

Factors affecting awareness and practice of primary health care professionals towards interaction of various medications used in systemic conditions, and its effect on periodontal health

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ABSTRACT

Background: Interaction of various drugs and its effects on gingival and periodontal health is the area of concern; hence the aim of the present study was to explore factors affecting the awareness and practice of primary health care professionals towards the interaction of various medications used for systemic diseases on periodontal health. **Materials and Methods:** It was a cross-sectional, descriptive, questionnaire study conducted among 203 primary health care professionals which include 94 medical officers and 109 nurses working in primary health centers in rural areas of Udaipur district. The study was conducted in December 2019. Sampling techniques was stratified random sampling technique. A close-ended questionnaire was prepared to conduct an interview schedule. **Results:** The majority of health professionals had poor awareness (157 [77.33%]) and poor practice (168 [82.75%]) regarding the interaction of various medications used in systemic conditions and periodontal health. Factors that significantly affect awareness and practice of study participants were age (0.01*), degree (0.05*), and number of patients with oral problems seen in a week (0.05*), gender (0.05*), designation (0.05*). **Conclusion:** From above it was concluded that awareness and practice of primary care health professionals were poor. The factors that affect significantly affect awareness and knowledge of study participants was age, degree and number of patients with oral problems seen in a week, gender, designation, no. of patient attended in a day.

Keywords: Awareness, periodontal, practice, primary health, systemic

Introduction

Infection in the periodontium is initiated by specific insidious oral pathogens that colonize bacterial plaque biofilms on

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the tooth surface, and the host's immunologic response to inflammation plays a critical role in the pathologic process. Periodontal diseases are characterized as an infectious process that needs the presence of microorganisms, response of the host, local, environmental and genetic factors. Association of periodontal disease with systemic diseases like vascular system, reproductive system, endocrine system, the renal

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system renders periodontal infection a complex multiphasic disease.^[1]

Periodontal diseases are considered complex infectious diseases ensuing from the interaction of bacterial infection and host response to microorganism challenge, and the disease is modified by environmental, non-inheritable risk factors and genetic vulnerability.^[2]

Recent proof suggests that periodontal infection might considerably enhance the danger for certain systemic diseases and are capable of altering the natural course of systemic diseases; literature also suggests that conditions like coronary artery disease (CHD) and CHD-related events like angina and infarction, stroke, preterm labor, low-birth-weight delivery, type II diabetes, and chronic obstructive respiratory diseases can be influenced by periodontal infections.^[3,4]

It is documented in the literature that various drugs namely phenytoin, ciclosporin, and calcium channel blockers, in particular, are associated with drug-induced gingival overgrowth (DIGO), initial symptom or first signs of change occurs in about 1–3 months after starting these drugs. If the doses are below the threshold plasma levels of the drugs then DIGO is unlikely to occur.^[5-7] Invariably a number of drugs used for the treatment of malignant diseases may also affect the periodontal tissues. Nowadays, newer therapies in the form of cytotoxic chemotherapy are extensively used for the management of a very wide variety of malignancies.^[8,9]

Studies conducted in the past stressed exclusively to explore the association between demographic variables and gingival enlargement.^[10,11] It was also reported that several drugs can cause oral lichenoid reactions which express in the form of desquamative gingivitis.^[12]

Agarwal *et al.*^[13] reported that periodontal disease is more widespread in rural population, which may be attributed to feeble structured oral healthcare delivery system in villages and unbalanced and uneven dentist to population ratio which is 1:2,00,000 in rural India. Primary health care is the first level of contact of individuals, the family, and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process (HCP).^[14] And primary health professionals are the forefront workforce in rural areas, and they are at a strategic position to diagnose the risk factors behind the worse periodontal conditions and also the effect of medications given for medical illness. Due to lack of awareness, and practice among primary health care professional, medications prescribed by them may cause gingival enlargement leads to worsening periodontal health and various factors affect the awareness and practice of health care professionals, therefore, these factors if manipulated leads to prevention of Periodontal diseases which is the main principle of primary health care. Therefore, it is very important to determine the factors which influence their

awareness and practice of these professionals toward periodontal health and also the effects of certain medication on periodontal health. Thus, the aim of the present study is to explore factors affecting the awareness and practice of primary health care professionals toward the interaction of various medications used in systemic conditions, and its effect on periodontal health.

