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Knowledge, Attitude and Practice of Diet Counselling Among Dental Professionals in Namakkal, Tamil Nadu, India: A Cross-Sectional Study

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ABSTRACT

Background: A synergistic relationship exists between oral health and diet. The practice of diet counselling influences the preventive dental care delivered to patients. This study is aimed to assess the knowledge, attitude and practice of diet counselling among dental professionals in Namakkal district, Tamil Nadu, South India.

Materials and methods: A cross sectional study was conducted in August 2017 among the dental professionals in Namakkal, Tamil Nadu using a structured questionnaire with 17 close-ended questions.

Results: Most of the participants (93%) agreed that there is a relation between nutrition and dental caries. Around 75% counsel their patients carrying high risk for dental caries. But, only 21% agreed that they always give diet counselling in their routine practice. There was a negative correlation between knowledge and attitude, positive correlation with practice which is not significant. There was a positive correlation between practice and attitude of the dental professionals.

Conclusion: Though there is greater awareness of diet counselling, the real challenge lies in making nutrition, dietary assessment, and guidance an integral part of routine dental practice.

Keywords: Dietary assessment, diet counselling, dental professionals.

INTRODUCTION

Oral health has a synergistic bidirectional relationship with diet and nutrition. Diet exhibits a local effect on oral health, primarily on the integrity of the teeth, pH, composition of the saliva and plaque. Nutrition has a systemic effect on the integrity of the structures in oral cavity which includes teeth, periodontium, oral mucosa, and alveolar bone. A good diet is not only necessary for development of the masticatory system, but also helps to keep this system functioning properly.[1] The dentists should pay attention to their patients' diet pattern and nutritional status as dentistry is closely linked to eating. The dental professionals are strategically positioned to reach a large number of the general public, under less urgent conditions than physicians, simply through regular appointments: a situation conducive to consultation, education, discussion and motivation with respect to healthy living.[2] Personalized and tailored diet counselling such as the guidance provided by dental care professionals should be

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altered based on age, socio-cultural background and health literacy.[3]

Owing to its numerous advantages, previous studies have stressed the importance of dietary counselling in the dental curriculum and incorporation of the same in routine dental practice. Kelly et al. (2008)[4] highlighted the uncertainty amongst dentists about the evidence base around nutrition and periodontal health and a lack of training opportunities. The study by Vivek et al (2016)[5] among dental students from the four southern Indian states concluded a good knowledge and a positive attitude toward diet counselling. The study by Swati Mallick et al (2017)[6] reported that most dental practitioners in Davangere, Karnataka agreed to the importance of diet counselling, but a few routinely practiced dietary counselling. The knowledge and attitudes towards diet counselling is important because that will be applied into routine dental practice thereby influencing the preventive dental care delivered to patients. Though previous studies have been aimed at the diet interventions and oral health, there are a limited number of studies aimed at the perception of diet counselling among dental professionals and no study has been conducted in Tamil Nadu, Southern India. Hence, the current study has been undertaken to assess the knowledge, attitude and practices towards diet counselling among dental professionals in Namakkal district, Tamil Nadu.

MATERIALS AND METHODS

A cross sectional descriptive study was conducted during August 2017 among the dental professionals in Namakkal district, Tamil Nadu. Prior permission was obtained from the authorities of the three dental colleges in Namakkal to conduct the study among the interns, postgraduates and teaching professionals in their respective dental colleges. In addition, the dentists working in dental clinics, government and private hospitals situated in Namakkal district were also approached to participate in the study. The questions were framed based on the pretested questionnaire from the previous studies. A pilot study was conducted among twenty dental professionals to gain feedback on acceptability and reliability of the questionnaire whereby Cronbach's coefficient was found to be 0.89.

The questionnaire was pretested, self-administered, structured, validated and written in English language with 17 close-ended questions based on:

1) Knowledge about importance of diet and nutrition on overall health and dental disease (4 questions)

2) Attitude towards incorporating diet counselling in routine dental practice (7 questions)

3) Practice of taking diet history, giving diet counselling in clinical practice and referral to a dietician (6 questions)

The dental professionals were visited by a single investigator, and those who are all available and willing to participate in the study were included in the study. The questionnaire was distributed on the day of visit after obtaining verbal consent from the dental professionals. Confidentiality and anonymity of the respondents were assured. The questionnaire generally took an average of ten minutes to complete.

