

ASSESSMENT OF THE AWARENESS, KNOWLEDGE AND ATTITUDE TOWARDS PERIODONTAL DISEASE AND ITS MANAGEMENT, AMONG THE PATIENTS VISITING A UNIVERSITY HOSPITAL, BANGALORE CITY

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ABSTRACT

Awareness of one's dental status is expected to vary across populations depending on education level and utilization of dental care. The education level and awareness of the general population would be much lower than among health professionals.^[1] Because periodontal diseases often progress slowly, without clear signs and symptoms, especially in their early stages, awareness of and the proper attitude toward these diseases are crucial for health promotion and disease prevention.^[2] Many people neither recognize the symptoms of periodontal disease nor do they associate existing symptoms with the disease. Thus, well informed health care professionals can be an important source to educate their patients regarding these knowledge deficits and can act as role models in the society. Hence, assessing and improving the existing knowledge about periodontal disease among the general population by the dentists will be beneficial to the society.^[3]

KEYWORDS: knowledge, attitude, management, periodontal disease.^[1,2,3]

INTRODUCTION

Periodontal diseases are the most widespread diseases. A high prevalence of periodontitis is noted among adults regardless of sex, race, education, residence or socioeconomic status. Periodontitis is also thought to influence systemic health.

Health care professionals can act as good source of knowledge providers to the general public. Health education plays an important role in prevention of periodontal disease. Hence, health care professionals including dentists need to pay attention to periodontal disease to improve general health of the patients.^[3]

Although the patients are aware of the periodontal problems, the urge or the need for treatment is often underestimated. Thus, the vision on oral health is that dentists need to improve and impart oral health counselling, and serve as a guide in developing positive dental attitudes.^[4]

The level of knowledge of and attitudes towards dental health might be a potential barrier for effective oral preventive efforts. Periodontal awareness alone seems not to result in appropriate periodontal healthy habits. Therefore, behavioural changes require understanding, retention and utilization of periodontal knowledge. Oral

health education works better when it is customized to the level of knowledge and concerns of the recipients.^[5]

Due to the misconceptions about routine dental treatments and unawareness of the relationship between oral hygiene and systemic diseases or disorders, most diseases remain undiagnosed or untreated.^[6] Inadequate knowledge and lack of awareness are among the reasons for non-compliance to oral hygiene directives.^[7] Thus, poor knowledge and awareness about the periodontal treatment can increase the prevalence of the periodontitis.^[8]

Hence this study was undertaken with a main objective to assess the existing knowledge about periodontal disease, the awareness about oral hygiene, aetiology of periodontal disease and awareness of treatment techniques for the same among the patients visiting the institute.^[3,9] This study also aims to understand the knowledge of the common people with regards to dental implants and their uses and to understand the level of knowledge and information regarding different periodontal treatment modalities.^[10,6]

MATERIALS AND METHODS USED

Sources of data: A questionnaire study was done for the assessment of awareness, knowledge and attitude towards periodontal disease and its management, among

the patients. The study population included the outpatients visiting D.A.P.M.R.V Dental College, Bangalore.

Inclusion criteria

- 1) Patients who have not undergone a prior periodontal surgery.
- 2) Patients between the age group of 20 and 50 years.

Exclusion criteria

- 1) Patients with professional dental knowledge.
- 2) Patients who have undergone a dental implant therapy.
- 3) Patients not willing to participate in the study.

A validated questionnaire designed in English language was utilized for the study after consulting the content in the questionnaire with various validators. The study was also approved by the Institutional review board (IRB) committee. The survey was a multiple-choice questionnaire consisting of 13 questions (QUESTIONNAIRE) and divided into two sections.

- a) **To assess the basic knowledge and awareness about cause of gum /periodontal disease-** which consisted of five questions.
- b) **To assess the knowledge and attitude towards management of periodontal disease-** which consisted of eight questions.

A total of hundred patients were included in the study. Patients were divided into fifty males and fifty females. After taking the consent, and providing a brief explanation about the study and its purpose, questionnaire was distributed to these patients in a

printed questionnaire form. Questions were also explained in the local language for those patients who found it difficult to read and understand the questionnaire. Collected data were tabulated and analysed statistically. The study was conducted between November 2020 to February 2021.

