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Awareness of Nutritional Counselling in Geriatric Patients among Various Dental Practitioners

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ABSTRACT

Aim: The relationship between oral health and the nutritional status of the elderly people is controversial and complex. Poor oral health and decreased ability to chew influence the food selection and the nutritional status of the individual, hence the nutritional status assessment becomes imperative so as to offer timely dietary advice to this expanding population.The influence of prosthetic restorations on nutritional status has been previously seen, particularly concerning complete and removable partial dental prostheses.

Material and methodology: A cross-sectional survey were conducted across dental colleges of the southern part of India in May 2020. A questionnaire consisting of 49 questions was formulated. This questionnaire was circulated among the prosthodontic postgraduate students, Prosthodontists, intern's, general practitioners and postgraduates of other departments through electronic media.

Results: The survey was analysed using Chi square test, Overall results of the survey was statistically significant (p value <0.05).

Conclusion: Within the limitations of the study, we can say that dentists are guiding the patients to improve their nutritional and overall, wellbeing as an individual. Among all the dentists, prosthodontists have shown good awareness of nutritional counselling.

Key words: Oral health, Anorexia, Prosthetic therapy, Edentulism

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INTRODUCTION

Oral health is so vital that it can interfere with a person's ability to work and concentrate on their everyday activities. Oral health, according to Dolan, is described as "a comfortable and effective dentition that permits individuals to maintain their intended social position" [1]. According to the World Health Organization, health is "a condition of complete physical, psychological, and social well-being, rather than only the absence of sickness or infirmity."

As Age increases, the chance of losing teeth is common and substantially impacts masticatory performance [2]. Because mastication is the initial step in the digestion process, a reduction in masticatory function leads to decreased food absorption efficiency [3] and nutritional status. In addition to masticatory disability, various factors have been implicated in the pathogenesis of anorexia in the elderly, including changes in taste and smell [4], gastrointestinal function decline [5], and depression [6], which may lead to reduced nutrient intake and exacerbate poor nutritional status [7]. This poor nutrition status may cause various diseases, particularly the lack of protein intake leads to a decrease in the quantity of muscle [8].

Nutrition is important for the health and comfort of oral tissues, and healthy tissues increase the chances of successful prosthodontic treatment in the elderly. Prosthetic therapy may be necessary to maintain or restore masticatory function in patients with partial or full tooth loss. Many additional factors, however, play a role in the nutritional condition of older people. As a result, many age-related medical disorders and diseases include nutritional components, and the patient's socioeconomic level and dietary habits have a significant impact on their food choices. The dental team must be aware of these potential negative effects of dental treatment and provide nutrition counselling to counteract them.

Oral diseases affect everyone, regardless of where they live, their nationality, race, or colour. The effects of tooth loss have been described in a variety of ways. Edentulism has been found to impact an individual's quality of life, which subsequently has an impact on psychological well-being; thus, knowing how to improve quality of life and provide solace and comfort is critical. Individuals' quality of life has a significant impact on their families,

communities, and even nations. It is a subjective blending of biological and psychological experiences impacted by one's personal and socio-cultural surroundings [9]. According to Evans, most older persons have a negative attitude toward dental treatment, contributing to their oral health decline [10]. One of the main goals of edentulous patients' oral rehabilitation is to improve their health by restoring function. When compared to dentate participants, denture wearers had a decreased masticatory ability [11-15], and the lower masticatory function may limit the foods that are difficult to chew [16-19]. In addition, poor masticatory performance in older denture wearers is linked to an increase in gastrointestinal diseases and related drugs [20].

MATERIALS AND METHODS

A cross-sectional survey was conducted across dental colleges of the southern part of India in May 2020. A questionnaire consisting of 49 questions was formulated. These questions were divided into four parts, namely demographic, knowledge, attitude, and practice. This questionnaire was circulated among the prosthodontic postgraduate students, Prosthodontists, intern's, general practitioners, and postgraduates of other departments through electronic media after approval of the ethical committee of Saveetha Dental College, Chennai. The participants of this survey belonged to all the years of post-graduation across the dental colleges of the southern part of India. Based on responses from the participants to these multiple choice-based questionnaires, the survey was analysed using Chi square test, Overall results of the survey was statistically significant (p value<0.05).