Statistical analysis

The data was analyzed using the Statistical Package for Social Sciences version 20 software. Descriptive statistics was used to summarize the sample and responses of the questionnaire. Chi-Square test was used to find the association between qualitative variables. Spearman's correlation analysis was used to determine the correlation between knowledge, attitude and practice. Level of significance was set at $P \leq 0.05$ (with confidence interval of 95%).

RESULTS

A total of 340 questionnaires were distributed, out of which six questionnaires were eliminated due to their incomplete nature, yielding a response rate of 98.23%. The mean age of the 334 participants was 26.08 ± 5.5 years with the range of 21 to 49 years. The details of participants according to the age, gender, qualification, years of experience and type of practice have been given in Table 1. The present study included 80% who were 20-29 years old, 16% were in the age group of 30-39 years and 4% were aged above 40 years. Almost 74% were females and 26% were males. Half of the study population were interns (53%), 30% BDS professionals and 17% MDS professionals. Most of the study participants

have <1 year experience (56%), 105 professionals (31%) have 1-5 years experience, 9% have 6-10 years experience and only 4% have more than 10 years experience.

Table 1: Distribution of the study subjects according to age, gender, qualification and years of experience.

		Frequency	Percentage
Age	20-29 Years	268	80
	30-39 Years	54	16
	> 40 years	12	4
Gender	Male	87	26
	Female	247	74
Qualification	Intern	177	53
	BDS	99	30
	MDS	58	17
Years of work experience	< 1 year	186	56
	1-5 years	105	31
	6-10 years	31	9
	>10 years	12	4
Total		334	100

In the present study, 69.46% answered that advice means to offer an opinion or suggestion. Around 46.41% answered that counselling is a two-person situation in which one person (client) is helped to adjust more effectively to himself. Most of the dental professionals (92.81%) agreed that there is relation between nutrition and dental caries. Almost 86.53% answered that fibrous food is the most beneficial form of food in preventing caries. Among the participants, 101 (30.2%) answered correctly for all the four questions, 134 (40.1%) gave three correct answers, 81 (24.9%) gave two correct answers, 14 (4.2%) gave one correct answer and 2 participants did not give any correct answer. The mean knowledge score is 2.97±1.56. The distribution of subjects according to knowledge towards diet counselling is given in table 2.

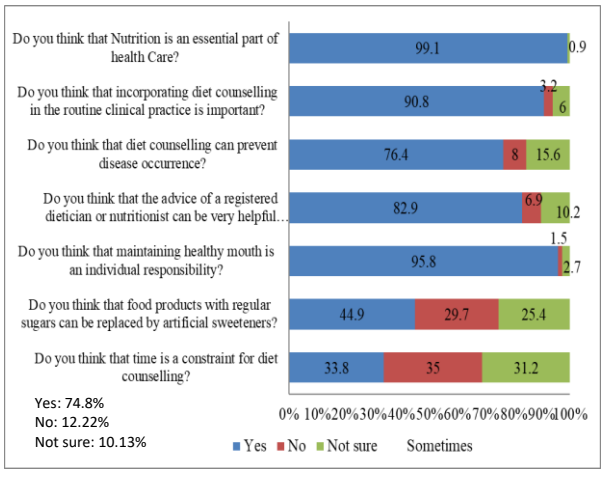
Table 2: Distribution of subjects according to knowledge towards diet counselling (% distribution).

Questions	Responses	Number	Percentage
What do you mean by Advice?	Two-person situation in which one person (client) is helped to adjust more effectively to himself	72	21.56
	Offer an opinion or suggestion	232	**69.46**
	Psychotherapy with individuals whose behaviour are neurotic	6	1.80
	Synonymous with counselling	24	7.19
What do you mean by Counselling?	Two-person situation in which one person (client) is helped to adjust more effectively to himself	155	**46.41**
	Offer an opinion or suggestion	36	10.78
	Psychotherapy with individuals whose behaviour are neurotic	108	32.34
	Synonymous with counselling	35	10.48