RESULTS

The data were analysed by using **IBM SPSS** statistical package 20.0 version software. Chi-square test was used to analyse statistical significance difference in the response between the two genders.

A total of hundred patients participated in the study and all the participants completed the questionnaires. Based on the responses of participants to the knowledge and awareness questions, it could be concluded that most of the patients (>50%) are aware of what does gum disease means, and their possible destructive outcomes, if left untreated. But not all the patients (<50%) were aware of the multifactorial aetiology of periodontal disease (**CHARTS I**). Based on the responses of participants to the knowledge and attitude towards management of periodontal diseases, majority of the participants showed a positive response. 45% of the participants believed that scaling can cause the removal of tooth material. >50% of the patients were aware of the various treatment modalities available for gum diseases. Conversely, a high proportion of the participants were unaware that LASER is used for the treatment of gum/periodontal diseases and only <50% of the patients were aware about where the dental implants are placed inside the oral cavity (**CHARTS II**).

Charts-I

1.Gum disease means
100 responses

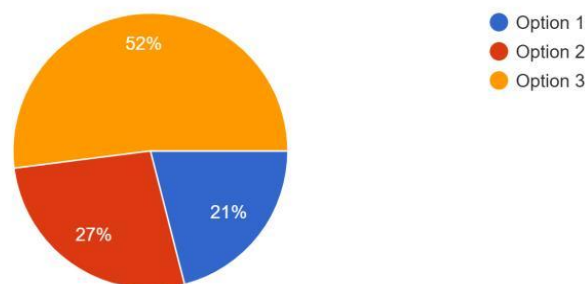


Fig. 1

2. Gum disease could be due to
100 responses

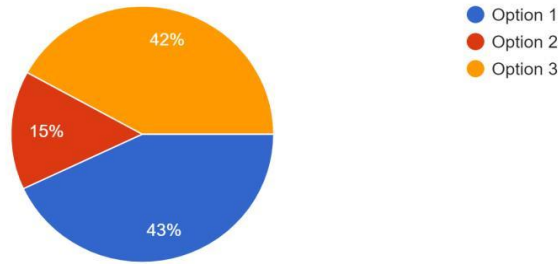


Fig. 2

3. Bad breath is caused by
100 responses

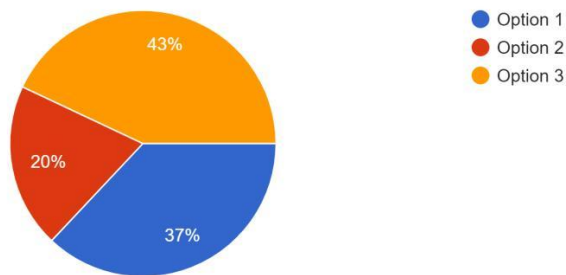


Fig. 3

4. Gum/Periodontal disease can cause
99 responses

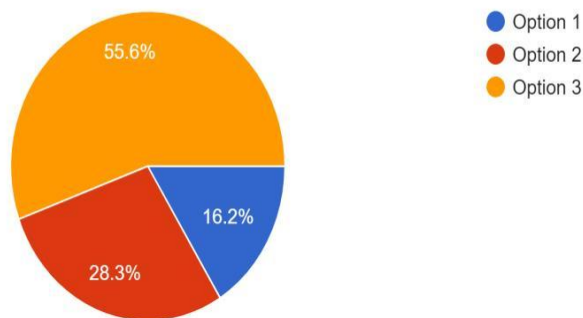


Fig. 4

