KNOWLEDGE AND AWARENESS OF MEDICAL INTERNS AND POST GRADUATES REGARDING THE RELATIONSHIP BETWEEN PERIODONTAL DISEASE AND SYSTEMIC HEALTH: A QUESTIONNAIRE-BASED STUDY.

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Abstract:

Background: Evidence strongly suggests that periodontal diseases are related to certain systemic diseases. An interdisciplinary approach is required for the diagnosis and treatment planning of these complex medical and dental conditions. This co-ordination is essential to help in achieving the best treatment outcome with long-term systemic and oral benefits to the patient.

Objective: To assess and compare the knowledge and awareness about the interlace between periodontal disease and systemic health among interns and post graduates in Krishna Institute of Medical Sciences (KIMS).

Methodology: A specially designed prevalidated questionnaire was developed, consisting of 15 questions, and was distributed through the electronic method in the form of Google form among interns and post graduate students of KIMS, KVV. The obtained data was statistically analyzed using the chi-square test.

Result: A total of 179 responses were recorded, including interns and post graduates. Overall good knowledge was observed. Variations in the responses were observed concerning the periodontal-systemic connection. Good awareness was found about oral hygiene, drug-induced gingival changes etc. The focus should be improving knowledge about invasive periodontal therapy, complications of diabetes as well the requirement of referral etc.

Conclusion: The present study shows the need for an increased awareness and knowledge in interns regarding respiratory disease and complications of systemic diseases. This can help in the promotion of oral and systemic health. This gap between periodontists and medical professionals can only be fulfilled by including basic dental education in both undergraduate and postgraduate medical curricula. The lacunae can be abrogated with the help of interactiveseminars and education programs conducted on a common platform.

Key words: Post graduates, Periodontist, Periodontitis, Systemic health.

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Introduction:

Medical practitioners and Periodontists are specialists with expert knowledge in their respective fields. They have paid close attention to their respective fields, specializing in medicine pertaining to the body and the periodontium, respectively. However, recent findings have strongly suggested that periodontal health may be indicative of systemic health. [1-3]

Periodontal disease is an inflammatory process that affects the periodontium. The severity of the disease depends on the level of bacterial accumulations, or local factors like dental plaque and calculus on the teeth.[1] The developing periodontal disease triggers an inflammatory cascade leading to changes in homeostasis. [1] The reaction of the host immune response adversely affects several other tissues and organs due to the release of inflammatory cells and biochemical enzymes.

In recent years, the bidirectional relationship between systemic and periodontal diseases has been the focus of research.[2] Periodontal disease is a constant potential source of infection and causes continued systemic damage. It has been considered as a separate risk factor for cardiovascular diseases, cerebrovascular diseases, infectious diseases, respiratory diseases, metabolic and endocrinal diseases, pregnancy and covid-19 etc. [3-6]

In today's era of research, role of periodontal disease in some systemic health issues has already been established. But there are some aspects that require enlightenment for improving periodontal health awareness and treatment promotion. A patient with a systemic condition and periodontal disease requires the combined role of medical practitioners and periodontists. This co-ordination is absolutely essential for diagnosis; treatment plans and to reduce the risk of complications with a better prognosis. The awareness and knowledge of medical students should be evaluated to understand the lacunae in an interdisciplinary approach and to improve future consequences. Hence this study was designed to assess and compare the knowledge and awareness of interns and medical post graduates regarding the relationship between periodontal diseases and systemic health.

Objectives:

1. To assess the knowledge of medical interns regarding the relationship between periodontal disease and systemic health.
2. To assess the awareness of medical post graduates regarding the relationship between periodontal disease and systemic health.

Materials and Methods:

Study design:

This cross-sectional study was conducted among medical interns and post graduates of western Maharashtra during the time period **from 30thJuly 2022 to 30th September 2022.**

Development of the questionnaire:

A google form questionnaire was fabricated by referring to the relevant literature and systematic reviews on the association of periodontal health and systemic disease. Expert opinions from senior physicians treating patients with systemic diseases and senior periodontists were considered to develop and validate the questionnaire. An unstructured questionnaire consisting 15 questions was framed based on systemic diseases and their co- relation with periodontal diseases and treatment. A pilot study among 30 medical post graduates was conducted to authenticate the validity of the questionnaire. The reliability of the pretested questionnaire was arrived after analyzing the results of the pilot study. [Table 1&2].All these questions were made mandatory to answer.

Distribution of questionnaire:

Google form distribution and collection of responses was done through emails. The questionnaire was divided into two parts. The information sheet was provided and prior consent was obtained from participants in the first part of the questionnaire. Responses were recorded in the second part of the questionnaire. Responses were recorded and analyzed.

Data collection:

A total of 179 participants took part in the survey. An intergroup comparison was carried out between medical interns and post graduate students.

Statistical analysis:

The statistical significance was calculated using Chi square test for comparison between these two groups. Statistical significance was set highly significant if $p<0.001$ and significant if $p<0.05$. The analysis was done using SPSS version 20.0 for Windows (SPSS Inc., Chicago, USA).