Is there any relation between nutrition and dental caries?	Yes	310	**92.81**
	No	10	2.99
	Not sure	14	4.19
Which is the most beneficial form of food in preventing caries?	Sticky	21	6.29
	Fibrous	289	**86.53**
	Refined	24	7.19
Total score: 0 - 0.6% 1 - 4.2% 2 - 24.9% 3 - 40.1% **4 - 30.2%**			

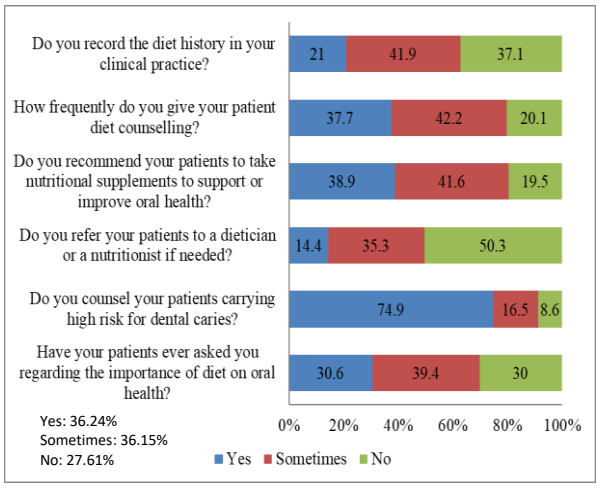
Nearly all the participants (99.1%) agreed that Nutrition is an essential part of health care. Around 91% felt that incorporating diet counselling in the routine clinical practice is important. Almost 76% felt that diet counselling can prevent disease occurrence. About 83% agreed that advice of a registered dietician or nutritionist can be very helpful in planning nutrition education for the patients. Most participants (95%) were of the opinion that maintaining healthy mouth is an individual responsibility. Around 45% felt that food products with regular sugars can be replaced by artificial sweeteners. Though 35% agreed that time is not a constraint for giving diet counselling, others (65%) agreed that time is a constraint. The distribution of subjects according to attitude towards diet counselling is shown in Graph. 1.

Graph 1: Distribution of subjects according to attitude towards diet counselling (% distribution).



Among the participants, around 42% agreed that sometimes they record diet history, give diet counselling, recommend their patients to take nutritional supplements to support or improve oral health. About 50% did not refer their patients to a dietician or a nutritionist if needed. Most professionals (75%) counsel their patients carrying high risk for dental caries. Around 40% replied that sometimes their patients asked regarding the importance of diet on oral health. The distribution of subjects according to practice of diet counselling is shown in graph. 2.

Graph 2: Distribution of subjects according to practice towards diet counselling (% distribution) .



The knowledge based questions regarding the meaning of advice and counselling had significant association with age, qualification and years of experience. Gender had significant association with practitioners who felt the importance of incorporating diet counselling in routine practice. Age and years of experience had significant association with dentists who were of the opinion that sugar containing food can be replaced by artificial sweeteners and with those who counsel

their patients with high risk for caries. The practitioners who record diet history had significant association with age. The practitioners who recommended nutritional supplements had a significant association with years of experience. The chi-square analysis with significance is given in table 3.

Table 3: Chi-square test analysis of knowledge, attitude & practice based questions.

