

**Importance of Diet Counselling To Prevent Dental Caries- A Review Paper**Das Soumalya<sup>1\*</sup>, Das Debaprasad<sup>2</sup>, Singh Chanprit<sup>3</sup>, Kaur Manpreet<sup>4</sup><sup>1</sup>BDS (HON'S) (WBUHS), MS (Counselling and Psychotherapy) formerly attached- Diamond Harbour Dist Hospital, Govt. West Bengal, India<sup>2</sup>MDS (Conservative Dentistry and Endodontics) (Manipal) Head of the Department, Dept. of Conservative Dentistry and Endodontics, Haldia Institute of Dental Sciences and Research, Haldia, West Bengal, India<sup>3</sup>BDS (BFDU) Clinical Tutor, Dept. of Pedodontics and Preventive Dentistry, Sri Sukhmani Dental College and Hospital, Mohali, Punjab, India<sup>4</sup>BDS (BFDU), Clinical Tutor, Dept. of Oral Medicine and Radiology, Sri Sukhmani Dental College and Hospital, Mohali, Punjab, India**Original Research Article****\*Corresponding author**

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**Abstract:** "Prevention is better than cure, an ounce of prevention is worth a pound of cure", this approach is equally applicable for the dental caries. The tooth is the only hard organ which is developed from the two different tissues of embryological origin. Being the toughest tissue in the body Enamel is the unique and one of it's kind in the human physiology, but according to nature's law it can also be affected by many factors. Ingestion of food may change the oral environment and effect oral health directly by both systemic and local mechanisms. Here role of diet comes to maintain the oral health and nutritional deficiencies or excess are just one among the any causes of defects in tooth development. Hence, dietary habits are very personal, so dietary advice must be personalised. Effective diet counselling always depends on the ability of the clinician to make the patient see the problem and they work upon as a team to resolve the situation. So dietary counselling by a dentist should not be limited to carbohydrate restriction could therefore be beneficial in a community perspective as well. Dietary Counselling for optimal oral health in children should be an essential part for general health counselling [7]. Hence in the present article reviews about the importance of diet counselling and proper diet as a preventive approach to reduce dental diseases and caries.

**Keywords:** Caries, Diet Counselling, Diet Diary, Dentist.

**INTRODUCTION**

Diet is defined referred to as food and drink regularly consumed (oxford dental dictionary), Total oral intake of a substance that provides nourishment and energy [2].

But some addicted material (chewing habits, smoking etc) are also taken frequently by many people which could lead up to oral diseases if necessary care not taken. The frequency and time of ingestion and the concept of cleaning mouth after having any food plays an major role for changing the oral microbial environment. Ingestion of food may effect oral health by systemically and locally. Nutritional effects are mediated systemically and dietary effects are mediated locally in the oral cavity. Depending in the components in the nutritional material, it has their influence on development, cellular and molecular integrity also repairment and resistance ability to disease of the oral and dental tissues, where as *local effects* due to dietary products are caused by interaction between food residues and oral bacteria, changes in the oral microbial flora, altered host resistance, modulating salivary secretion, altered biological status of the oral epithelium by the influence of potentially harmful chemicals like

are colin (due to some chewing habits) etc. Also behavioural factors should be analyzed for each person because it includes feeding practice and patterns, dietary preferences and oral hygiene habits by the dentist to provide an effective guidance during the Diet Counselling.

**DISCUSSION**

Dental diseases like Caries have an interrelated role with diet and nutrition. Despite a low rate of mortality rate associated with dental caries they have a strong impact on quality of life like inability to chew hard food objects, self-esteem, and nutrition and health status in childhood and adult stage of life. Optimal growth and development are the primary objectives of paediatric nutrition counselling. One of the major focuses with Dietary Counselling is making a slow step by step approach, so that the change can be granted for

long terms. Different types of diets are seen in different Socio-Economic Scale and Culture, some of them are-

## TYPES OF DIET

### a) Vegetarian Diet

It is a type of diet which excludes meat, fishes and generally eggs also.

#### i. Fruitarian Diet

A type of diet in which it predominantly consists of raw fruits.

#### ii. Lacto Vegetarianism-

A vegetarian diet that includes certain types of dairy, but includes eggs and foods which contain animal rennet.

#### iii. Lacto-ovo Vegetarian Diet-

A vegetarian diet that includes eggs and dairy.

