

# Nutritional Adaptation of Patients with Total or Partial Dentures

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**Abstract:** *The population at all, tends to aging, which must apply special measures for assessing and providing proper nutrition and overall physical and mental health. These changes are progressive and unavoidable for every individual and depends on genetics, environmental impact and lifestyle. Aim of the paper is to review the findings of the authors analyzed how patients adapt to the total and partial dentures through a change in eating habits. The material consists of papers and data found on the web that are part of journals, magazines or online articles from experts who have dealt with the examination of diet used by patients carriers of total and partial dentures. The only message that should be sent to the wearers of prosthetic replacements by health workers is that with total and partial dentures is possible regular and normal diet, but require longer adaptation period for appropriate use and acceptance by the body.*

**Keywords:** nutrition, total dentures, partial dentures

## 1. Introduction

The population at all, tends to aging, which must apply special measures for assessing and providing proper nutrition and overall physical and mental health. Aging is a big enigma of life, which is a collective term for a set of processes that contribute to the disruption of the health of some people, leading eventually to death as the ultimate consequence. It is a stable, predictable process which counted the growth and development of living organisms, and explains how complex is the biological process that causes changes in the molecular, cellular and organ level. These changes are progressive and unavoidable for every individual and depends on genetics, environmental impact and lifestyle. According to the US Census, there are over 44.7 million people aged 65 years in 2013 year<sup>1</sup>. Poor nutrition has a major impact on the overall health of people in the third age. Over the years, it decreases the body's ability to handle many functions for its normal functioning<sup>2</sup>. Appetite is controlled by several things in the body, such as: gastrointestinal system, brain, and hormones<sup>3</sup>. There is a clear link between metabolism and appetite. Appetite is also suitable when it is influenced by the metabolism. Due to the inability to move easily, joint pain or other diseases, the elderly tend to be less active than when they were younger. This can lead to reduced energy needs which were then result in a loss of appetite or anorexia. Each disease can cause loss of appetite. But not always definite cause of anorexia in the elderly, and it really can be the first symptom of undiagnosed disease. Loss of appetite can get unintended weight loss and malnutrition, which is fact that this symptom will not be dismissed as just a normal part of the aging process. Loss of appetite and malnutrition can also be caused by cancer, cardiovascular diseases, respiratory diseases, neurological disorders, liver disease, renal failure and even side effects of drugs<sup>3</sup>. Mental - health problems such as depression, dementia, anxiety and pain can lead to malnutrition. Factors such as reduced sense of taste, smell and appearance can also cause loss of appetite.

In the above mentioned, the health care providers are required to determine whether loss of appetite of an older

individual were determined with the physiological reasons, health condition or a consequence of poorly made dentures.

## 2. Aim

Aim of the paper is to review the findings of the authors analyzed how patients adapt to the total and partial dentures through a change in eating habits.

## 3. Material and Method

The material consists of papers and data found on the web that are part of journals, magazines or online articles from experts who have dealt with the examination of diet used by patients carriers of total and partial dentures.

### 3.1 Total and partial dentures

It is well known that good nutrition is essential for development and maintenance of healthy teeth, but healthy teeth are important to allow the consumption of a varied and healthy food throughout the life<sup>4</sup>. Dental needs of customers are increased and targeted at making dentures, especially patients in the third age. It is estimated that one person turning 65 will live an additional 17.8 years. The census by the American Dental Association has found that almost 57% of people aged 65-74 are carriers of some kind of partial or total dentures<sup>5</sup>. There are currently more than 32 million people in the US who wear partial or total dentures<sup>5</sup>. According to a study performed in 2013 by iData Research Inc., had 2,822,589 3,722,183 dentures and partial dentures fabricated for American patients, a total of 6,544,772; This reflects an increase of 3.5% compared to the previous year<sup>6</sup>. Ensuring the validity and proper use of mobile dentures is most important to the overall health of the individual.

