DOI: https://doi.org/10.53350/pjmhs22162540

ORIGINAL ARTICLE

Assessment of General Dentists' Knowledge of the new Classification of Periodontal and Peri-implant Diseases and Conditions 2017: A Cross-Sectional study in Saudi Arabia

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ABSTRACT

Objective: The most widely accepted and used classification in the periodontics field was that of the World Workshop 1999. However, due to several shortcomings, in 2018 the World Workshop devised a new classification for periodontal and peri-implant diseases and conditions. This study aims to explore general dentists' knowledge about the new Classification of Periodontal and Peri-implant Diseases and Conditions 2017.

Methods: A cross-sectional web-based questionnaire-based study was conducted from December 2020 to May 2021 targeting Saudi Arabian primary care dentists. The sample size was 242 participants and after written informed consent, they were given web-based questionnaires consisting of 20 questions to complete. The study protocol was explained to the participants.

Result: Of 310 dentists, 242 agreed to participate, with a response rate of 78.06%. The results showed that 143 participants (59.1%) were aware of the new classification while the rest were not. Half of the participants used it (50%), whereas the rest either did not use it or chose "not applicable." Participating male dentists had more knowledge of the classification than female dentists (P <0.001). Dentists graduating after 2018 and those who graduated from governmental college knew more about the new classification than those who had graduated from private colleges.

Conclusion: In this study, a moderately low percentage of participants displayed either no awareness of this new periodontal classification or did not use it, especially the graduates before 2018. Hence, there is an urgent need to spread awareness of the new classification among the dental community since it is a clinical and treatment-based classification.

Keywords: periodontics, awareness, dentistry, continuous education.

INTRODUCTION

It is essential to have a system of classifications for diseases and conditions to have a uniform communication language among clinicians and researchers. It is a standard framework that can be used by clinicians to precisely diagnose diseases and conditions. Using a global classification allows researchers to systematically conduct studies to evaluate different aspects of disease or conditions such as epidemiology, etiology, pathogenesis, and intervention modalities.

G.V. Black (1886) first introduced the classification of periodontal diseases depending on their clinical features. Since then, several classifications have been proposed such as Gottlieb's classification in 1920 [1], Page and Schroeder's classification 1982 [2], the American Academy of Periodontology's (AAP) 1986 classification [3], and the 1989 periodontal diseases classification at the World Workshop in Clinical Periodontics. Here, for the first time, scientists and clinicians in the periodontology specialty agreed upon a classification system for periodontal diseases. A simpler classification was introduced at the 1st European Workshop on Periodontology in 1993 [4].

In 1999, the International Workshop introduced a new Classification of Periodontal Disease and Conditions comprised of eight main categories. They included new categories such as abscess, endodontic-periodontal lesion, development, and acquired deformity which had not been included in the previous classifications [4,5]. However, there were still many parameters that were not covered in this classification like peri-implant diseases and conditions. Also, no consideration for the treatment need for diseases was given.

Thus, in 2018, a new periodontal diseases classification system was introduced by the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions [5]. Changes were made to the existing classification to resolve the previous one's issues and shortcomings. Information on disease pathogenesis or etiology or their association with other diseases was updated in the new classification after considering evidence-based studies [6].

Major changes to the 1999 classification have also been done. These include the addition of new categories and the replacement of dental terms with other terms. The major changes can be summarized as follows: Addition of a new classification for peri-implant diseases and conditions; addition of a new subcategory for periodontal health and gingival health; inclusion of two forms of periodontitis (chronic, aggressive) in the 1999 classification are now grouped under a single category, "periodontitis"; a multidimensional staging and grading system have been added to use for characterizing periodontitis severity and rate of progression; addition of a third form of necrotizing periodontal disease (necrotizing stomatitis). Some older terms like "necrotizing ulcerative gingivitis" (NUG) and "necrotizing ulcerative periodontitis" (NUP) have been replaced with "necrotizing gingivitis and necrotizing periodontitis". The terminology "ulcerative" was eliminated [7]. Systemic diseases or conditions affecting periodontal supporting tissue were added as a new category. Two forms of periodontal abscesses instead of three in the 1999

classification were included. Two forms of periodontic-endodontic lesions were included where before they had been a single category (Combined periodontic-endodontic lesions) in the 1999 classification. Also, a new recession classification that combines clinical parameters including the gingival phenotype, as well as characteristics of the exposed root surface, has been introduced. The term “periodontal biotype” was replaced by “periodontal phenotype”, while the term “biologic width’ was replaced with “supracrestal attachment apparatus”, and finally, the term, “excessive occlusal force” was replaced by “traumatic occlusal force” [8,9]. These changes were made after analyzing the new information from various studies.