#### iv. Vegan Diet

A type of diet where in addition to the requirements of a vegetarian diet, Vegans do not eat food produced by animals, Ex- Eggs, Dairy products, Honey etc

### b) Semi Vegetarian Diet

A blended type of vegetarian diet [13]

#### i. Flexitarian Diet-

A predominantly vegetarian diet, in which meat is occasionally consumed.

#### ii. Kangatarian

A diet originating from Australia. In addition to foods permissible in a vegetarian diet, Kangaroo meat is also consumed.

#### iii. Pescetarian Diet

A diet which includes fish but not any meat.

#### iv. Plant Based Diet

A broad term to describe diets in which animal products do not form a large proportion of the diet [13].

### c) Belief Based Diet

#### i. Buddhist Diet

While Buddhism does not have specific dietary rules, some Buddhists practice vegetarianism based on a strict interpretation of the first of Five Precepts [13].

#### ii. Hindu and Jain

Followers of Hinduism and Jainism may follow lacto-vegetarian diets, based on the principle of Ahimsa (non harming) [13].

#### iii. Islamic Diet and their law

Muslims follow a diet consisting solely of food that is 'Halal'- permissible under Islamic law. The opposite of halal is 'Haram', food that is Islamically

impermissible. Haram substances include alcohol, pork, and any meat from an animal which was not killed through the Islamic method ritual slaughter (Dhabihah) [13].

#### iv. Others-

Christians and other religions have their own modified version of diet.

### d) Medical Condition Based Diet

#### i. Best Bet Diet-

A diet designed to help prevent multiple sclerosis, by avoiding food which contains certain types of protein.

#### ii. Diabetic Diet

Diabetes Mellitus is a metabolic disease which is generally autoimmune or genetic in cause, where blood sugar level gets elevated than the normal range. Patients have been suffering through it advised to take more fibrous food and less carbohydrate *low glycemic index* foods but under strict supervision of an Endocrinologist and Nutritionist.

#### iii. GI Cancer/Colon Cancer

Calcium, Milk and Garlic are thought to help prevent colon cancer. Red meat and processed meat may increase risk [13].

#### iv. Liquid Diet

A diet in which only liquids are consumed. May be administered by clinicians for, medical reasons, such as after a surgery, gastric bypass or to prevent death through starvation from a hunger strike

#### e) Importance of Balance Diet

A balanced diet is important because our organs and tissues need proper nutrition to work effectively. Without good nutrition, our body is more prone to disease, infection, fatigue, and poor performance.

## CLASSIFICATION AND ROLE OF BASIC NUTRIENTS IN DIET [5]

The classification of nutrients are very important because each of them have a specific role for proper growth [5].

- Energy providing Carbohydrate and Lipid
- Tissue building and repairing Protein
- Regulators like Vitamin and Minerals
- Water composed 55-60% of the total body weight

The basic five foods are called foundation foods. Cereals, Vegetables, Fruits, Milk, Meat and different types of fundamental foods generally consumed for the source of energy.

**Table-1: Caloric requirement for different age group [5]**

	TODDLER	PRESCHOOL	SCHOOL	ADOLESCNET	ADULT	PREGNANT WOMEN
Caloric Requirement	1200-1500	1500	1800	2500	2800	2800
RDA Protein Requirement	18-20mg	22g	33g	50g	55g	100g

**IMPORTANCE OF DIET IN DENTAL HEALTH-**

Nutrition and dietary elements have a direct impact to the Oral and Dental health. In the Oral Developing stage Vitamin A, Vitamin D, Vitamin C, Calcium, Fluoride, Proteins etc are required. Malnutrition and inappropriate sugar consumption may leads to many dental diseased situations. Post-eruptive incorporation of fluoride forms *fluorohydroxyapatite* (FHAP) crystals which are less acid soluble. At optimal dosage fluoride markedly decreases the development of dental caries, which at over dosage it has an adverse effect on the Bone and Tooth structure. So it is very rational to have a proper knowledge about daily dietary components to maintain a long term good oral health through a proper Diet Counselling.

**DIET AND DENTAL CARIES**

It is already proven by so many well designed studies that fermentable carbohydrates, more specifically sucrose containing foods are the most potential cariogenic substances [2].