Study design

This cross-sectional study was conducted from January to February 2020 through an online survey.

Study subjects

A convenient sample of 146 dental practitioners was selected. Among 146 participants,12.5% were practicing dentists, 33.3% were Postgraduate students,50% were Prosthodontists and 4.2% were house surgeons' dentists.

Inclusion criteria

All the dental practitioners and interns who were willing to participate were included in the study.

Exclusion criteria

Practitioners who were not willing to participate were excluded.

Ethical considerations

Responding to the questionnaire was considered as implicit consent with no need for signing a written consent. Ethical approval for the study is obtained from the Institutional Review Board (IRB).

Study methods

A self-administered questionnaire of 49 close-ended questions was prepared and distributed among the dental practitioners and interns through online survey forms "GOOGLE FORMS".

Data quality assurance

The collected data were checked regularly for clarity, competence, consistency, accuracy, and validity. The necessary changes were made on questionnaires that needed correction accordingly and invalid questionnaires were removed before the actual data collection.

Statistical analysis

Data were analysed with the SPSS version (22.0). Descriptive statistics as number and percent were calculated to summarise qualitative data. Chi-square test was used to find the association between the variables and a p-value of 0.05 was significant.

RESULTS

The response rate of the participants in the present survey was satisfactory. Most of the participants had good knowledge (65%), attitude (78.30%) and practice (73.72%) regarding the nutritional counselling. The questionnaire was circulated among 200 dentists and 146 responded. It gives a response rate of 80% (Table 1). A snowball sampling was followed for this study. All the participants were allowed to choose one of the given three to four choices for each item in the questionnaire. Among the participants, 56.9% were males and 43.1% were females. Postgraduates of other specialties participated in the survey 12.56% were Practicing dentists, 33.3% Postgraduates, 50% Prosthodontist and 4.2% were house surgeons. Most of the participants were aware of nutritional counselling. Table 2 showing the percentage of responses, chi-square, and p-value among various designations of the participants and found to be statistically insignificant, and Table 3 shows the chi-square and p value of the first day, second day ad third day and fourth day after and statistically significant was seen in all the groups except milk group.

Table 1: Showing distribution of cases that were included for the study based on age, gender and qualification.

Demographic Variables	Categories No of Respondents Percentage
Gender	Female 43.16%
	Male 56.9%

Age	91.7% 20-35 years
	25 16% 36-50 years
	2 1.3% >50 years
Qualification	12.56% Practicing dentist
	33.3% Postgraduates
	50% Prosthodontist
	4.2% House surgeons
Years of clinical practice	1-5 years-82.9%
	5-10 years-12.9%
	10-15 years-1.8%
	More than 15 years-2.4%
Do you give Diet and Nutritional counselling to all your complete denture patients?	YES -83.6%
	NO -16.4%
Do you have a record of the patient's nutritional history and accurate food intake over the past 3-5 months period?	YES-16.4%
	NO-83.6%
Question	options Numbers Percentage
Do you take time and explain the components of a diet that will enhance your patients' overall health?	Yes -71.2%
	No -28.8%
Do you help the patient in establishing goals to improve the diet?	Yes -68.5%
	No - 31.5%
Have you conducted a Follow up to support the patient in efforts to change food behaviour?	YES -41.1%
	NO -58.9%
Do you take the history of Number of full meals taken by the patient per day?	YES -31.5%
	NO-68.5%
Do you ask if the patient has at least one serving of dairy products, two or more servings of daal and meat /fish every day?	YES-42.5%
	NO -57.5%
Do you ask the patient about consumption of two or more servings of fruits and vegetables per day?	YES-47.9%
	NO -52.1%
Did you ask the patient If they had suffered from any chewing or swallowing difficulties?	YES -82.2%
	NO -17.8%
Did you ask the patient about the number of cups of beverages or juices consumed per day?	YES-42.5%
	NO -57.5%
Did you ask the patient If he was self-fed or needed assistance?	YES -43.1%
	NO -56.9%
Do you ask the patient to Limit intake of bakery products high in fat, simple sugars and prepared and processed foods high in sodium and fat?	YES-47.9%
	NO-52.1%
Do you ever advise your patient to consult a physician when severe deficiency disease of any kind is present?	YES-83.6%
	NO -16.4%
Under normal conditions, should the fluid intake be at least 30 ml/kg bd. wt per day?	YES-82.2%
	NO -17.8%
Do you know the RDA of protein intake in older patients is 0.9 g/kg?	YES-54.8%
	NO-45.2%

