



AWARENESS OF THE RELATIONSHIP BETWEEN SYSTEMIC AND PERIODONTAL DISEASES AMONG PHYSICIANS AND DENTISTS IN GUJARAT: A CROSS-SECTIONAL STUDY.

Dental Science

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ABSTRACT

Background & Objective: An association between oral conditions such as periodontal diseases and systemic conditions is noted. As such, periodontal disease is associated with an increased risk of systemic illnesses such as cardiovascular disease, diabetes, adverse pregnancy outcome and stroke. Keeping this in view, the present survey was designed to evaluate the acquaintance, orientation and behaviour of general medical practitioners; concerning the effects of periodontal disease on systemic health. **Materials and Methods:** A typed questionnaire carrying sets of questions was distributed among general dental practitioners and non-dental practitioners of Gujarat government and private set ups. Questionnaire was developed to assess the acquaintance, orientation and behaviour of doctors towards periodontal disease. **Results:** Dental practitioners have knowledge regarding the inter-relationship of periodontal disease and systemic conditions. And most of the non-dental practitioners have knowledge regarding the inter-relationship of periodontal disease and diabetes mellitus. However, majority of them do not know about the potential effect of periodontal disease on other organ systems. **Conclusion:** General medical practitioners have inadequate knowledge regarding inter-relationship. Hence, oral health related training should be an integral part of the medical curriculum.

KEYWORDS

periodontal diseases, systemic conditions, dental practitioners, General medical practitioners, inter-relationship.

1. INTRODUCTION

The primary etiology of periodontitis is bacteria and periodontal pathogens in the biofilm elicit an inflammatory response that ultimately results in destruction of the periodontal supporting tissues in the susceptible host, not all individuals are equally susceptible to periodontitis. It has become evident that certain systemic diseases, disorders, and conditions including poorly controlled diabetes, immune compromise and psychosocial stress can adversely influence the normal host defence, leading to an increased severity of periodontal disease. It is important to recognize that the systemic diseases, disorders, or conditions themselves do not cause periodontitis but instead predispose, accelerate, or otherwise increase disease progression.^[1]

Oral health and general health are integral to each other, with a two-way relationship. The link between oral and systemic diseases is well documented in the dental and medical literature. As evidenced by several systematic reviews and meta-analysis, Diabetes Mellitus (DM) is a well-known risk factor for periodontitis and periodontitis adversely affects glycaemic control even in non-diabetic individuals leading to the development of type 2 diabetes.^[2,3]

There are systematic reviews and meta-analysis, on the association between periodontitis and cardio-vascular disease (CVD)^[4,5], cerebrovascular disease^[6], metabolic syndrome^[7], arterial hypertension^[8], chronic renal failure^[9], obesity^[10] and autoimmune disease such as rheumatoid arthritis^[11] and systemic lupus erythematosus. Increased adverse pregnancy outcomes (APO), mainly the risk of preterm birth and low birthweight are linked to periodontitis^[12]. Moreover, pregnancy complications, preeclampsia^[13] and gestational diabetes mellitus^[14] also show association with periodontitis.

Periodontal treatment is crucial in the management of many systemic diseases. A recent systematic review of randomised control trials shows that periodontal intervention can lower the risk of several systemic conditions, viz. adverse pregnancy outcomes, diabetes, pneumonia and chronic obstructive pulmonary disease.^[15]

The available literature shows an association between periodontal disease and systemic disease. This, together with the bidirectional treatment benefit, entails a need for good communication besides accurate evidence-based knowledge of perio-systemic link. Establishing good communication between dentists and physicians is important to promote health and to avoid serious complications^[16]. This interdisciplinary inter-action is essential in clinical counselling, health education, and disease prevention, mainly because periodontitis is a preventable and treatable condition, hence, it lowers the financial impact on healthcare systems and improves the quality of life.^[13,17]

Past studies have shown that medical professionals had limited education and knowledge regarding oral health.^[18,19] Till date, very few studies have assessed the general physician's knowledge about the awareness of the bidirectional relationship between periodontal and systemic disease. Keeping this in view, the present survey was designed to evaluate the awareness, attitude and practice of general medical practitioners of Gujarat; concerning the effects of periodontal disease on systemic health.

2. MATERIALS AND METHODS

This was a cross-sectional study conducted in the Gujarat, State of India. The study sample included a convenient sample of two groups of selected physicians and dentists in Gujarat. Group 1 comprised of intern physicians, and other specialists while group 2 consisted of intern dentists, general dental practitioners, other dental specialists. The sample size taken for group 1 was 262 and for Group 2 it was 249. Prior to the initiation of the study, ethical approval was obtained from the Research Ethics Committee of M.P. Shah Medical College, Jamnagar (Ministry of Health & Family Welfare Department Research) (Registration number: EC/NEW/INST/2021/1896).

2.1. Data Collection

The data were collected by using a self-developed structured questionnaire. The survey was developed by using <https://docs.google.com/forms>. Since the survey was online, the method of distribution and promoting the questionnaire was through social networking media

(facebook, WhatsApp) application. All were used to increase the distribution rate among medical health providers. The survey consisted of six pages: An introduction of the survey in English explaining the aim of the survey & importance of the topic. The second page contained consent for participation in the study.