Vipeholm Study concluded that [3]

- ‘ increased carbohydrate mainly sugar increased caries activity’
- ‘caries risk greater- sugar consumed retained in tooth surface’
- ‘caries activity greatest sugar consumed between meals,
- ‘varies widely between individuals;
- ‘withdrawal of sugar rich foods decreased caries activity rapidly’
- ‘high concentration-prolong retention- caries activity increased’

- ‘clearance time of sugar correlates closely with caries activity’

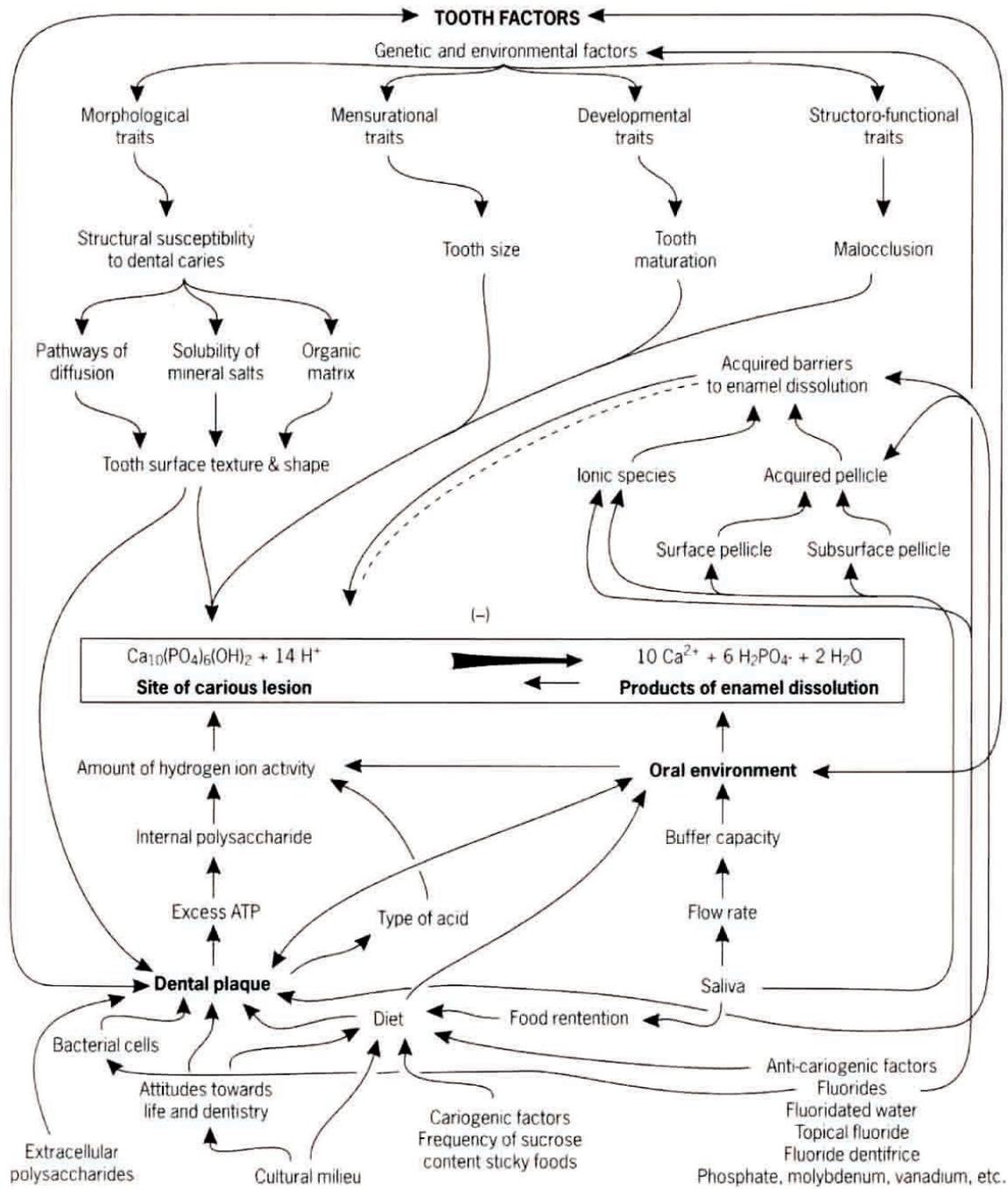
Turku Sugar Study concluded that [3] -

- Fructose was less cariogenic than Sucrose. Xylitol was non cariogenic or even anticariogenic [3].

