12	41,40%	4	13,80%	5	17,20%	29	74,35%		
TorF3	A. True	9	29,00%	10	32,30%	4	12,90%	8	25,80%	31	79,48%	2,679	0,44
	B. False	1	12,50%	5	62,50%	1	12,50%	1	12,50%	8	20,51%		
TorF4	A. True	3	18,80%	6	37,50%	2	12,50%	5	31,30%	16	41,02%	2,003	0,57
	B. False	7	31,80%	9	40,90%	3	13,60%	3	13,60%	22	56,41%		
TorF5	A. True	7	25,00%	12	42,90%	3	10,70%	6	21,40%	28	71,79%	,975	0,81
	B. False	3	27,30%	3	27,30%	2	18,20%	3	27,30%	11	28,20%		
TorF6	A. True	7	25,90%	10	37,00%	3	11,10%	7	25,90%	27	69,23%	,558	0,91
	B. False	3	25,00%	5	41,70%	2	16,70%	2	16,70%	12	30,76%		

According to Table 6 it is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the MCQ 1 question.

No chi-squared was achievable as all the periodontists have responded the same, demonstrating however that all periodontists are aware of the 2018 classification of periodontal diseases and conditions.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the MCQ 2 question. $\chi^2 = .467$, $p = 0.495$. $p > 0.05$.

Although it should be noted that only 1 periodontist stated that they do not know how to diagnose a patient with regards to the 2018 classification.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the MCQ 3 question.

No chi-squared was achievable as all the periodontists have responded correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the MCQ 4 question.

No chi-squared was achievable as all the periodontists have responded correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the MCQ 5 question. $\chi^2 = 1.120$, $p = 0.29$. $p > 0.05$.

Although it should be noted that 71,4% answered correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the MCQ 6 question.

No chi-squared was achievable as all the periodontists have responded correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the MCQ 7 question. $\chi^2 = 1.120$, $p = 0.29$. $p > 0.05$.

Although it should be noted that 71,4% answered correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the MCQ 8 question. $\chi^2 = 3.733$, $p = 0.053$. $p > 0.05$.

Although it should be noted that only 57,1% answered correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the MCQ 9 question. $\chi^2 = .875$, $p = 0.646$. $p > 0.05$.

Although it should be noted that only 57,1% answered correctly.

Table 6. - Occupation relationship of Periodontist–MCQ.

		31-40yo		41-50yo		Total		χ^2	p
MCQ1	Yes	5	71,40%	2	28,60%	7	100,00%		
MCQ2	Yes	4	66,70%	2	33,30%	6	85,71%	,467b	0,495
	No	1	100,00%	0	0,00%	1	14,28%		
MCQ3	33-66%	5	71,40%	2	28,60%	7	100,00%		
MCQ4	4	5	71,40%	2	28,60%	7	100,00%		
MCQ5	<_3mm	2	100,00%	0	0,00%	2	28,57%	1,120b	0,29
	>4mm	3	60,00%	2	40,00%	5	71,14%		
MCQ6	D. A and B are correct	3	60,00%	2	40,00%	5	71,14%		
MCQ7	B. B	3	60,00%	2	40,00%	5	71,14%	1,120b	0,29
	D. Bone loss over 5 years is a factor seen in Staging	2	100,00%	0	0,00%	2	28,57%		
MCQ8	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	1	33,30%	2	66,70%	3	42,85%	3,733b	0,053
	D. B and C	4	100,00%	0	0,00%	4	57,14%		
MCQ9	C. Stage IV	3	75,00%	1	25,00%	4	57,14%	,875b	0,646
	D. Stage III shifting to IV	1	50,00%	1	50,00%	2	28,57%		
	E. C and D are correct	1	100,00%	0	0,00%	1	14,28%		

According to Table 7 it is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the question TorF1. $\chi^2 = 3.733$, $p = 0.053$. $p > 0.05$

Although it should be noted that only 42,9% answered correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the TorF2 question.

No chi-squared was achievable as all the periodontists have responded correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the TorF3 question.

No chi-squared was achievable as all the periodontists have responded correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the question TorF4. $\chi^2 = 0.058$, $p = 0.809$. $p > 0.05$.

Although it should be noted that only 57,1% answered correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the question TorF5. $\chi^2 = 1.120$, $p = 0.29$. $p > 0.05$.

Although it should be noted that 71,4% answered correctly.

It is observed that in the Periodontist group there is no relationship between the age groups and the answers given in the question TorF6. $\chi^2 = 1.120$, $p = 0.29$. $p > 0.05$.

Although it should be noted that 71,4% answered correctly.

Table 7.- Occupation relationship Periodontist– TorF

		31-40yo		41-50yo		Total		χ^2	p
TorF1	A. True	4	100,00%	0	0,00%	4	57,14%	3,733b	0,053
	B. False	1	33,30%	2	66,70%	3	42,85%		
TorF2	B. False	5	71,40%	2	28,60%	7	100,00%		
TorF3	A. True	5	71,40%	2	28,60%	7	100,00%		
TorF4	A. True	2	66,70%	1	33,30%	3	42,85%	,058b	0,809
	B. False	3	75,00%	1	25,00%	4	57,14%		
TorF5	A. True	3	60,00%	2	40,00%	5	71,14%	1,120b	0,29
	B. False	2	100,00%	0	0,00%	2	28,57%		
TorF6	A. True	2	100,00%	0	0,00%	2	28,57%	1,120b	0,29
	B. False	3	60,00%	2	40,00%	5	71,14%		

7.4 Comparison of means of scores.

When there is a qualitative and a quantitative variable, a comparison of means is made to verify if there are statistically significant differences, it is necessary to define what type of test to apply (parametric or non-parametric). For them we verify if the assumptions are met or not:

1. Data independence
2. Normality of the sample

Data independence is fulfilled when we verify normality through the Kolmogorov-Smirnov test, since the sample is greater than 30 subjects.

We put forward the following hypotheses:

- H0: The sample is normally distributed.
H1: The sample is not normally distributed.

By obtaining a p-value greater than the significance level of 0.05, we have no elements to reject the null hypothesis, so we can affirm that the sample is normally distributed.

Therefore, a T-test for independent samples is carried out.

According to table 33 we can see that there are statistically significant differences between General Dentist and Periodontist $t=-3.102$. $p = 0.003$ $p < 0.05$, highlighting that the Periodontist group has obtained a higher average score.

Table 8.- Mean score of General Dentists and Periodontists

	Occupation	N	Mean	Deviation	t	p
Total	General Dentist	39	5,1795	1,5538	-3,102	0,003
	Periodontist	7	7,1429	1,46385		

Table 9.- Mean score of General Dentists and Periodontists according to age

	N	Mean	Deviation	95% of the confidence interval for the mean		Minimum	Maximum	F	p
				Inferior Limit	Superior Limit				
23-30yo	10	5,2	1,54919	4,0918	6,3082	3	7	0,732	0,539
31-40yo	20	5,9	1,77408	5,0697	6,7303	3	9		
41-50yo	7	5,1429	1,77281	3,5033	6,7824	2	7		
>50yo	9	5,1111	1,61589	3,869	6,3532	2	7		
Total	46	5,4783	1,68311	4,9784	5,9781	2	9		

To determine the existence of differences between the total score with respect to age in the Dentist group, the Anova mean contrast test was used, previously checking the normal distribution of the sample and the homogeneity of the variances through the Kolmogorov-test. Smirnov and Levene.

According to Table 34, there are no statistically significant differences, although it should be noted that the group of 31-40 years presents a higher mean value. 23-30yo (M=5.2, SD=1.54919), 31-40yo (M=5.4, SD=1.54919), 41-50yo (M=4.6 SD=1.81659), >50yo (M=9, SD=1.61589) F= .321, p =.81.

Tabla 8.- Mean score of General Dentists according to age

	N	Mean	Deviation	95% of the confidence interval for the mean		Minimum	Maximum	F	p
				Inferior Limit	Superior Limit			0,321	0,81
23-30yo	10	5,2	1,54919	4,0918	6,3082	3	7		
31-40yo	15	5,4	1,54919	4,5421	6,2579	3	8		
41-50yo	5	4,6	1,81659	2,3444	6,8556	2	7		
>50yo	9	5,1111	1,61589	3,869	6,3532	2	7		
Total	39	5,1795	1,5538	4,6758	5,6832	2	8		

8 Discussion

Modifications made to the classification of periodontitis implies modifications to how we diagnose, evaluate, and treat our periodontal patients. It is crucial that dentists and especially periodontists stay ahead of any modifications made so to better their understanding and knowledge regarding new ways of identifying a periodontitis patient and its new procedural protocols in regard to their periodontal stage. Therefore, a questionnaire has been developed to assess and examine the knowledge of dentists and periodontists regarding the new 2018 classification of periodontal diseases and conditions. The questionnaire consists of 6 demographic background questions and 9 multiple choice questions (MCQ) and 6 true or false questions (TorF). The purpose of this questionnaire is to answer the previously mentioned objectives of this study,

- Primary Objective:
 - 1) Assess the knowledge of the 2018 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions in general dentist and periodontists.

- Secondary Objectives:
 - 1) Assess the awareness of general dentists and periodontists on the existence of the 2018 classification of periodontal disease.
 - 2) Assess the capability of general dentists to perform a diagnosis according to the 2018 classification of periodontal disease.
 - 3) Compare the knowledge and awareness regarding the 2018 classification of periodontal disease between younger and older dentists.
 - 4) Compare the knowledge regarding the 2018 classification of periodontal disease between general dentists and periodontitis.

8.1 Interpretation of results

8.1.1 Assessment of the knowledge

To answer the primary objective, the descriptive variable analysis of the MCQ and TorF questions will be discussed.

Furthermore, out of the MCQs 3-9, only 4 were answered correctly which is roughly above 50% of the MCQ section of the exam.

MCQ 3, 4, 7, and 9 were answered correctly, however it is important to say that MCQ 7 which asked whether "If a patient experienced < 2 mm bone loss over 5 years, it means he/she has a Grade:" the majority who answered correctly to *Grade B* was only 37% while 34,8% said *Grade A* was the correct option. The percentual difference is too low between the two answers given and although the majority answered correctly, only 1 respondent less than those who answered correctly, has answered wrong. Furthermore, what is almost as concerning is that 26,1% have replied to option D, that *bone loss over 5 years is a factor seen in Staging*, therefore thinking that it is not even part of the grading section in diagnosing a patient.

In MCQ 4, we ask how many stages to periodontitis there are and to prove that most dentists have a high enough knowledge of the 2018 classification, higher results were expected. 30,4% of all respondents could answer how many stages of periodontitis there are in the 2018 classification out of which 8,7% even replied that *chronic and aggressive* is still part of the new classification. Therefore, although most dentists and periodontists have answered correctly, the numbers of right answers are not enough to prove a high level of knowledge.