General dentists must be updated with the terminologies as they will facilitate better communication and more precise diagnosis for their patients. Since this classification is universal, it will also facilitate an international language for clinical communication. Moreover, for epidemiological purposes, it may facilitate international population surveys of disease prevalence.

Hence, this present cross-sectional study aims to explore dentists’ knowledge about the New Classification of Periodontal and Peri-implant Diseases and Conditions 2017 in Qassim region, Saudi Arabia and if they are aware of the major changes that have been introduced in this classification.

MATERIALS AND METHODS

Study design and period: A cross-sectional web-based questionnaire-based study was conducted from December 2020 to May 2021 targeting general dentists in Saudi Arabia. This study was conducted only after approval by the Research Ethics Committee of the College of Dentistry, ref. no. ST/54/2019.

Sample size determination: Using Cochran’s formula, the sample size at a 95% confidence level and an error margin of 5% was calculated. The estimated required sample size to achieve a statistically significant result was calculated at 184 participants (n = 184).

Quantitative data collection tools and techniques: A self-explanatory, English-language, closed-ended questionnaire was designed by the author. Using a template provided by Google Forms (Google, Inc., USA), quantitative data were collected. To prevent multiple entries from the same participant, the allowed response number was set at one. The study’s protocol was spelled out to all participants, and their written informed consent was obtained before completing the questionnaire.

Validity and reliability: The questionnaire comprised 20 questions. Six were related to demographic characteristics such as gender, graduation year, graduation dental school (public or private), place of work (governmental or private), awareness of the 2017 periodontal classification, and use of the 2017 classification. 16 questions were about their knowledge of the New Classification of Periodontal and Peri-implant Diseases and Conditions 2017.

To recognize the variability, a pilot study comprising 50 participants was conducted before the administration of the questionnaire, and its validity and standardization were verified. The consistency and clarity were determined for the content validity by subject experts from the college. In addition, Cronbach’s alpha was calculated and found to be 0.734. The completed questionnaire was collected, and data was compiled on a MS Office Excel sheet. It was then subjected to statistical analysis.

Statistical analysis: The statistical analysis was performed on the collected data using SPSS Statistics, a statistical software package for social sciences (version 21: SPSS, Chicago, IL, USA). The frequency analysis and percentages for all variables were calculated. To find if there was a significant difference between the variables (gender, years since graduation, graduating dental college, place of work) in terms of knowledge of new periodontal classification, the collected data was analyzed using a t-test. The test results with $P < 0.05$ were considered statistically significant.

RESULTS

A total of 242 dentists out of 310 agreed to participate in the study. (The response rate was 78.06%). 173 (71.5%) were male and 69 (28.5%) were female. Regarding the graduation year, 110 (45.45%) graduated in or before 2018, and 132 (54.5%) after 2018. 165 (68.2%) graduated from governmental dental college whereas 77 (31.8%) graduated from a private college. 155 (64.04%) of the participants were working in the governmental sector and 87 (35.95%) were working in the private sector (Table 1).

The results showed that only 143 (59.1%) of 242 participants were aware of the new classification – they had either read or heard about it. 99 (40.9%) were not aware. Regarding using the classification in their practices, 121 participants (50%) used it, whereas 88 (36.4%) did not. 33 (13.6%) choose “not applicable” either because they are not working or they do not diagnose or treat periodontal patients in their practice (Table 2).

Table 1: Frequency of demographic characteristics of the study sample (n = 242)

	Percent	Frequency
		Total Knowldge Level
9.09	13	Good/High level of knowledge
32.16	46	Intermediate level of knowledge
58.74	84	Poor level of knowledge

Table 2: Analysis of the subject’s awareness of new classification and whether they are using it or not (n = 242).