The cariogenic carbohydrates are dietary in origin, since uncontaminated human saliva contains only negligible amounts of carbohydrate regardless of the blood sugar level. *Salivary Carbohydrates are bound to proteins and other compounds, are not readily available for oral microbial degradation* [8]. The cariogenicity of dietary carbohydrates varies with the frequency of ingestion, chemical composition and presence of other constituent, physical form of the food. Substrate with time is a major factor of dental caries according to the modern concepts also time of ingestion of food and pregnancy are important factors. Solid and Retentive sucrose containing foods that are more cariogenic than sugar containing less retentive although these are vulnerable for gum health.

**EDUCATION OF PATIENT ABOUT THE ROLE OF SUGAR IN DECAY PROCESS**

Enlighten the patient’s about the underneath facts of patho-physiological process for dental caries in simple version is very important to create a concrete awareness against the decay process into their mind. They need to understand the etiological factors for dental caries because it is the only way they could encourage their basic common sense to prevent themselves to get affected by those factors. The etiology of dental caries involves interplay between oral bacteria, local carbohydrates and tooth surface.



**Fig-1: One of the recent methods of describing the etiology of dental caries was put forth by Thylstrup and Fejerskovas [10]:**

The plaque that forms in the teeth every day contains bacteria. These bacteria change the sugar present in food into acid-

**SUGAR (in food) + PLAQUE/BACTERIA (germs) = TOOTH + ACID = DECAY [1, 2]**

The grand total time of exposure to acid is used here, to give the patient a rough idea of the risk that his diet is imposing on his teeth.

**OBJECTIVE OF COUNSELLING**

The main objective of dietary counseling in for oral health is caries prevention. If prevention is indeed the objective, then diet assessment and preventive recommendations must begin at an early age, prior to visible signs of the carious process. Diet Counseling aims to help parents change their and their children’s dietary behavior so that they choose diets with low or non-cariogenic snacks, limit sweet foods to mealtimes

and perform tooth brushing after sugar exposures. Thus in short the objectives of diet counseling are [6]:

- Correction of diet imbalance that could affect the patient's general health and sometimes reflect on his oral health.
- Modification of dietary habits, particularly the ingestion of sucrose containing foods in forms, amt, and circumstances that cause caries formation.
- Dietary recommendations must be realistic and always based on current dietary behavior of the family .It is pointless to prescribe changes that a patient cannot or will not implement.

To achieve a realistic diet according to age it is important and intelligent to use Sugar containing foods in Major Meals and Modification in frequency of food intake, food habit, food composition and appropriate oral hygiene measures. Sometimes a compromise is may be necessary. It is better to go from a Very to Less cariogenic diet then obtain nothing. Individuals should be recommended to reduce the frequency with which they consume foods containing free sugars to four times a day and thereby limit the amount of free sugars consumed. In countries where fluoride toothpaste is available/affordable, individuals should be encouraged to brush their teeth with fluoride toothpaste twice a day [11].

#### **WHO SHOULD GIVE DIET COUNSELLING**

The counsellor should have a recognised dental or nutritional degree with updated knowledge as a result of continuing professional education and training. The best qualified persons are - Dental Surgeon, Dental Hygienist, Nutritionist.

#### **WHERE SHOULD THE COUNSELLING OCCUR**

Counseling as well as all patient education should take place in a consultation types of room/ office where distractions and anxiety producing elements should not be present.

#### **IMPORTANT FOR COUNSELLOR**

- Not to be judgemental about the patient's responses.
- Not to emphasize the role of sucrose containing food, otherwise the patient may tend to present an ideal diet rather than his/her real diet.
- The patient should not be patronized or lectured.
- Duration of counselling should not exceed 45 minutes per session.

#### **COUNSELLING DESIGN**

A proper diet counselling should be done by a designed manner.

#### **FIRST APPOINTMENT**

Before counselling a child or his/her mother, determine what the child is eating. In a 15-20 minutes appointment the diet diary forms are introduced with a brief discussion of the purpose of diet counselling such as, explain to the patient-

- That we are looking for possible dietary causes of the caries problem of the patient, so that we can reduce the risk of future caries by dietary means [1].
- A 24 hour diet record is prepared [1].
- A 6 days diet diary is advised to be prepared by the patient or his/her parents [1].