Looking at MCQ 9, this question was one constructed to deeply assess the knowledge of dentists and periodontists. Being able to answer this question correctly would imply knowing the different stages of periodontitis, knowing what occurrences there would need to be in each stage and most importantly know what diagnosis to give to the patient. The question asked *If a patient presents interdental CAL ≥ 5 mm, ≤ 4 teeth lost due to periodontitis, PPD of ≥ 6 mm, with a bite collapse, what would the correct answer be?* There are signs from both under stage III and IV. This question aims to assess whether dentists and periodontists can place the patient under the correct corresponding stage which would subsequently imply knowing what treatment is best to give. The majority 45,7%

has answered correctly replying to *Stage IV*. However, although there is a higher number of dentists and periodontists who answered within the correct option, there are overall more wrong answers given. Out of 49 respondents, only 21 answered *Stage IV* and the remaining 25 answered other options with a total percent of 54,3%.

MCQs 5,6,8 were all answered wrong by most of our respondents. Besides MCQ 9, the 5th MCQ was also another crucial question. As previously explained in the *Assessment of the gingival tissue* section in *Table 1*, because current evidence has proven that it is rare to achieve ≤ 3 mm at 100% of treated sites, the new threshold has been set at ≤ 4 mm to avoid overtreatment, hence, this MCQ was developed to assess the knowledge of this fact. Out of the 49 respondents, 54,3% have answered ≤ 3 mm and only 32,6% answer correctly, ≤ 4 mm. Therefore, this data shows that 67,4% of the respondents would agree to say that a patient with a healthy reduced periodontitis should have ≤ 3 mm pockets. As the new evidence proved that the threshold should be at ≤ 4 mm, this would lead to wrong treatment plans for patients who don't require any treatment as ≤ 4 mm pockets is to be expected finally demonstrating the fact that the overall knowledge of the 2018 classification of periodontitis is unsatisfactory.

(11) In agreement to the study by Abdullah in which dentists from Saudi Arabia were submitted to a questionnaire where their knowledge and awareness of the 2018 classification was evaluated, the authors decided to divide the sample in three groups: Good/high, Intermediate, and poor level. Abdullah also observed that a low percentage of the sample (9,09%) had a good knowledge of the classification and that more than half of the sample were graded as poor level of knowledge (58,74%). This may be due to the fact that in the article by Abdullah, a bigger sample (242 dentists) was studied whereas our study only included 39 participants. On the other hand, it may be possible that dentists from Europe have more knowledge regarding the new classification compared to dentists in Saudi Arabia.

In the questionnaire, a total of 8 questions, 4 MCQs and 4 TorF, were answered correctly out of 15. Various questions evaluate the knowledge regarding the simple structure of the classification system, like staging and grading. Although the results show that many have answered correctly, the

results demonstrate that still too many dentists and periodontists have a low knowledge regarding structure of the classification.

It can therefore be determined that regarding the overall answers given by general dentists and periodontists in this questionnaire, the knowledge of the 2018 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions is low as expected from the hypothesis.

8.1.2 Assessment of awareness

MCQ 1 assesses the awareness of the existence of the new classification of periodontal diseases and conditions. 80,4% of dentists and periodontists together have established that they are aware of the 2018 classification periodontitis. However, it is important to distinguish that 100% of periodontists and 76,9% of dentists are aware of the new classification, meaning that almost 25% of dentists, which is a striking quantity, were not aware that a new classification of periodontitis was made.

Similar to the results observed by Abdullah who observed that a higher percentage of the sample (59,1%) of the sample studied were aware of the new classification. However, in our study the percentage of dentists that were aware of the classification was higher than the one reported in the article of Abdullah. This may be due to the fact that in the article by Abdullah, a bigger sample (242 dentists) was studied whereas our study only included 39 participants. On the other hand, it may be possible that dentists from Europe have more knowledge regarding the new classification compared to dentists in Saudi Arabia.

8.1.3 Assessment of the diagnostic capabilities

To respond to this objective, the questionnaire asks whether the respondents are able to diagnose a patient with regards to the 2018 classification of periodontitis in MCQ 2. The result conveyed an alarming amount that only 46,2% answered YES. Furthermore, in table 5, it is shown that 53,8% of dentists alone are not confident in diagnosing a patient with the 2018 classification. In addition, the data explained in the primary objective of the discussion portrays

sufficient evidence that there is a lack in capability of correctly diagnosing a patient through the use of the 2018 classification.

(12) In another study by Marzieh et al., the knowledge regarding periodontal tissues health was studied. Although their study did not analyse the knowledge of the 2018 classification, the results in our study have shown that not many dentists are capable of diagnosing a patient correctly. These results agree with the findings of the study by Marzieh et al.

8.1.4 Comparison of the knowledge in different age groups

To compare between two qualitative variables, age and knowledge, an inferential analysis is performed, in which chi-squared test is applied. The data shows that overall, there is no statistical correlation between the age of the dentist and their knowledge regarding the 2018 classification. Therefore, we accept the null hypothesis that the variables are independent. However, it is important to highlight that throughout the various MCQs and TorF questions, results showed that the dentists in the age ranges of 23-30 and 31-40 represented better responses. For example, in MCQ 5, no statistical correlation was found, yet 80% of dentists that answered correctly were in the range of 23-40. In another instance, in MCQ 9, although no statistical correlation was determined, 47,1% that responded correctly belonged in the 31-40 range. The fact that majority of correct answers were given by dentists with ages between 31-40 may signify that the previous generation but not the generations from after 41 years old, have been more active in the continuing to improve their knowledge on newly emerging evidence. Ages 23-30 showed the second highest results overall, demonstrating the fact that some of the dentists in the younger generations have continued to expand their knowledge yet, less than the 31-40 age group. The dentists in older age groups had the lowest results overall, meaning that this age group least improved their knowledge on the modifications of the periodontal classification. In conclusion, although there is no statistical evidence that proves that age affects the knowledge acquired on the 2018 classification, a substantial number of correct responses were given by the younger age groups. The future realization of a similar study comparing the ages to knowledge of dentists regarding this

topic would aid in rendering these results more valid being able to compare those results with the ones from this study.

8.1.5 Comparison of the knowledge in general dentists and periodontists

The aim of this objective is to determine if there is a large difference in the knowledge of the 2018 classification of periodontal diseases and conditions between dentists and periodontists. One limitation encountered which will be discussed in the further section, is that out of 46 respondents, only 7 were periodontists. This leads to inconclusive results. By having a scarce number of periodontists respondents, the statistical analysis showed that there was no correlative significance between the two variables, knowledge of dentists and periodontists. To be able to compare the knowledge of dentists and periodontists, we established two variables, one qualitative, the occupation, and a quantitative, the average score of the questionnaire performed. As previously mentioned in results, to analyse a qualitative and quantitative variable a comparison of averages of points needs to be applied. Data independence is fulfilled when we verify normality of distribution of the sample through the Kolmogorov-Smirnov test. As was shown in table 8 the average score displayed a higher knowledge in periodontists than general dentist regarding the 2018 classification of periodontitis.

However, as already mentioned, there are only 7 periodontists in this study. This means that even if, hypothetically, one periodontist who answered 100% of the questionnaire correctly out of 40 dentists that gave some correct answers, the average would still score higher for the periodontist. Therefore, no conclusion can asseverate that periodontists have a higher knowledge regarding the 2018 classification than general dentists. Despite these results, what demands to be discussed is the overall performance of the periodontists. Although not one question had more wrong answers from periodontists, meaning that within each question, most of the periodontists answered correctly than the other periodontists, some questions were expected to have higher score than what was shown. For instance, MCQ 8, which asks for the correct symptomatology of necrotizing periodontitis, 42,9% answered *B. ulcerated and necrotic papillae and gingival margins without loss of attachment* and not option

C which includes option B and *suppuration and pain*. The presence of suppuration and pain is a typical sign and symptom of necrotizing periodontitis that cannot be left out when diagnosing a patient. Therefore, in this question, 100% of correct answers was expected from periodontists. In TorF 1, asking whether drug-induced gingivitis is part of the plaque-induced gingivitis classification, 42,9% stated that it is false. This question was also expected to be answered correctly by all periodontists. Therefore, it can be concluded that although periodontists had a higher average score than general dentists, the number of periodontists who participated in the questionnaire is too insignificant to give significant statistical results.

8.2 Validity and Limitations

This study encountered several limitations during its process. This study attempted to avoid as much bias as it could to retrieve the most valid and unbiased responses to be able to evaluate the knowledge of dentists and periodontists and compare them. Because this study was not controlled in any way, there are various forms of response bias that may have occurred, demand bias and social desirability bias.

Demand bias can be transpired by the respondent reading the title of the study being done. Due to the fact that the title of the questionnaire refers to the knowledge of dentists and periodontists, this could push respondents to affect the way they answer to appear more knowledgeable. One way this could have been done is by researching the answer to give a higher score. Because the respondents were not controlled, neither a lockdown web-browser was used, where an exam is performed without the ability to access online tools, the respondents may have had the opportunity to check answers. Furthermore, the aim of the study which was to assess and compare the knowledge of the 2018 classification was stated in the informed consent, therefore the participants may have wanted to show better results than what they knew.

Social desirability bias is when the respondents have the propensity to misrepresent responses in order to be more in line with the social expectations. This can appertain more to the periodontists who feel they should know more than general dentists regarding the 2018 classification. Therefore, periodontists

and or general dentists may have checked answers to better their score to be in line with the social norm as to not be perceived negatively.

To improve these limitations in another instance, it would be recommended to have the participant take the test through a lockdown web-browser such as "Respondus". Having dentists and periodontists in one room may be difficult to organize and convince to participate. However, personally handing a physical version of the test and give approximately 5 minutes to complete the test per participant could be an option although it would require more time.

The sample size itself was a significant limitation to this study. As previously mentioned in the discussion, only 7 periodontists out of the 49 respondents participated in this study. This has led the results to obtain irrelevant data when assessing the knowledge of periodontists and particularly when performing a comparison test between periodontists and general dentists. Having had few periodontists meant that no true comparisons could be made. Furthermore, although as previously discussed, the knowledge of the few periodontists was not as high as expected, there were still too few periodontists which could have changed the overall results as regards to the knowledge of periodontists. Therefore, comparison tables and tests could not be drawn to determine significant differences amongst the two occupations.

To improve this limitation, a larger time frame could have been appropriate to acquire more participants, particularly periodontists, to achieve data that could give more valid and exploitable results to assess and compare the knowledge of dentists and periodontists. Another proposal may be to personally stop by various dental clinics and periodontal clinics, which could have also made possible the previous suggestion about making the dentists and periodontists perform the test on a physical paper rather than online.

As regards to the questionnaire, it was later considered that it could have been more appropriate to add a, *I do not know*, option. This would have led to less guessing in cases of uncertainty. It may have been possible that amongst certain guesses, a correct option may have been selected. Another limitation of this study is that this research only refers to the *Periodontal Disease and*

Conditions section of the classification, leaving out the *Peri-implant* part of the classification. To accomplish a more complete research regarding the knowledge of the 2018 classification, the questionnaire could have added questions regarding the Peri-implant section of the classification.

