

Geriatric Nutrition in Denture Wearers: Revisited

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ABSTRACT

The prevalence of malnutrition increases with age because of many factors. Presence of edentulous jaws leads to avoidance of many types of food. Shifts in food selection patterns result from impairments in masticatory ability. In most of the instances, prosthodontic treatment alone, such as complete dentures, implant overdentures, or other prosthetic treatment for elderly patients in the absence of proper dietary instructions, is inadequate to attain a significant progress in nutritional levels. Thus, to achieve a successful therapy, most researchers imply on giving a dietary instruction as a part of treatment procedure. An attempt has been made to review the dietary requirements for geriatric denture wearers which would benefit them from untoward consequences of malnutrition.

Keywords: Dentures, Food pyramid, Geriatric denture wearers, Minerals recommended daily allowance, Nutrition, Vitamins.

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INTRODUCTION

The goal of every individual is to lead a long and healthy life. With our groundbreaking medical achievements, we have managed to increase the average life expectancy, but the quality of life during geriatric age continues to deteriorate.¹ During this period, our body undergoes physiological changes which lead to increased susceptibility toward many diseases. All the fatal diseases in modern world like diabetes, hypertension, atherosclerosis, etc., mostly result due to poor nutrition or "malnutrition."

What is Malnutrition?²

Malnutrition is defined as "a state of nutrition in which a deficiency or excess (or imbalance) of energy, protein and other nutrients causes measurable adverse effects on tissue/body form (body shape, size, and composition) and function, and clinical outcome." Many nutritional deficiencies show oral manifestations which serve as good soil for many pathologies.

Nutrition in Denture Wearers^{3,4}

In patients with complete tooth loss, prosthetic therapy not only restores the teeth but also installs confidence in them. The longevity and stability of this complete denture prosthesis depend on patients' mucosal health. Any change in mucosa leads to ill-fitting dentures and thus failure of treatment. Mucosal health is determined by the type of food a person consumes. Edentulous individuals consume lower amounts of protein and other nutrients, including fibers, carbohydrates, and some vitamins, because they avoid ample food types, especially fresh fruits and uncooked vegetables when compared with other groups of population. An understanding of the nutritional requirements, symptoms of malnutrition, and environmental factors that influence food choices will assist the prosthodontist in identifying the denture-wearing patients at risk of malnutrition. Dietary guidance and nutritional support will improve the tolerance of the oral mucosa to new dentures and prevent the rejection of dentures. Since denture fabrication requires a series of appointments, dietary analysis and counselling can be easily incorporated into an edentulous patient's treatment plan.

Factors influencing Malnutrition in Elderly⁵⁻⁸

Patient Factors

- The food choices of patient may be altered due to
 - Fear of food lodgment
 - Fear of choking
 - Hysteria
- Some people tend to compensate for decline in masticatory ability by choosing cooked or processed food over fresh food which creates a nutritional imbalance.
- Most of the elders these days are under many medications which may cause anorexia, nausea, gastrointestinal disturbances, and interfere with nutrient absorption and utilization.

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Physiologic Factors^{9,10}

- Muscular forces decrease as age progresses which leads to increase in duration and force applied during mastication.
- Decrease in quantity of saliva is seen with advancing age. Therefore, the ability to form a bolus which assists easy swallowing (plastic, cohesive and slippery) is hampered.
- Dehydration: This is a result of impaired water absorption by the kidneys. Kidneys are one of the primary organs which start degenerating as the age increases. Disturbances in kidney function not only cause dehydration but also invite many other deadly conditions like hyponatremia, hypoglycemia, etc. Aging processes has detrimental effects on nutritional status, nutrient requirements of the elderly. The factors affecting dietary intake will help the prosthodontist to provide appropriate meaningful guidance to the geriatric individuals in achieving improved oral health (Tables 1 and 2).

Diet Recommended for a New Denture Wearer^{17,18}

The regularly followed procedure of eating food is ingestion, mastication, and swallowing/deglutition. For a new denture wearer, it is much easier to just swallow the food. As the patient tends to swallow food in their first days' postinsertion, it becomes mandatory to put the patient on a proper liquid diet until they get accustomed to the new prosthesis. Once the oral cavity of the patient shows significant improvement without any allergic reactions toward the given prosthesis, a solid and firm diet can be followed.