#### **PROCESS**

- Complete records of 6 days diet diary are analyzed regarding the balanced and unbalanced diet [1].
- Isolating the sugar factors [1].
- Educating the patients in the role of sugar in the decay process [1].
- The consumption of acceptable and easily available substitutes [1].
- The recognition of particle limitations of immediate success [1].
- Provision of continuous positive reinforcement [1].

#### **SUGAR CLOCK**

The concept of a sugar clock must be stressed upon. This means we must explain to the parents/ caretaker, the importance of abstaining from frequent snacking through the day. It helps to reduce the intermittent food intake. This will decrease the amount of time the Ph of oral fluids remains below the critical pH (5.2- 5.5) and thus fewer, demineralization attacks on the tooth surface [3].

#### **DEIT DIARY**

Patient or Parents (if the patient is child) are asked to record every food item consumed- solid, liquid-during 6 consecutive days. Record food consumed at mealtime, between meals, at soda fountain or while watching television. Also record candies, chewing gum, cough drops with each and every particulars. The approximate amount in household measures such as 1 cup, 1 table spoon, 1 tea spoon. The kind of food and how it was prepared, such as baked chicken, raw apple, cooked cereal etc should be mentioned. Additions to food in cooking or at the table: butter, sugar, cream etc [2].

#### **FOOD PYRAMID GUIDE**

Food Guide Pyramid was given by National Academy of Sciences and the US Department of Agriculture, this pyramid categorizes food into following groups; Grain group (in base) Vegetable group, Fruit group (above the base), Milk group, Meat group and Others (fat oils and sweets eat sparingly) (at the top) [1].

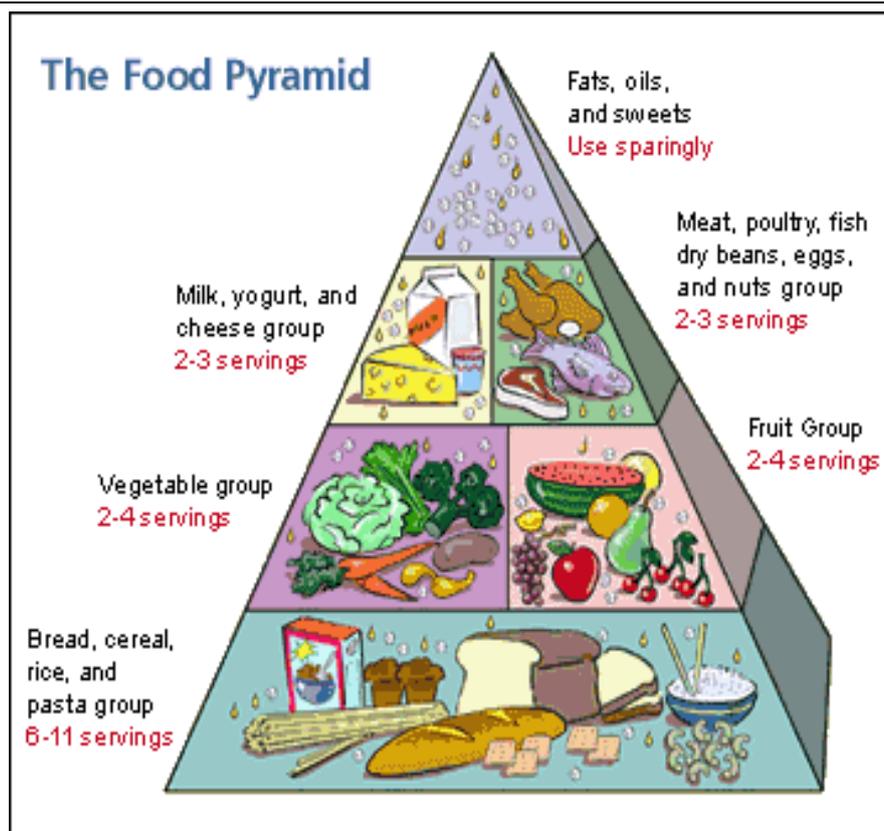


Fig-2: Food Guide Pyramid

## DIETARY ADVICE FOR DIFFERENT AGE GROUPS

### 0-1 YEAR-

Pediatricians should assist parents in establishing a “dental home” for their children by referral to a pediatric dentist or family dentist for an initial evaluation and consultation. It is recommended that a child's first dental visit occur within 6 months after the eruption of the first tooth, and no later than 12 months of age to conduct a caries risk assessment and provide parental education including anticipatory guidance for prevention of oral diseases.<sup>[7][14]</sup> Recommendations for the first dental examination and to decrease the risk of developing ECC, the AAPD encourages the professional and at-home preventive measures that include the following [4, 14]:

- Immediate referral for infants with an apparent dental problem due to trauma, disease, or developmental abnormality [4].
- Avoiding frequent consumption of liquids/solid foods containing sugar, in particular- Sugar-sweetened beverages (e.g. juice, soft drinks, sport drinks, sweetened tea) [14].
- Ad libitum breast-feeding after the first primary tooth begins to erupt and other dietary carbohydrates are introduced [14]. Breastfeeding greater than seven times daily after 12 months of age is associated with increased risk of ECC [9].

- Examination at no later than 6 months after eruption of the first tooth for infants at high risk for dental disease [4].
- Examination at no later than 18 months for infants not at high risk for dental disease [4].
- Baby bottle use after 12-18 months [14].
- Oral hygiene measures should be implemented no later than the time of eruption of the first primary tooth. Tooth-brushing should be performed for children by a parent twice daily, using a soft toothbrush of age-appropriate size and the correct amount of fluoride toothpaste [9]. Using a fluoridated toothpaste and rinsing with alcohol free, over-the-counter mouth rinse containing 0.05% Sodium Fluoride mouth rinse once a day or 0.02% Sodium Fluoride rinse twice a day have been suggested to help reduce plaque levels and promote enamel remineralization [9].

### CHILDHOOD

Once baby can sit alone and can make chewing movements, is time to encourage the child to taste different vegetables. Sweet and Chocolates should not be given as rewards.

Routine dental checkup should be done. They must be encouraged to clean their teeth twice daily once in the morning and before bed time. Use fluoride dentifrices and mouth washes should be given and soft bristle tooth brush to clean tooth. While at school swish

the mouth out with fresh water after any intermittent food.

### ADOLESCENCE- ADULT

In young and adult people it is normal to supplement their meals with snacks. There might be a change in food habit like frequent intake of high sugar liquid which often leads to increased amount of decay causing acid that is produced [3]. If they have developed any chewing habit/addiction (khaini, gutkha, pan, betel nut, smoking etc) then they should be advised to stop it as early as they can.

Advised for routine dental check up, and maintain good oral hygiene by doing proper brushing, flossing and using fluoride toothpastes etc.

### DENTAL HEALTH DIET SCORE

The dental health diet score is a screening device to achieve this objective. It is a simple scoring procedure that can disclose a potential dietary problem that is likely to adversely affect a patient's dental health.

The dental health diet score gives points earned as a result of an adequate intake of food from each of the food groups plus points for ingesting foods especially recommended because they are the best sources of the ten nutrients essential for achieving and maintaining dental health. From this sum points are subtracted for frequent ingestion of foods that are overtly sweet – whose sweetness is derived from added refined sugar or concentrated natural sugars. The difference is the dental health diet score.

A score of 60 to 100 is acceptable and dietary counselling is not usually given unless the patient requests it. If the score is 56 or less, dietary counselling is both indicated and recommended as a part of a comprehensive preventive dentistry service to patients.

#### STEP 1

To ascertain the average daily intake, list everything you eat and drink on an ordinary weekday including snacks. Record the time when the meal or snacks were eaten, the amount ingested, how the food was prepared, and the number of teaspoons of sugar added [6].

#### STEP 2

Circle the foods in the diary that have been sweetened with added sugars or are concentrated natural sweets. Classify the uncircled foods or mixed food dishes into one or more of the appropriate food groups

For each serving of these foods listed in the food intake diary, place a check mark in the appropriate food group block.

Add the number of checks and multiply by the number shown. The maximum number of points credit for the milk and meat group is 24 each and for the fruit, vegetable and the bread cereal group is 24 each

Add the points [6]. The sum is the food group score (96 is the highest score).

#### STEP 3

How many of the foods listed contain one or more of the ten nutrients essential for dental/oral health? In the Nutrient Evaluation Chart are listed the foods that are good sources of the nutrients essential for good health in general and dental oral health in particular.

In each of the eight columns of foods, check the one or more eaten on this usual weekday. If a food is checked, circle the number 7 beside the nutrient that heads this column.

