

“Nutritional Counseling: Perceptions, Perceived Competence, and Barriers to the Provision in the Dental Practice Setting”

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Abstract

Introduction: Human nutrition refers to the provision of essential nutrients necessary to support human life and health. Poor eating habits and lack of nutritional knowledge are crucial public health issues that have serious health implications, through proper dietary education for their patient's, dentists play a significant role in preventing nutritional-related diseases. **Aim and Objective:** The current study set to evaluate the knowledge, attitude, and practice (KAP) on diet counseling among dental practitioners. **Materials and Methods:** A cross-sectional study using a pre-tested structured questionnaire written in English, which includes 25 questions based on knowledge of the dental practitioners about diet and nutrition counseling, which were given to 200 participants and the participants asked to respond to each item. Data analysis was performed using SPSS software 21.0 and presented as descriptive statistics and Logistic Regression ($p < 0.05\%$). **Results:** Of the subjects, 78% agreed that nutrition was a vital component of total health care. However, only 46.8% of the participants reported that they had received adequate training in diet counseling. Most of the subjects agreed that diet counseling needed to be emphasized in dental education, 28.9%, and only 40% of the participants expressed their confidence in rendering diet counseling to their patients. **Conclusion:** The present study concluded that most of the participating subjects had basic knowledge regarding diet and its importance in oral health. Lack of confidence, time, and apprehension about financial reimbursement were three main reasons cited as obstacles for the incorporation of diet counseling in routine clinical practice.

Keywords: Nutrition, Knowledge, Attitude, Diet counseling, private practitioners.

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INTRODUCTION

An unhealthy diet is identified as a common risk factor threatening both oral and general health [1]. It accounts for many health problems, including Cancers, Cardiovascular diseases, Diabetes, Obesity, Dental caries, and dental erosion [2].

From the dental perspective, dental caries is modulated by diet in several ways, mainly the form and frequency of the consumption of sugars and other fermentable carbohydrates, along with the sequence and combination of food intake and foods' potential to stimulate saliva [1].

Nutrition is vital to human development, growth, and the maintenance of health. Nutritional issues, at the forefront of popular culture, are part of the current wellness and health promotion climate [3, 4].

Today, like never before, people are concerned with optimizing their health by acquiring nutritional information and applying it to their daily lives. Nevertheless, with all of the information available in the media, misinformation is also in plenty. Health care professionals frequently neglect inquiries about the patient's nutritional status and offer little guidance in this area [5].

Diet counseling has an essential place in the dental care setting, given the precise relationship between dietary factors and dental caries and the association between obesity, diabetes, and periodontitis [3].

Diet counseling is defined as “a cooperative mode of interaction between the patient and health care provider aimed to assist patients in adopting healthy dietary behaviors associated with improved health outcomes” [6].

Moreover, it is an essential step in determining whether nutritional deficiencies/imbbalances exist and assessing the need for necessary referrals [9].

Counseling components shown to increase dietary changes include a comprehensive nutritional assessment, family involvement, social support, group counseling, food interaction (cooking, taste testing), goal setting, advice appropriate to patient groups, and anticipatory guidance[1,9].

Anticipatory guidance is “a proactive, developmentally based counseling technique that focuses on the needs of a child at each stage of life.” By providing practical and contemporary health information to parents before significant physical, emotional, and Psychological milestones, parents will anticipate impending changes, maximize their child's developmental potential, and identify their child's individual needs[8].

When dietary recommendations are provided, individuals must replace poor nutritional choices for healthy ones. Foods and beverages are not consumed in isolation but rather in patterns and should be considered together [7-8].

When a patient visits a dentist for the first time, a nutritional analysis report gives the patient's oral health status for assessing the prognosis of the treatment. Hence, the dental provider should offer recommendations with suggested strategies to achieve the proposed nutritional modifications [9].

As per the 'Dietary Guidelines for Indians, 2011 of the National Institute of Nutrition (NIN), a balanced diet is “one which provides all the nutrients in required amounts and proper proportions; and unhealthy (junk) foods are those containing little or no proteins, vitamins or minerals but are rich in salt, sugar, fats and are high in energy(calories)” [7].

Hence, the current study was set to assess knowledge, attitude, and practice (KAP) on diet counseling among dental practitioners.

MATERIAL AND METHODS

Inclusion Criteria and Exclusion Criteria

Inclusion Criteria: Participants who were willing to participate in the study.

Exclusion Criteria:

- Participants were included in the pilot study.
- Participants not willing to participate in the study.
- Physically and mentally disabled person.

Participant recruitment: Registered dental practitioners.

Pilot study

The quantitative part consisted of administering a pre-tested questionnaire in the English version of among ten dentists in Sept-Oct 2019. As per discussion with them and experts, revision of the questionnaire was carried out to obtain the final version of the survey.