Table 1: Nutrient needs of elderly individuals¹¹⁻¹⁶

| Vitamin | Recommended daily allowance | Deficiency manifestations |
|------------------------------------|---------------------------------------|--|
| Vitamin A | 800–1000 µg/day | Dryness and keratosis of oral mucosa Decreased salivary flow Hyperplasia of gums |
| Thiamine (vitamin B ₁) | 1 mg/day | Beri-beri |
| Vitamin B ₆ | 1.2–1.4 mg/day | Severe glossitis |
| Vitamin B ₁₂ | 8 mg/day | Magenta-colored tongue Glossodynia |
| Vitamin D | 5 µg/day | – |
| Vitamin E | Total plasma levels increase with age | Deficiency is rare |
| Vitamin C | 60 µg/day | Spongy bleeding gums |
| Folic acid | 500 µg/day | Mouth ulcers Glossodynia Stomatitis and glossitis |

Table 2: Recommended daily allowance (RDA) of minerals

| Mineral | RDA | Deficiency manifestations |
|------------------|--|---|
| Calcium | 800 mg/day | Alveolar ridge resorption Osteoporosis |
| Iron | 10 mg/day | Burning tongue Anemia Angular cheilitis |
| Zinc | 15 mg/day | Decreased taste sensation Delayed wound healing |
| <i>Component</i> | | |
| Energy | 65- to 74-year-old female: 1300 kcal/day 65- to 74-year-old male: 1800 kcal/day | Parotid gland enlargement Muscle wasting Pale and atrophic tongue |
| Protein | 56 gm/day male 46 gm/day female | edema |
| Carbohydrates | 50–60% of total calories consumed per day | Deficiency is rarely seen |
| Water | 30 mL/kg body wt/day | Xerostomia |
| Calories | 1600 kcal/day female 2400 kcal/day male | Decreased masticatory ability |

First Postinsertion Day

Vegetable-Fruit group: Fruit or vegetable juices are advised. In addition to providing necessary nutrients, juices also produce a soothing effect in the oral cavity of the patient. Bread-Cereal group: Softened bread or cereals mixed in liquid consistency can be recommended to maintain protein levels of the body. Milk group: Fluid milk is included in the dietary pattern which serves as rich source of calcium and prevents conditions like osteoporosis. Meat group: Meats made into puree form, meat broths or soups which are more palatable and easier to swallow can be instructed. As the geriatric age group is more prone to physiologic muscle loss and bone resorption, two glasses of milk has to be added to the dietary menu to prevent osteoporosis.

Second and Third Postinsertion Day

Vegetable-Fruit group: Juices; seedless and peeled vegetables, fruits cooked in semi-solid consistency. Bread-cereal group: Cooked cereals, rice porridge, soft noodles or pasta, crushed bread powder with milk. Milk group: Milk and melted cottage cheese can be directly consumed. Meat group: Tenderly cooked chicken, finely cut beef, thick broth or soups, fish liver with thick cream, etc. The sample menu must include consumption of any two dairy products (milk, butter, cheese, etc.) at least once a day.



