Periodontal diagnosis in private dental practice: a case-based survey

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ABSTRACT

Background: Despite the prevalence of periodontitis in Australia, there are few reports regarding periodontal diagnosis and therapies in the general dental practice setting. This study aimed to assess the degree of diagnostic accuracy in periodontal cases of Victorian general dental practitioners.

Methods: Following ethics approval, dentists were invited to complete a scenario-based questionnaire on the Australian Dental Association Victorian Branch (ADAVB) website. Five text-based clinical scenarios (from a total of 10) were randomly presented, representing patients with a range of disease levels from periodontal health/gingivitis to severe periodontitis, and respondents were asked what examinations they would usually perform. Based upon the presented results of periodontal and radiographic examinations, a periodontal diagnosis was requested.

Results: One hundred and thirty-five dentists attempted the survey. Most were in group practice and based in Melbourne; 22.5% of respondents worked in a practice employing a hygienist. The clinical parameters most commonly measured to diagnose periodontal disease were pocket depth and mobility. The majority of respondents diagnosed health, gingivitis and mild periodontitis correctly compared to American Academy of Periodontology guidelines. However, moderate periodontitis tended to be diagnosed as severe.

Conclusions: Dentists in Victoria used appropriate clinical parameters when assessing periodontal disease and were generally accurate in their diagnoses. There is a need for consensus regarding diagnostic definitions.

Keywords: Diagnosis, general dental practitioner, practice-based research, periodontal disease.

Abbreviations and acronyms: AAP = American Academy of Periodontology; ADAVB = Australian Dental Association Victorian Branch; BOP = bleeding on probing; CAL = clinical

attachment loss; CDC = Centers for Disease Control; PD = probing depth; PEARL = Practitioners Engaged in Applied Research and Learning.

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INTRODUCTION

Periodontal disease is one of the two major oral diseases that affect human populations worldwide at high prevalence rates.[1] Destructive periodontal diseases are common in the adult population. An analysis of the Third National Health and Nutrition Survey (NHANES III) reported a 14% prevalence of moderate to severe periodontitis in the adult (over 20 years of age) United States population.[2] However, the 2009 and 2010 NHANES cycle, which examined adults aged 30 years and over using a whole-mouth, 6-site per tooth protocol, instead of the previous random half-mouth protocol which probed only two sites per tooth, reported a far higher total periodontitis prevalence of 47.2%, with a 30.0% prevalence of moderate and 8.5% prevalence of severe periodontal disease.[3] This change in examination methodology is likely to have corrected previous under-reporting of periodontal disease.[4] A recent Australian study of adults 15 years and over using the NHANES 2001–2004 methodology (a 3-site per tooth protocol) and also using the US Centers for Disease Control Prevention (CDC)/American Academy of Periodontology (AAP) case definitions used in the NHANES surveys estimated the prevalence of periodontitis in the Australian adult population as 22.9%.[5] As this survey uses an earlier NHANES examination methodology, the results may be an underestimate of the true disease level.

In view of the prevalence of periodontitis, the ageing population and the decreasing prevalence of edentulism in Australia, it would follow that assessment and treatment of destructive periodontal diseases should be common in general practices. However, there are relatively few reports regarding periodontal diagnosis and therapies in the general dental practice setting. A survey of 782 patient charts from three geographically distinct practices in the United States revealed, on average, an increase in the age of referred periodontal patients, a decrease in tobacco usage, an increase in periodontal case severity, an increased number of teeth extracted and a decreased number of teeth present when charts from 1981 were compared with charts from 2001.[6] These data suggest that an increasing percentage of periodontal care is being performed in general practice settings together with a decrease in timely referrals. These data are also contrary to what one would expect from the epidemiologic data of destructive periodontal diseases over the last two decades.[7]

Several hypotheses have been forwarded to explain these findings including: increased knowledge of the pathogenesis of periodontal diseases from plaque-based to host-response mechanisms; increased use of dental hygienists; the emergence of dental implants as a predictable treatment option; movement in dental schools from a specialist-based curriculum to a general group practice model; and economic issues including the rise of third party payment mechanisms and dental school tuition.[8] However, few studies have provided data to support these hypotheses.