Results:

In the present study a total of 179 participants

took part in the survey and filled the questionnaire completely. Present study compared knowledge and awareness between medical interns and post graduate students. Both genders (males=97, females=82) between age group of 23 to 35 were included.

Total 46% respondents were aware about periodontal diseases and its connection with systemic health. Intergroup comparison showed consulting post graduates were more cognizant than interns (p = 0.00001). About 42% participants agreed that systemic condition of a patient affects periodontal health and treatment plan where intergroup comparison showed post graduates were more aware than interns (p=0.00001). About 33% of participants were not aware about invasive periodontal therapy and 60.8% opined against cessation of antiplatelet drug while performing periodontal surgery. About 73.1% agreed that oral hygiene maintenance can improve systemic health. Intergroup comparison was not significant (p=0.1). A total of 26.3% participants were not aware that delayed referral for periodontal treatments will result in irreversible systemic damage. About 97.7% of respondents agreed that poor oral hygiene adversely affects systemic health. The comparison between interns and post graduates regarding awareness about invasiveness of periodontal therapy, cessation of antiplatelet drug, effect of oral hygiene maintenance and damage caused by delayed referral to periodontal treatment was insignificant. [Table no. I]

Table No. I Statistical difference in awareness of participants

SR No.	Questions		Yes	No	Chi square	P value
1.	Are you aware of periodontal diseases and its connection with systemic health?	Interns	7	85	**117.4**	**0.00001**
		PG	77	10		
2.	Do you think, systemic condition of patient affects periodontal health and treatmentplan?	Interns	6	86	**100.05**	**0.00001**
		PG	70	17		
3.	Are you aware that some periodontal therapies are invasive?	Interns	36	56	**70.03**	**0.00001**
		PG	85	2		
4.	Do you think that, cessation of antiplatelet medication is required for invasiveperiodontal surgeries?	Interns	32	60	1.48	0.22
		PG	38	49		
5.	Do you think poor oral hygiene affects overall health?	Interns	72	20	2.485	0.1
		PG	59	28		
6.	Do you think that oral hygiene maintenance can improve systemic health issues?	Interns	90	2	0.53	0.46
		PG	85	2		
7.	Can Delayed referral for periodontal treatments result in irreversible systemic damage?	Interns	70	22	0.003	0.9
		PG	62	25		

About 83.2% participants knew that periodontitis is associated with an increased risk of chronic gastritis and peptic ulcer. Intergroup comparison showed higher percentage of knowledge in post graduates about the increased risk of gastric ulcer (p=0.00001). From 179 participants, 35.2 % were not knowing that periodontal pathogens have a potential influence on respiratory diseases. The intergroup comparison showed a greater number of post graduates knew about the influence of periodontal pathogens on respiratory diseases (p=0.00001). The majority of the participants agreed (87.7%) that periodontal diseases are more severe and frequent among chronic obstructive pulmonary disease patients (COPD). Intergroup comparison was found not significant. Gingival enlargement can be caused by calcium channel blockers was not known to 36.4% of participants. About 35.2% of respondents were not having knowledge about the bidirectional relationship of periodontitis and diabetes mellitus. Intergroup comparison showed a greater number of post graduates knew about calcium channel blockers induced gingival enlargement and the bidirectional relationship of periodontitis and diabetes (p=0.00001). From all participants, only 3.92% were not knowing that antiepileptic drugs cause gingival enlargement and only 7.9% of respondents knew that there are anticonvulsants increase the chance of developing periodontal disease. About 75.9% of respondents agreed that periodontal infection increases the risk of post covid complications. Overall, Post graduates had better knowledge than interns. [Table no. II]

Table no. II: Statistical difference in knowledge of participants

Sr.No.	Questions		Strongly agree	Agree	Disagree	Strongly disagree	Chi square statistic	p value
8.	Do you know, periodontitis is associated with an increased risk ofchronic gastritis and peptic ulcer?	Interns	10	70	2	10	1.8	0.17
		PG	13	56	10	8		
9.	Can periodontal pathogens have apotential influence on respiratory diseases?	Interns	13	23	53	3	**54.7**	**0.00001**
		PG	43	37	2	5		
10.	Do you know, periodontal diseases are more severe and frequent amongCOPD patients?	Interns	46	36	7	3	0.35	0.55
		PG	33	42	8	4		
11.	Do you know gingival enlargementcan be caused by calcium channel blockers?	Interns	7	25	51	9	**68.38**	**0.00001**
		PG	36	46	2	3		
12.	Do you think that periodontitis anddiabetes mellitus have bidirectionalrelationship?	Interns	8	30	5	51	**45.83**	**0.00001**
		PG	41	37	3	6		
13.	Do you think that anticonvulsant drugs cause gingival enlargement?	Interns	8	79	4	1	1.17	0.27
		PG	43	42	1	1		
14.	Do you know, antiepileptic drugsincrease chance of developing periodontal diseases?	Interns	25	60	7	0	0.01	0.91
		PG	45	35	2	5		
15	Do you agree that periodontal infection increases the risk of postcovid complications?	Interns	51	18	9	14	0.09	0.75
		PG	25	42	6	14		

