Nutritional considerations for geriatric edentulous patients

Shreya Gupta[1,*], Sneha S Mantri[2], Abhilasha Bhasin[3]

[1]Post Graduate, [2]HOD, [3]Reader, Dept. of Prosthodontics, Hitakarini Dental College and Hospital, Jabalpur, Madhya Pradesh, India

***Corresponding Author:**
Email: shreyagupta.2009@gmail.com

Abstract
Perfect diet and nutrition are important factors in the promotion and maintenance of health throughout the entire course of life. Malnutrition is both a cause and a consequence of ill health. Geriatric population with long term medical and psyco-social problems are chronically underweight and so are vulnerable to acute illness. Even people who are well-nourished eat and drink less if they are ill or injured. Although this may only be short lived as a part of an acute problem. If it persists the person can become undernourished to an extent that it precipitates other medical conditions. Issues related to geriatric nutrition are extricable linked to certain broader issues facing the geriatric population. This article provides an overview of geriatric nutrition and related issues faced by this group of people. This review summarizes the changes in diet associated with senior group of people.

Keywords: Diet, Nutrition, Malnutrition, Ill-health, Acute illness, Geriatric.

Introduction
Nourishment and nutrition are the basic requirement for promotion of health, human growth and development, quality of life and citizenship. In our increasingly senior population group, nutritional health is more marginal and the magnitude of the effect on nutritional health is amplified.

Health issues, physical limitations and financial hardship sometime make it difficult for seniors to get the nutrients they need for balanced diet. A 1990 survey by Ross Laboratory found that 30% of seniors skip atleast one meal a day while 16% consume fewer than one thousand calories a day which is insufficient, to maintain adequate nutrition.[1,2]

Possible Causes of Poor Nutrition [3]
Multiple factors are associated with nutritional deficiencies in elderly which includes decline in sense of smell and taste, xerostomia or alter taste sensation, complete edentulism, ill-fitting dentures, multiple missing teeth efficiency resulting in poor quality of diet with adverse effect on nutritional status.[4] With increasing age, physical limitation make it difficult for elderly to go grocery shopping, navigate through heavy traffic and park away from the store door. Senior age people with debilitating conditions like fibromyalgia, arthritis, vertigo and disability generally suffer from physical pain and poor strength. This makes simple tasks like opening a can, peeling fruit, standing long enough to cook meal difficult.

Fig. 1: Possible causes of Malnutrition in geriatric patients

Elderly people with partial or total loss of independence may develop protein caloric malnutrition. Studies have shown that an inverse relationship exist between nutritional status and complication rates (eg. Mortality, infection, pressure ulcers), lengthy stay in hospital and duration of convalescence after acute illness in geriatric patient.[5] Compromised nutrient and fluid intake results in progressive loss of lean body mass. Since restoration of body cell mass is more difficult in senior persons, preventative nutritional support with adequate intake of energy, protein and micronutrients should be considered in every elderly patients which can be done by two ways, either enteral route or by parenteral nutritional (PN) support.[5-7] Various assisted feeding devices are designed to help physically disabled to aid in taking food (Fig. 2). The planning should be such that it minimizes parental nutrition which is less physiologic and more invasive than the enteral route. This is a crucial step in diagnostic workup of these patients.[8]

Fig. 2: Various assisted feeding devices

Evaluation of Diet and Nutrition in Geriatric Adults

As compared to young adults, the nutritional requirements in the elderly remains the same, but their energy needs decreases. The average daily energy requirement for people over 65years age with a normal body mass index (BMI) should be 2,300 calories and 1800 calories for males and females respectively.[9]

BMI is calculated as, BMI = Weight in kilograms/ (Height in meters)^2

Table 1: Increase and decrease in nutritional requirements for older adults compared to young age

Increase	Decrease
Protein 0.8 to1.0g	Calories kcal Fat g
Vit D 15 to 20 mcg	Sodium 1.3 to 1.2g
Calcium 1000 to 1200 mg	Chloride 2.0 to 1.8 g

Dietary Nutritional Requirements for Elder Population

The nutritional needs can be fulfilled by eating variety of food in adequate amount. A modified food pyramid has been designed for people over 70years to optimize their nutrient intake.[10] This modified pyramid has a narrow base which reflects the reduced energy need while emphasizing nutrient dense food, fibers and water. This dietary pattern will provide daily energy intake of 1200 to 1600Kcal. Finally a flag at the top indicates that supplementary calcium, vitamin D, and vitamin B12 are required for optimal health.[11] (Fig. 3)

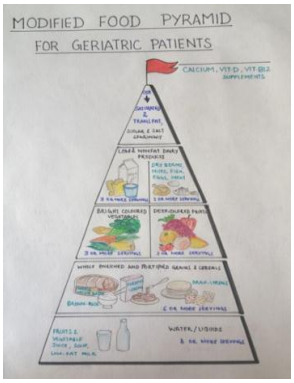

Fig. 3: Food pyramid for older aged people

Table 2: The recommended nutrients in the food pyramid with their daily requirements and sourses[12] are described in Table 1

	Nutrients	Daily need (RDA)	Sources	Deficiency
1	Calcium	1000miligrams/day	Milk and milk products, calcium fortified mineral water, dark green vegetables.	Tetany
2	Iron		meat, fish, poultry, whole grain	Anaemia
3	Protein		milk and milk products, meat, fish, eggs, legumes, cereals and potatoes	edema
4	Fats and Oils	10grams	Butter, oil	
5	Carbohydrates	50 – 60% of total caloric intake	grains, cereals, vegetables, fruits and dairy products	
6	Water	At least 30 milliliters/kilogram body weight per day		Dehydration, lethargy
7	Vitamin A –	800-1000 micrograms	Milk and milk products, spinach, papaya, pumkin, carrot, apricot.	Bitot's spot
8	Vitamin D –	5 micrograms	Sunlight, Fish liver oil	bow legs, beading of ribs.
9	Vitamin E	8-10miligrams	Pumpkin seeds, Corn, dairy food	
10	VitaminB1Thiamine	0.5/1000 calories	Pork meat, chicken, peas, whole grain, fortified grains, cereals and yeast.	beri –beri.

11	Vitamin B6 (Pyridoxine)	1.2 to 1.4 mg.	Cabbage, Banana, walnut	Carpal tunnel syndrome
12	Vitamin B12 (Riboflavin)	3micrograms (µg).	Kidney, heart, milk, eggs, liver and green leafy vegetables.	

Food to Counteract Constipation in Elderly: Food rich in dietary fibers such as whole grain bread, whole rice, granolas, figs, berries, bran are advised to counteract the age related problem of constipation which occurs due to decreased bowel movements.[12]

Food to Counteract Diarrhoea in Elderly: Food like bananas, paddy rice, black tea, blue berries, dark chocolate, white bread are advised for patients suffering from digestive disorders like diarrhea.[12]

Conclusion

Balanced nutritional supplementation influences the general health status with positive effects on quality of life in elderly people. Hence nutritional counseling and guidance should be carried out for this group of population. The dietary regimen advised should be followed by these people for improving health and quality of life. Greater emphasis should be given on consumption of nutrient dense, high fibrous food and water.

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