

RESEARCH ARTICLE

Filipino endocrinologists' awareness of the diabetes - periodontal disease interrelationship

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ABSTRACT

Background and Objectives: Periodontitis and Diabetes Mellitus are both inflammatory conditions that trigger the host response in a similar manner. The effect of uncontrolled diabetes on the progression of periodontitis, as well as the effect of periodontal health on the glycemic control of a patient, have been well documented. The need to include oral health in the management of a diabetic patient is deemed necessary. The objective of this study is to determine the awareness of the interrelationship between diabetes and periodontal disease among Endocrinologists in the Philippines and to determine whether management of a diabetic patient includes measures on maintaining periodontal health.

Methodology: A 20-item self-administered survey questionnaire was distributed to endocrinologists registered in the Philippine Society of Endocrinology, Diabetes and Metabolism (PSEDM) Seminar and General Assembly held on September 5-6, 2015 at Sofitel Manila, Pasay City. The questionnaire was comprised of eight multiple choice and 12 yes-no questions, which combined queries on demographics, associations between diabetes and periodontitis as well as patient management.

Results: Most of the endocrinologists answered that tooth brushing and flossing should be performed at a minimum of twice a day (96.6%) and that frequency of dental visits should be at least every six months (71.3%). Although most endocrinologists claimed to be aware of the manifestations of gingivitis and periodontitis, only 3.6% accurately identified the symptoms of gingivitis and 3% accurately identified the symptoms of periodontitis. Majority (79.2%) were aware that periodontal disease affects Diabetes Mellitus (DM) and that DM is a risk factor for Periodontitis (95.9%). However, only 38.6% noted periodontitis as one of the complications of diabetes. More than half of the respondents refer their patients to dentists but less than half educate their patients on oral health.

Conclusion: More than 90% of the Endocrinologists are aware of the bidirectional relationship of Periodontal disease and diabetes mellitus but do not clearly know the difference between gingivitis and periodontitis. In addition, the awareness is not translated to the management of diabetic patients.

Keywords: periodontal disease, diabetes, endocrinologist, awareness

Introduction

Periodontal disease and diabetes mellitus are two chronic inflammatory disorders affecting the health and well-being of millions of individuals worldwide [1]. In the Philippines, periodontal disease is considered the second most common oral disease affecting Filipinos. Diabetes is a chronic metabolic disease highly prevalent in the Philippines with 3.2 million cases of type 2 diagnosed in 2014 [2]. Studies have proven the interconnection between the two conditions

based on the host immune response [1,3,4,5]. Uncontrolled Diabetes is both a risk and a modifying factor for Periodontitis. On the other hand, Periodontitis can influence a person's glycemic index and is known to be the sixth complication of Diabetes [6]. The need for a collaborative approach among medical and dental practitioners cannot be overemphasized. It is imperative that patients with diabetes receive holistic treatment involving systemic health and oral health care.

Objectives

The objective of this study is to determine the awareness of Philippine endocrinologists on the effects of diabetes on the periodontium and the effect of periodontitis on the glycemic control of a diabetic patient. In addition, it is the aim of the study to determine whether patient management of a Filipino Endocrinologist includes measures addressing and maintaining oral health care.

Methodology

The study is a descriptive cross-sectional survey conducted among Filipino Endocrinologists who attended the Philippine Society of Endocrinology, Diabetes and Metabolism (PSEDM) convention on September 5-6, 2015. Since the organization had 318 registered members, computation of sample size, with a 5% margin of error and at 95% confidence level was 174. However, there were only 124 participants in the convention. Total enumeration was thus applied but one member declined to answer. Excluded in the study were doctors that held practice with a dentist and doctors with a spouse or immediate relative who is a dentist. This narrowed down the number of respondents to 88.

The 20-item self-administered questionnaire was formulated by the researchers in coordination with the faculty of Oral Medicine Section, specifically the discipline of Periodontics, at the University of the Philippines College of Dentistry. Pilot testing was done with 24 5th year medical interns of the Philippine General Hospital. The questionnaire consisted of eight multiple choice and 12 yes-no questions.