The third page contained detailed information regarding the gender, age, E-mail ID/contact number, specialty and designation. Fourth to sixth pages contained the questions regarding diabetes mellitus, cardiovascular diseases and pregnancy. The total number of questions was 20. The questions were regarding the topic of research and were distributed as follows: eleven questions for awareness, five questions for attitude, four questions for clinical practices.

2.2. Data Analysis

The data were entered into an Excel spreadsheet and analysed using the Statistical Package for Social Science (SPSS). Descriptive analysis was undertaken to present an overview of the findings from this sample. Differences between groups were examined using Pearson Chi-Square test across the rated questions, and cross tabulations to compare responses from different groups. The level of significance was set at $p \leq 0.05$.

3. RESULT

Table 1. Demographic data of participants & Distribution of Physicians and Dentists specialty (number and percentages)

Male	228(44.6%)
Female	283(55.3%)
Dentist	249(48.7%)
Physician	262(51.2%)
Interns	93(18.1%)
PGs	94(18.4%)
Practitioners	279(54.6%)
Academicians	45(8.8%)
Total	511

Table 2. Comparison of awareness among physicians and dentists

Questions related to awareness	Responses	Physicians	Dentists	P value
1. Are you aware that certain systemic conditions clearly may affect the initiation and progression of gum disease?	Aware Unaware	78.6% 21.4%	98.8% 1.2%	<0.0001
2. Do you think that periodontal disease has any potential effects on organ systems?	Aware Unaware	86% 14%	90.8% 9.2%	0.086
3. Is there an association between poor dental health and myocardial infarction?	Aware Unaware	70% 30%	84.7% 15.3%	0.000091
4. Do you think that hematological disorders like production and function of leukocytes have any effect on the periodontium?	Aware Unaware	57% 43%	82.7% 17.3%	<0.0001
5. Should diabetic patients be routinely referred to a periodontist?	Aware Unaware	74.4% 25.6%	92.3% 7.7%	<0.0001
6. Does active periodontal disease have an influence on the glucose level of the diabetic patient?	Aware Unaware	73.2% 26.8%	87% 13%	0.000089
7. Does periodontal treatment have an effect in reducing systemic inflammatory markers?	Aware Unaware	64.5% 35.5%	83% 17%	<0.0001
8. Are you aware that periodontal disease is a complication of diabetes mellitus?	Aware Unaware	83.2% 16.8%	95% 5%	0.000015
9. Do you think pregnancy increases the risk of periodontal disease?	Aware Unaware	32.4% 67.6%	98.3% 107%	<0.0001
10. Is periodontal disease during pregnancy a cause for low-birth-weight infants?	Aware Unaware	32% 68%	64.6% 35.4%	<0.0001
11. Do you think treating periodontal disease during pregnancy would improve pregnancy outcomes?	Aware Unaware	31.6% 68.4%	74.6% 25.4%	<0.0001

Table 3. Comparison of attitude among physicians and dentists

Questions related to attitude	Responses	Physician	Dentist	P value
12. Do you think that periodontal disease evaluation should be done by general practitioners in case of systemically ill patients?	Yes	11.4%	32%	<0.00001
	No	27.4%	10.8%	
	To some extent	61.2%	57.2%	
13. Are you at ease while performing a simple periodontal examination?	Yes	19%	63%	<0.00001
	No	27.9%	3.6%	
	To some extent	53.1%	33.4%	
14. Have you acquired knowledge about periodontal disease and its relation with systemic diseases?	Yes	28.2%	69.9%	<0.00001
	No	26.8%	3.6%	
	To some extent	45%	26.5%	
15. Do you think that medical training should also include some acquaintance about screening of periodontal disease?	Yes	41.6%	60.6%	<0.00001
	No	11%	2.4%	
	To some extent	47.4%	37%	
16. Do the patients expect that you should discuss the role of periodontal health and its relation with systemic health?	Yes	39.7%	47.8%	0.163
	No	15%	11.6%	
	To some extent	45.3%	40.6%	

Table 4. Comparison of clinical practice among physicians and dentists

Questions related to clinical practice	Responses	Physician	Dentist	P value
17. Do you inquire with your patients if they have a history of periodontal disease currently or in the past?	Always	9%	36.5%	<0.00001
	Never	47%	5.6%	
	Very frequently	44%	57.9%	
18. Do you examine your patients for any kind of periodontal disease?	Always	11%	66.2%	<0.00001
	Never	41%	1.7%	
	Very frequently	48%	32.1%	
19. Do you take periodontist's suggestion or referral in systemically ill patients?	Always	27%	34.1%	<0.00001
	Never	34.7%	6%	
	Very frequently	38.3%	59.9%	
20. Have you ever noticed severe periodontal destruction in uncontrolled diabetic patients?	Always	24.4%	22.9%	<0.00001
	Never	25.2%	3.6%	
	Very frequently	50.4%	73.5%	

4. DISCUSSION

The study was conducted to assess the awareness of the relationship between systemic diseases (SD) and periodontal disease (PD) of dentists and physicians in Gujarat. The majority of the participants (88%) agreed that there, in general, a relationship between periodontal and systemic diseases.