In 1985, Betof and co-workers reported that dentists younger than 30 years of age and presumably with more current knowledge of periodontics were more likely to treat periodontal patients than practitioners 31–45 years of age. Practitioners older than 60 years of age were more likely to offer periodontal services.[9] However, more recently Zemanovich and co-workers found no difference in a Virginian sample of dentists, based upon age or years in practice.[10] The presence of one or more dental hygienists or practices with more than one dentist has been reported to be associated with the provision of more periodontal services within the general practice setting.[11]

A follow-up survey of dentists in Virginia found recent graduates tended not to refer for non-surgical periodontal therapies including scaling and root planing, possibly due to expanded dental school curriculae. In addition, an increasing number of dental hygienist days in the practice decreased dentist participation in non-surgical periodontal therapies. Of interest, dentists with postgraduate qualifications tended to refer for periodontal surgical services including dental implant placement.[12] Within the Australian context, a survey of Victorian dentists showed that 20% do not regularly check the periodontal status of their patients.[13]

To address the question of how periodontal disease is currently treated in Australian general dental practices, data on how periodontal diseases are diagnosed and managed within general practice need to be determined. Therefore, it is important to identify what criteria are used by practitioners to arrive at a periodontal diagnosis, how periodontal patients are triaged among dental hygienists, general dentists and specialists and what periodontal therapies are provided, in addition to the interval between maintenance and recall visits of periodontal patients. The US-based Practitioners Engaged in Applied Research and Learning (PEARL) Network recently surveyed their practitioner members (using randomized case presentations) to assess the degree of diagnostic accuracy in periodontal cases and reported that there was wide variation in diagnosis between PEARL practitioners that may affect treatment outcome.[14] This paper reports on a similar study conducted through eviDent, an Australian practice-based research network which aims to describe:

(1) what clinical criteria are used by practitioners to establish a diagnosis of periodontal health (gingivitis, or mild, moderate or severe periodontitis);

(2) the degree of practitioner diagnostic accuracy; and

(3) how the diagnosis of cases compare between the practitioners of the eviDent and PEARL networks.

The results of the research will not only help in understanding decision-making criteria used in practice regarding periodontal therapy, but will also aid the design of further studies looking at the effectiveness of the treatment of periodontal diseases.

MATERIALS AND METHODS

The project was designed as an online, cross-sectional survey using randomized case presentations. The questionnaire was based on a similar survey conducted by the PEARL dental practice-based network in the US.[14] This project was conducted through the eviDent Foundation. eviDent is an Australian dental practice-based research network (an initiative of the Australian Dental Association Victorian Branch (ADAVB) and the Oral Health Cooperative Research Centre) and facilitates practice-based research by supporting the relationship between dental practitioners and academic researchers. The project obtained ethical approval from The University of Melbourne.

Participants

The questionnaire was available to all members of the ADAVB who were general dentists (approximately 2500 dentists at the time of the survey); specialist practitioners were not eligible to participate. The questionnaire was hosted in the 'Members Only' section of the ADAVB website and promoted via emails, the ADAVB Newsletter, the Australian Society of Periodontology and at relevant continuing professional development (CPD) events. All responses were anonymous. Options for responses within the survey were generally provided in the form of drop-down menus with the occasional free-text field.

Survey

On first logging on to the survey, dentists were presented with a plain language statement explaining the study and then asked a series of questions to help determine: the type and location of practice; years in practice; number of practitioners; whether a hygienist was employed at the practice; location of undergraduate training and any postgraduate training including recent CPD in periodontics in the last three years or advanced formal training, such

as a Graduate Diploma or Masters degree. Periodontists and periodontic postgraduate students were excluded from the study. A flow chart outlining the delivery of the presentations, scenarios and questions to the practitioners is presented in Fig. 1.

The dentist was then shown one of three clinical presentations. Clinical presentation A described a new 45-year-old patient with no periodontal attachment loss; clinical presentation B described a new 45-year-old patient with a history of mandibular tooth loss due to looseness; clinical presentation C described a long-time patient in their practice treated for several years by their referring periodontist who has returned to see them after a two-year gap. Each clinical presentation was followed by a more specific clinical scenario. Clinical presentation A preceded scenarios 1 to 4, clinical presentation B preceded scenarios 5 to 8 and clinical presentation C preceded scenarios 9 and 10. The clinical scenarios were text-based and corresponded to periodontal health/gingivitis (scenarios 1 and 2), mild periodontitis (scenarios 3 and 4), moderate periodontitis (scenarios 5, 6 and 7), severe periodontitis (scenario 8) and recurrent periodontitis occurring at both single and multiple sites which were also classified as severe periodontitis (scenarios 9 and 10).

The criteria used as a basis for the scenarios were developed by the PEARL network using the currently available literature in consultation with periodontists and was reviewed by their Protocol Review Committee (Table 1).[14] The AAP position paper[15] and parameters of care papers[16-18] for chronic periodontal disease were not solely used to develop the scenarios as they do not always distinguish between mild and moderate disease.

