



## GERIATRIC NUTRITION – RECOMMENDATIONS AND REVIEW

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### ABSTRACT

Geriatric patients with minimal risk of chronic diet related disability are the ones who have adhered to a health promoting diet throughout their lifetime. The main factors causing malnutrition in elderly include poor knowledge of the diet, lack of teeth, disability, drugs and dependence. This risk can be reduced by a combined effort of assessing the nutritional needs of the elderly and also by providing them with adequate access to the food and nutrition they require. Denture wearing patient may need appropriate guidance from treating dentist about nutrition requirement of geriatric denture wearing patients and schedule for eating various food stuff after denture insertion. Thus this article aims at providing knowledge about the basic nutritional requirements of elderly and formulating a diet plan for all the new denture wearers for ease of getting acclimatize to the prosthesis without compromising their nutritional needs.

**KEYWORDS:** Diet, Nutritional status, Malnutrition, Nutritional requirements, Prosthesis, Dentures.

### INTRODUCTION

It has been said that the real wealth is not the amount of monetary stuffs you have but the good health, and since an ancient era it has been seen and facts have been cleared a sound relationship between a good body health and dental health. Both of them go hand in hand and if one of them is affected, it leads the change in other.

While the vast majority of people have a genetic predisposition to good health, many people jeopardize this valuable asset by failing to properly care for their bodies. Much of this neglect is due to a lack of knowledge of the best way to care for this complicated yet wonderful machine. This is more so amongst the older age group of individuals. Genetics, age, gender, state of health, functional status, and environmental factors all determine the nutritional status of elderly people.

The words “diet” and “nutrition” are often confused with one another, Diet is defined as the food consumed by the person whereas the digestion of food products, as well as the maintenance and repair of bodily tissues by these digested food elements, which are delivered throughout the body via the blood, are referred to as nutrition. A balanced diet is a required for proper maintenance of good health. If a food lacks proper vitamins and minerals or the body is not capable of consuming those minerals,

then the person may “starve” his body even though he consumes food in sufficient quantities.<sup>[1]</sup>

With the advancing age, changes in physical health as well as mental health can be observed and in which nutritional factors play a major role as it decides the chronicity of the disease, the amount of hospitalization, the rate of recovery as well the re-hospitalization, the increased amount of care and the increased amount of mortality.<sup>[2]</sup>

#### The purposes of this article is to

1. To formulate a diet plan for all the new denture wearers for ease of getting acclimatize to the prosthesis without compromising their nutritional needs
2. Provide knowledge about the basic nutritional requirements of geriatric denture wearer

#### Diet Recommendation and Schedule for New Denture Wearer<sup>[3]</sup>

Any denture wearer has travelled a long journey starting from dentulous state to edentulous state and again getting back the dentulous state in the form of Prosthesis.

The food is normally consumed in followed phases. First is biting the food followed by chewing it to convert it to smaller food particles and getting it ready for swallowing. For any new denture wearer, the first day of

denture insertion brings joy of getting new teeth in the form of denture, but with that joy it also brings apprehension and anxiety about the success of the same. For new denture wearers food to be consumed for the first few days should be in liquid/semi solid form such

that it requires only swallowing. Initial diet menu should include soft food for the next few days and ultimately firm and regular diet can be resumed by the patient by the end of first or second week. Table 1 shows the following phases of eating food after denture insertion.

**Table 1: Phases of eating food after denture insertion.**

Phase (Post insertion)	Food Items
<b>First Phase</b>	<p><b>Vegetable-Fruit group:</b> Juices</p> <p><b>Bread-Cereal group:</b> Oats or rice cooked in either milk or water.</p> <p><b>Milk group:</b> milk can be consumed in any of the form.</p> <p><b>Meat group:</b> Eggs in semisolid form, mashed meats, meat gravies, or soups. One should consume a glass of milk at least once a day.</p>
Any food items as per the choice of patient can be continued for 2 to 3 days or till patient is ready to move to next phase	
<b>Second Phase</b>	<p><b>Vegetable-Fruit group:</b> Juices; Tender cooked fruits and vegetables, (seedless and skinless)</p> <p><b>Bread-cereal group:</b> Cooked cereals, softened breads boiled, rice, noodles and macaroni.</p> <p><b>Milk group:</b> Fluid milk and cottage cheese.</p> <p><b>Meat group:</b> Chopped beef, ground liver, tender chicken/fish in a cream sauce, scrambled eggs, thick soups, etc.</p> <p>Food must include butter or Ghee, a glass of milk at least once a day.</p>
Any food items as per the choice of patient can be continued for 2 to 3 days or till patient is ready to move to next phase	
<b>Third Phase</b>	Firm and solid foods can be eaten in addition to the soft foods. These should ideally be cut into small pieces before eating. The sample menu must contain butter and a glass of milk.
Any food items as per the choice of patient can be included in the diet plan to make it balanced diet for him/her	

### Nutrition for The Patient

Nutrition is a complex subject about which newer things are constantly being discovered. Food substances are classified into following components: (1) proteins, (2) carbohydrates, (3) fats, (4) vitamins, and (5) minerals. A detailed discussion of these food groups would merely serve to confuse those who are unfamiliar with the field of nutrition. As a result, just a brief overview of the dietary groups and their sources will be provided.