Another limitation is the lack of articles regarding the knowledge of dentists and periodontists concerning the 2018 classification. More articles would have helped to compare the results from our study to truly assess whether the knowledge of the dentists and periodontists of this study are similar or not compared to other dentists. Abdullah's article was the first study evaluating the knowledge of dentists in Saudi Arabia. To the best of our knowledge this is the first study, similar to that of Abdullah, in Europe. Hence, more studies to compare could have been more helpful.

A great improvement to the limitation of this study could be to construct a standardized questionnaire that analyses the knowledge of the classification of dentists and periodontists, usable by different countries. With a standardized questionnaire, we could achieve a controlled variable that would facilitate the possibility to compare the knowledge of different dentists, within the same or different countries.

9 Conclusion

9.1 Primary / Principal Conclusion

- In conclusion, in response to the primary objective, most questions were answered correctly by dentists and periodontists. Yet the level of knowledge assessed by each occupation was insufficient to determine that there was a satisfactory level of knowledge proven by the amount of wrong answers given in the questionnaire by both occupations.

9.2 Secondary Conclusions

- Although a substantial number of general dentists were not aware of the existence of the 2018 classification of periodontal diseases and conditions, most dentists were.
- It can be concluded that even though most dentists confirmed that they are confident in being able to diagnose a patient with the 2018 classification, the responses given by most dentists has led us to believe that their capabilities to do so is scarce. Due to the low number of periodontists who participated in this study, the scarce data collected has led the results to accept the null hypothesis, being that the variables are independent to each other. More time to acquire more periodontist participants may probably alter the overall result of this objective.
- Age demonstrated no statistical proof that younger dentists had more knowledge regarding the 2018 classification although the younger age groups did illustrate a higher level of knowledge in comparison to the older dentists.
- Lastly, although periodontists resulted in scoring better in the questionnaire statistically, there were not enough periodontists to declare this conclusion valid.

Therefore, in conclusion, it can be stated that the overall results acquired by this study accepts the hypothesis of this study that the general dentists and periodontists will have a low score on the questionnaire assessing the knowledge of the 2018 classification of periodontal and peri-Implant diseases and conditions.

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11 Annex

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation	
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	Front Page
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	1
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	19
Methods			
Study design	4	Present key elements of study design early in the paper	23
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	23
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	20
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	20
Data sources/measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	N/A
Bias	9	Describe any efforts to address potential sources of bias	N/A
Study size	10	Explain how the study size was arrived at	21
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	22
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	24
		(b) Describe any methods used to examine subgroups and interactions	N/A
		(c) Explain how missing data were addressed	N/A
		(d) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(e) Describe any sensitivity analyses	N/A
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	N/A
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A

Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	27
		(b) Indicate number of participants with missing data for each variable of interest	N/A
Outcome data	15*	Report numbers of outcome events or summary measures	27-31
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	N/A
		(b) Report category boundaries when continuous variables were categorized	N/A
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	32-43
Discussion			
Key results	18	Summarise key results with reference to study objectives	44-50
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	50-52
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	44-52
Generalisability	21	Discuss the generalisability (external validity) of the study results	52
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	N/A

Table 4. Diagnostic look-up table for gingival health or dental plaque-induced gingivitis in clinical practice(3,5)

Periodontitis (reduced periodontium)						
	Healthy Intact Periodontium	Intact Periodontium with Gingivitis	Healthy Stable Periodontitis patient	Stable Periodontitis patient with Gingivitis	Healthy Non-Periodontitis patient	Non-Periodontitis patient with Gingivitis
Probing Attachment Loss	No	No	Yes	Yes	Yes	Yes
Bleeding on Probing	< 10%	Yes (\geq 10%)	< 10%	Yes (\geq 10%)	<10%	Yes (\geq 10%)
Probing Pocket Depth	\leq 3 mm	\leq 3 mm	\leq 4 mm	\leq 3 mm	\leq 3 mm	\leq 3 mm
Normal Bone Height	Yes	Yes	No	No	Yes, or possible loss	Yes, or possible loss

Table 5: Periodontitis stage based on the 2018 classification of periodontitis (5–7)

Periodontitis stage	Stage I	Stage II	Stage III	Stage IV
Severity				
Interdental CAL at site of greatest loss	1 to 2 mm	3 to 4 mm	≥5 mm	≥5 mm
Radiographic bone loss	Coronal third (15%)	Coronal third (15% to 33%)	Extending to mid-third of root and beyond	Extending to mid-third of root and beyond
Tooth loss	No tooth loss due to periodontitis	No tooth loss due to periodontitis	Tooth loss due to periodontitis of ≤4 teeth	Tooth loss due to periodontitis of ≥5 teeth
Complexity				
Local	Maximum probing depth ≤4 mm Mostly horizontal bone loss	Maximum probing depth ≤5 mm Mostly horizontal bone loss	In addition to stage II complexity: Probing depth ≥6 mm Vertical bone loss ≥3 mm Furcation involvement Class II or III Moderate ridge defect	In addition to stage III complexity: Need for complex rehabilitation due to: Masticatory dysfunction Secondary occlusal trauma (tooth mobility degree ≥2) Severe ridge defect, Bite collapse, drifting, flaring. Less than 20 remaining teeth (10 opposing pairs)
Extent and distribution	Add to stage as descriptor	For each stage, describe extent as localized (<30% of teeth involved), generalized (>30% of teeth involved), or molar/incisor pattern.		

Table 6. Periodontitis grade based on the 2018 Classification of periodontal diseases and conditions(5–8)

Periodontitis grade			Grade A: Slow rate of progression	Grade B: Moderate rate of progression	Grade C: Rapid rate of progression
Primary criteria	Direct evidence of progression	Longitudinal data (radiographic bone loss or CAL)	Evidence of no loss over 5 years	<2 mm over 5 years	>2 mm over 5 years
	Indirect evidence of progression	% bone loss/age	<0.25	0.25 to 1.0	>1.0
Case phenotype		Heavy biofilm deposits with low levels of destruction	Destruction commensurate with biofilm deposits	Destruction exceeds expectation given biofilm deposits: specific clinical patterns suggestive of periods of rapid progression and/or early onset disease (e.g., molar/incisor pattern; lack of expected response to standard bacterial control therapies)	
Grade modifiers	Risk factors	Smoking	Non-smoker	Smoker <10 cigarettes/day	Smoker >10 cigarettes/day
		Diabetes	Normoglycemic/ no diagnosis of diabetes	HbA1c <7.0% in patients with diabetes	HbA1c > 7.0% in patients with diabetes
Risk of systemic impact of periodontitis	Inflammatory burden	High sensitivity CRP (hsCRP)	<1 mg/L	1 to 3 mg/L	>3 mg/L
Biomarkers	Indicators of CAL/bone loss	Saliva, gingival crevicular fluid, serum	?	?	?

Table 9.- General variable frequencies

		N	%
Gender	Male	16	34,80%
	Female	30	65,20%
Age	23-30yo	10	21,70%
	31-40yo	20	43,50%
	41-50yo	7	15,20%
	>50yo	9	19,60%
Occupation	General Dentist	39	84,80%
	Periodontist	7	15,20%
Work	Spain	31	67,40%
Location	France	7	15,20%
	Italy	8	17,40%

Table 10.- Multiple-Choice Question (MCQ) Variables Results.

		N	%
MCQ1	Yes	37	80,40%
	No	9	19,60%
MCQ2	Yes	24	52,20%
	No	22	47,80%
MCQ3	<15%	1	2,20%
	15-33%	5	10,90%
	33-66%	35	76,10%
	>66%	5	10,90%
MCQ4	Chronic and Aggressive	4	8,70%
	3	7	15,20%
	4	32	69,60%
	5	3	6,50%
MCQ5	<_3mm	25	54,30%
	>4mm	1	2,20%
	<_4mm	15	32,60%
	<3mm	5	10,90%

MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	3	6,50%
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	20	43,50%
	C. Gingival bleeding and inflammation	1	2,20%
	D. A and B are correct	22	47,80%
MCQ7	A. A	16	34,80%
	B. B	17	37,00%
	C. C	1	2,20%
	D. Bone loss over 5 years is a factor seen in Staging	12	26,10%
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	6	13,00%
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	10	21,70%
	D. B and C	30	65,20%
	MCQ9	A. Stage II	1
	B. Stage III	6	13,00%
	C. Stage IV	21	45,70%
	D. Stage III shifting to IV	10	21,70%
	E. C and D are correct	8	17,40%

Table 11. True or False (TorF) Variables Results.

		N	%
TorF1	A. True	11	23,90%
	B. False	35	76,10%
TorF2	A. True	10	21,70%
	B. False	36	78,30%
TorF3	A. True	38	82,60%
	B. False	8	17,40%
TorF4	A. True	19	41,30%
	B. False	26	56,50%
	Total	45	97,80%
	Sistema	1	2,20%

TorF5	A. True	33	71,70%
	B. False	13	28,30%
TorF6	A. True	29	63,00%
	B. False	17	37,00%

Table 12.- Occupation relationship General Dentist - MCQ

		23-30yo		31-40yo		41-50yo		>50yo		Total		χ^2	p
MCQ1	Yes	9	30,00%	9	30,00%	4	13,30%	8	26,70%	30	76,92%	4,136	0,247
	No	1	11,10%	6	66,70%	1	11,10%	1	11,10%	9	23,07%		
MCQ2	Yes	7	38,90%	4	22,20%	1	5,60%	6	33,30%	18	46,15%	7,48	0,058
	No	3		11	52,40%	4	19,00%	3	14,30%	21	53,84%		
MCQ3	<15%	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%	15,312	0,083
	15-33%	0	0,00%	3	60,00%	0	0,00%	2	40,00%	5	12,82%		
	33-66%	9	32,10%	10	35,70%	2	7,10%	7	25,00%	28	71,78%		
	>66%	1	20,00%	2	40,00%	2	40,00%	0	0,00%	5	12,82%		
MCQ4	Chronic and Aggressive	0	0,00%	2	50,00%	1	25,00%	1	25,00%	4	10,25%	7,208	0,615
	3	1	14,30%	4	57,10%	0	0,00%	2	28,60%	7	17,94%		
	4	7	28,00%	8	32,00%	4	16,00%	6	24,00%	25	64,100%		
	5	2	66,70%	1	33,30%	0	0,00%	0	0,00%	3	7,69%		
MCQ5	<_3mm	5	21,70%	9	39,10%	5	21,70%	4	17,40%	23	58,97%	8,682	0,467
	>4mm	0	0,00%	0	0,00%	0	0,00%	1	100,00%	1	2,56%		
	<_4mm	4	40,00%	4	40,00%	0	0,00%	2	20,00%	10	25,64%		
	<3mm	1	20,00%	2	40,00%	0	0,00%	2	40,00%	5	12,82%		
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	1	33,30%	1	33,30%	0	0,00%	1	33,30%	3	7,69%	13,398	0,145
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	7	38,90%	8	44,40%	1	5,60%	2	11,10%	18	26,08%		
	C. Gingival bleeding and inflammation	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%		
	D. A and B are correct	2	11,80%	6	35,30%	3	17,60%	6	35,30%	17	43,58%		
MCQ7	A. A	4	25,00%	5	31,30%	2	12,50%	5	31,30%	16	41,02%	9,656	0,379
	B. B	1	8,30%	6	50,00%	1	8,30%	4	33,30%	12	30,76%		
	C. C	1	100,00%	0	0,00%	0	0,00%	0	0,00%	1	2,56%		
	D. Bone loss over 5 years is a factor seen in Staging	4	40,00%	4	40,00%	2	2,000%	0	0,00%	10	25,64%		
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%	5,882	0,437
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	3	42,90%	2	28,60%	0	0,00%	2	28,60%	7	17,94%		