Each clinical scenario provided an overview of each case with a summary of information regarding probing depths (PD), bleeding on probing (BOP), clinical attachment loss (CAL), inflammation, bone loss, furcation involvement or mobility. In all, participating dentists were presented with five randomly allocated clinical scenarios (and their associated clinical presentations) from a total of 10. A flow chart outlining the delivery of the presentations, scenarios and questions to the practitioners is presented in Fig. 1.

The dentist was asked what examinations were typical and customary to be performed in response to each clinical presentation. A periodontal diagnosis was then requested based upon the results of the periodontal and radiographic examinations presented in the clinical scenario. The available options for diagnosis were periodontal health, gingivitis, mild periodontitis, moderate periodontitis and severe periodontitis. Respondents were also given the option of referring the patient to a periodontist for a diagnosis. Participating dentists were

not provided with any criteria for these classifications as part of the study. Dentists were also asked to report the clinical criteria they used to help them arrive at a diagnosis.

This cycle was repeated a maximum of five times so that each participant answered questions about a maximum of 5 out of the 10 scenarios.

The paper presents descriptive statistics including frequencies and percentages of categorical variables. Cohen's kappa coefficient was calculated for certain variables as a measure of examiner consistency when presented with the same presentation at different times. Possible associations between categorical variables were examined with chi-squared tests.

RESULTS

One hundred and thirty-five dentists started the survey out of a possible 2500, a response rate of 5.4%. Of these, 106 went on to complete at least one clinical scenario. There were between 85 and 106 respondents for each of the five rounds of case presentations with between 36 and 53 respondents per clinical scenario.

The characteristics of the responders are presented in Table 2. The majority of responders were general practitioners within a group general practice (58.5%). Although most responders were Melbourne-based, 20.7% were based in either regional or rural locations. Few respondents had completed further formal advanced training (13.3%); however, the majority of respondents (64.4%) reported having completed between 1 and 8 hours of periodontally-related CPD. Almost one-quarter of respondents (22.2%) worked in a practice which employed a hygienist. In those practices that employed a hygienist, the majority employed a hygienist for 4 or 5 days a week. Just over half of respondents (56.3%) received their dental degree from The University of Melbourne.

Typical examinations

After viewing one of the three clinical presentations, participating dentists were asked to describe the routine examinations performed in their practice. The results for scenarios using the same clinical presentation (i.e. scenarios 1 to 4, 5 to 8, and 9 and 10) have been combined; 87% of practitioners reported they would perform a periodontal examination for case presentation A, 95% for case presentation B and 93% for case presentation C. As dentists were asked to complete five scenarios, they would necessarily see some case

presentations more than once. Analysis of the consistency of the reported routine examinations when dentists responded to a repeat of the same clinical presentation showed that individual dentists were very consistent in their responses and hence, the combination of scenarios used above.

Some practitioners (13% following case presentation A, 5% following case presentation B and 7% following case presentation C) reported they would not routinely perform a periodontal examination. However, a previous history of periodontal disease, the presence of gingival inflammation, the presence of recession or a periodontal examination being required for payment would trigger these practitioner to perform a periodontal examination (in 89%, 78%, 50% and 31% of cases respectively).

The clinical parameters recorded by practitioners during a routine periodontal examination are shown in Fig. 2. The most commonly measured clinical parameters were PD and tooth mobility, closely followed by BOP, suppuration and furcation involvement. The presence of inflammation or plaque was more often recorded in cases of health or gingivitis than in cases of periodontitis. The location of the mucogingival junction was the least measured parameter.

Diagnostic criteria

The criteria used by practitioners to make their diagnoses are detailed in Fig. 3. For moderate and severe periodontal disease practitioners were most likely to use the criteria of multiple sites with pocket depths of >3 mm to help make their diagnosis. BOP was the most commonly used criteria for diagnosis of health/gingivitis and mild periodontal disease. The presence of plaque was least commonly used for diagnosis of scenarios in all three clinical presentations. Practitioners were also given the option of describing other criteria (i.e. other than those presented) that they might use to help reach a diagnosis. For case presentation 1 the most commonly used 'other' criteria was an absence of symptoms (in 9 out of 175 cases), for case presentations 2 and 3 the most commonly used 'other' criteria was the use of radiographs to assess bone loss (in 13 out of 189 cases and 9 out of 95 cases respectively).