The same food, such as broccoli, may be found in several columns. Also, in column more than one food may be checked. Regardless of the number of foods checked in the column, only seven points is given per nutrient (56 is a perfect score) [13].

#### STEP 4

List the sweet, sugared foods, and the frequency with which they are consumed. Classify each sweet into liquid, solid and sticky or slowly dissolving. Place check mark in the frequency column of each item as long as they are eaten 20 minutes apart. Add the checks- if sweets are liquid – multiply by 5, solid- multiply by 10, slowly dissolving- multiply by 15 [13].

#### STEP 5

Now put it all together, Transfer the 4 food group score the sweet score to the Totaling the Scores page. If the 4 Food Group is barely adequate or not adequate and *lor* the sweet score is in the 'Watch Out' zone, nutrition counseling is indicated [13].

### TOTALING THE SCORE

*Food Group Score-*

72-96 - Excellent.

64-72 - Adequate.

56-64 - Barely Adequate.

56 or less - Not Adequate.

Score 60-100 is acceptable, and diet counseling is given only at pt request. If 56 or less, then dietary counseling is both recommended and indicated as a part of preventive program [12]. Giving dietary advice successfully, therefore depends on for more than providing knowledge, it requires sensitive understanding of the role of food in society and its significance for the individual patients. Dietary advice consists of several distinct elements which cannot be considered as one of the events. Changing eating habits

is one of the most difficult changes in behavior to achieve because of all pervasive nature of food. Ideally, changes in food related behaviour should be paralleled by changes in other aspects of health related behaviour in order to produce healthier person in all respects [12].

*Sweet Score*  
 5 or less - Excellent  
 10 - Good  
 15 or more- 'Watch Out' zone

Table. 3

Food Group	Recommended Adult Servings	Portion Size Considered one Serving	Number of Servings	Points
MILK (milk and cheese)	3	8 oz (1c) milk 1 ½ oz Cheddar cheese 1 ½ slice American cheese 1 ½ c cottage cheese 8 oz (1 c) yogurt	_____ x 8 =	(Highest possible score = 24)
MEAT (Meat, fish, poultry, dry beans, nuts)	2	2oz lean cooked meat, fish, or poultry 2 eggs 4 tbsp peanut butter 1 c cooked dry beans or lentils	_____ x 12 =	(Highest possible score = 24)
FRUITS AND VEGETABLES Vitamin A : (dark green and deep yellow fruits and vegetables)	1	½ c cooked fruit or vegetable 1 medium raw fruit or vegetable ½ medium grapefruit or melon 4 ox ( ½ c) juice	_____ x 5 =	(highest possible score = 6)
Vitamin C (juice and citrus fruits)	1		_____ x 6 =	(highest possible score =6)
Other	2		_____ x 6 =	(highest possible score =6)
BREAD AND CEREALS (enriched or whole grain)	4	1 slice bread ¾ c dry cereal ½ c cooked cereal, rice, noodles, or macaroni	_____ x 6 =	(highest possible score = 6)

TOTAL SCORE = \_\_\_\_\_  
 (Highest Possible score = 96)

Fig-3: Dental Health Diet Score Step 2 Scoring

Table-- 5

Example	Form	Frequency	Points
10:00 A.M. 1 jelly donut	Liquid	✓ x 5 =	5
12:00 Noon ham and cheese sandwich	Solid and sticky	✓✓ x 10 =	20
1 c milk	Slowly dissolving	✓ x 15 =	15
1 cupcake			
3:00 P.M. 1 coke			
5:00 P.M. 1 cough drop			

TOTAL SCORE = 35

Decay Promoting Potential

Form	Frequency	Points
<b>Liquid</b> Soft drinks, fruit drinks, cocoa, sugar and honey in beverages, nondairy creamers, ice cream, sherbet, gelatin dessert, flavored yogurt, pudding, custard, popsicles	_____ x 5 =	
<b>Solid and Sticky</b> Cake, cupcakes, donuts, sweet rolls, pastry, canned fruit in syrup, bananas, cookies, chocolate candy, caramel, toffee, jelly beans, other chewy candy, chewing gum, dried fruit, marshmallows, jelly, jam	_____ x 10 =	
<b>Slowly Dissolving</b> Hard candies, breath mints, antacid tablets, cough drops	_____ x 15 =	

TOTAL SCORE = \_\_\_\_\_

Fig-4: Dental Health Diet Score Step 4 Scoring

## COMMUNICATION AND MOTIVATION

Motivate the patient for getting accepted with the modified food habit. However, the counsellor's positive attitude and conviction as to the necessity and effectiveness of nutrition counseling can stimulate the patient to initiate an improved dietary pattern.