5. Gum/Periodontal disease is not associated with
99 responses

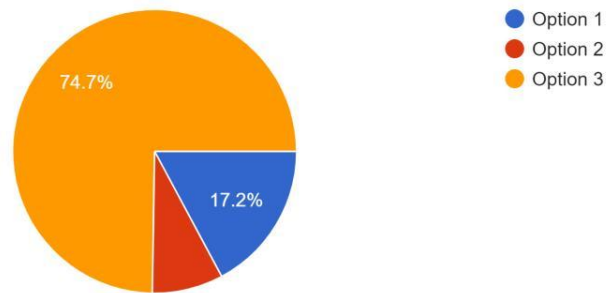


Fig. 5

Charts-II

6. Do you think scaling/cleaning of teeth can cause removal of tooth material?
100 responses

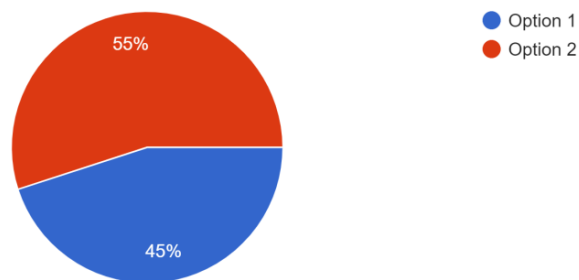


Fig. 6

7. If your gums are brown, do you think they can be treated?
100 responses

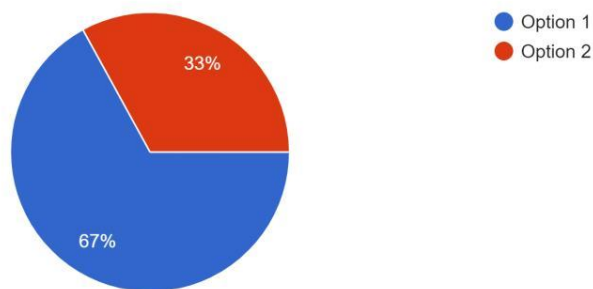


Fig. 7

10. Are you aware that LASER is used for the treatment of gum/periodontal disease?

100 responses

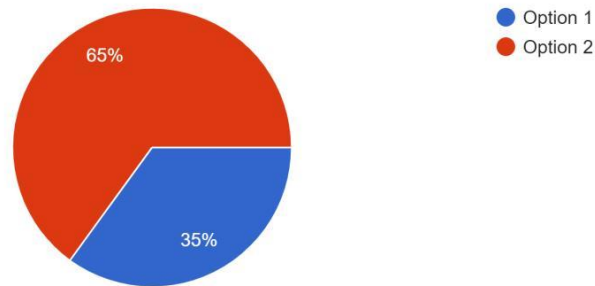


Fig. 8

11. Have you ever heard about dental implants?

99 responses

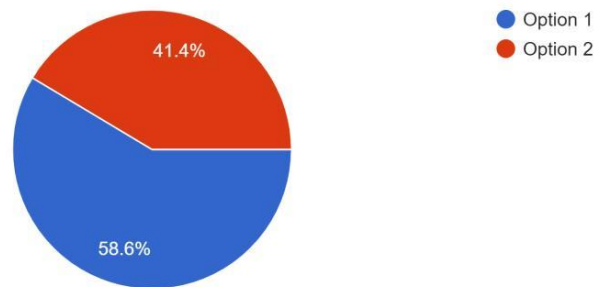


Fig. 9

12. Where do you think implants are placed in the jaw?

99 responses

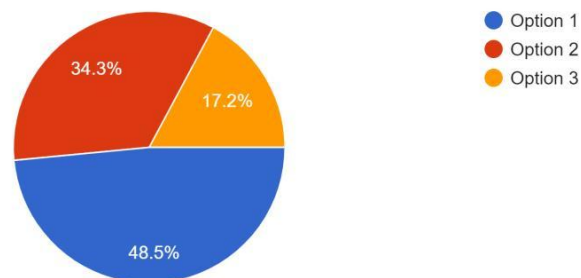


Fig. 10

The patients' knowledge and awareness of the periodontal disease based on gender, is illustrated in (Table. 1). Results indicate that, there were no statistically significant difference between male and female subjects with regard to their responses to the level of periodontal disease awareness questions ($p > 0.05$). The differences for responses between males and females were only statistically significant for the third question

(Bad breath is caused by?) ($p=0.054$), where in, males were more aware of the causes for bad breath than the females. Also, when overall comparison was made, based on the correct answer, male and female subjects did not show much statistically significant difference, with regard to their responses (Table. 2).

Table 1: Distribution Of Responses Of “Basic Knowledge And Awareness About Cause Of Gum /Periodontal Disease Questions” According To Sex.