	D. B and C	4	15,40%	12	46,20%	4	15,40%	6	23,10%	26	66,66%		
MCQ9	A. Stage II	0	0,00%	1	100,00%	0	0,00%	0	0,00%	1	2,56%	8,687	0,729
	B. Stage III	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%		
	C. Stage IV	2	11,80%	8	47,10%	3	17,60%	4	23,50%	17	43,58%		
	D. Stage III shifting to IV	3	37,50%	2	25,00%	0	0,00%	3	37,50%	8	20,51%		
	E. C and D are correct	2	28,60%	3	42,90%	1	14,30%	1	14,30%	7	17,94%		

Table 13.- Occupation and age relationship of General Dentist – TorF

		23-30yo		31-40yo		41-50yo		>50yo		Total			
TorF1	A. True	2	28,60%	3	42,90%	1	14,30%	1	14,30%	7	17,94%	,371	0,95
	B. False	8	25,00%	12	37,50%	4	12,50%	8	25,00%	32	82,05%		
TorF2	A. True	2	20,00%	3	30,00%	1	10,00%	4	40,00%	10	25,64%	2,170	0,54
	B. False	8	27,60%	12	41,40%	4	13,80%	5	17,20%	29	74,35%		
TorF3	A. True	9	29,00%	10	32,30%	4	12,90%	8	25,80%	31	79,48%	2,679	0,44
	B. False	1	12,50%	5	62,50%	1	12,50%	1	12,50%	8	20,51%		
TorF4	A. True	3	18,80%	6	37,50%	2	12,50%	5	31,30%	16	41,02%	2,003	0,57
	B. False	7	31,80%	9	40,90%	3	13,60%	3	13,60%	22	56,41%		
TorF5	A. True	7	25,00%	12	42,90%	3	10,70%	6	21,40%	28	71,79%	,975	0,81
	B. False	3	27,30%	3	27,30%	2	18,20%	3	27,30%	11	28,20%		
TorF6	A. True	7	25,90%	10	37,00%	3	11,10%	7	25,90%	27	69,23%	,558	0,91
	B. False	3	25,00%	5	41,70%	2	16,70%	2	16,70%	12	30,76%		

Table 14. - Occupation relationship of Periodontist–MCQ.

		31-40yo		41-50yo		Total		χ^2	p
MCQ1	Yes	5	71,40%	2	28,60%	7	100,00%		
MCQ2	Yes	4	66,70%	2	33,30%	6	85,71%	,467b	0,495
	No	1	100,00%	0	0,00%	1	14,28%		
MCQ3	33-66%	5	71,40%	2	28,60%	7	100,00%		
MCQ4	4	5	71,40%	2	28,60%	7	100,00%		
MCQ5	< 3mm	2	100,00%	0	0,00%	2	28,57%	1,120b	0,29
	>4mm	3	60,00%	2	40,00%	5	71,14%		
MCQ6	D. A and B are correct	3	60,00%	2	40,00%	5	71,14%		
MCQ7	B. B	3	60,00%	2	40,00%	5	71,14%	1,120b	0,29
	D. Bone loss over 5 years is a factor seen in Staging	2	100,00%	0	0,00%	2	28,57%		
MCQ8	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	1	33,30%	2	66,70%	3	42,85%	3,733b	0,053
	D. B and C	4	100,00%	0	0,00%	4	57,14%		
MCQ9	C. Stage IV	3	75,00%	1	25,00%	4	57,14%	,875b	0,646
	D. Stage III shifting to IV	1	50,00%	1	50,00%	2	28,57%		
	E. C and D are correct	1	100,00%	0	0,00%	1	14,28%		

Table 15.- Occupation relationship Periodontist– TorF

		31-40yo		41-50yo		Total		χ^2	p
TorF1	A. True	4	100,00%	0	0,00%	4	57,14%	3,733b	0,053
	B. False	1	33,30%	2	66,70%	3	42,85%		
TorF2	B. False	5	71,40%	2	28,60%	7	100,00%		
TorF3	A. True	5	71,40%	2	28,60%	7	100,00%		
TorF4	A. True	2	66,70%	1	33,30%	3	42,85%	,058b	0,809
	B. False	3	75,00%	1	25,00%	4	57,14%		
TorF5	A. True	3	60,00%	2	40,00%	5	71,14%	1,120b	0,29
	B. False	2	100,00%	0	0,00%	2	28,57%		
TorF6	A. True	2	100,00%	0	0,00%	2	28,57%	1,120b	0,29
	B. False	3	60,00%	2	40,00%	5	71,14%		

Table 8.- Mean score of General Dentists and Periodontists

	Occupation	N	Mean	Deviation	t	p
Total	General Dentist	39	5,1795	1,5538	-3,102	0,003
	Periodontist	7	7,1429	1,46385		

Table 9.- Mean score of General Dentists and Periodontists according to age

	N	Mean	Deviation	95% of the confidence interval for the mean		Minimum	Maximum	F	p
				Inferior Limit	Superior Limit				
23-30yo	10	5,2	1,54919	4,0918	6,3082	3	7	0,732	0,539
31-40yo	20	5,9	1,77408	5,0697	6,7303	3	9		
41-50yo	7	5,1429	1,77281	3,5033	6,7824	2	7		
>50yo	9	5,1111	1,61589	3,869	6,3532	2	7		
Total	46	5,4783	1,68311	4,9784	5,9781	2	9		

Table 16.- Mean score of General Dentists according to age

	N	Mean	Deviation	95% of the confidence interval for the mean		Minimum	Maximum	F	p
				Inferior Limit	Superior Limit				
23-30yo	10	5,2	1,54919	4,0918	6,3082	3	7	0,321	0,81
31-40yo	15	5,4	1,54919	4,5421	6,2579	3	8		
41-50yo	5	4,6	1,81659	2,3444	6,8556	2	7		
>50yo	9	5,1111	1,61589	3,869	6,3532	2	7		
Total	39	5,1795	1,5538	4,6758	5,6832	2	8		

Questionnaire Assessing the Knowledge of the 2018 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions in General Dentists and Periodontists.

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Abstract

Background: For 19 years dentists and periodontists have benefited from the 1999 classification of periodontitis. The most recent classification came out with various modifications which play an important role in the diagnostic and treatment phases of the everyday work routine of a dentist or periodontist.

Objectives: The primary objective of this study is to evaluate the overall knowledge of dentists and periodontists regarding the 2018 classification of periodontal diseases and conditions. The secondary objectives are to assess the awareness of the 2018 classification, their capability to diagnose a patient with regards to the modified classification, compare this knowledge in various age groups and amongst general dentists and periodontists.

Materials and methods: An observational, descriptive, and transversal analysis online questionnaire was conducted targeting dentists and periodontists to evaluate their knowledge concerning the 2018 classification. The questionnaire given is constructed by 9 multiple-choice and 6 true or false questions with 4 previous demographic questions.

Results: There was a total of 46 participants, of which 65,2% female and 34,8% male, n=39 dentists (84,8%) and n=7 periodontists (15,2%) from countries Spain (67,4%), France, (15,2%), and Italy (17,4%)

Conclusion: In conclusion this study demonstrated that there is a low level of knowledge and awareness of the 2018 classification of periodontal diseases accepting the hypothesis of this study. The collected data demonstrated that there is no statistical evidence to prove that the age or occupation affects the level of knowledge in dentists and periodontists. Due to the low number of periodontists, a valid comparison could not be established, even though periodontists did have a higher score.

Introduction

After the 1999 classification of periodontitis, newly emerged evidence has sparked the need of a new gold standard for a classification of periodontitis. A large group of specialized dentists in the field of periodontics with the support of the American Academy of Periodontology (AAP) and the European Academy of Periodontology (EAP) have met to modernize and improve the previous classification by developing proceedings of the World Workshop on the Classification of Periodontal and Peri-implant Diseases and Conditions(1). Modifications to the 1999 classification were applied to the gingival health and inflammation aspects as well as the periodontitis classification aspects(2). The new evidence has suggested that various aspects of the previous classification needed to be changed and modified if dentists and periodontists were to better diagnose and offer better treatment plans to their patients. The most influential and significant change applied to the 1999 classification of periodontitis is that the previously known forms of periodontitis recognized as chronic and aggressive periodontitis have now been joined into one singular category called “Periodontitis” further categorized into stages(3) and grades(2–5).

Furthermore, ulcerative gingivitis or periodontitis has been converted into necrotizing periodontal disease (NPD)(6).

It is fundamental as a medical practitioner to stay up to date with the newest evidence and information being published to be able to offer patients the best treatment options possible. The study aims to assess whether general dentists and periodontists are aware of the 2018 classification and whether they can accurately diagnose gingivitis and periodontitis according to it. Therefore, the objectives of this research are to assess the knowledge of dentists and periodontists regarding the 2018 classification, evaluating their awareness, ability to diagnose a patient, and comparing the level of knowledge with age groups and between occupations, general dentists and periodontists.

Materials and Methods

Type of study: To perform this study, it was thought best to select an observational, descriptive, and transversal analysis type of study through the realization of a questionnaire.

Inclusion / exclusion criteria:

Inclusion Criteria: General dentists, Dentists that have completed some form of specialization or formation program or have achieved a master in Periodontics, Dentists and periodontists that are currently active in their practice.

Exclusion Criteria: Other formations or masters such as: endodontists, orthodontists, prosthodontists, paediatricians, etc, Dental Students, Retired dentists and periodontists

Sample Size: To determine the size of a sample in an epidemiological study 4 elements are considered:

- The degree of precision that you want to achieve, the smaller the acceptable margin of error in the work, the larger the sample should be.
- The degree of probability corresponding to the desired precision.
- The foreseeable order of magnitude, that is, the estimated prevalence figure that is expected to be found.
- The type of sampling to be used. Since the sampling error can only be determined when the sample has been drawn randomly.