Do you know the RDA of vitamin A is 600-700 microgram retinol activity equivalents?	YES-67.1%
	NO- 32.9%
Do you know the RDA of vitamin C is 60-100 micrograms?	YES-67.1%
	NO-32.9%
Do you know the RDA of vitamin D is 10-15 micrograms?	YES-54.8%
	NO-45.2%
Do you know the RDA of vitamin E is 100-400 IU?	YES-54.8%
	NO-45.2%
Did you know the RDA of vitamin B2 is1.3 mg for men and 1.1mg for women?	YES-47.9%
	NO-52.1%
Do you know the RDA of vitamin B12 is 2.5 micrograms?	YES-40.3%
	NO-59.7%
Do you know the RDA of calcium is 800-1200 milligrams?	YES-81.7%
	NO-18.3%
Do you know that the RDA of iron is 10 milligrams under no excessive iron loss?	YES-57.5%
	NO-42.5%
Do you know the RDA of zinc is 15 milligrams?	YES-50%
	NO-50%
Do you know the RDA of fat is 30% in a sedentary older person and 35% for an active older person?	YES-37%
	NO-63%
Did you know deficiency of vitamin B6 is an important cause of increases in prevalence of carpal tunnel syndrome?	YES-56.2%
	NO-43.8%
Did you know the decrease in taste acuity is due to deficiency of zinc?	YES-71.2%
	NO-28.8%
Did you know that conventional food groups are divided into 4 groups?	YES-74%
	NO-26%

Table 2: Table showing the percentage of responses, chi-square, and p-value among various designations of the participants.

Question	RESPONSES	Chi-square value	P value
Do you give Diet and Nutritional counselling to all your complete denture patients?	YES - 83.6%	2.098	0.552
	NO - 16.4%		
Did you ask the patient If they had suffered from any chewing or swallowing difficulties?	YES - 82.2%	3.438	0.329
	NO - 17.8%		

Table 3: table showing the chi-square value and the p value of the various recommendations done on 1st, 2nd, 3rd, and 4th day.

DAYS	Food groups	Chi-square value	p-value
First day post insertion diet recommendation	Vegetable or fruit group	39.18	0
	Bread-cereal group	41.195	0
	Milk group	6.511	0.089

	Meat group	105.575	0
2nd and 3rd post-insertion day diet recommendation	Vegetable or fruit group	13.94	0.305
	Bread-cereal group	73.61	0
	Milk group	12.16	0.007
	Meat group	84.845	0
Fourth day and after diet recommendation	Vegetable or fruit group	17.183	0.511
	Bread-cereal group	21.498	0.011
	Milk group	6.939	0.643
	Meat group	60.97	0.029

DISCUSSION

The main nutritional goals are to establish a balanced diet that is compatible with the patient's physical, social, psychological, and economic circumstances. To provide temporary dietary supportive treatment aimed at specific goals such as carrying control, postoperative healing, or soft tissue conditioning, and interpreting factors unique to the denture age group of patients, which may relate to or complicate nutritional therapy [21].