Materials and Method

It was a cross-sectional, descriptive, questionnaire study conducted among 203 primary health care professionals which include 94 medical officers and 109 nurses working in primary health centers in rural areas of Udaipur district. The study was conducted in December 2019.

Sampling techniques were stratified random sampling technique. According to data from the site of NRHM Rajasthan^[15] there are 73 PHCs in 11 blocks of Udaipur. Out of each block, 5 PHCs were randomly selected. A total of 55 PHCs were selected and the interview schedule was conducted by four investigators. Before the study, institutional ethical clearance was availed before the start of the study, permission and informed consent was availed from medical officers. Those health professionals present on the day of the survey and given their consent were included in the survey.

Before the start of the study, a pilot study was conducted among 5% of study participants to check the feasibility of the study and pre-testing the questionnaire. The reliability of the questionnaire was determined by using test-retest and the values of measured Kappa (k) = 0.70 weighted Kappa (k_w) = 0.76. Internal consistency of questionnaires was measured by applying Cronbach's-Alpha (α) and the value of α = 0.81 was measured. Those questions with less validity and reliability were removed.

A close-ended questionnaire was prepared to determine the awareness and practice of primary health care professionals towards the interaction of various medications used. It consists of demographic variables which include age group, gender, designation, socioeconomic status, marital status, and years of experience. OPD details which include no. of patient seen in a month, no. of patients with oral diseases seen in a month. 10 questions regarding the awareness and practice of health care professionals toward the interaction of various medications with periodontal health were asked. The knowledge score was determined by assigning 1 mark for each correct answer and 0 for an incorrect answer. The practice of study participants was measured on a Likert scale with options vary from 4- completely agree, 3- partly agree, 2- partly disagree, 1- completely disagree. Higher the score better the practice.

Data will be analyzed using SPSS- 20 (Statistical Package for the Social Sciences). Keeping in view the objectives as well as the design of the study, descriptive, inferential statistics were used for the analysis of data. Demographic details, awareness and practice scores were analyzed using descriptive analysis. Awareness and

practice of primary health care professionals and demographic factors were determined by applying Pearson's correlation. The level of significance was set at $P \leq 0.05$.

Results

Table 1 shows that the majority of study participants were males (122 [60.09%]) and belonged to the age group of 36–45 years (73 [35.96%]). Lower middle socioeconomic class (82 [40.39]) was in majority among all study participants. Nurses 115 (57.66%) were more than the medical officer. A medical officer with an MBBS degree (51 [57.95%]) was more than specialists. Most of the study participants were married [118 [58.12%]].

About 82 (40.39%) health professionals know that there is an effect of systemic diseases on periodontal health. And among these diabetes mellitus is the disease reported by 26 (40.62%) having an effect on periodontal diseases. The majority of health professionals (120 [49.28]) don't know the interaction of systemic medication and periodontal health. Among those who had the knowledge of Interaction, reported that Ca channel blockers were the commonest drug to interact with periodontal health. With regards to practice among study participants majority of them does not perform an inspection of the oral cavity in a patient taking medication have an effect on periodontal ligament (119 [58.63%]) neither they take complete history (69 [44%]) and they also prescribe medication without keeping in mind the interaction of systemic medication and periodontal health (158 [77.85%]). Most (144 [70.93%]) of them refer case to dentists with interaction. 17 (8.3) of the study participants update knowledge regarding the interaction [Table 2].

Table 3 shows that the majority of Health professionals had poor awareness (157 [77.33%]) and poor practice (168 [82.75%]) regarding the interaction of various medications used in systemic conditions and its effect on periodontal health.

Table 4 shows that factors that significantly affect awareness of study participants were age (0.01*), degree (0.05*) and number of patients with oral problems seen in a week (0.05*). And factors affecting practice was gender (0.05*), designation (0.05*), no. of patient attended in a day (0.05*), number of patients with oral problems seen in a week (0.05*).

Discussion

The present is conducted to determine factors that affect the awareness and practice of the primary health care professionals regarding the interaction of systemic medication on periodontal health as no study in past conducted to explore the same and it is very important as in rural areas the prevalence of periodontal diseases is very high as dentist population is as low as 1:1,200,000.^[13] So Primary health care professionals are the front line workers to diagnose the interaction and do the needful.