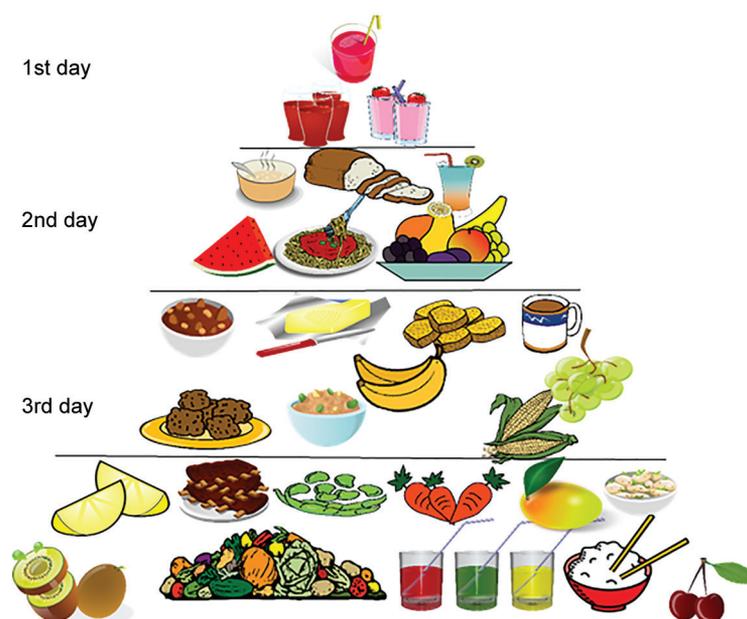


Fig. 1: Food pyramid for geriatric denture wearers

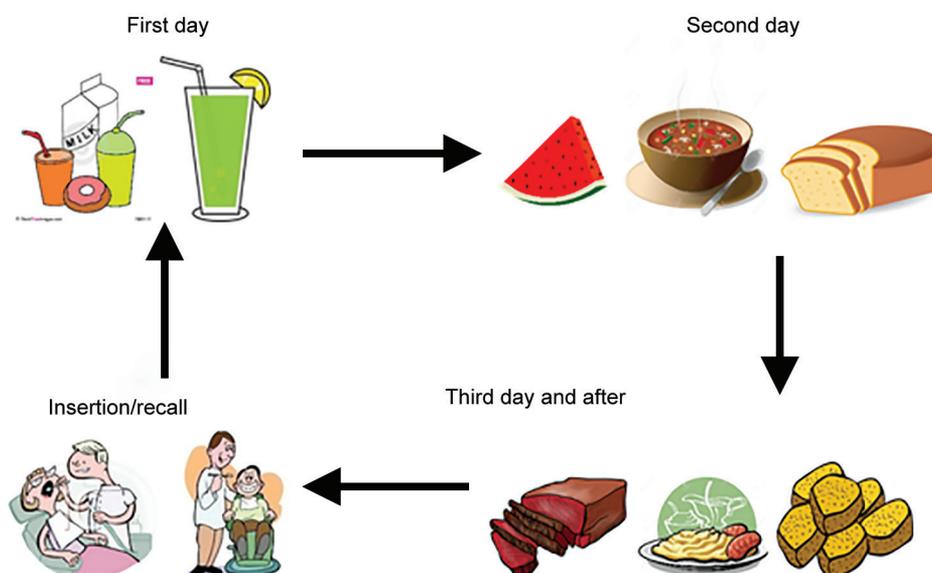


Fig. 2: Dietary habits for a new denture wearer

Fourth Day and After

With the usage of dentures together with denture hygiene, the sore spots which were once painful and red creating inconvenience to the patient tend to heal. The patient can shift the dietary needs from soft fluid diet to a solid diet. Care must be taken to prevent gagging or choking. This is done the cutting the food into smaller bits before consumption until the patient gets adapted with the prosthesis (Figs 1 and 2).

RECOMMENDATIONS

Recommendations can be given to health care providers to highlight about the nutritional status of elderly individual

while taking case history. Together with past medical history, nutritional assessment could be made mandatory in the form of mini nutritional assessment tool. The assessment should include intentional/unintentional weight loss/gain, changes in dietary pattern, and type of food eaten and difficulty in eating. Health care professionals should be consistent in providing necessary dietary care or recommendations could be made to a nutritionist.¹⁹

Recall visits should be made mandatory for adults with full dentures for their scheduled oral health assessments. Difficulties in chewing and denture discomfort are common with old age. This could further decrease or alter the dietary pattern due to pain and discomfort. Denture alterations are necessary to prevent mucosal abrasions and edema.

The overall quality of life could be improved by providing proper fitting prostheses with better quality materials.

CONCLUSION

Complete denture wearers are always at a greater risk of malnutrition than normal population. Regular monitoring of nutritional status of complete denture wearers is important to prevent morbidities and complications associated with malnutrition. Hazards of imbalanced diet, consumption of excessive amount of cariogenic food should be clearly elucidated by the dentist and dietary advice must be given accordingly.

Thus, dietary counseling and analysis should be incorporated into the treatment sequence of fabrication of denture prosthesis.

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