The first part dealt with demographics. The second part (questions 1-15) focused on determining awareness, and the last part (questions 16-20) pertained to patient management. The study was approved by the University of the Philippines Manila Review Ethics Board (UPMREB 2015-158-UND).

Each respondent was asked to sign an informed consent form that provided assurance of non-disclosure and full confidentiality. The questionnaire were given and collected on the same day. Anonymity was maintained by assigning a number to each questionnaire, which allowed for ease in encoding. Data was encoded and tabulated using Microsoft Excel 2010 then summarized and analyzed using descriptive statistics. The investigators did not have any conflict of interest or bias and there were no vulnerable populations in the study.

Results

Demography: Among the 123 respondents, only 88 were included, based on the criteria listed. The mean age was 41 while the average years in practice among the endocrinologists was 6.5 years. There were 22 female respondents and 5 male respondents. The others did not indicate their gender.

Awareness: Majority of the participants (96.6%) responded that frequency of brushing should be at least twice a day or more. A further breakdown reveals that 48.9% of the respondents chose twice a day as the required brushing frequency while 44.3% chose three times a day and 3.4 % answered more than three times a day (Figure 1). On the other hand, 71.3 % believed that interval of dental visits should be every six months (Figure 2).

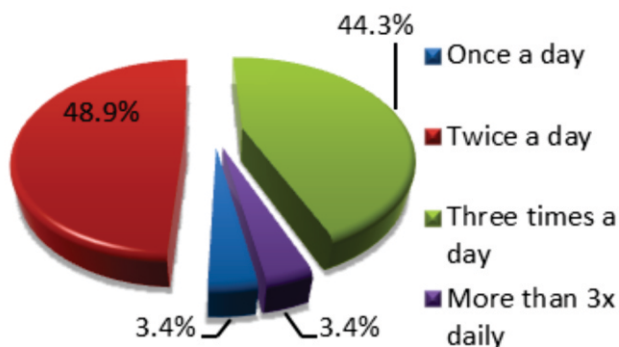


Figure 1. Frequency of Brushing

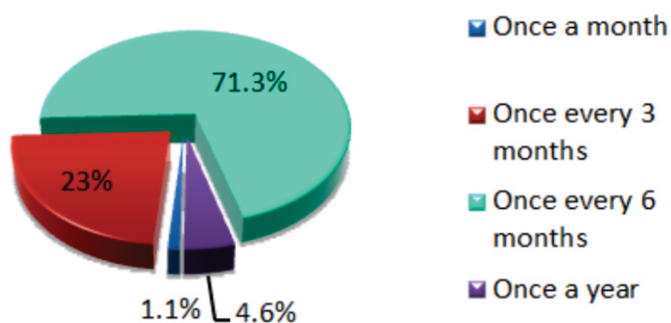


Figure 2. Interval of Dental Visits

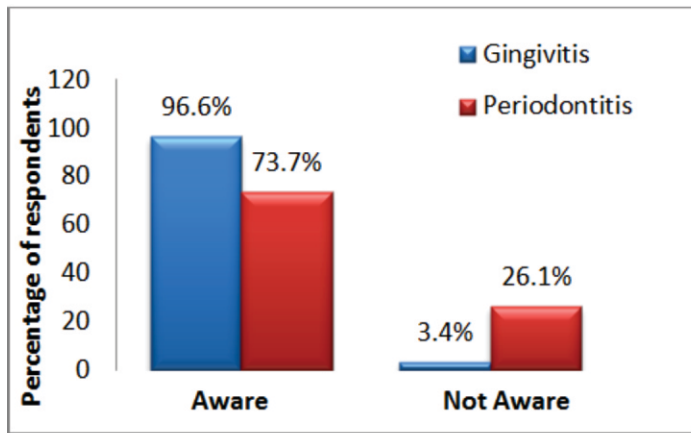


Figure 3. Awareness on Manifestations

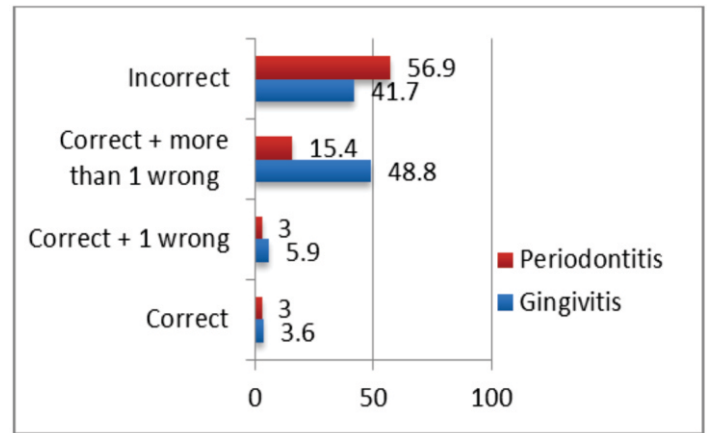


Figure 4. Manifestations of Periodontal Disease

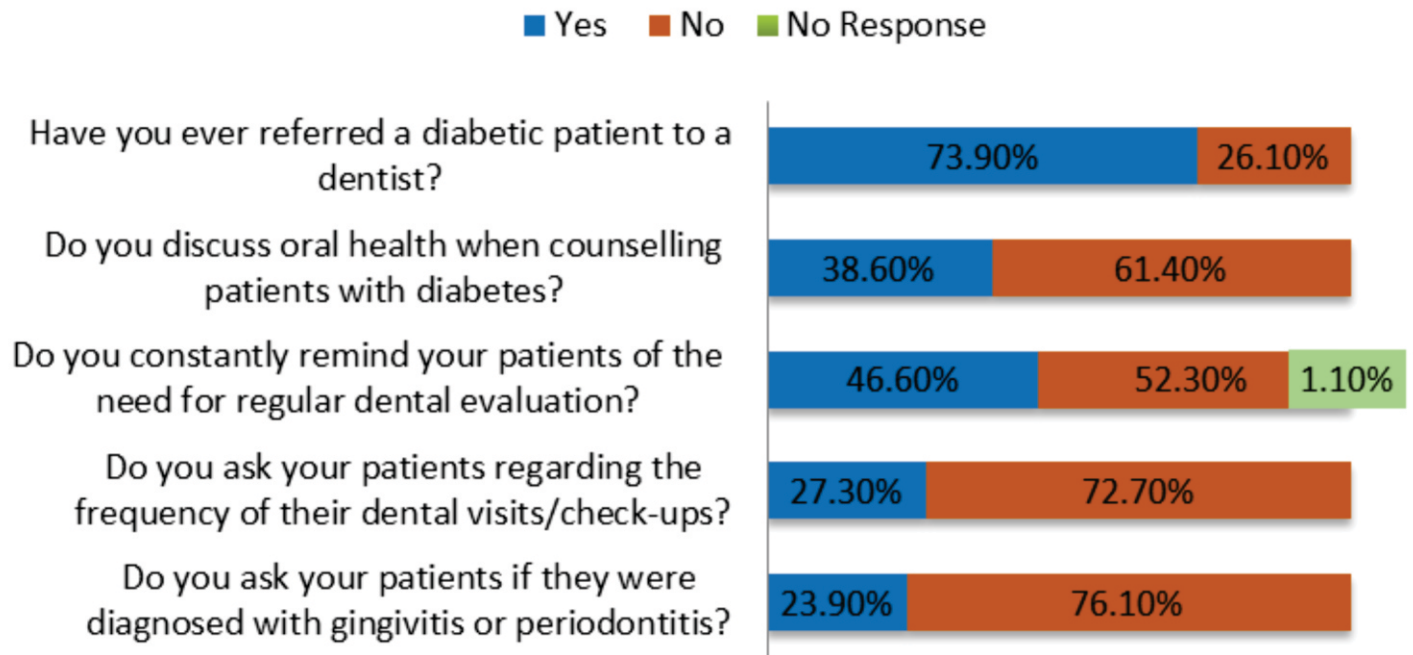


Figure 5. Patient Management of Endocrinologists

Figure 3 shows that 96.6% claimed to know the manifestations of gingivitis but only 3.6% correctly identified the symptoms (Figure 4). With regards to periodontitis, 73.7% indicated 'yes' to knowing the symptoms (Figure 3) but only 3% were able to correctly identify the symptoms (Figure 4).