However, more dentists (90.8%) compared to physicians (86%) agreed that a relationship between PD and systemic disorders and conditions (cardiovascular disease- dentists: 84.7%; physicians: 70%); (Haematological disorders- dentists: 82.7%; physicians: 57%); (diabetes mellitus- Dentists: 95%; physicians: 83.2%); (pregnancy- Dentists: 98.3%; physicians: 32.4%); (low-birth-weight infants- Dentists: 64.6%; physicians: 32%) existed. The validation related to the selected diseases is relatively strong and supported by the Joint Workshop on Periodontitis and Systemic Diseases between AAP and EFP in 2013. The study found that the physicians knowledge about the relationship between PD and DM, CVD and APO is relatively lacking. The relationship between PD and DM is vastly supported in the current literature; therefore, both physicians and dentists should be aware

about pathophysiological processes, complications and treatment for these two chronic diseases. The FDI World Dental Federation with the International Diabetes Federation encouraged, enhanced awareness of the association between DM and oral health among medical health providers (International Diabetes Federations, 2007). Improving the knowledge of health professionals will improve their attitudes and decisions in the management of diabetic patients (Al Khabbaz et al., 2011). In this survey only 64.5% physicians believes that periodontal treatment has an effect in reducing systemic inflammatory markers. Mealy (2008) reported that dentists do not communicate with diabetic patients and their physicians.

The evidence generated in the study could support efforts to improve collaboration between physicians and dentists in educating and referring diabetic patients. Our data showed that 87% of Dentists, had relatively good awareness that active PD influence the glucose level of diabetic patients. However, physicians (73.2%) had low level of awareness.

Table 3 shows the comparison of attitude among physicians and dentists regarding inclusion of periodontal examination in their daily practice and requirement of medical training. About 61.2% physician and 57.2% dentists think that to some extent periodontal disease evaluation should be done by in case of systemically ill patients while 11.4% physician and 32% dentists fully agree to it. Only 34% were at an ease while performing a simple periodontal examination like probing while 3.6% dentists even can not easily do the periodontal probing. Morgan et al. (2001) stated that most of the hospital doctors (77.0%) in their study, did not feel that they had sufficient training or felt confident to examine an oral cavity

Among all the practitioners 26.8% physicians and 3.6% did not acquire any knowledge about periodontal disease and its relation with systemic health while in medical college. Whereas 41.6% physicians and 41.6% dentist agree that medical training should include acquaintance about screening periodontal disease. Based on the findings of this study, it can be interpreted that training in medical schools does not cover all aspects of oral/ periodontal health which is very necessary based on today's need. 45.3% physicians and 40.6% dentist among all the respondents feel that patients expect them to discuss the role of periodontal health and its relation with systemic health, therefore the intergroup comparison of this questions showed statistically nonsignificant result.

Therefore, respondents expect that they should discuss with their patients the potential role of periodontal health and its reciprocal relation with systemic health, while majority of them think that their main role is to focus on systemic health conditions rather than on oral health, which comes within the vicinity of dental specialists. The reason may be that the majority of the physicians did not acquire any knowledge about periodontal disease and its relation with systemic health while they were in medical college. There is an urgent need for new information to enable the medical profession to identify who needs periodontal treatment and how to treat such patients.

Table 4 shows the responses to questions exploring the general medical practitioners and dentists regarding their clinical practice, orientation and behavior toward periodontal diseases. Only 9% physicians and 36.5% dentists among all the respondents always inquire their patients that whether they have any periodontal disease, but 47.6% and 5.6 % physicians and dentists respectively never ask their patients for the same, whereas only 11% physicians and 66.2 % dentist always examine their patients for it. 34.7% physicians and 6% dentists have never taken any Periodontist's suggestion or have never referred their systemically ill patients for a periodontal evaluation in their practice till now. 50.4 % physicians and 73.5% dentist among all the respondents noticed severe periodontal destruction in uncontrolled diabetic patients. The evidence generated in the study could support efforts to improve collaboration between physicians and dentists in educating and referring diabetic patients. In addition, 61.0% of medical interns in India did not know that PD is a risk factor for DM (Gur and Marga, 2011). In contrast, Quijano et al. (2010) found that almost all physicians interns in their study agreed that PD is more prevalent in diabetic patients.

We believe that lack of communication between physicians and dentists, insufficient knowledge or training in medical and dental schools, or lack of continuing education programs result in improper

management of serious chronic diseases in dental clinics as well as the neglect of oral health by physicians. Improving the awareness and updating the knowledge of medical professionals can be achieved through a review of curricula in medical and dental schools and conducting continuous educational programs.

5. CONCLUSION

With the limitations of this study, we can conclude that physicians' and dentists' awareness regarding relationship between periodontal diseases and systemic diseases is generally low and improved collaboration between medical and dental health providers is suggested.

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