Questions	Male (N)	Female (N)	Total (N)	P value
1. Gum disease means				
a) Disease of surrounding structures of tooth	7	14	21	0.101 NS
b) Bleeding gums	12	15	27	
c) All of the above*	31	21	52	
2. Gum disease could be due to				
a) Deposits on teeth	19	24	43	0.139 NS
b) Smoking/ lack of nutrition/genetics	11	4	15	
c) All of the above*	20	22	42	
3. Bad breath is caused by				
a) Not brushing teeth	14	23	37	0.054 S
b) Gum disease/ increased blood sugar levels	9	11	20	
c) All of the above*	27	16	43	
4. Gum/Periodontal disease can cause				
a) Loss of tooth	7	9	16	0.182 NS
b) Shaking tooth	11	18	29	
c) All of the above*	32	23	55	
5. Gum/Periodontal disease is not associated with				
a) Bleeding gums	12	5	17	0.156 NS
b) Shaking tooth	3	5	8	
c) Bleeding nose*	35	40	75	

*Correct answer.

Positive (Yes) response. S: Statistically significant at the 0.05 level. NS: Not significant.

Table 2: Distribution Of Responses Of “Basic Knowledge And Awareness About Cause Of Gum Periodontal Disease Questions” According To Sex. Overall Comparison Based On Correct Answer.

Questions	Male	Female	Total	P value
1. Gum disease means	31	21	52	0.320 NS
2. Gum disease could be due to	20	22	42	
3. Bad breath is caused by	27	16	43	
4. Gum/Periodontal disease can cause	32	23	55	
5. Gum/Periodontal disease is not associated with	35	40	75	

*Correct answer.

Positive (Yes) response. S: Statistically significant at the 0.05 level. NS: Not significant.

The patients' knowledge and attitude towards the management of periodontal disease based on gender, is illustrated in (Table. 3). Results indicate that, there were no statistically significant difference between male and female subjects with regard to their responses to these questions ($p > 0.05$). The differences for responses between males and females were only statistically significant for the twelfth question (**where implants are placed in the jaw?**) ($p=0.04$), where in, males were more aware of the correct answer, than the females. Also, when overall comparison was made, based on the correct answer and positive responses, male and female subjects did not show much statistically significant difference, with regard to their responses (Table. 4).

Table 3: Distribution Of Responses Of “Knowledge And Attitude Towards Management” According To Sex.

Questions	Male (N)	Female (N)	Total (N)	P value
6. Do you think scaling/cleaning of teeth can cause removal of tooth material?				
a) Yes #	22	23	45	0.841
b) No	28	27	55	NS
7. If your gums are brown, do you think they can be treated?				
a) Yes #	37	30	67	0.137
b) No	13	20	33	NS
8. Gum disease can recur after dental treatment if				
a) Oral health is not maintained*	39	36	75	0.562
b) Frequent cleaning is done	7	11	18	NS
c) It never recurs	4	3	7	
9. Surgical treatment for gum disease				
a) Should not be done	4	5	9	0.236
b) Is harmful to patient	5	1	6	NS
c) Should be done if necessary*	41	44	85	
10. Are you aware that LASER is used for the treatment of gum/periodontal disease?				
a) Yes #	21	14	35	0.142
b) No	29	36	65	NS
11. Have you ever heard about dental implants?				
a) Yes #	32	27	59	0.309
b) No	18	23	41	NS
12. Where do you think implants are placed in the jaw?				
a) In the jaw bone*	28	20	48	0.040
b) In the gums	11	23	34	S
c) In/on the neighbouring tooth	11	7	18	
13. Prevention of gum disease is				
a) Responsibility of dentist only	2	4	6	0.264
b) Responsibility of toothpaste manufacturing companies	2	0	2	NS
c) Sharing of responsibility between the dentist and patient*	46	46	92	

*Correct answer.

Positive (Yes) response. S: Statistically significant at the 0.05 level. NS: Not significant.

Table 4: Distribution of Responses of “Knowledge And Attitude Towards Management” According To Sex. Overall Comparison Based On Correct Answer And Positive Responses.

Questions	Male	Female	P value
6. Do you think scaling/cleaning of teeth can cause removal of tooth material? #	22	23	0.902 NS
7. If your gums are brown, do you think they can be treated? #	37	30	
8. Gum disease can recur after dental treatment if *	39	36	
9. Surgical treatment for gum disease*	41	44	
10. Are you aware that LASER is used for the treatment of gum/periodontal disease? #	21	14	
11. Have you ever heard about dental implants? #	32	27	
12. Where do you think implants are placed in the jaw? *	28	20	
13. Prevention of gum disease is *	46	46	

*Correct answer.

Positive (Yes) response. S: Statistically significant at the 0.05 level. NS: Not significant.