Sample size

Based on the results of the pilot study, the sample size calculated was 240 dental professionals. It was increased by 25% to compensate for non-response or incomplete responses of participants. Hence the final sample size for the present study was 300 subjects.

Sampling technique

Systematic random sampling technique was followed for data collection.

Research Design

This descriptive, quantitative, cross-sectional, questionnaire-based study was conducted and carried out among Dental practitioners for data collection.

Data Collection

The survey proforma was prepared with the help of a self-administered structured questionnaire, which was distributed after checking its content and face validity to assess the diet counseling knowledge, attitude, and behavior of the private dental practitioners. The questionnaire had four parts.

A self-administered, structured questionnaire, which included two closed-ended and 23 open-ended questions were framed in consultation with experts in the field.

- The first part of 2 questionnaires was designed to collect personal data, inquiring about, gender and designation.
- The second part comprises eight questions on knowledge of Diet counseling by their patients.
- The third part comprises seven questionnaires on attitudes toward diet counseling by their patients.
- The fourth part comprises ten questionnaires on practice concerning diet counseling by their patients.

Participation in the study was voluntary. A telephone number was also provided for respondents to clear any doubts and confusion regarding the questionnaire. Cutoff date was announced for receipt of the completed questionnaire, after which no further forms were accepted. Questionnaires were distributed to a total of 300 participants. Ten participants were eliminated due to their incomplete nature, yielding a response rate of 96.6 % (n=290). Participants were asked to respond to each item in the questionnaire by choosing the most appropriate alternative.

The participants were asked about the balanced diet, nature, type, and frequency of intake, the influence of diet on oral structures, and its effect on oral diseases such as dental caries, periodontal diseases, and malocclusion. Participants were asked about regular recording and counseling of all patients about their diet and nutrition. Some records assess the attitude of the practitioner toward the maintenance of dental records and evidence.

Ethical Consideration

Consent was obtained from the participants and was assured of the confidentiality, the anonymity of the collected data, and that the resultant information would be used only for the research purposes.

STATISTICAL ANALYSIS

The reliability and validity of the questionnaire were checked individually for all the three domains, i.e., knowledge, attitude, and practice and was found to be 0.72, 0.78, and 0.69, respectively. The frequency and percentages of responses were calculated. Much of the material collected was descriptive. Discrete variables were analyzed using a two-tailed Fisher's exact test. P values <0.05 were considered statistically significant. Data analyses were performed using SPSS version 21.0.

RESULTS

The knowledge of the participants toward diet counseling is depicted in Table 2. Of the subjects,

78.9% (n=229) agreed that nutrition was an essential component of total health care.

However, only 46.8% (n=136) of the subjects reported that they had received adequate training in diet counseling. Of the subjects, 15.1 % (n=44) assumed that counseling was synonymous with advice. The majority of the subjects reported rightly that the arch-criminal in caries causal on was sucrose 56.2% (n=163).

Nevertheless, a few subjects, 3.4 % (n=10) answered that it was xylitol that was responsible for caries. The attitudes of the participants toward diet counseling are depicted in Table 3. A large number of subjects, 28.5% (n=84), agreed with the statement that diet counseling should be emphasized in the dental curriculum.

Nearly half of the subjects 31 % (n=90) agreed with the statement that proper nutrition was essential for oral health. Also, many agreed 30% (n=87) with the statement that diet counseling was valuable in dental practice too.

The practices of the participants toward diet counseling are depicted in Table 4. Of the subjects, n=113 (38.9%) reported that they took dietary history in the routine practice. Also, 41% (n=119) reported that they gave dietary advice to their patients. Only 40% (39%) of the subjects expressed their confidence in rendering diet counseling to their patients.

Table-1: Social -demographic variables of respondents (n=290)

Individual Scenario.			
Variable		Response (n)	Frequency (%)
Total no of respondent		290/300	96.6
Gender	Males	99	34.1
	Females	191	65.8
Designation	Private practitioners	290	100

Table-2: Distribution of subjects according to the knowledge of Diet Counseling (n=290)