Almost all the of the endocrinologists who participated in the study were aware of the existing interrelationship between diabetes and periodontitis. Table 1 shows that most respondents were aware that: poor glycemic control affects the severity of periodontitis (93.6%); glycemic

control improves after periodontal therapy (92.3%); and improvement of oral hygiene enhances glycemic control (90.9%).

Patient management:

With regards to the application of knowledge, the study revealed that only 38.6% discuss oral health when counselling patients. In addition, 46.6% remind their patients of the need for regular dental evaluation, while 27.3% inquire about the dental visits of patients. Only 23.9%

Table 1. *Interrelationship Between Diabetes and Periodontitis*

Questions on Diabetes-Periodontitis Relationship	Yes	No	No response
Periodontitis is severe in patients with uncontrolled diabetes.	92.3	1.3	6.4
Are people with diabetes more susceptible to develop periodontitis?	93.6	0	6.4
Does poor glyceemic control affect the severity of periodontitis?	93.6	0	6.4
Does glyceemic control improve with treatment of periodontitis?	92.3	1.3	6.4
Does improvement of oral health enhance glyceemic control?	90.9	9.1	0

ask patients if they have been diagnosed with periodontitis. However, 73.9% have referred a diabetic patient to a dentist at least once throughout the length of practice (Figure 5).

Discussion

The study revealed that the endocrinologists had a high level of awareness on the oral health regimen universally recommended to patients particularly on frequency of brushing and dental visits. Although awareness on the bi-directional relationship between diabetes mellitus and periodontitis was high, it was not common practice to refer patients to dentists, perform oral health counselling or inquire on the patient's existing oral health practices. In addition, only less than 4% of the endocrinologists were accurate with the manifestations of gingivitis and periodontitis although they were aware of some common features.

Diabetes and Periodontal Disease

The bidirectional relationship between diabetes and periodontal disease has long been established [7,8]. Several mechanisms have been linked with the occurrence of this interrelationship [9,10]. There has been sufficient evidence from systematic review and literature review supporting the effect of uncontrolled diabetes on the periodontium and the effect of periodontitis on the glyceemic index [11,12]. Periodontal disease is the most common complication of diabetic patients and is referred to as the sixth complication of diabetes [4,6]. Knowledge on the basic concepts of periodontitis and diabetes will guide the performance of the medical health workers. Knowledge affects behavior and thus awareness dictates practices of the health professional. In this study, more than 90% of the endocrinologists were aware of this bidirectional relationship that exists between

periodontitis and diabetes mellitus. This is similar to the study of Jaiswal [13] wherein 70% of the 150 medical interns were knowledgeable about the association, and the study among internal medicine residents in Nigeria [14] wherein 77.9% of the 109 participants were knowledgeable about the association of diabetes and periodontitis. In the study of Owens [15] however, 79% of the 254 internists and endocrinologist were unsure when asked if they were knowledgeable of the link between periodontitis and diabetes mellitus. One of the recommendations of the International Diabetes Federation (IDF) is that diabetes health care professionals should educate patients on the interrelationship between diabetes and periodontal disease regularly [3]. Being the medical specialists that manage diabetic patients, endocrinologists should have sufficient knowledge to explain the interconnection to the patient to motivate them towards maintaining health. Awareness on the impact of periodontitis on diabetes would be a propelling factor. Among the participants of the study, however, only 40% noted periodontitis as one of the complications of diabetes. This is similar to the result of the study of Jaiswal [13] where only 41.3% knew that the sixth complication of diabetes is periodontitis. A research could be conducted to determine the depth of knowledge of endocrinologists and other diabetes health workers. Meanwhile, the results of this study, cognizant of IDF recommendations, could already provide basis for developing seminars or providing updates to the professionals.

Holistic Patient Management:

Controlled diabetes with maintenance of good oral health can improve the quality of life of a diabetic patient [4]. Collaborative patient care approach between the medical and the dental health professions would produce better clinical outcomes. In the study of Ota *et al.* [16] at Tokyo Dental College Chiba hospital, the clinical pathway of

the diabetes care program, which was a collaborative approach to treatment by dentists and physicians, was instrumental in the improvement of the glycemic control and oral health of the diabetic patients. Several systematic reviews and meta-analysis indicated that periodontal treatment had a modest effect on the improvement of the glucose levels of a diabetic patient [12,17].