Questions	Responses	Frequency (%)	Chi-square value	P-value
Do you think that incorporating diet counselling in the routine clinical practice is important?	Yes	303(90.72)	10.609	0.005** (gender)
	No	11 (3.29)		
	Not sure	20 (5.99)		
What do you mean by Advice?	Two-person situation in which one person (client) is helped to adjust more effectively to himself	72 (21.56)	14.139 27.656	0.028* (age) 0.024* (years of experience)
	Offer an opinion or suggestion	232 (69.46)		
	Psychotherapy with individuals whose behaviour are neurotic	6 (1.80)		
	Synonymous with counselling	24 (7.19)		
What do you mean by counselling?	Two-person situation in which one person (client) is helped to adjust more effectively to himself	155 (46.41)	13.557 13.546 30.028	0.035* (age) 0.035* (qualification) 0.012* (years of experience)
	Offer an opinion or suggestion	36 (10.78)		
	Psychotherapy with individuals whose behaviour are neurotic	108 (32.34)		
	Synonymous with advice	35 (10.48)		
Do you think that diet counselling can prevent disease occurrence?	Yes	255 (76.35)	19.025	0.040*(years of experience)
	No	27 (8.08)		
	Not sure	52 (15.57)		
Do you think that food products with regular sugars can be replaced by artificial sweeteners?	Yes	150 (44.91)	13.737 22.860	0.008* (age) 0.011*(years of experience)
	No	99 (29.64)		
	Not sure	85 (25.45)		
Do you record the diet history in your clinical practice?	Yes	70(21)	19.299	0.013* (age)
	No	140 (41.9)		
	Sometimes	124 (37.1)		
Do you counsel your patients carrying high risk for dental caries?	Yes	250 (74.9)	25.276 39.168	0.001** (age) 0.006**(years of experience)
	No	55 (16.5)		
	Sometimes	29 (8.7)		
Do you recommend your patients to take nutritional supplements to support or improve oral health?	Yes	130 (38.9)	30.190	0.067* (years of experience)
	No	139 (41.6)		
	Sometimes	65 (19.5)		

*P < 0.05 Significant at 5 %; ** P < 0.01 Significant at 1 %

When subjected to Spearman's correlation analysis, there was a positive correlation between age and knowledge and a negative correlation with attitude and practice of the dental professionals which is significant. There was a negative correlation between gender and age, qualification, years of experience. There was a negative correlation between knowledge and attitude, positive correlation with practice which is not significant. There was a positive correlation between practice and attitude of the dental professionals. The results are given in Table 4.

Table 4. Spearman's correlation analysis between knowledge, attitude and practice

	Gender	Age	Qualification	Experience	Knowledge	Attitude	Practice
Gender	1						
Age	-0.366**	1					
Qualification	-0.309**	0.854**	1				
Experience	-0.251**	0.774**	0.799**	1			
Knowledge	-0.100	.067	0.095	0.095	1		
Attitude	.069	-0.092	-0.101	-0.100	-0.060	1	
Practice	.057	-0.006	0.026	0.068	0.042	0.194**	1

**Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

Dentists must be aware of how nutrition impacts general as well as oral health and how dental treatment can impact the nutritional status of the patient.[7] In the present study, most of the participants agreed with the statement that nutrition was an integral part of total health care. This is similar to the studies done by Vivek et al[5], Swati Mallick et al[6] and Yokoyama et al.[8] Almost 70% knew the meaning of advice similar to study by Vivek et al.[5] In the present study, the dental professionals had a doubt in the meaning of counselling as 30% answered that it is psychotherapy with individuals whose behaviour are neurotic. Most of the participants agreed that there is a relation between nutrition and dental caries and answered that fibrous food is preventing caries.

Nearly 90% of the dental professionals felt that diet counselling should be integrated into routine clinical practice similar to the study by Swati Mallick et al.[6] But, the study by Vivek et al[5] showed that only 14% interns strongly agreed. Though most of the participants (83%) agreed that the advice of a registered dietician or nutritionist can be very helpful in planning nutrition education for the patients, only 14% referred their patients to a dietician or a nutritionist if needed. Around 35% replied that sometimes they might refer patients to a nutritionist or dietician. The study conducted by K Shah[9] among the undergraduate students of dentistry, public health nutrition and first-year postgraduate students of dietetics showed significant inter-group differences in relation to recommendations concerning the between-mealtime consumption of a wide range of snacks and drinks. This study highlighted that inconsistencies exist in diet counselling among these students. In the study conducted by Bhat et al[10], overall knowledge of dieticians pertaining to diet and oral health was 56.48%. The study by Threlfall[11] reported that there was a large variance in the dietary counselling within the dental community, although dentists know the basic principles of diet counselling. On the contrary, the study by Heima et al.[12] found that children who consume snacks recommended by only dieticians have the least number of dental caries and those who consume snacks recommended by only dentists had slightly more dental caries. Optimal oral and nutrition health care can be integrated with effective interactions between health care providers, nutritionists and dental professionals to obtain improved oral, nutritional, and systemic health status.