Practitioner diagnoses

Each clinical presentation was followed by a more detailed clinical scenario after which the practitioner was asked to give a diagnosis and report the criteria used to make this diagnosis. Table 3 displays the periodontal diagnoses made by the practitioners for each of the 10 clinical scenarios presented during the survey. The bolded figures reflect concurrence of the

practitioner diagnosis with that of the classification described earlier. The majority of practitioners agreed with the diagnosis of periodontal health for scenario 1, gingivitis for scenario 2, mild periodontitis for scenarios 3 and 4, moderate periodontitis for scenario 5 and severe periodontitis for scenario 8. However, the majority of practitioners diagnosed scenarios 6 and 7 as severe periodontitis rather than moderate. Scenarios 9 and 10 which presented cases of recurrent periodontitis were generally classified as mild or moderate periodontitis by respondents.

The data were also examined for any associations between practitioner factors and diagnosis, but no strong associations were found. The Kappa value for examiner consistency when presented with the same presentation at different times was 0.64.

A number of dentists chose to refer their presented cases to a periodontist for diagnosis. These are presented at the scenario level in Table 4. The highest rate of referral was for scenario 6, where 30% of respondents chose to refer that patient for diagnosis rather than make a diagnosis themselves. There were also high levels of referral for diagnosis for scenarios 7 (22%) and 8 (25%).

Comparison with PEARL

The practitioner diagnoses for scenarios 6, 9 and 10 differed to those made by the practitioners in the US-based PEARL survey. A comparison of the diagnoses made by the practitioners in the eviDent survey to those made by those in the PEARL survey is presented in Table 5.

DISCUSSION

The high prevalence of periodontal disease in the Australian adult population means that accurate diagnosis and appropriate treatment are necessary. This practice-based study aimed to describe how accurate participating practitioners were in their periodontal diagnoses of the presented cases, what criteria they used to reach their diagnoses and how their diagnoses compared to those of US practitioners. Between 87% and 95% of practitioners reported they would routinely perform a periodontal examination for the presented cases. This figure is higher than that reported by Darby et al.[13] where 20% of respondents would not routinely check the periodontal status of their patients. A history of periodontal disease and signs of inflammation in the mouth would trigger an examination of the periodontal status for those

practitioners who did not routinely perform a periodontal examination. Gingival inflammation is a common sign of gingivitis and periodontitis but not an accurate marker of periodontitis, especially in smokers and aggressive periodontitis where there may be bone loss without marked inflammation. It must be used in conjunction with other parameters. Probing depths, CAL and BOP were the parameters most commonly used.[19] Almost all of the respondents used these in their diagnosis. It has been suggested that the use of PD alone would underestimate the amount of disease due to the recession that can occur.[20] Therefore, use of CAL may be preferable. However, treatment of periodontal disease is based primarily on the management of PDs. The AAP parameter on comprehensive periodontal examination[21] also states that the presence and distribution of plaque and calculus, presence, location and extent of furcation involvement, mucogingival relationship, and presence of exudates should be assessed. These are all used by the practitioners in this study. Interestingly, no mention of mobility is made in this parameter although it was the second most commonly used parameter reported by practitioners. Mobility is often related to loss of bone support. Identification of furcation involvement is vital as these teeth have a poor prognosis and respond less well to scaling and root planing.[22] There were no differences in the use of clinical parameters and practitioner variables such as age or years in practice, which is consistent with previous studies.[10]

The agreement between practitioner diagnosis and the intended case diagnosis ranged from highs of 89% in scenario 8 (an intended diagnosis of severe periodontitis) and 83% in scenario 1 (periodontal health) to lows of 15% in scenario 7 (moderate periodontitis) and 8% in scenario 9 (severe periodontitis). There tended to be an over-diagnosis of severe periodontitis in the moderate periodontitis scenarios. Martin *et al.*[14] suggested that a lack of consensus in the definitions of periodontitis may have contributed to the variation in diagnosis. A systematic review of definitions of periodontitis[19] presented at least 15 different classifications. Interestingly, age or length of time in practice had no effect on the diagnoses given by the practitioners in this study, suggesting that practitioners who graduated before 1999 and the publication of the current AAP classification are, nevertheless, familiar with that classification. Gingivitis and mild periodontitis may have a similar clinical appearance and may only be distinguished by radiographic confirmation of bone loss. Page and Eke[20] concur that the difference between moderate and severe periodontitis can be difficult to distinguish, suggesting that a diagnosis of moderate periodontitis would pick up cases of

severe periodontitis that are missed. This may ensure that patients are correctly diagnosed as having periodontal disease.