Discussion:

The increased severity of systemic illnesses and its association with oral health requires combined efforts of dentist and medical practitioners including medical students, interns and post graduates. [9][10] Scientific evidence has demonstrated that periodontal diseases are complex diseases of multifactorial interplay between microorganisms and host immune and inflammatory responses. [11] A variety of systemic diseases and conditions can affect the course of periodontitis or have a negative impact on the entire periodontium.[12] It is essential to understand the concept regarding the association of periodontal health and systemic diseases such as cardiovascular disease, type 2 diabetes mellitus, respiratory diseases, gastrointestinal diseases, etc.

Results from this study demonstrate that respondent post graduates had a good amount of awareness regarding the connection of periodontal disease and systemic health. Post graduates were more aware about the connection than interns. The possible reason for this difference in awareness could be more academic and clinical experience as well as clinical practice. The results of our study are contradicting the study done by Zekeriya et al where 90.8%. of respondents showed good awareness regarding the oral and systemic correlation.[16] But when compared to Arpita Gur et al it showed similar results as only 18(11%) physicians had good awareness regarding the connection of periodontal health and systemic disease. [13] In the present study, more than half of the participants agreed that the systemic condition of the patient affects periodontal health and treatment plan. These results are similar to Al Sharrad et al (2019), where majority of the physicians (family medicine specialists 97%) acknowledged the relationship between periodontal and systemic diseases.[17] A more percentages of respondents (67%) were unaware about invasive periodontal therapy. As they are unaware about the invasiveness of periodontal therapy; it can be the possible cause of indecisiveness of physicians about cessation of antiplatelet medication for invasive periodontal therapy. Our results are contradictory to A.H. Shah et al (2015), where good awareness in medical practitioners (77.9%) was observed regarding cessation of antiplatelet medication before periodontal surgical procedures.[18] Greater number of respondents (73.1%) agreed that oral hygiene maintenance can improve systemic health issues and they also agreed that poor oral hygiene has adverse effects on systemic health. In the present study majority of participants were aware that delayed referral for periodontal treatments result in irreversible systemic damage. This finding is contradicting to Sharma et al (2021) where only half of the respondents (59.2%) agreed that delayed referral of dental treatments can result in life threatening conditions. [9]

In the present study majority of the participants had good knowledge about the relationship of peptic ulcer and periodontal health. Contradicting results were observed in Mehrotra et al (2015) where only 6.4% of respondents agreed that periodontal disease is risk factor for peptic ulcer.[19] The majority of respondents knew about the potential influence of periodontal pathogens on respiratory diseases. More number of consulting post graduates responded well about influence of periodontal pathogens on respiratory

disease than interns. In our study only few respondents were lacking the knowledge about frequency and severity of COPD in patients with periodontal diseases. In this study, a maximum number of participants knew about antihypertensive drugs like calcium channel blockers induce gingival enlargement. Ugale et al (2022) showed contradicting results where only 34.73% knew that gingival overgrowth can be caused by antihypertensive drugs. In our study respondents were having good knowledge (64.8%) about the bidirectional relationship of periodontitis and diabetes mellitus. The intergroup comparison showed post graduates having clear knowledge about bidirectional relationship of periodontitis and diabetes mellitus. The possible reason may be more clinical orientation and practical exposure of post graduates. These results are similar to Al Sharrad et al, 2019 where 88% of physicians knew about the bidirectional relationship of periodontitis and diabetes mellitus.[17] In this study maximum number of respondents agreed that antiepileptic drugs increase the chances of developing periodontal disease. These results were similar to Ugale et al (2022) where 88.62% of general physicians agreed that antiepileptic drugs could induce gingival overgrowth. A good amount of knowledge was observed in respondentsregarding complications of covid and periodontal health.

The study was restricted to single geographic area so, the result may not be applicable to other areas due to variation in awareness among medical interns and post graduates. In future, the studies can be conducted with large sample size from other geographical locations, medicalinstitutes and can include general practitioners and different faculties and domains of medicine.

Conclusion:

The present study clearly shows a need for awareness and knowledge in medical interns and post graduates regarding oral hygiene, complications of systemic diseases, and periodontal diseases. The interdisciplinary approach can help in the promotion of oral health and hygiene as well as maintaining stable systemic conditions. In general, the expected outcome of periodontal therapy is improved oral and systemic health. A comprehensive periodontal health program handled by medical students and practitioners will have a great impact on maintaining health in general. The lacunae in knowledge and awareness of interns and post graduates regarding this perio-systemic link can be abrogated with the help of interactive seminars, workshops, and education programs conducted on a common platform. This would further enrich and update the knowledge and provide valuable insights in strengthening the associationbetween specialities.

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Conflict of interest:

The authors declare no conflict of interest.

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