	%	Frequency
		Gender
71.5	173	Male
28.5	69	Female
		Graduation Year
45.45	110	2018 or before 2018
54.5	132	After 2017
		Dental College
68.2	165	Governmental
31.8	77	Private
		Place of Work
64.04	155	Governmental
35.95	87	Private

Table 3: Analysis of knowledge of the participants pertaining to new 2017 classification (n = 143).

	Percent	Frequency
		Awarness of new classification
59.1	143	YES
40.9	99	NO
		Using new classification
50	121	YES
36.4	88	NO
13.6	33	Not applicable

Table 4: Comparison of Mean ± SD knowledge scores (%) between study variables (gender, graduation year, dental college and work sector) (n = 143).

	p value	test-t	SD	Mean
				Gender
<0.001	5.38	28.14	43.35	Male
		25.13	23.39	Female
				Graduation Year
<0.001	3.95-	25.61	29.59	Before 2018
		22.38	43.45	After 2018
				Dental College
<0.001	6.3-	20.74	46.19	Governmental
		34.52	19.38	Private
				Place of Work
0.674	0.424-	24.32	32.33	Governmental
		31.84	28.46	Private

Regarding scoring knowledge, participants who were not aware of the new classification were excluded from calculation of knowledge score. The percentage was calculated as follows: (maximum score 14, correct answer 1, wrong or do not know 0). The total score for each participant was divided by the maximum knowledge score (14) then multiplied by 100. Depending on their knowledge score percentage, participants were divided into 3 groups ("Poor" level of knowledge was 0-50%, "Intermediate" was 51-70%, "High" was 71-100%). We found that 13 (9.09%) participants had a "High" level of knowledge, 46 (32.16) had an "Intermediate" level and 84 (58.74%) had a "Poor" level of knowledge (Table 3).

After calculating the means (SD) of knowledge score percentage for each variable, the T-test was used to discover if there was a significant difference between the means of variables. The results showed that male dentists had more knowledge of the classification than female dentists (p-value 0.001). Dentists graduating after 2018 had more knowledge about the classification than dentists who had graduated in 2018 or (p-value .000). Dentists who graduated from governmental college have more knowledge than those who graduated from private college (p-value 0.002). There was no difference in knowledge between those working in the governmental or private sector (p-value 0.674) (Table 4).

DISCUSSION

In 2018, the American Academy of Periodontal Disease released a newer classification and modified many of the terms found in the earlier version based on the ICD (International Classification of Diseases) [5]. This newer classification has many advantages, one of them being that it is broader than the previous classification which helps the clinicians to better diagnose and treat periodontal diseases.

`There also has been the institution of biomarkers in this grading system to gain deeper insight into periodontitis disease progression and provide more treatment options. This classification comprises four types of staging depending not only on the severity but also on the management complexity. It has considered the etiologic factors and will aid clinicians to better diagnose periodontal conditions [7].

The new classification has also incorporated peri-implant diseases and conditions which were not present in the 1999 classification [2]. They are categorized into 3 parts – peri-implant health, peri-implant mucositis, and peri-implantitis where the case definitions were developed based on clinicians' experience of individual case management and cross-over studies in various populations.

The new classification is more extensive than the previous one but very precise. However, it is still very unclear whether clinicians are using it or not to diagnose and treat periodontal diseases.

General dentists are considered to be primary oral health providers. To motivate their patients to practice good oral hygiene and implement better oral health, they themselves should be motivated. Therefore, they need to be up to date with the current classification. This study targeted such dentists to assess whether they are updated with the 2017 classification or not.

Hence, this present cross-sectional study aimed to explore the dentists' knowledge about the New Classification of Periodontal and Peri-implant Diseases and Conditions 2017 and to find out if they are aware of the major changes that have been introduced in this classification.

In all, 242 dentists out of 310 agreed to participate in the study. Of these, 71.5% were male and 28.5% were female. 45.45% of all the participants graduated in or before 2018, while 54.5% graduated after 2018. More participants had graduated from governmental dental colleges (68.2%), whereas 31.8% had graduated from private colleges. The majority of participants were working in the governmental sector (64.04%) and 35.95% in the private sector.

The study results showed that only 59.1% of participating dentists were aware of the new classification while 40.9% were not. Approximately 50% of the participants used it, whereas 36.4% did not. 13.6% chose "not applicable" either because they are not working, or they did not diagnose or treat periodontal patients in their practice.