An accurate diagnosis is important for appropriate treatment planning and management. Under-diagnosis may lead to inadequate debridement of periodontal pockets limiting the effectiveness of treatment and reducing outcomes. Over-diagnosis may mean unnecessary treatment with no additional beneficial effect, as well as extra financial and time costs for the patients.

Generally, Victorian practitioners were more likely than their US counterparts to give a severe diagnosis to cases portraying moderate disease and a moderate diagnosis to cases of severe recurrent disease. This difference may reflect the lack of consensus on definitions of periodontitis, or the difference in dental education between the two countries. A consensus on terminology would reduce the variation, with Preshaw[23] suggesting this is now necessary. Both groups of practitioners used similar clinical parameters in their assessment of severity. In Victoria, for scenarios portraying moderate and severe periodontal disease, practitioners were most likely to use the criteria of multiple sites with pocket depths of >3 mm to help make their diagnosis. BOP was the most commonly used criteria for diagnosis of health/gingivitis and mild periodontal disease, which is again similar to the PEARL dentists. The presence of plaque was least commonly used for diagnosis of scenarios in all three clinical presentations, as is appropriate because plaque is not a good indication of disease severity and is not included in definitions.[20]

The survey design, although modified from a protocol used successfully in a previous study, had some limitations. It was hosted through the ADAVB website and this may have reduced the number of participants. Additionally, some practitioners who started the survey did not complete all five scenarios, perhaps indicating that some found the survey either arduous or time-consuming or both, suggesting that the survey instrument used could benefit from further streamlining. There was likely to have been some selection bias. Of the 2500 dentists eligible to participate, only 135 attempted the survey. It is possible that these dentists participated because of a pre-existing interest in periodontal disease. The number of reported CPD hours related to periodontal disease (with the majority of practitioners reporting undertaking between 1 and 8 hours) would tend to support this. The low response and selection bias may be that the results are not representative of all the general dental practitioners in Victoria and this needs to be borne in mind when extrapolating these results.

CONCLUSIONS

The Victorian dentists who took part in this study were using the appropriate clinical parameters to diagnose periodontal disease. In general, their diagnoses were reasonably accurate with accepted case definitions. However, moderate periodontitis was frequently over-diagnosed as severe. This was the major difference between this study and that in the US. The variations in diagnoses may reflect the lack of consensus of the diagnosis of periodontal disease, highlighting the need for a consensus position in this area. For optimum patient care it is important that the criteria that practitioners use to establish a diagnosis match those used in the development of evidence-based standards of care for patients with periodontal disease. Similarly, from a practice-based research perspective, research focusing on periodontal research needs to ensure that participating practitioners are standardized in the criteria they employ to reach their diagnoses.

ACKNOWLEDGEMENTS

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Table 1. Criteria for randomized case presentation (adapted from Martin[14])

Case type	Definition
No periodontitis	None of the following criteria are met
Mild* periodontitis	≥1 teeth with ≥3 mm PD or ≥1 posterior teeth with grade I furcation involvement
Moderate periodontitis	≥1 teeth with PD ≥5 mm or ≥2 teeth having PD ≥4 mm or ≥1 posterior teeth with grade I furcation involvement and accompanied with PD ≥3 mm
Advanced*periodontitis	≥2 teeth having PD ≥5 mm or ≥4 teeth having PD ≥4 mm or ≥1 posterior teeth with grade II furcation involvement

* 'Mild' synonymous with 'slight' and 'advanced' synonymous with 'severe'.

Table 2. Demographics of the eviDent network survey participants

Respondent characteristics (n = 135)		Frequency (%)
Practice description	Solo practitioner	30 (22.2)
	GP in group general practice	79 (58.5)
	GP in group practice including specialists	5 (3.7)

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	Public/community dental clinic			18 (13.3)	

Scenario	n=	Periodontal health (%)	Gingivitis (%)	Mild periodontitis (%)	Moderate periodontitis (%)	Severe periodontitis (%)
			Defence Forces		2 (1.5)	
			Dental Hospital		1 (0.7)	
Practice location			Melbourne		107 (79.3)	
			Regional Centre		22 (16.3)	
			Rural		6 (4.4)	
Time in practice			Not recorded		1 (0.7)	
			1–5 years		42 (31.1)	
			6–10 years		14 (10.4)	
			11–15 years		11 (8.1)	
			16–20 years		21 (15.6)	
			21–30 years		20 (14.8)	
			>31 years		26 (19.3)	
Undergraduate university			Melbourne		76 (56.3)	
			Other		59 (43.7)	
Formal advanced training			No		117 (86.7)	
			Yes		18 (13.3)	
Hours of perio CPD completed			Not recorded		1 (0.7)	
			0 hours		16 (11.9)	
			1–8 hours		87 (64.4)	
			9–16 hours		7 (11.1)	
			17–24 hours		15 (5.2)	
			More than 24 hours		9 (6.7)	
Dental hygienist employed at practice			Yes		30 (22.2)	
			No		105 (77.8)	