## RECALL VISIT

During the next months at regular intervals, the dentist should evaluate the patient's progress and provide psychological reinforcement. Schedule a follow up visit for 2 weeks later. The patients asked to complete a second 5 day food diary in the same manner first just, before returning.

Evaluations are made by means of [2]:

- The patient's comments.
- New diet diaries.
- Discuss misinterpretations, misunderstandings, problems and basic pit-falls with the patient.
- Susceptibility tests such as – Snyder Test, Clinical judgment.
- Reinforcement is provided by praising the patient's efforts. Point out the improvements made in the diet as well as in the test results and the absence of new carious lesions.

## PATIENTS WITH HIGH CARIES ACTIVITY DIET

In such cases diet counseling should be a part of preventive procedure and it should be included with-

- Immediate removal of all carious tissue and placement of ZnOE restorations Topical fluoride applications [2].
- Plaque control instructions [2].
- Home use of fluoride containing dentifrices and mouth rinses [2].

## CONCLUSION

Modifying normal diet and dietary habit to improvise oral health status is not so easy. Dental caries is related to diet and that creates some difficulties for majority of the population. A proper nutritional diet can play a major role in good oral health. It is important that there is a recommended maximum level for consumption of free sugars because when free sugars consumption by a population is low, dental caries levels are low. To prevent this, the role of primary health care providers (general physician, dentist etc) and nutritionists are very important to *educate, aware, motivate and counsel* the people about proper diet, dietary habits and also individualised care should be taken for risk prone persons. Oral health education should be promoted alongside other forms of health education and dietary and nutrition advice for oral health should be integrated with advice for general health. Health education campaigns and health promotion websites should be encouraged. Thus a collaborative effort is mandatory for the successful

implementation of nutritional counseling in pediatric medical and dental settings [4]. Their individual role is very important to get an optimum result.

## CONFLICTS OF INTEREST

There is no area of conflicts of interest.

## REFERENCES

1. Sivakumar N, Muthu MS. Child psychology. Paediatric Dentistry Principles and Practice. 2011;2:69-87.
2. Tandon S. Text book of Pedodontics-2<sup>nd</sup> Edition, Elsevier, 2009, 241-248.
3. Damle SG. Text book of Pediatric Dentistry- 4<sup>th</sup>, Edition, API, 2012, 98-118.
4. Dutta A, Dutta G. Nutritional Counselling in prevention of caries- A Team Approach- ijdsr, vol.2, 6B-2014, 9.
5. Hugar S, Hugar D, Sajjanshetty S. Diet Counselling for Pediatric Patients-A Review-SJAMS, 2014, 2(4A), 1199-1201.
6. Chour GV, Chour R. Diet Counselling- A Primordial level of Prevention of Dental Caries-IOSR-JDMS,v.13, Issue 1, ver II, 2014, 64-70.
7. Preventive Oral Health Intervention for Pediatricians. Pediatrics 2008; 122: 1387-1394.
8. Rajendran R. Shafer's textbook of oral pathology. Elsevier India; 2009.
9. American Academy of Pediatric Dentistry. Guideline on Infant Oral Health Care. Pediatr Dent. 1986 (adopted) 2014 (revised); v.37 (n.6): 15/16: 146-150.
10. Crall J J. Optimising oral health throughout childhood: The importance of caries risk assessment and strategic interventions. International Dental Journal 2007, 57, p: 221-228.
11. Moynihan P, Petersen PE. Diet, Nutrition and the prevention of dental diseases- Public Health Nutrition, 7(1A), 201-208.
12. Niezel P. Nutrition in Clinical Dentistry, 3<sup>rd</sup> Edition, WB Saunders and company, 1989, 277-307.
13. Mahan LK. Krause's food, nutrition, & diet therapy. Escott-Stump S, editor. Philadelphia: Saunders; 2004.
14. Policy on Early Childhood Caries (ECC) Classifications, Consequences, and Preventive Strategies: Review Council, American Academy of Pediatric Dentistry, 2016, 39, 6, 17/18.