Individual Scenario					
Variables	Respondents	Frequency (n)	Response rate (%)	Mean \pm SD	Inferential Statistics
Nutrition is an essential part of health care.	Yes	229	78.9	14.5 \pm	$P < 0.222$
	No	61	21	118.7	NS
Have you had adequate training on diet counseling?	Yes	136	46.8	145 \pm	$P < 0.0001$
	No	154	53.1	12.7	HS
Counseling is	The two-person situation in which one person (client) is helped to adjust more effectively to himself	70	24.1	96.6 \pm 69.9	$P < 0.0001$
	Offer an opinion or suggestion	176	60.6		SS
	Synonymous with consulting	44	15.1		
Arch criminal in caries causation is.....	Glucose	67	23.1	72.5 \pm	$P < 0.0001$
	Sucrose	163	56.2	64.9	SS
	Fructose	50	17.2		
	Xylitol	10	3.4		
Most beneficial form of food in preventing caries	Sticky	137	47.2	96.6 \pm	$P < 0.0001$
	Fibrous	91	31.3	37.8	SS
	Refined	62	21.3		
Food products with regular sugars can be replaced by artificial sweeteners.	Yes	206	71	145 \pm	$P < 0.093$
	No	84	28.9	86.2	NS
The most helpful in identifying Patients who need diet counseling for the Prevention of Dental caries is.	Oral hygiene index score	128	44.1	72.5 \pm	$P < 0.0001$
	A dental health diet score	87	30	44.1	HS
	Past medical history	45	15.5		
	All of the above	30	10.3		
Dietary counseling absolute prevention of Dental caries.	Do not guarantee	174	60	96.6 \pm	$P < 0.0001$
	Guarantee	71	24.4	55.7	SS
	I do not know	45	15.5		

NS: Not significant; S: Significant; HS: Highly significant

Table-3: Distribution on of study subjects according to their attitudes toward Diet Counseling (n=290)

Individual Scenario							
Statements	Strongly disagree (%)	Disagree (%)	Uncertain (%)	Agree (%)	Strongly agree (%)	SD	p-value
Do you think diet counseling should be emphasized in the dental curriculum?	66 (22.7)	38 (13.1)	58 (20)	44 (15.1)	84 (28.9)	58 \pm 18.2	$p < 0.0001$ HS
Proper nutrition is essential to Dental health.	70 (24.0)	27 (9.3)	30 (10.3)	73 (25.1)	90 (31)	58 \pm 28.0	$p < 0.0001$ HS
Improving and maintaining the health of the mouth is not in your control	98 (33.7)	35 (12)	71 (24.4)	49 (16.8)	37 (12.7)	58 \pm 26.7	$p < 0.0001$ HS
Incorporating Diet counseling in the routine Dental practice is important	33 (11.3)	72 (24.8)	58 (20)	40 (13.7)	87 (30)	58 \pm 22.2	$p < 0.0001$ HS
Maintaining a healthy mouth is an individual responsibility.	97 (33.4)	42 (14.4)	57 (19.6)	67 (23.1)	27 (9.3)	58 \pm 26.5	$p < 0.0001$ HS
The advice of a Registered Dietician or Nutritionist can be beneficial to a dentist in planning nutrition education for his/her patients.	34 (11.7)	79 (27.2)	53 (18.2)	95 (32.7)	29 (10)	58 \pm 28.5	$p < 0.0001$ HS
The Dentists should refer patients with physical signs of malnutrition to a Physician.	33 (11.3)	47 (16.2)	95 (32.7)	73 (25.1)	42 (14.4)	58 \pm 25.4	$p < 0.0001$ HS
Total attitude score	Favorable: 21.1% Moderate: 19.4% Unfavorable: 20.7%						

HS: Highly significant

Table-4: Distribution of study subjects according to practice concerning Diet Counseling (n=290)

Individual Scenario					
Variables	Respondents	Frequency (n)	Response Rate (%)	Mean±SD	p-value
Do you counsel your patients carrying a high risk for Dental caries?	Never	26	8.96	58 ± 45.4	<i>p</i> <0.0001 HS
	Rarely	15	5.1		
	Sometimes	129	44.4		
	Often	73	25.1		
	Always	47	16.2		
Do you give dietary advice to your patients?	Never	28	9.6	58 ± 42.9	<i>p</i> <0.0001 HS
	Rarely	54	18.6		
	Sometimes	119	41		
	Often	79	27.2		
	Always	10	3.4		
Do you prescribe dietary supplements for the prevention of Dental caries?	Never	27	9.3	58 ± 35.6	<i>p</i> <0.0001 HS
	Rarely	41	14.1		
	Sometimes	105	36.2		
	Often	87	30		
	Always	30	10.3		
Do you record the diet history in your clinical practice?	Never	21	7.2	58 ± 43.3	<i>p</i> <0.0001 HS
	Rarely	11	3.7		
	Sometimes	113	38.9		
	Often	88	30.3		
	Always	57	19.6		
do you refer your patients to a Dietician or a Nutritionist if needed?	Never	12	4.1	58 ± 42.8	<i>p</i> <0.0001 HS
	Rarely	44	15.1		
	Sometimes	110	37.9		
	Often	96	33.1		
	Always	28	9.6		
How frequently do you give your patient Diet counseling?	Never	22	7.5	58 ± 38.4	<i>p</i> <0.0001 HS
	Rarely	79	27.2		
	Sometimes	84	28.9		
	Often	94	32.4		
	Always	11	3.7		
Patient compliance is a constraint for Diet counseling.	Never	23	7.9	58 ± 34.1	<i>p</i> <0.0001 HS
	Rarely	87	30.0		
	Sometimes	99	34.1		
	Often	53	18.2		
	Always	28	9.6		
Reimbursement is a constraint for Diet counseling.	Never	25	8.6	58 ± 29.3	<i>p</i> <0.0001 HS
	Rarely	59	20.3		
	Sometimes	76	33.1		
	Often	96	26.2		
	Always	34	11.7		
Time is a constraint for Diet counseling.	Never	32	11.0	58 ± 26.1	<i>p</i> <0.0001 HS
	Rarely	74	27.2		
	Sometimes	79	25.5		
	Often	78	26.8		
	Always	27	9.3		
Do you have enough confidence in counseling a patient?	Yes	116	40	58 ± 33.4	<i>p</i> <0.0001 HS
	No	58	20		
	Not sure	116	40		