Table 3. Diagnosis selected by practitioners (n = 409). Responses are listed by scenario. N = total number of scenarios completed excluding referrals to specialists. Bolded figures represent concurrence with intended diagnosis.

		Periodontal health	Gingivitis	Mild periodontitis	Moderate periodontitis	Severe periodontitis
1	47	**39 (83)**	5 (10.6)	2 (4.2)	1 (2.2)	0
2	43	5 (12)	**25 (58.1)**	11 (26)	2 (5)	0
3	47	1 (2.2)	9 (19.1)	**27 (57.4)**	9 (19.1)	1 (2.2)
4	35	2 (6)	5 (14)	**21 (60)**	7 (20)	0
5	44	1 (2.3)	0	**19 (43.1)**	23 (52.3)	1 (2.3)
6	31	0	0	**13 (42)**	18 (58)	
7	40	1 (2.5)	0	**6 (15)**	33 (82.5)	
8	36	0	0	**4 (11)**	32 (89)	
9	40	0	1 (2.5)	16 (40)	20 (50)	**3 (7.5)**
10	46	2 (4.3)	16 (40)	28 (61)	**10 (22)**	

Scenario	No. of responders	No. referring for diagnosis	Referral rate (%)
1	48	1	2.1
2	44	1	2.3
3	47	0	0
4	36	1	3
5	46	2	4.3
6	45	13	30
7	51	11	22
8	48	12	25
9	42	2	9
10	53	7	13.2

Table 4. Dentists choosing to refer cases for diagnosis by scenario

Table 5. Scenario diagnosis comparison

Scenario	eviDent survey results	AAP position paper guidelines	PEARL survey results

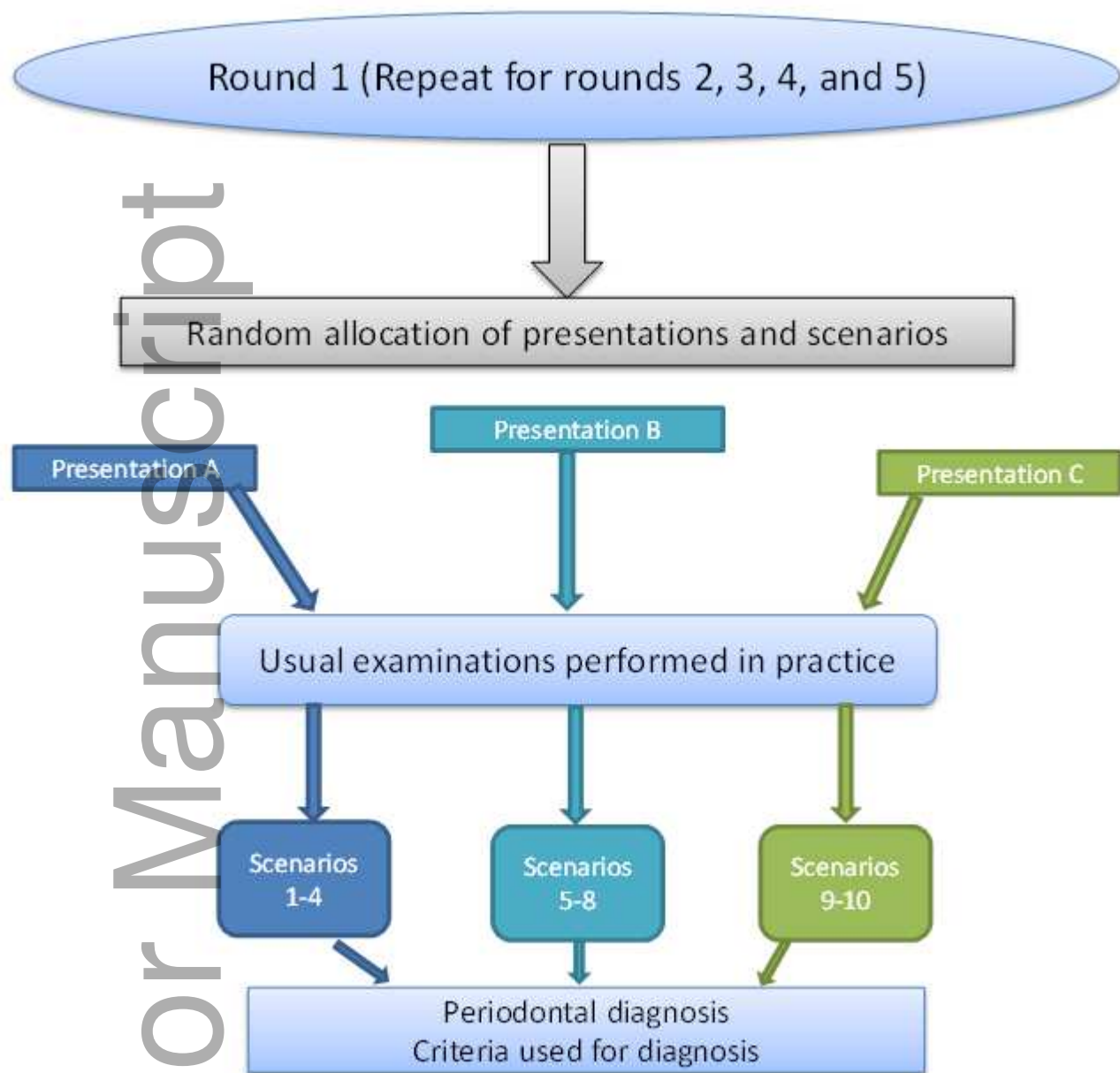|			
1	Health	Health	Health
2	Gingivitis	Gingivitis	Gingivitis
3	Mild periodontitis	Mild/moderate periodontitis	Mild periodontitis
4	Mild periodontitis	Mild/moderate periodontitis	Mild periodontitis
5	Mild periodontitis	Mild/moderate periodontitis	Moderate periodontitis
6	Severe periodontitis	Mild/moderate periodontitis	Moderate periodontitis
7	Severe periodontitis	Mild/moderate periodontitis	Moderate periodontitis
8	Severe periodontitis	Severe periodontitis	Severe periodontitis
9	Moderate periodontitis	Severe periodontitis	Severe periodontitis
10	Moderate periodontitis	Severe periodontitis	Severe periodontitis