The oral factors that affect food and the condition of a healthy diet are xerostomia - it is associated with difficulty in chewing and swallowing, all of which can interfere with food choice and contribute to poor nutrition. Use of drugs with side effects of hypo saliva can have a detrimental effect on dental tissue20 Taste and smell - Age-related changes in taste and smell can change food choices and reduce food quality for some people. Factors contributing to this reported reduced activity may include health disturbances, medications, oral hygiene, tooth decay and smoking. The smell is greatly reduced with age, much faster than the sense of taste [22]. Periodontal disease also increases with age and may be exacerbated by nutritional deficiencies.

Dentate status- Poor oral health leads to impaired masticatory function and leads to inadequate food choice and alters nutrition intake [23]. Natural teeth and well-fitting dentures were associated with higher and more varied nutrition intakes and greater dietary quality in the oldest old sampled [24].

Effect of dentures on taste and swallowing - The entire upper denture can affect the taste and ability to swallow. The hard palate has taste buds, so taste sensitivity may be reduced when the upper denture covers the hard palate covers. As a result, swallowing can lead to poor coordination, and dentures can be a major contributor to death from suffocation.

The effect of dentures on chewing ability, as adults, they use more strokes and longer chewing, to prepare food for swallowing, and in full dentures wearers the mastery efficiency is about 80% lower than in people with intact natural dentures. The effect of dentures on food choices, dietary quality and general health - The effect of dentures on nutritional status varies greatly in individuals [19]. Some people compensate for the reduction in mesenteric capacity by choosing processed or cooked foods instead of fresh foods and by chewing long before swallowing. Conversely, others may exclude whole food groups from their diet. Replacing weak-fitting dentures with new ones does not necessarily lead to a significant improvement in dietary intake. Similarly, the exchange of good complete dentures for implant-supported dentists has not significantly improved food selection or nutrient consumption [5].

A balanced diet provides all the nutrients in the required amounts and in the right proportions. It can be easily obtained by combining four basic food groups. The amount of food needed to meet needs vary with age, gender, physical condition, and physical activity. A balanced diet should be about 50-60% of total calories from carbohydrates, preferably from complex carbohydrates, about 10-15% from protein and 20-30% from visible and invisible fats. In addition, a balanced diet should provide other non-nutrients such as dietary fiber, antioxidants and phytochemicals, which provide positive health benefits. Antioxidants such as vitamins C and E, beta carotene, riboflavin and selenium protect the human body from free radical damage.

In the report of the expert group of NIN (National Institute of Nutrition) Guideline [15], Indian Council Medical and Medical Research 2009, it is recommended to include micronutrient foods in the diet of the elderly so that they can be fit and active [25]. Recommended Dietary Allowances (RDA) are the level of essential nutrient intake that is considered sufficient or sufficient to meet the nutritional needs of almost all (97 to 98%) healthy individuals at a certain stage of life and gender group (Table 2).

Significance/uses of RDA

As we know, RDA presents the level of nutrients consumed daily to meet all the needs of most individuals in a given population. So with the help of RDA, we can help in planning a balanced diet which includes different types of food taken from different food groups which helps in meeting nutritional needs. For the Indian population, dietary standards have been calculated by the Indian Medical Research (ICMR). These recommendations have been published as "Nutritional Needs and Recommended Diet Allowances for Indians" (ICMR 2010) (Table 4).

Table 4: Recommended nutrient intakes for older persons (WHO, 2002).

Energy	1.41.8 Multiples of the Basal Metabolic Rate (BMR) to maintain body weight at different levels of physical activity
Protein	0.91.1g/kg per day
Fat	30% in sedentary older persons and 35% for active older persons. Saturated fats should not exceed 8% of energy.
Calcium	800-1200mg/day
Iron	10mg/day assuming no excessive iron losses
Selenium	50-70ug/day
zinc	Moderate Zn availability (30%) Men 7.0mg/day, Women 4.9mg/day
Riboflavin	1.3mg for men and 1.1mg for women.
Folate	400ug/day
Vitamin B12	2.5ug/day
Vitamin C	60-100mg/day
Vitamin A	600-700ug retinol equivalents/day
Vitamin D	10-15ug/day
Vitamin E	100-400IU/day

Foods recommended for the elderly

The five food groups

All the nutrients needed for optimal health in the desired amount can be obtained by eating sufficiently varied foods from the following five food groups: 1) Four servings of vegetables and fruits, divided into 3 categories: 2 servings of good sources of vitamin C, citrus fruits and Raw cabbage serve as a good source, such as green eggs, green and yellow vegetables or fruits and potatoes and a collection of other vegetables and fruits. 2. Four servings of rich bread, cereal, and flour products.