Based on all the above considerations, we determined both the sample size and the margins of error or confidence intervals. In both cases, the Lilienfield and Lilienfiels (1987) formula was used, for a probability of $p < 0.05$. To carry out this calculation, we consider the following factors: size of the population, population variance, sampling error, confidence level, scale level of the variables, and type of sampling. Of these factors, some are proposed by the researcher: type of sampling, level of confidence and sampling error, and others are imposed such as the size of the population, scale of the variables,

population variance. In our study these parameters are specified as:

In this study, the sample size will be selected from dentists and periodontists who are currently active in their practice in the following countries: Spain, Italy, France.

Material Used: The questionnaire is formed by 19 questions. It was constructed in such way to acquire the sociodemographic background of the respondent as well as the respondent's amount of knowledge of the 2018 classification of periodontal diseases and conditions. This questionnaire was developed by 13 multiple choice questions and 6 true or false questions. The sociodemographic background of the respondent is determined by the first 4 multiple choice questions and the remaining questions will determine the amount of knowledge and the diagnostic capacity with respect to the new classification of periodontitis.

Description of the Procedure: In general lines there are variations of the basic methods of obtaining information and its mode of administration: personal interview, computer-assisted self-administered interview, self-completed questionnaires provided during an interview or by mail or email, telephone survey, or published literature sources. In our case, the questionnaires were self-completed by each dentist and periodontist. Due to the fact that there was no interviewer, biases were not introduced, neither by the way in which the questions are formulated nor by the way in which they are recorded. The disadvantage is that the questions must be very simple and clear in order to obtain the greatest number of responses and avoid errors in completing the questionnaire. The questionnaire can be sent by email or delivered personally and picked up some time later by email on completion of a survey or webpage. The questionnaire is anonymous and at all times it has been intended that it be answered by the dentists and periodontists individually and sincerely, an aspect that appears and is highlighted in the header of the first page of the questionnaire.

Validation of the questionnaire:

The questionnaire was reviewed by professionals who are experts in the field of periodontics, experts in educational and research methods.

Data collection

The data will first be received through a confirmation email of completion by the respondent. Consequently, the answers will be transferred into a SPSS table where the sociodemographic variables and numerical variables will be transferred into a codified classification.

Ethical Considerations

The study adhered to ethical standards outlined in the Declaration of Helsinki and Good Clinical Practice recommendations. It received approval from the Ethics Committee of the European University of Valencia. Participants were provided with information about the study's characteristics, objectives, and nature before completing the questionnaire. Data protection measures were implemented in accordance with Organic Law 15/1999 to ensure anonymity and confidentiality. A numerical code was used to identify respondents, and their personal information was kept strictly confidential, protecting the content of the collected data from unauthorized use.

Statistical Analysis

Regarding the results of the survey, they were extracted and transferred into the SPSS programme and both sociodemographic variables and the principal variable were codified numerically and classified in such way to determine results more feasibly. Once this point was reached, the SPSS programme ("Statistical Package for the Social Sciences") Statistics 25 for carrying out descriptive statistics of the collected data that were categorized was applied.

Results

Descriptive variable analysis of the multiple-choice questions (MCQ).

According to table 2 most of the respondents (80,4%) were aware of the existence of the 2018 classification yet only 52,2% are able to diagnose a periodontal patient using the new classification. MCQs 3,4,7, and 9 had the most correct answers given although, there was 30-60% of the remaining

participant who answered wrong.

In MCQ 3, 76.10% (n=35) were aware that for a patient to be classified as stage III periodontitis, they had to have a radiographic bone loss of 33-66%.

In MCQ 4, 69.60% (n=32) had knowledge of the number of stages of periodontitis in the 2018 periodontal diseases and conditions classification system.

Only 32.60% (n=15) answered question MCQ5 correctly.

In MCQ 9, only 45.70% (n=21) knew that if a patient presented interdental CAL >5 mm, <4 teeth lost due to periodontitis, PPD >6 mm, with bite collapse, they had stage IV.

		N	%
MCQ1	Yes	37	80,40%
	No	9	19,60%
MCQ2	Yes	24	52,20%
	No	22	47,80%
MCQ3	<15%	1	2,20%
	15-33%	5	10,90%
	33-66%	35	76,10%
	>66%	5	10,90%
MCQ4	Chronic and Aggressive	4	8,70%
	3	7	15,20%
	4	32	69,60%
MCQ5	5	3	6,50%
	<_3mm	25	54,30%
	>4mm	1	2,20%
MCQ6	<_4mm	15	32,60%
	<3mm	5	10,90%
	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	3	6,50%
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	20	43,50%
MCQ7	C. Gingival bleeding and inflammation	1	2,20%
	D. A and B are correct	22	47,80%
	A. A	16	34,80%
	B. B	17	37,00%
MCQ8	C. C	1	2,20%
	D. Bone loss over 5 years is a factor seen in Staging	12	26,10%
	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	6	13,00%
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	10	21,70%
MCQ9	D. B and C	30	65,20%
	A. Stage II	1	2,20%
	B. Stage III	6	13,00%
	C. Stage IV	21	45,70%
	D. Stage III shifting to IV	10	21,70%
	E. C and D are correct	8	17,40%

Table 1.- Multiple-Choice Question (MCQ) Variables Results.

Inferential Analysis

Results showed that the dentists in the age ranges of 23-30 and 31-40 represented better responses. For example, in MCQ 5, no statistical correlation was found, yet 80% of dentists that answered correctly were in the range of 23-40. In another instance, in MCQ 9, although no statistical correlation was determined, 47,1% that responded correctly belonged in the 31-40 range.

Also, it was observed that in the General Dentist group there was no relationship between the age groups and the answers given in question MCQ8. $\chi^2 = 5.882$, $p = 0.437$. $p > 0.05$

Although it should be noted that only 46.20% of those who answered correctly were in the 31-40 age range.

Table 2.- Occupation relationship General Dentist - MCQ

		23-30yo		31-40yo		41-50yo		>50yo		Total		χ^2	p
MCQ1	Yes	9	30,00%	9	30,00%	4	13,30%	8	26,70%	30	76,92%	4,136	0,247
	No	1	11,10%	6	66,70%	1	11,10%	1	11,10%	9	23,07%		
MCQ2	Yes	7	38,90%	4	22,20%	1	5,60%	6	33,30%	18	46,15%	7,48	0,058
	No	3		11	52,40%	4	19,00%	3	14,30%	21	53,84%		
MCQ3	<15%	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%	15,312	0,083
	15-33%	0	0,00%	3	60,00%	0	0,00%	2	40,00%	5	12,82%		
	33-66%	9	32,10%	10	35,70%	2	7,10%	7	25,00%	28	71,78%		
	>66%	1	20,00%	2	40,00%	2	40,00%	0	0,00%	5	12,82%		
MCQ4	Chronic and Aggressive	0	0,00%	2	50,00%	1	25,00%	1	25,00%	4	10,25%	7,208	0,615
	3	1	14,30%	4	57,10%	0	0,00%	2	28,60%	7	17,94%		
	4	7	28,00%	8	32,00%	4	16,00%	6	24,00%	25	64,100%		
	5	2	66,70%	1	33,30%	0	0,00%	0	0,00%	3	7,69%		
MCQ5	<_3mm	5	21,70%	9	39,10%	5	21,70%	4	17,40%	23	58,97%	8,682	0,467
	>4mm	0	0,00%	0	0,00%	0	0,00%	1	100,00%	1	2,56%		
	<_4mm	4	40,00%	4	40,00%	0	0,00%	2	20,00%	10	25,64%		
	<3mm	1	20,00%	2	40,00%	0	0,00%	2	40,00%	5	12,82%		
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	1	33,30%	1	33,30%	0	0,00%	1	33,30%	3	7,69%	13,398	0,145
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	7	38,90%	8	44,40%	1	5,60%	2	11,10%	18	26,08%		
	C. Gingival bleeding and inflammation	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%		
	D. A and B are correct	2	11,80%	6	35,30%	3	17,60%	6	35,30%	17	43,58%		
MCQ7	A. A	4	25,00%	5	31,30%	2	12,50%	5	31,30%	16	41,02%	9,656	0,379
	B. B	1	8,30%	6	50,00%	1	8,30%	4	33,30%	12	30,76%		
	C. C	1	100,00%	0	0,00%	0	0,00%	0	0,00%	1	2,56%		
	D. Bone loss over 5 years is a factor seen in <u>Staging</u> .	4	40,00%	4	40,00%	2	2,000%	0	0,00%	10	25,64%		
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%	5,882	0,437
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	3	42,90%	2	28,60%	0	0,00%	2	28,60%	7	17,94%		
	D. B and C	4	15,40%	12	46,20%	4	15,40%	6	23,10%	26	66,66%		
MCQ9	A. Stage II	0	0,00%	1	100,00%	0	0,00%	0	0,00%	1	2,56%	8,687	0,729
	B. Stage III	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%		
	C. Stage IV	2	11,80%	8	47,10%	3	17,60%	4	23,50%	17	43,58%		
	D. Stage III shifting to IV	3	37,50%	2	25,00%	0	0,00%	3	37,50%	8	20,51%		
	E. C and D are correct	2	28,60%	3	42,90%	1	14,30%	1	14,30%	7	17,94%		

According to table 33 we can see that there are statistically significant differences between General Dentist and Periodontist $t=-3.102$. $p =0.003$ $p<0.05$, highlighting that the Periodontist group has obtained a higher average score.

Table 3 - Mean score of General Dentists and Periodontists

	Occupation	N	Mean	Deviation	t	p
Total	General Dentist	39	5,1795	1,5538	-3,102	0,003
	Periodontist	7	7,1429	1,46385		

Discussion

The study found that 80.4% of the respondents were aware of the existence of the new classification, but only 52.2% were able to correctly diagnose a periodontal patient with it. This indicates that although most dentists were aware of the new classification, a significant number continued to use the previous 1999 classification. A similar study conducted in Saudi Arabia also showed that only half of the dentists were aware of the 2018 classification and used it in their practice(7). The current study had a higher percentage of dentists who were aware of the classification, which may be attributed to the smaller sample size of 39 participants compared to the 242 participants in the study conducted by Abdullah. It is also possible that dentists in Europe have more knowledge about the new classification compared to dentists in Saudi Arabia. In another study by Marzieh et al., the knowledge regarding periodontal tissues health was studied and the results identified have shown that the participant’s knowledge was lower than the average. Although their study did not analyse the knowledge of the 2018 classification, the low capability of diagnosing a patient was similar as in our results(8).

The dentists in older age groups had the lowest results overall, meaning that this age group least improved their knowledge on the modifications of the periodontal classification while younger generations presented higher scores overall. However, there was no statistical evidence to suggest that age plays a significant role in the level of knowledge. The future realization of a similar study comparing the ages to knowledge of dentists regarding this topic would aid in rendering these results more valid by comparing results. The aim of this objective is to determine if there is a large difference in the knowledge of the 2018 classification of periodontal diseases and conditions between dentists and periodontists.