Figure legend

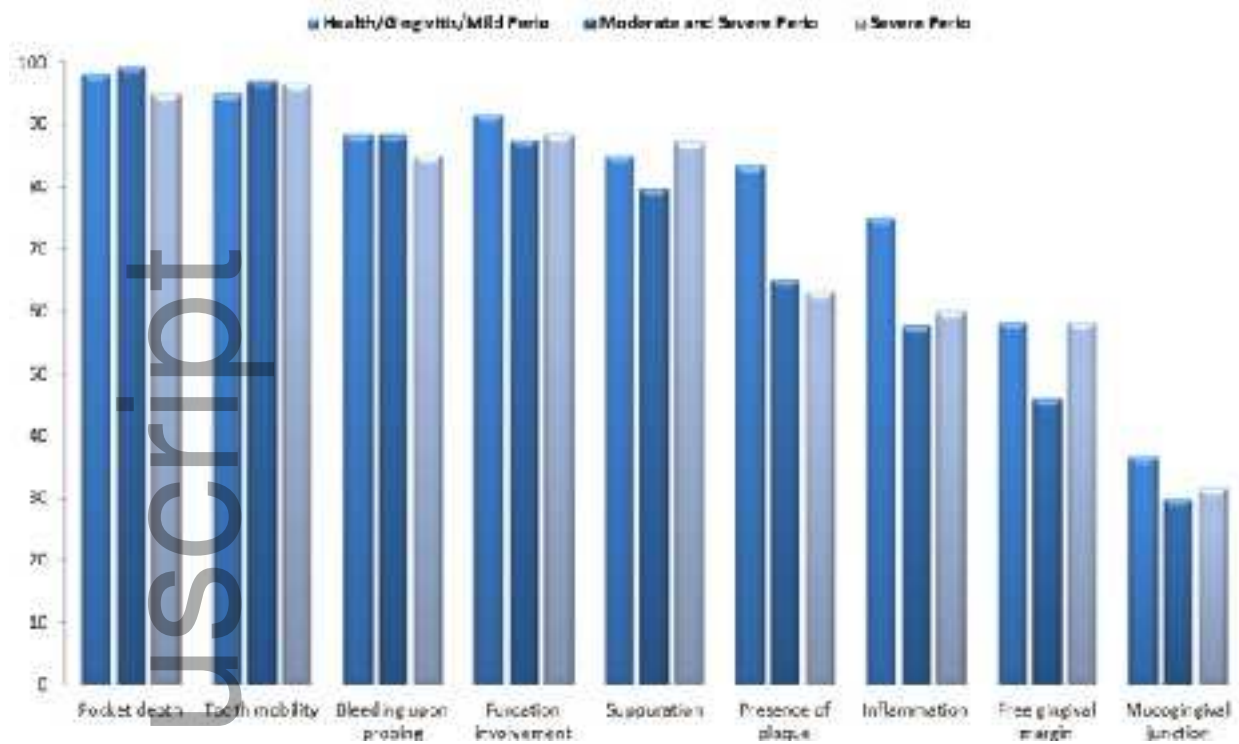**Fig. 1** Flow chart of survey presentation.