DISCUSSION

Motivation for preventive measures as well as the patients' perception and evaluation of their own periodontal conditions are considered essential for achieving and maintaining a high level of oral hygiene.^[11] Dental disease awareness, although not always resulting in the utilization of dental services, can still be used as a measure of subjectively perceived treatment needs. Moreover, improvement of people's

awareness and knowledge of their own dental disorders, is likely to increase the demand for dental services.

The importance of oral health, of which periodontal health is a key component, to general well-being has been well documented. Periodontitis may be a source of systemic inflammation that impacts overall health. Henceforth, oral health care professionals as well as non-oral health care professionals must be well informed

about periodontal disease and its bilateral associations with systemic conditions to ensure the spread of knowledge among the general population.^[12]

A significant etiological factor behind the periodontal disease is the plaque.^[13] The other risk factors associated with the disease are poor physical activity, poor diet and nutrition, excessive use of tobacco, over-consumption of alcohol, obesity, psychosocial stress, inadequate personal oral hygiene and overall health.^[14] The plaque can be prevented by maintaining proper oral hygiene and also visiting the dentist.^[15-17] If the periodontal disease is left untreated it can cause many severe complications of the oral cavity like the mobility of the teeth, bone resorption and ultimately tooth loss.^[18]

Periodontal disease progresses unnoticed, and most people probably recognise it only once it reaches an advanced state. The concept of periodontal disease is vague, since subjects tend not to understand the connection between gum bleeding and gum disease. The overall awareness of the patients about the periodontal conditions in the present study indicates that majority of the participants are having a good knowledge towards the periodontal disease, but still, there are certain percentage of population, who are poor at understanding the nature and aetiology of these conditions. Therefore, knowledge and awareness of such periodontal disease is important to control and maintain periodontal health.

Nutritional deficiencies not only have an impact on the quality of life of the public, but also affects the health of the new born, including birth weight.^[19] There are many researches that support the association between adverse pregnancy outcomes and inadequate maternal nutritional status. In oral health, the defects of the dental hard tissues, oral mucosa and periodontium could be due to malnutrition or undernourishment of certain food components.^[19,20] From our study, it was observed that only minority (42%) of the patients, were aware that nutritional deficiency could be a possible aetiological factor for periodontitis (Fig. 2). Hence, more awareness needs to be spread among the general population about the influence of nutritional deficiency on causing periodontal diseases.

The accumulated scientific evidence and mechanisms of biological plausibility indicated a strong association between diabetes mellitus and periodontal diseases. It has been suggested that periodontitis should be listed with other typical complications of diabetes along with retinopathy, nephropathy, and neuropathy, delayed healing of wounds and vascular conditions. Although the connection between diabetes mellitus and periodontal diseases has been well-established, the awareness of periodontal outcomes of diabetes among the current study population was found low in comparison with awareness of other systemic complications.^[21]

Tobacco, both in smoked and smokeless form is considered as a global epidemic, which is one of the most common causes of deaths all over the world.^[22] The oral and dental problems include staining or discoloration of teeth, oral mucosal lesions such as leukoplakia, oral submucous fibrosis and smoker's palate, acute necrotizing ulcerative gingivitis, delayed and impaired wound healing, periodontal diseases, bone loss, mobility of teeth, failure of dental implants to life threatening diseases such as oral cancer.^[23] Increase in probing pocket depth may also results due to alveolar bone loss.^[24]

Various studies have been conducted all over the world about knowledge and awareness of ill-effects of smoking on general and oral health. However, not many studies have been conducted in which awareness regarding harmful effects of smoking on periodontal health has been estimated. Few studies which have been conducted in the past found that patients are less aware about the adverse effects of smoking on periodontal health.^[23,25-28] In this study, <50% patients (Fig. 2) had awareness that smoking is a causative factor for gum disease, which indicates that more awareness needs to be created among the patients about this.