Table 1: Demographic details of study participants (n=203)

| Demographic variables | | n (%) |
|-----------------------|-----------------|-------------|
| Age | 26-35 years | 59 (29.06) |
| | 36-45 years | 73 (35.96) |
| | 46-55 years | 39 (19.21) |
| | Above 55 years | 32 (15.77) |
| | Total | 203 (100) |
| Gender | Male | 122 (60.09) |
| | Female | 81 (39.91) |
| | Total | 203 (100) |
| Socioeconomic status | Upper class | 19 (9.35) |
| | Upper middle | 78 (38.42) |
| | Lower middle | 82 (40.39) |
| | Upper lower | 21 (10.34) |
| | Lower | 03 (1.5) |
| | Total | 203 (100) |
| Designation | Medical officer | 88 (43.34) |
| | Nurse | 115 (57.66) |
| | Total | 203 (100) |
| Degree | MBBS | 51 (57.95) |
| | Specialist | 37 (42.05) |
| | Total | 88 (100) |
| Marital status | Married | 118 (58.12) |
| | Non-married | 41 (20.19) |
| | Divorcee | 12 (5.91) |
| | Widow/Widower | 32 (21.69) |
| | Total | 203 (100) |

In the present study, the majority of health professionals were males with age from 36 to 45 years. The majority of them were having MBBS degree. In a study by Obulareddy *et al.*^[4] and Umezudike KA^[6] on health professionals reported that male health professionals were more than females with the age group of 26–35 years.

In the present study, the majority of study participants know that systemic diseases mainly diabetes mellitus affect periodontal health and the majority of them don't know about the interaction of systemic medication and periodontal health. Calcium channel blockers are the drug that was reported by the majority of primary health professionals having an effect on periodontal health. While in the study by Obulareddy *et al.*^[4] all 100% of health professionals had awareness about the relationship between systemic diseases and periodontal health. While in a study by Gur *et al.*^[17] Coronary heart disease is the main disease that effects periodontal health. While in a study by Umezudike *et al.*^[6] The majority of study participants reported chronic kidney disease and diabetes mellitus associated with periodontal health. In a study by Al Sharrad *et al.*^[18] It was reported that awareness of physicians and dentists regarding the relationship between periodontal diseases and systemic diseases (DM, CVD, APO) is generally low.

In the present study, awareness and practice among primary health professionals were poor regarding the interaction between systemic medication and periodontal health. In the past, no study conducted among primary health professionals to explore the same.

Table 2: Awareness and practice regarding the interaction of various medications used in systemic conditions, and its effect on periodontal health

| Awareness of study participants | | n (%) | |
|---|-----------------------------|-------------|------------|
| Is there any effect of systemic diseases on periodontal health? | Yes | 82 (40.39) | |
| | No | 59 (29.06) | |
| | Don't know | 62 (30.55) | |
| | Total | 203 (100) | |
| Name the systemic diseases which have the effect of periodontal diseases | Coronary heart disease | 19 (29.68) | |
| | Cerebral infarction | 09 (14.06) | |
| | Diabetes mellitus | 26 (40.62) | |
| | Hospital acquired pneumonia | 02 (3.12) | |
| | Preterm labor | 08 (12.52) | |
| | Total | 64 (100) | |
| Is there any interaction of medication given for systemic diseases and periodontal health? | Yes | 65 (32.01) | |
| | No | 38 (18.71) | |
| | Don't know | 120 (49.28) | |
| | Total | 203 (100) | |
| What are the different medication and up to what extent each affect the periodontal health? | Anticonvulsants | Frequently | 10 (55.55) |
| | | Moderately | 06 (33.33) |
| | | Rarely | 02 (11.12) |
| | | Total | 18 (27.69) |
| | Immunosuppressants | Frequently | 03 (21.42) |
| | | Moderately | 05 (35.71) |
| | | Rarely | 06 (42.87) |
| | | Total | 14 (21.53) |
| | Calcium channel blockers | Frequently | 23 (79.31) |
| | | Moderately | 05 (17.24) |
| | | Rarely | 01 (3.45) |
| | | Total | 29 (44.61) |
| | Anti inflammatory | Frequently | 00 (0.0) |
| | | Moderately | 01 (25) |
| | | Rarely | 03 (75) |
| | | Total | 04 (6.17) |
| Total | Total | 65 (100) | |
| Practice of study participants | | | |
| I perform an inspection of oral cavity in a patient taking medication have an effect on periodontal ligament. | Completely agree | 12 (5.91) | |
| | Partly agree | 23 (11.33) | |
| | Partly disagree | 49 (24.13) | |
| | Completely disagree | 119 (58.63) | |
| | Total | 203 (100) | |
| I take complete history in a patient before prescribing the medication having an effect on periodontal health | Completely agree | 29 (14.28) | |
| | Partly agree | 47 (23.15) | |
| | Partly disagree | 58 (28.57) | |
| | Completely disagree | 69 (44) | |
| | Total | 203 (100) | |
| I prescribe the medication keeping in mind the interaction of systemic medication and periodontal health in patient with history of interaction | Completely agree | 07 (3.44) | |
| | Partly agree | 13 (6.40) | |
| | Partly disagree | 25 (12.31) | |
| | Completely disagree | 158 (77.85) | |
| | Total | 203 (100) | |
| I myself handle the case with the interaction of systemic medication and periodontal health. | Completely agree | 02 (0.98) | |
| | Partly agree | 12 (5.91) | |
| | Partly disagree | 35 (17.24) | |
| | Completely disagree | 154 (75.87) | |
| | Total | 203 (100) | |