One limitation encountered which will be discussed in the further section, is that out of 46 respondents, only 7 were periodontists. This leads to inconclusive results. By having a scarce number of periodontists respondents, the statistical analysis showed that there was no correlative significance between the two variables, knowledge of dentists and periodontists. As was shown in table 8 the average score displayed a higher knowledge in periodontists than general dentist regarding the 2018 classification of periodontitis. However, this is due to the difference in sample size between dentists and periodontists.

The study faced limitations in terms of bias, sample size, questionnaire design, and available articles. Demand bias and social desirability bias may have influenced responses, and the small sample size of periodontists hindered meaningful comparisons. Suggestions were made to address these limitations, such as using a lockdown web browser and conducting personal visits to clinics to hand the questionnaire personally. The questionnaire could have included an "I do not know" option and incorporated questions on the Peri-implant section. Furthermore, the lack of existing articles limited the ability to compare findings.

Conclusion

In conclusion, the study found that although most dentists and periodontists were aware of the 2018 classification of periodontal diseases and conditions, their level of knowledge was insufficient. Many dentists were not familiar with the classification, and even those who claimed to be confident in diagnosing patients using it provided incorrect answers in the questionnaire. The limited participation of periodontists affected the overall findings, making it difficult to draw definitive conclusions about their knowledge. Age did not demonstrate a significant correlation with knowledge, although younger dentists generally displayed a higher level of understanding compared to older dentists. While periodontists performed better in the questionnaire, the small number of participants prevented a valid conclusion.

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- Funding: none declared / Conflict of interest: none declared

		N	%
MCQ1	Yes	37	80,40%
	No	9	19,60%
MCQ2	Yes	24	52,20%
	No	22	47,80%
MCQ3	<15%	1	2,20%
	15-33%	5	10,90%
	33-66%	35	76,10%
	>66%	5	10,90%
MCQ4	Chronic and Aggressive	4	8,70%
	3	7	15,20%
	4	32	69,60%
	5	3	6,50%
MCQ5	<_3mm	25	54,30%
	>4mm	1	2,20%
	<_4mm	15	32,60%
	<3mm	5	10,90%
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	3	6,50%
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	20	43,50%
	C. Gingival bleeding and inflammation	1	2,20%
	D. A and B are correct	22	47,80%
MCQ7	A. A	16	34,80%
	B. B	17	37,00%
	C. C	1	2,20%
	D. Bone loss over 5 years is a factor seen in Staging	12	26,10%
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	6	13,00%
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	10	21,70%
	D. B and C	30	65,20%
	MCQ9	A. Stage II	1
	B. Stage III	6	13,00%
	C. Stage IV	21	45,70%
	D. Stage III shifting to IV	10	21,70%
	E. C and D are correct	8	17,40%

Table 1.- Multiple-Choice Question (MCQ) Variables Results.

Table 2.- Occupation relationship General Dentist - MCQ

		23-30yo		31-40yo		41-50yo		>50yo		Total		χ^2	p
MCQ1	Yes	9	30,00%	9	30,00%	4	13,30%	8	26,70%	30	76,92%	4,136	0,247
	No	1	11,10%	6	66,70%	1	11,10%	1	11,10%	9	23,07%		
MCQ2	Yes	7	38,90%	4	22,20%	1	5,60%	6	33,30%	18	46,15%	7,48	0,058
	No	3		11	52,40%	4	19,00%	3	14,30%	21	53,84%		
MCQ3	<15%	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%	15,312	0,083
	15-33%	0	0,00%	3	60,00%	0	0,00%	2	40,00%	5	12,82%		
	33-66%	9	32,10%	10	35,70%	2	7,10%	7	25,00%	28	71,78%		
	>66%	1	20,00%	2	40,00%	2	40,00%	0	0,00%	5	12,82%		
MCQ4	Chronic and Aggressive	0	0,00%	2	50,00%	1	25,00%	1	25,00%	4	10,25%	7,208	0,615
	3	1	14,30%	4	57,10%	0	0,00%	2	28,60%	7	17,94%		
	4	7	28,00%	8	32,00%	4	16,00%	6	24,00%	25	64,100%		
	5	2	66,70%	1	33,30%	0	0,00%	0	0,00%	3	7,69%		
MCQ5	<_3mm	5	21,70%	9	39,10%	5	21,70%	4	17,40%	23	58,97%	8,682	0,467
	>4mm	0	0,00%	0	0,00%	0	0,00%	1	100,00%	1	2,56%		
	<_4mm	4	40,00%	4	40,00%	0	0,00%	2	20,00%	10	25,64%		
	<3mm	1	20,00%	2	40,00%	0	0,00%	2	40,00%	5	12,82%		
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	1	33,30%	1	33,30%	0	0,00%	1	33,30%	3	7,69%	13,398	0,145
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	7	38,90%	8	44,40%	1	5,60%	2	11,10%	18	26,08%		
	C. Gingival bleeding and inflammation	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%		
	D. A and B are correct	2	11,80%	6	35,30%	3	17,60%	6	35,30%	17	43,58%		
MCQ7	A. A	4	25,00%	5	31,30%	2	12,50%	5	31,30%	16	41,02%	9,656	0,379
	B. B	1	8,30%	6	50,00%	1	8,30%	4	33,30%	12	30,76%		
	C. C	1	100,00%	0	0,00%	0	0,00%	0	0,00%	1	2,56%		
	D. Bone loss over 5 years is a factor seen in <u>Staging</u> .	4	40,00%	4	40,00%	2	2,000%	0	0,00%	10	25,64%		
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%	5,882	0,437
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	3	42,90%	2	28,60%	0	0,00%	2	28,60%	7	17,94%		
	D. B and C	4	15,40%	12	46,20%	4	15,40%	6	23,10%	26	66,66%		
MCQ9	A. Stage II	0	0,00%	1	100,00%	0	0,00%	0	0,00%	1	2,56%	8,687	0,729
	B. Stage III	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%		
	C. Stage IV	2	11,80%	8	47,10%	3	17,60%	4	23,50%	17	43,58%		
	D. Stage III shifting to IV	3	37,50%	2	25,00%	0	0,00%	3	37,50%	8	20,51%		
	E. C and D are correct	2	28,60%	3	42,90%	1	14,30%	1	14,30%	7	17,94%		

Table 3 - Mean score of General Dentists and Periodontists

	Occupation	N	Mean	Deviation	t	p
Total	General Dentist	39	5,1795	1,5538	-3,102	0,003
	Periodontist	7	7,1429	1,46385		

Cuestionario de Evaluación del Conocimiento del Taller Mundial 2018 sobre la Clasificación de las Enfermedades y Condiciones Periodontales y Periimplantarias en Odontólogos Generales y Periodontistas.

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Abstracto

Antecedentes: Durante 19 años, los dentistas y periodontistas se han beneficiado de la clasificación de periodontitis de 1999. La clasificación más reciente salió con varias modificaciones que juegan un papel importante en las fases de diagnóstico y tratamiento de la rutina diaria de trabajo de un dentista o periodontistas.

Objetivos: El objetivo principal de este estudio es evaluar el conocimiento general de los dentistas y periodontistas con respecto a la clasificación de enfermedades y condiciones periodontales de 2018. Los objetivos secundarios son evaluar el conocimiento de la clasificación de 2018, su capacidad para diagnosticar a un paciente con respecto a la clasificación modificada, comparar este conocimiento en varios grupos de edad y entre dentistas generales y periodontistas

Materiales y métodos: Se realizó un cuestionario en línea observacional, descriptivo y de análisis transversal dirigido a odontólogos y periodontistas para evaluar su conocimiento sobre la clasificación 2018. El cuestionario entregado está construido por 9 preguntas de opción múltiple y 6 preguntas de verdadero o falso con 4 preguntas demográficas previas.

Resultados: Hubo un total de 46 participantes, de los cuales 65,2% mujeres y 34,8% hombres, n=39 odontólogos (84,8%) y n=7 periodontistas (15,2%) de países España (67,4 %), Francia (15,2 %) e Italia (17,4 %)

Conclusión: En conclusión, este estudio demostró que existe un bajo nivel de conocimiento y conciencia de la clasificación de enfermedades periodontales del 2018 aceptando la hipótesis de este estudio. Los datos recolectados demostraron que no existe evidencia estadística que demuestre que la edad u ocupación afecte el nivel de conocimiento en odontólogos y periodontistas Debido al bajo número de periodontistas no se pudo establecer una comparación válida, a pesar de que los periodontistas sí tuvieron un puntaje más alto .

Introducción

Después de la clasificación de la periodontitis de 1999, la nueva evidencia ha despertado la necesidad de un nuevo estándar de oro para una clasificación de la periodontitis. Un nutrido grupo de odontólogos especialistas en el campo de la periodoncia con el apoyo de la American Academy of Periodontology (AAP) y la European Academy of Periodontology (EAP) se han reunido para modernizar y mejorar la clasificación anterior desarrollando actas del World Workshop on the Clasificación de las Enfermedades y Condiciones Periodontales y Periimplantarias(1). Las modificaciones a la clasificación de 1999 se aplicaron a los aspectos de salud e inflamación gingival, así como a los aspectos de clasificación de la periodontitis(2). La nueva evidencia ha sugerido que varios aspectos de la clasificación anterior deben cambiarse y modificarse si los dentistas y periodontistas quieren diagnosticar mejor y ofrecer mejores planes de tratamiento a sus pacientes. El cambio más influyente y significativo que se aplicó a la clasificación de periodontitis de 1999 es que las formas de periodontitis previamente conocidas, reconocidas como periodontitis crónica y agresiva, ahora se han unido en una categoría singular llamada "Periodontitis", clasificada además en etapas (3) y grados (2). –5).

Además, la gingivitis ulcerosa o periodontitis se ha convertido en enfermedad periodontal necrosante (ENP)(6).

Es fundamental como médico mantenerse actualizado con la evidencia y la información más reciente que se publica para poder ofrecer a los pacientes las mejores opciones de tratamiento posibles. El estudio tiene como objetivo evaluar si los dentistas generales y los periodontistas conocen la clasificación de 2018 y si pueden diagnosticar con precisión la gingivitis y la periodontitis de acuerdo con ella. Por lo tanto, los objetivos de esta investigación son evaluar el conocimiento de los odontólogos y periodontistas con respecto a la clasificación 2018, evaluando su

conocimiento, capacidad para diagnosticar a un paciente y comparar el nivel de conocimiento con grupos

de edad y entre ocupaciones, odontólogos generales y periodontistas.

Materiales y métodos

Tipo de estudio: Para realizar este estudio se pensó mejor seleccionar un tipo de estudio observacional, descriptivo y de análisis transversal a través de la realización de un cuestionario.