NS: Not significant; SS: Significant; HS: Highly significant

DISCUSSION

The current study set to evaluate the knowledge, attitude, and practice (KAP) on diet counseling among dental practitioners.

Nutrients are substances that the body needs for growth and metabolism. The human body processes over 45 different nutrients from dietary intake necessary for growth, maintenance, and repair at cellular levels [8].

A condition known as malnutrition may develop when the body does not get the right amount of variety of nutrients it needs to maintain healthy tissue and organ function. Malnutrition can occur at any point during an individual's lifetime as a result of poor nutrition or dietary intake [9].

The primary focus of dentistry today, and especially of the future, is the prevention of dental disease, and one of the components of preventive dental care is nutrition [10].

Optimal growth and development are the primary objectives of pediatric nutrition. A child's diet, defined as the combination of foods consumed and the nutrients contained therein, has the profound ability to influence cognition, behavior, and emotional development in addition to ultimate physical growth and development [6].

Food is merely a vehicle for nutrient delivery; the nutrients provide energy for growth, serve as structural components, and participate in all metabolic functions of the body. Food, however, is more than just nutrients: sensory, emotional, social and cultural associations influence food choices [11].

Carole *et al.*, in whose study dental students expressed a generally favorable attitude toward nutrition, and nutritional counseling of their patient's similar findings was reported in the present study [12].

Counseling components shown to increase dietary changes include a comprehensive nutritional assessment, family involvement, social support, group counseling, food interaction (cooking and taste testing), goal setting, and advice appropriate to patient groups and anticipatory guidance [13].

Moynihan PJ noted that most of the study participants (92.8%) considered dietary counseling to be an integral part of routine dental practice. This was per the present study [14].

Rajesh Nidhi K. R. *et al.* had recommended nutritional supplements to their patients, half of the study participants (47.9%) said that they practice the same as and when needed. This finding was statistically significant with the present study [15].

When the participants were asked regarding the cariogenicity of different types of sugar, it was seen that considerably small amount of the study participants (29.7%) knew that polysaccharides were least cariogenic, around 63% had answered according to study by Rajesh Nidhi K. R. *et al.* and this finding was statistically significant with the present study [15].

CONCLUSION

The dental professional should screen patients to determine nutrition risk and integrate the findings in the treatment plan. With today's emphasis on the prevention of diseases, diet counseling helps to reduce the risk of some illness by appropriate counseling.

SIGNIFICANCE OF THE STUDY

The information gained from this research could result in improved dietary screening and nutritional counseling practices by the dentist and, subsequently, improvement of oral health in their patients.

LIMITATIONS

- a) The literature search shows minimal studies in this arena, and to the best of our knowledge, this is the first of its kind. Hence, comparisons with previous studies were limited.
- b) The participants in this study may not be a representative sample of the population.
- c) The results of this study may not be transferrable to dental practicing in settings other than general Dentists offices.
- d) The results were based on self-reported responses, and the chances of bias due to under or over-reporting cannot be excluded
- e) This study was limited to fewer dental practitioners.

RECOMMENDATIONS

A few findings and guidance from our study include

- a) Extensive diet counseling beyond the realm of the dental practice is referred to as a medical doctor and a registered dietician.
- b) Given the time-consuming nature of diet counseling and the absence of professional nutritionists/dietitians, it was suggested that patients should be referred to trained dental hygienists for diet counseling.
- c) The challenge is to make nutrition, dietary assessment, and guidance an integral part of routine dental practice.
- d) The impact of nutrition on dental education and clinical practice has created a greater awareness of the need for mainstream dentistry to form liaisons with other professionals in the health care delivery system.

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