#### 1. Proteins

With increasing age, the requirement for protein increases. a decrease of the skeletal muscle mass is a primary indicator of Protein depletion in the elderly.<sup>[1]</sup> The RDA for proteins, for persons aged 51 and over, is 0.8-g protein/kg body weight per day approximately 56 grams for males and 46 grams for females.<sup>[3]</sup> Meat, fish, poultry, dairy product like goat milk (8.69gm/cup), sheep milk (14.65 gm/cup), buffalo milk (9.15gm/cup), where 1 cup= 244 gm.<sup>4</sup> and eggs are the best sources of animal protein, especially when not overcooked. Peas and beans are arguably one of the best vegetable protein sources. Among the meats, steaks and chops are hard to chew, but liver are easier to chew. Ground and chopped meats and many kinds of fish are easy to eat. Soups, broths, and gravies can provide a lot of the nutrients found in meat. Milk and cheese are good protein foods. Cream cheese and well-aged cheddar and Swiss style are preferable to

the cheese spreads. Deficiency of proteins causes edema.<sup>[3]</sup>

#### 2. Carbohydrates

Sugar and starch are the main components of Carbohydrates and are obtained mainly from plants. They are a primary energy source. In our modern diet, carbohydrates are found in refined form, as in sugar, white bread, flour like wheat flour, white flour, and refined cereals. These type of carbohydrates are called “empty calories” and contain little or none of the essentials required for building and maintaining a healthy body. Most of the carbohydrates, especially the cooked cereals, are among the easiest foods to eat. They are called the “energy foods,” as it does not contain much apart from the energy.<sup>[1]</sup>

#### 3. Fats

The principal purpose of fats is to produce heat and energy. However, there is only a slight role in building and repairing the tissue. Chief sources of fats are fat meats, vegetable oils, butter, cream, egg, yolk, and nuts. Fats are an essential part of the diet.

#### 4. Vitamins

These are chemical substances which promote growth and assist in the maintenance of healthy body tissues. There are instances when the body is unable to provide sufficient amounts of vitamins, and they must be taken

from outside sources as a nutritional necessity. Denture wearers are typically on a deficient diet and may require supplementary vitamins.

### Vitamin A

The RDA for vitamin A is 800-1000 micrograms. It is highly essential for normal vision. Deficiency of this vitamin may produce lead to “night blindness.” It also helps to maintain the health of the skin and the linings of the mouth, nose, and inner organs. Vitamin A are found in high quantities in egg yolks 1 large (75 RAE), whole milk 1 cup (149 RAE), and sweet potato 1 whole (1463 RAE). The body can also produce vitamin A from yellow, leafy green, and some red vegetables.<sup>[5]</sup>

### Vitamin D

The RDA is 5 micrograms. Vitamin D is essential as it is required to form strong bones and sound teeth. It is also known as the “sunshine vitamin,” because the rays of the sun change certain substances in the skin into vitamin D.<sup>[6]</sup> Foods such as egg, yolk, butter, cream, and irradiated whole milk contain vitamin D. Fish liver oils are the richest natural source of vitamin D. The elderly is frequently deficient in Vitamin D because of lack of sun exposure and an inability to synthesize Vitamin D in skin and convert it in the kidney. Deficiency can cause weak bones, bowlegs and beading of ribs.<sup>[7]</sup>

### Vitamin B Complex

Thiamine or B1(RDA 1 mg daily), riboflavin or B2(RDA 3 mg daily), and niacin are the most important members of the vitamin B family. Folic acid and vitamin B12, are also very important as they are necessary for a healthy state of the blood. Burning of the tongue or cracking at the corners of the mouth are initial signs of vitamin deficiency. Other symptoms include individual who gets tired easily, chronic grouch, or the person with vague complaints may possibly be showing the effects of foods which provide too little of these important members of the vitamin B complex.

Whole grain cereals and whole grain breads and leafy green vegetables are good source of vitamin B. Milk is a good source of the vitamin B group (approx. 0.447/cup or /244 g), especially riboflavin. Meats are also good sources, and liver is especially rich in vitamin B12, as well as in vitamin A.<sup>[8]</sup>

### Vitamin C

The RDA is about 60 micrograms. Deficiency of vitamin C causes scurvy. It may manifest by a tendency to bruise easily and by tender gums which bleed easily. Many people get too little vitamin C as a part of their daily diet.