Criterios de inclusión/exclusión:

Criterios de inclusión: Odontólogos generales, Odontólogos que hayan completado algún tipo de programa de especialización o formación o hayan obtenido una maestría en Periodoncia, Odontólogos y periodontistas que actualmente se encuentran activos en su práctica.

Criterios de Exclusión: Otras formaciones o maestrías tales como: endodoncistas, ortodoncistas, prostodoncistas, pediatras, etc, Estudiantes de Odontología, Odontólogos y periodontistas jubilados

Tamaño de la muestra: Para determinar el tamaño de una muestra en un estudio epidemiológico se consideran 4 elementos:

- El grado de precisión que se quiera lograr, cuanto menor sea el margen de error aceptable en el trabajo, mayor deberá ser la muestra.
- El grado de probabilidad correspondiente a la precisión deseada.
- El orden de magnitud previsible, es decir, la cifra de prevalencia estimada que se espera encontrar.
- El tipo de muestreo a utilizar. Dado que el error de muestreo solo se puede determinar cuando la muestra se ha extraído al azar.

En base a todas las consideraciones anteriores, determinamos tanto el tamaño de la muestra como los márgenes de error o intervalos de confianza. En ambos casos se utilizó la fórmula de Lilienfield y Lilienfiels (1987), para una probabilidad de $p < 0,05$. Para realizar este cálculo consideramos los siguientes factores: tamaño de la población, varianza de la población, error de muestreo, nivel de confianza, nivel de escala de las variables y tipo de muestreo. De estos factores, algunos son propuestos por el investigador: tipo de muestreo, nivel de confianza y error de muestreo, y otros son impuestos

como el tamaño de la población, escala de las variables,

varianza de la población. En nuestro estudio estos parámetros se especifican como:

En este estudio, el tamaño de la muestra se seleccionará entre dentistas y periodontistas que estén actualmente activos en su práctica en los siguientes países: España, Italia, Francia.

Material Utilizado: El cuestionario está formado por 19 preguntas. Se construyó de tal manera para adquirir los antecedentes sociodemográficos del encuestado, así como la cantidad de conocimiento del encuestado sobre la clasificación de enfermedades y condiciones periodontales de 2018. Este cuestionario fue elaborado por 13 preguntas de opción múltiple y 6 preguntas de verdadero o falso. Los antecedentes sociodemográficos del encuestado están determinados por las primeras 4 preguntas de opción múltiple y las preguntas restantes determinarán la cantidad de conocimiento y la capacidad de diagnóstico con respecto a la nueva clasificación de periodontitis.

Descripción del Procedimiento: En líneas generales existen variaciones de los métodos básicos de obtención de la información y su modo de administración: entrevista personal, entrevista auto administrada asistida por computadora, cuestionarios auto llenado entregados durante una entrevista o por correo postal o electrónico, teléfono encuestas o fuentes bibliográficas publicadas. En nuestro caso, los cuestionarios fueron autocumplimentados por cada odontólogo y periodoncista. Debido a que no hubo entrevistador, no se introdujeron sesgos, ni por la forma en que se formulan las preguntas ni por la forma en que se registran. El inconveniente es que las preguntas deben ser muy sencillas y claras para obtener el mayor número de respuestas y evitar errores en la cumplimentación del cuestionario. El cuestionario puede enviarse por correo electrónico o entregarse personalmente y recogerse algún tiempo después por correo electrónico al completar una encuesta o página web. El cuestionario es anónimo y en todo

momento se ha pretendido que sea respondido por los odontólogos y periodontistas de forma individual y sincera, aspecto que aparece y se destaca en el encabezado de la primera página del cuestionario.

Validación del cuestionario: El cuestionario fue revisado por profesionales expertos en el campo de la periodoncia, expertos en métodos educativos y de investigación.

Recopilación de datos: Los datos se recibirán primero a través de un correo electrónico de confirmación de finalización por parte del encuestado. En consecuencia, las respuestas se trasladarán a una tabla SPSS donde las variables sociodemográficas y las variables numéricas se trasladarán a una clasificación codificada.

Consideraciones éticas: El estudio se adhirió a los estándares éticos descritos en la Declaración de Helsinki y las recomendaciones de Buenas Prácticas Clínicas. Recibió la aprobación del Comité de Ética de la Universidad Europea de Valencia. Los participantes recibieron información sobre las características, objetivos y naturaleza del estudio antes de completar el cuestionario. Se implementaron medidas de protección de datos de acuerdo con la Ley Orgánica 15/1999 para garantizar el anonimato y la confidencialidad. Se utilizó un código numérico para identificar a los encuestados y su información personal se mantuvo estrictamente confidencial, protegiendo el contenido de los datos recopilados del uso no autorizado.

Análisis estadístico: En cuanto a los resultados de la encuesta, se extrajeron y transfirieron al programa SPSS y tanto las variables sociodemográficas como la variable principal se codificaron numéricamente y se clasificaron de tal manera que la determinación de los resultados fuera más factible. Una vez alcanzado este punto, se aplicó el programa SPSS ("Statistical Package for the Social Sciences") Statistics 25 para realizar estadísticas descriptivas de los datos recolectados que fueron categorizados.

Resultados

Análisis de variables descriptivas de las preguntas de opción múltiple (MCQ).

Según la tabla 2, la mayoría de los encuestados (80,4 %) conocían la existencia de la clasificación de 2018, pero solo el 52,2 % puede diagnosticar a un paciente periodontal utilizando la nueva clasificación. Los PMC 3, 4, 7 y 9 tuvieron la mayor cantidad de respuestas correctas, aunque hubo un 30-60 % de las restantes participante que respondió mal.

En el MCQ 3, el 76,10% (n=35) sabía que para que un paciente fuera clasificado como periodontitis en estadio III, tenía que tener una pérdida ósea radiográfica del 33-66%.

En el MCQ 4, el 69,60% (n=32) tenía conocimiento del número de estadios de la periodontitis en el sistema de clasificación de enfermedades y condiciones periodontales 2018.

Solo el 32,60%% (n=15) respondió correctamente a la pregunta MCQ5.

En el MCQ 9, solo el 45,70% (n=21) sabía que si un paciente presentaba CAL interdental > 5 mm, < 4 dientes perdidos por periodontitis, PPD > 6 mm, con colapso de mordida, tenía estadio IV. Tabla 1.- Resultados de las

		N	%
MCQ1	Yes	37	80,40%
	No	9	19,60%
MCQ2	Yes	24	52,20%
	No	22	47,80%
MCQ3	<15%	1	2,20%
	15-33%	5	10,90%
	33-66%	35	76,10%
	>66%	5	10,90%
MCQ4	Chronic and Aggressive	4	8,70%
	3	7	15,20%
	4	32	69,60%
	5	3	6,50%
MCQ5	<_3mm	25	54,30%
	>4mm	1	2,20%
	<_4mm	15	32,60%
	<3mm	5	10,90%
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	3	6,50%
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	20	43,50%
	C. Gingival bleeding and inflammation	1	2,20%
	D. A and B are correct	22	47,80%
MCQ7	A. A	16	34,80%
	B. B	17	37,00%
	C. C	1	2,20%
	D. Bone loss over 5 years is a factor seen in Staging	12	26,10%
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	6	13,00%
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	10	21,70%
	D. B and C	30	65,20%
MCQ9	A. Stage II	1	2,20%
	B. Stage III	6	13,00%
	C. Stage IV	21	45,70%
	D. Stage III shifting to IV	10	21,70%
	E. C and D are correct	8	17,40%

VARIABLES DE LAS PREGUNTAS DE OPCIÓN MÚLTIPLE (MCQ).

Análisis inferencial

Los resultados mostraron que los dentistas en los rangos de edad de 23-30 y 31-40 presentaron mejores respuestas. Por ejemplo, en el MCQ 5, no se encontró correlación estadística, sin embargo, el 80% de los dentistas que respondieron correctamente estaban en el rango de 23-40. En otro caso, en el MCQ 9, aunque no se determinó correlación estadística, el 47,1% de los que respondieron correctamente se encontraban en el rango 31-40.

Asimismo, se observó que en el grupo Odontólogo General no hubo relación entre los grupos de edad y las respuestas dadas en la pregunta MCQ8. $\chi^2 = 5,882$, $p = 0,437$. $p > 0,05$

Aunque cabe señalar que solo el 46,20% de los que respondieron correctamente se encontraban en el rango de edad de 31-40 años.

Tabla 2.- Relación de ocupación Odontólogo General – MCQ

		23-30yo		31-40yo		41-50yo		>50yo		Total	χ^2	p	
MCQ1	Yes	9	30,00%	9	30,00%	4	13,30%	8	26,70%	30	76,92%	4,136	0,247
	No	1	11,10%	6	66,70%	1	11,10%	1	11,10%	9	23,07%		
MCQ2	Yes	7	38,90%	4	22,20%	1	5,60%	6	33,30%	18	46,15%	7,48	0,058
	No	3		11	52,40%	4	19,00%	3	14,30%	21	53,84%		
MCQ3	<15%	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%	15,312	0,083
	15-33%	0	0,00%	3	60,00%	0	0,00%	2	40,00%	5	12,82%		
	33-66%	9	32,10%	10	35,70%	2	7,10%	7	25,00%	28	71,78%		
	>66%	1	20,00%	2	40,00%	2	40,00%	0	0,00%	5	12,82%		
MCQ4	Chronic and Aggressive	0	0,00%	2	50,00%	1	25,00%	1	25,00%	4	10,25%	7,208	0,615
	3	1	14,30%	4	57,10%	0	0,00%	2	28,60%	7	17,94%		
	4	7	28,00%	8	32,00%	4	16,00%	6	24,00%	25	64,100%		
	5	2	66,70%	1	33,30%	0	0,00%	0	0,00%	3	7,69%		
MCQ5	<_3mm	5	21,70%	9	39,10%	5	21,70%	4	17,40%	23	58,97%	8,682	0,467
	>4mm	0	0,00%	0	0,00%	0	0,00%	1	100,00%	1	2,56%		
	<_4mm	4	40,00%	4	40,00%	0	0,00%	2	20,00%	10	25,64%		
	<3mm	1	20,00%	2	40,00%	0	0,00%	2	40,00%	5	12,82%		
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	1	33,30%	1	33,30%	0	0,00%	1	33,30%	3	7,69%	13,398	0,145
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	7	38,90%	8	44,40%	1	5,60%	2	11,10%	18	26,08%		
	C. Gingival bleeding and inflammation	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%		
	D. A and B are correct	2	11,80%	6	35,30%	3	17,60%	6	35,30%	17	43,58%		
MCQ7	A. A	4	25,00%	5	31,30%	2	12,50%	5	31,30%	16	41,02%	9,656	0,379
	B. B	1	8,30%	6	50,00%	1	8,30%	4	33,30%	12	30,76%		
	C. C	1	100,00%	0	0,00%	0	0,00%	0	0,00%	1	2,56%		
	D. Bone loss over 5 years is a factor seen in <u>Staging</u>	4	40,00%	4	40,00%	2	2,000%	0	0,00%	10	25,64%		
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%	5,882	0,437
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	3	42,90%	2	28,60%	0	0,00%	2	28,60%	7	17,94%		
	D. B and C	4	15,40%	12	46,20%	4	15,40%	6	23,10%	26	66,66%		
MCQ9	A. Stage II	0	0,00%	1	100,00%	0	0,00%	0	0,00%	1	2,56%	8,687	0,729
	B. Stage III	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%		
	C. Stage IV	2	11,80%	8	47,10%	3	17,60%	4	23,50%	17	43,58%		
	D. Stage III shifting to IV	3	37,50%	2	25,00%	0	0,00%	3	37,50%	8	20,51%		
	E. C and D are correct	2	28,60%	3	42,90%	1	14,30%	1	14,30%	7	17,94%		

Según la tabla 33 podemos ver que existen diferencias estadísticamente significativas entre Odontólogo General y Periodoncista $t=-3.102$. $p = 0,003$ $p < 0,05$, destacando que el grupo Periodoncista ha obtenido una mayor puntuación media.