In 2007, the World Dental Federation (FDI) and the IDF signed a joint declaration stressing the need to include oral disease prevention and oral health promotion as essential components of diabetes management. The FDI published a guideline recommending primary health care providers to ask patients about their oral health care, provide education on oral health care and check for existing symptoms [3,18]. The specific recommendations of the IDF include asking about day to day routine of the patient on dental care, frequency of dental visits, inquiring symptoms of periodontal disease, reminding patients of the role of oral health care, and explaining the interrelationship of periodontal disease and diabetes. In this study, only a small percentage of respondents inquired about patient's oral health or included oral health counselling in the routine patient management. This study revealed that although the endocrinologists were aware of the bidirectional relationship of diabetes and periodontal disease, the knowledge was not translated to practice. The studies of Albert [4] and Southerland [19] reiterate the value of including oral health education, inquiring of symptoms and referral to dentists, in managing diabetic patients. In the study by Quijano *et al.* [20], among medical interns and trainees, 82% of the 115 respondents never asked patients regarding history of periodontal disease and 76% never screened for periodontal disease. In a similar study by Owens *et al.* [14], among the 254 respondents, only 5% reported that oral health counselling and screening were part of their diabetic care and 77% did not have any oral health education material in their office. 66% referred at least one patient to the dentist within the year. In the study by Jaiswal *et al.* [13], although 57.3% never ask the patient about being diagnosed with periodontitis, 46.7% encourage their patients to see the dentist at least once a year. A holistic, interdisciplinary approach, with dentists and physicians communicating and collaborating, has shown to produce successful treatment outcomes in managing diabetic patients [16].

Providing education on oral health care as well as checking for existing symptoms are among FDI recommendations. It would thus be necessary for the

endocrinologists to be aware of the basic symptoms of both gingivitis and periodontitis for holistic patient management. In the study of Owens *et al.* [15] among 254 North Carolina Internists and Endocrinologists, it was noted that although more than 60% were aware of the general manifestations of periodontitis, 30% had chosen an incorrect manifestation to the disease. Jaiswal's [13] study among 150 medical interns revealed that 52% identified the manifestations of periodontitis. The study by Kehinde *et al.* [14] noted that only 28% of the 109 internal medicine residents had adequate knowledge on periodontal disease. In this study among Filipino endocrinologists, although the most claimed to be aware of gingivitis and periodontitis, less than 4% were accurate with the manifestations of both gingivitis and periodontitis. The respondents were aware of some manifestations but included those which did not belong to periodontal disease. The endocrinologists might not be aware of the dissonance that exists between knowing the definition of the disease and the actual symptoms. Continuing education programs could be conducted by the professional group to fill in the information gaps. In addition, the local professional group may consider adopting the recommendations of the IDF as part of best practices to lay the foundation for holistic diabetic patient management.

Conclusion

Based on the findings, it could be concluded that majority of the participating endocrinologists from the Philippine Society of Endocrinology, Diabetes and Metabolism are aware of the bidirectional relationship of periodontal disease and diabetes mellitus but are not aware of the difference between gingivitis and periodontitis. Their awareness on the link between the two diseases did not translate into practice. The IDF recommendations were not incorporated in the management of diabetic patients.

One limitation of a cross-sectional study is that it is a mere snapshot of a time period given the population at hand; thus, conclusions are not generalizable. Although the respondents were from various parts of the country, it is recognized that the small sample size may not be a good representative of the endocrinologists in the Philippines. The low attendance count in the continuing education program of Philippine Society of Endocrinology, Diabetes and Metabolism (PSEDM) in September 2015 affected the attainment of the computed sample size. However, only 1 attendee declined to take participate in the study. Despite this, the study was able to gather sufficient data that may provide a baseline for other

studies geared towards a collaborative approach between the medical and dental profession and towards determining the level of awareness in a more in-depth manner. This study, and those done prior, may provide PSEDm with guidance in the formulation of policies and practices in accordance with the recommendations of the International Diabetes Foundation and in the formulation of continuing education programs.

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