In this study, about 45% of the subjects felt that food products with regular sugars can be replaced by artificial sweeteners. This result is lower than the response given by the dental interns (68%) from the study by Vivek et al.[5] The present study showed that around 26% were not sure whether to

replace sugar containing foods with artificial sweeteners. About 34% of the dental professionals considered time as a constraint for diet counselling while 35% felt sometimes time may be constraint and 31% agreed that time was never a constraint. Previous studies by Vivek et al[5], K Shah[9], Swati Mallick et al[6], Kushner[13] reported that inadequate training in counselling skills, lack of education, patient compliance, reimbursement, inadequate materials and lack of confidence were also obstacles for delivering diet counselling in routine practice.

In the present study, around 42% sometimes recorded diet history and gave diet counselling while 37% never recorded diet history. The study by Sarmadi et al.[14] among the patients who are at high risk for caries showed that nearly 50% of patients received general dietary information and about 20% received dietary counselling based on their own diet history. Even if a dentist cannot provide full nutritional counselling, he or she should advise patients of any problems, give advice and refer them to the appropriate health professionals. When patients are already receiving professional treatment for nutritional or health problems, the dentist's contribution will further encourage them to persevere.[15]

Around 20% participants replied that they never gave diet counselling while 21% gave diet counselling often. This is similar to the study by Yokoyama et al where 48% provided diet counselling to more than 20% of their patients. Almost half of the participants gave a favourable response of referring their patients to a dietician or nutritionist if needed. These findings are lower than the results of the study by Vivek et al.[5] Around 80% dentists in the present study recommended nutritional supplements as and when needed which is greater than the studies by Kelly[4] and Swati Mallick et al.[6] Most of the participants (91%) counsel their patients carrying high risk for dental caries sometimes or always if needed. This finding implies that dentists gave diet counselling only when there is an utmost need for the patients to change their dietary practices to halt the progress of the dental disease. When the dentists were queried if their patients have asked regarding the importance of diet on oral health, about 30% responded positively while 40% gave a neutral response, but 30% responded negatively that their patients have not asked them regarding oral health and diet. This finding is lower than that reported by Swati Mallick et al.[6] where 85% replied that their patients had asked them regarding diet and its importance on oral health. A study conducted in Mansfield, Pennsylvania by Stager[16] reported that 78% of dentists were asked about nutrition by their patients. A negative correlation was found between knowledge and attitude, and a positive correlation between attitude and practice. This finding is contrary to the results of the study done by Vivek et al[5] who reported a negative correlation between knowledge and practice. The present study shows a statistically significant correlation between attitude and practice which implies that though dental professionals possessed good knowledge, they had a negative attitude towards diet counselling. But, those who had positive attitude, practiced diet counselling most often.

Limitations

The study has cross-sectional and observational study design. The responses are self-reported and may be subjected to social desirability bias. As a convenient sample of study participants was included, the results cannot be generalized. This study is limited to a certain geographic locality. The awareness regarding diet counselling might be different between the dental professionals among the various parts of our country. These factors should be taken into consideration.

Recommendations

- Nutrition needs to be recognised as an essential part of training for dental health professionals, and dental health issues, an important component of education of nutritionist and other health professionals. This is essential if advice for dental health is to be consistent with dietary advice for general health.[17]
- Integration of nutrition and oral health will help to build an interconnected web, linking basic and clinical sciences and demonstrating progression from knowledge to clinical application.
- There is a need for improving applied nutrition training for dental professionals,

formulating a uniform set of nutritional guidelines which address all aspects of health and for improving professional relationships between dentists and nutritionists.[18]

- Increase in the number of Continuing Dental Education programmes on impact of nutrition on oral health and dietary counselling might help to create awareness amongst dental professionals.

CONCLUSION

The present study highlights the perception of diet counselling among dental professionals and emphasises the need for decisive role of dentists in adopting diet counselling in clinical practice. It can be concluded that most of the participating subjects had basic knowledge and positive attitude regarding diet and its importance in oral health. But, only lesser amount of participants practiced dietary counselling on a routine dental practice. Though greater awareness of the need for mainstream dentistry to form liaisons with other professionals in the health care delivery system has been created, the real challenge lies in making nutrition, dietary assessment, and guidance an integral part of routine dental practice.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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