Contd...

Table 2: Contd...

| Awareness of study participants | | n (%) |
|---|---------------------|-------------|
| I refer the case to dentists with the interaction of systemic medication and periodontal health. | Completely agree | 144 (70.93) |
| | Partly agree | 39 (19.21) |
| | Partly disagree | 19 (9.35) |
| | Completely disagree | 01 (0.55) |
| | Total | 203 (100) |
| I update my knowledge time to time regarding the interaction of systemic medication and periodontal health. | Completely agree | 17 (8.3) |
| | Partly agree | 56 (27.58) |
| | Partly disagree | 79 (38.42) |
| | Completely disagree | 51 (25.70) |
| | Total | 203 (100) |

Table 3: Awareness on periodontal and practice score of study participants regarding the interaction of various medications used in systemic conditions, and its effect health

| | | n (%) |
|------------------|--------------------------|-------------|
| Awareness scores | Poor awareness (0-1) | 157 (77.33) |
| | Average awareness (2-3) | 39 (19.21) |
| | Good awareness (3-4) | 07 (3.46) |
| | Total | 203 (100) |
| Practice scores | Poor practice (6-11) | 168 (82.75) |
| | Average practice (12-17) | 32 (15.76) |
| | Good Practice (18-24) | 03 (1.49) |
| | Total | 203 (100) |

Table 4: Factors affecting the awareness and practice of health professionals regarding the interaction of various medications used in systemic conditions, and its effect on periodontal health

| Demographic variables | AWARENESS | | PRACTICE | |
|-----------------------|----------------|-------|----------------|-------|
| | X ² | P | X ² | P |
| Age | 1.009 | 0.01* | 3.586 | 0.71 |
| Gender | 2.742 | 1.22 | 0.871 | 0.05* |
| Socioeconomic status | 1.544 | 2.33 | 1.313 | 1.35 |
| Designation | 0.947 | 1.20 | 0.508 | 0.05* |
| Degree | 0.568 | 0.05* | 1.346 | 1.38 |
| Marital status | 1.384 | 3.49 | 1.231 | 2.87 |

P≤0.05*

In the present study factors that significantly affect awareness of study participants were age, degree, and number of patients with oral problems seen in a week. And factors affecting practice were gender, designation, no. of patients attended in a day, number of patients with oral problems seen in a week. In various studies,^[10,19,20] age is now recognized as an important risk factor for both cyclosporine- and phenytoin-induced gingival overgrowth. In a study by Hassell *et al.*^[11] gender was not a risk factor for phenytoin-induced gingival overgrowth.

Conclusion

From above it was concluded that awareness and practice of primary care health professionals were poor. The factors that

affect significantly affect awareness and knowledge of study participants was age, degree and number of patients with oral problems seen in a week, gender, designation, no. of patient attended in a day.

To summarize present study was first of its kind to determine factors affecting awareness and practice of primary health care professionals toward the interaction of various medications used in systemic conditions, and its effect on periodontal health, but in future more studies should be conducted to cover various other factors which have impact on awareness and practice of health professionals which can be improved with the help of these studies and organizing CDE programs regarding pathogenesis, etiology of the diseases and treatment involved.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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