Oral malodour or halitosis refers to unpleasant breath. Physiological and pathological causes associated with halitosis include smoking, certain medications, alcohol, intake of certain foods, periodontal disease, respiratory tract disorders, and gastrointestinal disorders.^[29] Pathologic halitosis can be of intra-oral or extra-oral origins, and it has been demonstrated that the intra-oral causes such as periodontal diseases, tongue coating, and tooth decay are involved in more than 75% of the cases.^[30] Therefore, due to its high prevalence and a predominant intra-oral aetiology, dentists should play a major role in the identification, awareness and management of this condition.^[31,32]

In this study, responses concerning knowledge about the treatments available for treatable periodontal problems like brown gums, replacement of missing teeth with dental implants, and the use of laser in periodontal therapy were average, suggesting that there is still a need for awareness of these aspects. A similar finding was observed in **Pralhad** and **Thomas** study among interns. Half of those interviewed did not know what dental implants are. With implantology coming up to be recognized as a subspecialty, it is necessary that information about implants be disseminated among the public and also among the professionals. Misconceptions about routine dental treatments are common among the general public. When asked about scaling, the most common periodontal procedure performed, 45% of the subjects believed that scaling causes removal of tooth material (Fig. 6). Similar results were seen and it was surprising to know that 52.6% of the medical professionals in the **Dhulipalla** et al study believed that scaling causes loss of enamel.^[6]

In the current study, only 58.6% of patients had heard about dental implants, and only 48.5% of patients, were aware of where dental implant is placed within the oral cavity (Fig. 9 and 10 respectively). About 67% of patients (Fig. 7) were aware about the treatment for brown gums, while only 35% of the patients were aware about the use of lasers in the treatment of gum diseases (Fig. 8). From these observations, it could be concluded that a major percentage of the patients were aware about the periodontal diseases and their management, but more awareness and information, still needs to be passed on among the general public by the dentists.

Limitations of the current study include the small sample size, that may not represent the whole of the population of Bangalore; however, bigger samples and more comprehensive studies are being planned in the future.

CONCLUSIONS

Most of the aforementioned dental problems can be prevented by providing awareness starting from community level on early signs of periodontitis, the need for professional diagnosis, effect of its treatment outcome, the importance of completing the treatment of periodontitis before proceeding with replacement, role of dental implants as a part of the rehabilitation of masticatory dysfunction, and interdependence of periodontal health and general health.⁶

Within the limitations of the present study, it can be concluded that there are limited knowledge and awareness among the patients, about the aetiology of periodontal diseases and about dental implants and role of dentists as a primary source of information has not been attained. The attitude of patients toward dental implants and other periodontal treatments are appreciable, but there is still a need of strengthening education in young dentists to reinforce knowledge and awareness in public sectors regarding these limitations.¹⁰

QUESTIONNAIRE^{3,9,10}

I) BASIC KNOWLEDGE AND AWARENESS ABOUT CAUSE OF GUM /PERIODONTAL DISEASE

1. Gum disease means
 - a) Disease of surrounding structures of tooth
 - b) Bleeding gums
 - c) All of the above
2. Gum disease could be due to
 - a) Deposits on teeth
 - b) Smoking/ lack of nutrition/genetics
 - c) All of the above
3. Bad breath is caused by
 - a) Not brushing teeth
 - b) Gum disease/ increased blood sugar levels
 - c) All of the above

4. Gum/Periodontal disease can cause
 - a) Loss of tooth
 - b) Shaking tooth
 - c) All of the above
5. Gum/Periodontal disease is not associated with
 - a) Bleeding gums
 - b) Shaking tooth
 - c) Bleeding nose

II) KNOWLEDGE AND ATTITUDE TOWARDS MANAGEMENT

6. Do you think scaling/cleaning of teeth can cause removal of tooth material?
 - a) Yes
 - b) No
7. If your gums are brown, do you think they can be treated?
 - a) Yes
 - b) No
8. Gum disease can recur after dental treatment if
 - a) Oral health is not maintained
 - b) Frequent cleaning is done
 - c) It never recurs
9. Surgical treatment for gum disease
 - a) Should not be done
 - b) Is harmful to patient
 - c) Should be done if necessary
10. Are you aware that LASER is used for the treatment of gum/periodontal disease?
 - a) Yes
 - b) No
11. Have you ever heard about dental implants?
 - a) Yes
 - b) No
12. Where do you think implants are placed in the jaw?
 - a) In the jaw bone
 - b) In the gums
 - c) In/on the neighbouring tooth
13. Prevention of gum disease is
 - a) Responsibility of dentist only
 - b) Responsibility of toothpaste manufacturing companies
 - c) Sharing of responsibility between the dentist and patient

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