Fig. 2 Percentage of routinely recorded clinical parameters grouped by clinical presentation.

Fig. 3 Percentage use of diagnostic criteria grouped by clinical presentation.
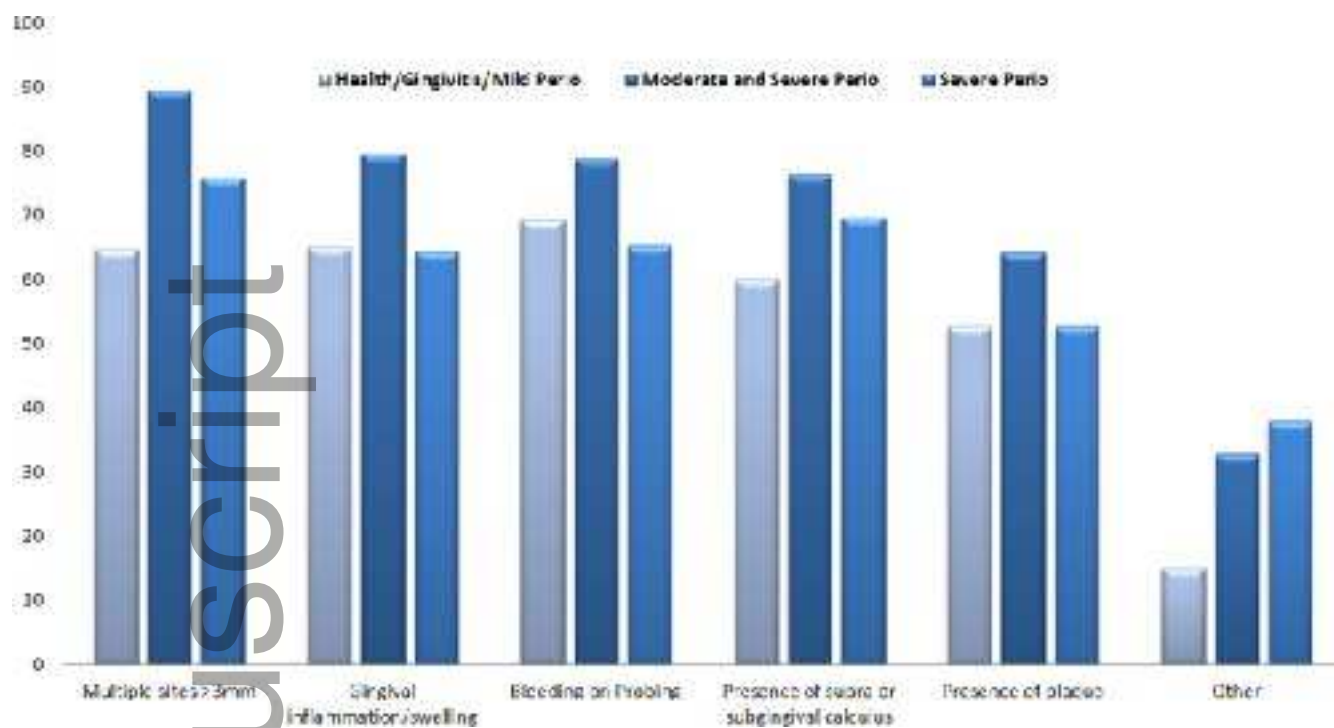
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Legend: Health/Gingivitis/Mild Perio · Moderate and Severe Perio · Severe Perio

Categories: Multiple sites ≥3mm · Gingival inflammation/swelling · Bleeding on Probing · Presence of supra or subgingival calculus · Presence of plaque · Other

adj_12369_f3.tif