Tabla 3 - Puntuación media de Odontólogos Generales y Periodontistas

	Occupation	N	Mean	Deviation	t	p
Total	General	39	5,1795	1,5538	-3,102	0,003
	Dentist					
	Periodontist	7	7,1429	1,46385		

Discusión

El estudio encontró que el 80,4% de los encuestados conocía la existencia de la nueva clasificación, pero solo el 52,2% pudo diagnosticar correctamente a un paciente periodontal con ella. Esto indica que aunque la mayoría de los dentistas conocían la nueva clasificación, un número significativo continuó usando la clasificación anterior de 1999. Un estudio similar realizado en Arabia Saudita también mostró que solo la mitad de los dentistas conocían la clasificación de 2018 y la usaban en su práctica(7). El estudio actual tuvo un porcentaje más alto de dentistas que conocían la clasificación, lo que puede atribuirse al tamaño de muestra más pequeño de 39 participantes en comparación con los 242 participantes en el estudio realizado por Abdullah. También es posible que los dentistas en Europa tengan más conocimiento sobre la nueva clasificación en comparación con los dentistas en Arabia Saudita. En otro estudio de Marzieh et al., se estudió el conocimiento sobre la salud de los tejidos periodontales y los resultados identificados mostraron que el conocimiento de los participantes fue inferior al promedio. Aunque su estudio no analizó el conocimiento de la clasificación de 2018, la baja capacidad de diagnóstico de un paciente fue similar a la de nuestros resultados(8).

Los odontólogos de los grupos de mayor edad obtuvieron los resultados más bajos en general, lo que significa que este grupo de edad fue el que menos mejoró su conocimiento sobre las modificaciones de la clasificación periodontal, mientras que las generaciones más jóvenes presentaron puntajes más altos en general. Sin embargo, no hubo evidencia estadística que sugiriera que la edad juega un papel significativo en el nivel de conocimiento. La realización futura de un estudio similar que compare las

edades con el conocimiento de los dentistas sobre este tema ayudaría a que estos resultados sean más válidos al comparar los resultados. El objetivo de este objetivo es determinar si existe una gran diferencia en el conocimiento de la clasificación de enfermedades y condiciones periodontales de 2018 entre odontólogos y periodontistas.

Una limitación encontrada que se discutirá en la siguiente sección es que de los 46 encuestados, solo 7 eran periodontistas. Esto conduce a resultados no concluyentes. Al tener un escaso número de periodontistas encuestados, el análisis estadístico mostró que no existe una significación correlativa entre las dos variables, conocimiento de los odontólogos y periodontistas. Como se muestra en la tabla 8, el puntaje promedio mostró un mayor conocimiento en periodontistas que en dentistas generales con respecto a la clasificación de periodontitis de 2018. Sin embargo, esto se debe a la diferencia en el tamaño de la muestra entre dentistas y periodontistas.

El estudio enfrentó limitaciones en términos de sesgo, tamaño de la muestra, diseño del cuestionario y artículos disponibles. El sesgo de demanda y el sesgo de deseabilidad social pueden haber influido en las respuestas, y el pequeño tamaño de la muestra de periodontistas impidió comparaciones significativas. Se hicieron sugerencias para abordar estas limitaciones, como usar un navegador web bloqueado y realizar visitas personales a las clínicas para entregar el cuestionario personalmente. El cuestionario podría haber incluido una opción "No sé" e incorporado preguntas en la sección Periimplante. Además, la falta de artículos existentes limitó la capacidad de comparar los hallazgos.

Conclusión

En conclusión, el estudio encontró que, aunque la mayoría de los dentistas y periodontistas conocían la clasificación de enfermedades y afecciones periodontales de 2018, su nivel de conocimiento era insuficiente. Muchos dentistas no estaban familiarizados con la clasificación, e incluso aquellos que afirmaban tener confianza en el diagnóstico de pacientes que la usaban

proporcionaron respuestas incorrectas en el cuestionario. La participación limitada de los periodontistas afectó los hallazgos generales, lo que dificultó sacar conclusiones definitivas sobre su conocimiento. La edad no demostró una correlación significativa con el conocimiento, aunque los dentistas más jóvenes generalmente mostraron un mayor nivel de comprensión en comparación con los dentistas mayores. Si bien los periodontistas obtuvieron mejores resultados en el cuestionario, el pequeño número de participantes impidió una conclusión válida.

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Funding: none declared / Conflict of interest: none declared

		N	%
MCQ1	Yes	37	80,40%
	No	9	19,60%
MCQ2	Yes	24	52,20%
	No	22	47,80%
MCQ3	<15%	1	2,20%
	15-33%	5	10,90%
	33-66%	35	76,10%
	>66%	5	10,90%
MCQ4	Chronic and Aggressive	4	8,70%
	3	7	15,20%
	4	32	69,60%
	5	3	6,50%
MCQ5	<_3mm	25	54,30%
	>4mm	1	2,20%
	<_4mm	15	32,60%
	<3mm	5	10,90%
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	3	6,50%
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	20	43,50%
	C. Gingival bleeding and inflammation	1	2,20%
	D. A and B are correct	22	47,80%
MCQ7	A. A	16	34,80%
	B. B	17	37,00%
	C. C	1	2,20%
	D. Bone loss over 5 years is a factor seen in Staging	12	26,10%
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	6	13,00%
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	10	21,70%
	D. B and C	30	65,20%
	A. Stage II	1	2,20%
MCQ9	B. Stage III	6	13,00%
	C. Stage IV	21	45,70%
	D. Stage III shifting to IV	10	21,70%
	E. C and D are correct	8	17,40%

Tabla 1.- Resultados de Variables de Preguntas de Opción Múltiple (MCQ).

Tabla 2.- Relación de ocupación Odontólogo General - MCQ

		23-30yo		31-40yo		41-50yo		>50yo		Total		χ^2	p
MCQ1	Yes	9	30,00%	9	30,00%	4	13,30%	8	26,70%	30	76,92%	4,136	0,247
	No	1	11,10%	6	66,70%	1	11,10%	1	11,10%	9	23,07%		
MCQ2	Yes	7	38,90%	4	22,20%	1	5,60%	6	33,30%	18	46,15%	7,48	0,058
	No	3		11	52,40%	4	19,00%	3	14,30%	21	53,84%		
MCQ3	<15%	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%	15,312	0,083
	15-33%	0	0,00%	3	60,00%	0	0,00%	2	40,00%	5	12,82%		
	33-66%	9	32,10%	10	35,70%	2	7,10%	7	25,00%	28	71,78%		
	>66%	1	20,00%	2	40,00%	2	40,00%	0	0,00%	5	12,82%		
MCQ4	Chronic and Aggressive	0	0,00%	2	50,00%	1	25,00%	1	25,00%	4	10,25%	7,208	0,615
	3	1	14,30%	4	57,10%	0	0,00%	2	28,60%	7	17,94%		
	4	7	28,00%	8	32,00%	4	16,00%	6	24,00%	25	64,100%		
	5	2	66,70%	1	33,30%	0	0,00%	0	0,00%	3	7,69%		
MCQ5	<_3mm	5	21,70%	9	39,10%	5	21,70%	4	17,40%	23	58,97%	8,682	0,467
	>4mm	0	0,00%	0	0,00%	0	0,00%	1	100,00%	1	2,56%		
	<_4mm	4	40,00%	4	40,00%	0	0,00%	2	20,00%	10	25,64%		
	<3mm	1	20,00%	2	40,00%	0	0,00%	2	40,00%	5	12,82%		
MCQ6	A. Interproximal clinical attachment loss (CAL) is detectable at 2 adjacent teeth	1	33,30%	1	33,30%	0	0,00%	1	33,30%	3	7,69%	13,398	0,145
	B. Buccal CAL >3mm with pocketing >_3mm is detectable at >_2 teeth	7	38,90%	8	44,40%	1	5,60%	2	11,10%	18	26,08%		
	C. Gingival bleeding and inflammation	0	0,00%	0	0,00%	1	100,00%	0	0,00%	1	2,56%		
	D. A and B are correct	2	11,80%	6	35,30%	3	17,60%	6	35,30%	17	43,58%		
MCQ7	A. A	4	25,00%	5	31,30%	2	12,50%	5	31,30%	16	41,02%	9,656	0,379
	B. B	1	8,30%	6	50,00%	1	8,30%	4	33,30%	12	30,76%		
	C. C	1	100,00%	0	0,00%	0	0,00%	0	0,00%	1	2,56%		
	D. Bone loss over 5 years is a factor seen in <u>Staging</u> .	4	40,00%	4	40,00%	2	2,000%	0	0,00%	10	25,64%		
MCQ8	A. ulcerated and necrotic papillae and gingival margins with loss of attachment	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%	5,882	0,437
	B. ulcerated and necrotic papillae and gingival margins without loss of attachment	3	42,90%	2	28,60%	0	0,00%	2	28,60%	7	17,94%		
	D. B and C	4	15,40%	12	46,20%	4	15,40%	6	23,10%	26	66,66%		
MCQ9	A. Stage II	0	0,00%	1	100,00%	0	0,00%	0	0,00%	1	2,56%	8,687	0,729
	B. Stage III	3	50,00%	1	16,70%	1	16,70%	1	16,70%	6	15,38%		
	C. Stage IV	2	11,80%	8	47,10%	3	17,60%	4	23,50%	17	43,58%		
	D. Stage III shifting to IV	3	37,50%	2	25,00%	0	0,00%	3	37,50%	8	20,51%		
	E. C and D are correct	2	28,60%	3	42,90%	1	14,30%	1	14,30%	7	17,94%		

Tabla 3 - Puntuación media de Odontólogos Generales y Periodontistas

	Occupation	N	Mean	Deviation	t	p
Total	General	39	5,1795	1,5538	-3,102	0,003
	Dentist					
	Periodontist	7	7,1429	1,46385		