Vitamin C is found in high quantities in all the citrus fruits. Other good sources include tomatoes, fresh strawberries, and raw green foods, such as cabbage, green pepper, and lettuce. Potatoes also contain some amount of vitamin C.<sup>[9]</sup>

## MINERALS

### Folic acid

RDA is 500 micrograms. Folic acid is found in leafy green vegetables, oranges, liver, legumes, and yeast. Deficiency causes megaloblastic anaemia, mouth ulcers, glossodynia, glossitis, stomatitis.<sup>[10]</sup>

### Calcium

The recommended daily allowance of calcium is 800 mg/day. Calcium must be acidulated before digestion in the elderly because calcium absorption is reduced due to a lack of hydrochloric acid in the stomach. Food sources of calcium include milk and milk products, dried beans and peas, leafy green vegetables.<sup>[11]</sup>

### Iron

The RDA for iron is 10 mg. Meat, fish, poultry, whole grains, fortified breads and cereals, leafy green vegetables, dry beans, and peas are all good food sources. Deficiency causes burning tongue, dry mouth, anaemia and angular cheilosis.<sup>[12]</sup>

### Zinc

The RDA is 15 mg. Good sources of zinc are animal products, whole grains and dried beans. Reduced taste perception, mental lethargy, and poor wound healing are all symptoms of zinc deficiency.

## APPLICATION

Though all the daily essential requirements of a diet have been described the main problem of how to apply it still remains. In other words, what does a person consume in order to achieve correct nutrition? One of the simplest and most practical nutritional systems to follow is the “basic seven.” In general, the “basic seven” provides an excellent scheme for a daily diet to ensure adequate nutrition as given in table 2.<sup>[1]</sup>

However, if there is any presence of disease such as stomach or intestinal disorder or any other physical illness then, a physician should be consulted for dietary advice. The following foods are recommended:

**Well-cooked cereals:** oatmeal, corn meal, and creamed wheat. (These should be eaten only in moderate quantities).

**Stewed fruits:** peaches, apples, and apricots.

**Fresh fruits:** crushed apples, pears, bananas, tomatoes, avocados, and oranges.

**Soups:** rice spaghetti, vegetable, and all creamed soups.

**Cooked vegetables:** peas, potatoes, spinach, carrots, beets, asparagus tips, turnips, and Brussels sprouts.

**Uncooked vegetables:** finely cut lettuce, parsley, and cauliflower.

**Fish:** boiled, broiled, or baked.

**Eggs:** poached, boiled, or scrambled.

**Ground meats:** lamb, and liver.

**Cheese:** cottage, cream, Swiss, and cheddar.

**Desserts:** custards, ice cream, and rice puddings.

**Beverages:** sweet milk, skimmed milk, buttermilk, malted milk, orange juice, pineapple juice, tomato juice, all vegetable juices.<sup>[1]</sup>

**Table 2: scheme for daily diet to ensure adequate nutrition.**

Basic Seven food Groups	Approximate Daily Measure	Chief Nutrients Supplied
Leafy green or yellow vegetables	One or more servings	Vitamin A chiefly; also, B1, C, calcium, and iron
Citrus fruit or juice	One-half cup juice or two whole fruits	Vitamin C
Potatoes, other vegetables, and fruits	Two or more servings	Calories, minerals, and vitamins
Milk and milk products (fluid, evaporated, and dried milk, cheese, and ice cream)	One glass	Proteins, calcium (this group is the best source), and vitamins A, B2, and D
Meat, poultry, fish, dried peas, beans, and eggs	One or more servings; one daily preferably (at least 4 per week)	Proteins, iron, and vitamins B1 and B2,
Bread, cereals, and flour (natural whole grain, preferably, or enriched)	Two servings As sandwich, Poha, Ragi Preparation, Pan cakes etc.	Calories, iron, vitamin B1, and proteins. (These are plant proteins that aren't as widely available as those in Group 5.)
Butter or fortified margarine	To satisfy appetite and energy needs.	Calories and vitamin A

## CONCLUSION

Older people are at an increased risk of inadequate diet and malnutrition. Many denture patients cannot masticate enough food to supply themselves with a sufficient amount of all the vitamins they need. Thus, it is often necessary to supplement the diet with additional vitamins and trace minerals. Certain foods, vitamins, and minerals help build healthy tissues. This article is concerned with nutrition and general health in relation to dentistry. When used correctly, the knowledge included in it will improve dental comfort and overall well-being.

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