It is essential for dentists to update their knowledge from time to time. Since 36.4% did not use the current classification and 13.6% marked "not applicable," they are not only in breach of ethical principles but also failing to give justice to the patients by not using the updated classification. Hempton et al. (2020) [11] reported that diagnostic information allows the clinician to formulate a precise case-based treatment plan, as this new classification is based on clinical considerations which help GPs to diagnoses diseases, determine the severity of

periodontitis, estimate the rate of progression, and devise a precise treatment plan as per the patient's need.

Depending on the knowledge score percentage, participants were divided into 3 groups (low level of knowledge 0-50%, intermediate 51-70%, high 71-100%). We found that an extremely low number of participants (9.09%) had a Good/High level of knowledge, 32.16% had an Intermediate level of knowledge, and 58.74% had a Poor level of knowledge.

The results delineated that male dentists have more knowledge of the changes than female dentists. Also, dentists graduating after 2018 had more knowledge about classification than dentists who graduated in or before 2018. This was mainly because dental schools continuously and immediately update the knowledge as per the new guidelines. It also means there is a high need for these graduates to update their knowledge about this classification. Dentists who graduated from governmental college had more knowledge than the ones who graduated from private college (p-value 0.002). No difference in knowledge was found between the ones who worked in the governmental or private sectors (p-value 0.674).

In a study done by Mishra et al. 2019 [12], he focused on the prevalence estimates of periodontitis by diagnosing periodontal diseases using two different criteria simultaneously. The first criterion was based on the classification approved in the 1999 World Workshop, whereas the other was based on the new classification scheme of periodontal diseases and conditions in the 2017 World Workshop. The researchers found that there was a significant reduction in the prevalence estimates ($P < 0.001$) of periodontitis following the new classification scheme. They delineated that the new classification scheme recognizes the clinical salience of periodontitis and is more likely to influence the treatment modality of the patients suffering from periodontal problems across the globe. They concluded that the new classification will form the basis of future research in the field of dentistry.

To summarize, in this present study, out of 310 dentists, 242 agreed to participate. The results showed that only 143 participants were aware of the new classification while the remaining 99 were not. Half of the participants used the new classification, whereas the rest either did not use it or chose "not applicable." Participating male dentists were found to be more knowledgeable than female dentists. Also, dentists who graduated after 2018 and those who graduated from governmental colleges had more knowledge about this classification than those who graduated from private colleges. The main reason behind this is that dental schools updated to the new schemes, therefore, the students were continuously in sync with the updated knowledge as in the present study about the new AAP classification 2017.

This study has several limitations. To the best of our knowledge, this was the first study to explore the awareness and knowledge of general dentists about the Classification of Periodontal and Peri-implant Diseases and Conditions 2017. Therefore, it is not possible to compare this study's findings with those of others. In addition, a new questionnaire was introduced in this study which must be considered when evaluating the findings.

CONCLUSION

In this study, a moderately low percentage of participants displayed either no awareness of this new periodontal classification or did not use it, especially the graduates before 2018. Dentists who graduated from governmental colleges had more knowledge of the new classification than the ones who graduated from private colleges while there was no significant difference in knowledge between the ones who worked in governmental or private sectors. Dentists graduating after 2018 had more knowledge about the new classification than dentists who graduated before 2018 which clearly displayed that dental schools regularly update their curriculums.

We recommend that a greater number of CDE programs and awareness campaigns must be mandated so that all dentists use this precise classification, do their patients justice, and be uniform across the globe.

Acknowledgments: The author would like to thank Dr. Ramy Elmoazen, Department of Community Dentistry, College of Dentistry, Qassim University for his assistance with this study's statistical analysis.

Informed Consent Statement: The author declares that written informed consent was obtained from all the participants before conducting this research. The participants were informed that the survey was anonymous and participation voluntary.

Availability of Data and Materials: The datasets used and/or analyzed during this study are available from the corresponding author on reasonable request.

Conflicts of Interest: The author declares that they have no competing interests.

Funding: This study was self-funded.

Authors' contributions: The author designed and performed the study, collected the data, and wrote and reviewed the manuscript. The author read and approved the final manuscript.

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