Four servings of rich bread, cereal, and flour products.

Two servings of milk and milk-based foods like cheese.

Two servings of meat, fish, poultry, eggs, dried beans, peas, and almonds.

Extra casual foods including fats, oils, and sugars, as well as alcohol.

The only serving recommended is for about 2-4 teaspoons of polyunsaturated fats, which provide essential fatty acids.

Diet recommended for new denture wearer

The correct order of eating food is to bite, chew and swallow, and it is much easier for a new denture wearer to master this complex of masticatory movements in reverse order. Consequently, consistent foods that only need to be swallowed, such as liquids, should be prescribed for the first few days after the denture is inserted. The use of soft foods is advocated for the next few days and a pa or regular diet can be eaten by the end of the week [26].

First post-insertion day

Vegetable-fruit group: Juice

Bread-cereal group: Gruels Boiled in both milk and water.

Milk group: Liquid milk can be taken in any form.

Meat group: Eggs in eggnogs, pureed meat, meat broth or soup.

The sample menu should include a glass of milk at least once a day.

Second and third post insertion day

Vegetable-fruit group: juice; Tender cooked fruits and vegetables (seedless and without skin).

Bread-cereal group: cooked cereals, boiled softened bread, rice, noodles and macaroni.

Milk group: liquid milk and cottage cheese.

Meat group: chopped meat, ground liver, tender chicken / fish in cream sauce, scrambled eggs, thick soup, etc.

The sample menu must include butter or margarine, a glass of milk at least once a day.

Fourth day and after

On the fourth day, or as soon as the sore spots heal, hard foods can be eaten in addition to soft foods. Ideally it should be cut into small pieces before eating. The sample menu must include butter or margarine and a glass of milk.

The current study suggests that dentists are guiding the patients to improve their overall well-being as a person by enquiring about a patient's nutrition and overall well-being, by setting goals for overall health, dietary

improvement, adopting follow-ups, and enquiring whether someone is swallowing. Most participants are familiar with RDA recommendations and related diseases.

When the data related to the 1st day post insertion, in the vegetable group, prosthodontist has chosen the maximum percentage (27.4%) of the recommended diet (juices). Followed by postgraduates. In the bread and cereal group, prosthodontists have chosen the recommended diet and among postgraduates, the highest percentage was recorded for cooked cereals, softened bread, followed by boiled rice and then gruels cooked in milk or water. In the milk group, maximum participants have chosen milk. In the meat group, prosthodontists have chosen the recommended diet (egg in eggnogs, meat soup) and among postgraduates, the highest percentage was recorded for egg in eggnogs followed by me soup and thick soup. Among practicing dentists, maximum response was recorded for egg in eggnogs and thick soup.

In the second- and third-day post insertion, in the vegetable group, maximum responses were seen for tender cooked fruits and vegetables in all the groups. In the bread and cereals group, postgraduates and prosthodontists have chosen cooked cereals, a softened bread followed by boiled rice. Whereas among practicing dentists, the choice of recommendation was cooked cereals, a softened bread followed by boiled noodles and macaroni. In the meat group, the highest percentage of responses was seen for pureed meat in all the groups followed by thick soups in practicing dentists and postgraduates.

CONCLUSION

Within the limitations of the study, we can say that dentists are guiding the patients to improve their nutritional and overall wellbeing as an individual. Among all the dentists, prosthodontists have shown good awareness of nutritional counselling when compared to other dentists and care must be taken to educate all the dentists about the diet recommended after denture insertion.

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