Dentures have both positive and negative effects on the human body. They have a negative impact on minimizing the taste and sensation due coverage of the gingiva<sup>7</sup>. More importantly, many carriers of dentures have the appearance of painful wounds due to bad prepared dentures. Total and partial dentures must pass through strict clinical and laboratory phases of work to ensure proper fit in the mouth

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from the beginning. A poorly fabricated dentures can cause damage and dissatisfaction for the individual, which in turn, can lead to discontinuation of using the dentures<sup>8</sup>. About 33% of the denture wearers were dissatisfied with them and applied to have removed them when eating<sup>9</sup>. Also, adults who wear dentures must know that it is necessary to regularly visit a dentist at least once a year for those with already adapted prostheses, while a visit to the dentist should be extended to those with newer works of dental prostheses. Dentures should be removed during the day for proper hygiene and to allow the gums to rest (often at night). Avoiding these rules of using dentures leads to unaccepted dentures in the oral cavity. Those people with bad accepted dentures have a higher degree of oral function restrictions and significantly increased levels of poor health and depression<sup>8</sup>.

### 3.2 Detecting inappropriate nutrition

Mini-nutrient assessment is a tool used internationally in various health conditions to perform fast valid assessment of nutritional status in elderly<sup>10</sup>. This tool identifies vulnerable persons and those who already suffer from malnutrition. In addition, nutritional status can be measured by body mass index (BMI), serum albumin and self-report of appetite and weight loss. In a study by Sheiham, Steel and associates, the likelihood of older adults who have a BMI within the normal range (20-25) is raised in those who had more than 20 natural teeth. By contrast, they found people over 65 who have few natural teeth or no teeth, which were at greater risk of reduced weight due to functional problems of inadequate nutrition, and yet there were also at greater risk of obesity due low quality diet<sup>11,12</sup>.

Examination of the oral cavity can provide information about the dryness of the oral mucosa that can show if a person is faced with decreased secretion of saliva. It may alert the doctor to the poor oral hygiene of the patient. However, while only a handful of carriers of prostheses that have been tested by Donini, reported that reduced saliva cause discomfort while wearing dentures; in approximately 30% of all 65-year old patient detected reduced secretion of saliva or xerostomia<sup>13</sup>.

Xerostomia can cause problems with chewing and swallowing. When it is present, along with poor oral hygiene can lead to dietary changes which causes malnutrition and involuntary weight loss in frail elderly. The ability to chew and digest food may be impaired in the elderly or in loss of teeth or use of dentures. Impaired diet is partly related to the lack of natural teeth, lack of saliva or poorly made dentures<sup>14</sup>. Reduced ability of mastication can also lead to changes in the types of foods eaten by individuals due to a change in the ability to grind food or food perception by the individual carrier of prosthetic devices that overall there comes to inappropriate nutrition of the person.

### 3.3 Adequate nutrition

Older people should eat a variety of nutrients, vegetables, fruits, whole grains, protein, vitamins, milk and enough amount of water. This is necessary to increase the calcium and vitamin D to maintain bone health. As people get older,

their bones and all parts of the body also get older, so to maintain the normal functions of the body, they need to consume previously mentioned ingredients. However, there were found toothless elderly patients who consume less food, significantly less protein, milk sugars, no scrob polysaccharides (fibers), calcium, no hem iron, niacin and vitamin C against the people that still have teeth in the oral natural cavity<sup>14</sup>. A study at Tufts University found that the wearers of a total or partial dentures have significantly lower diet with the 19 different nutrients, compared to nutrition among adults who do not have missing teeth<sup>7</sup>. Many of the nutrients that were consumed were those which was hard to chew, such as tough meat, some vegetables and fruits, such as carrots and apples, and nuts. People with certain health problems or disabilities may be more vulnerable to reduced intake of nutrients<sup>14</sup>. Another factor affecting the nutrition in adults is the choice of food, which is usually dictated by the socio-cultural background and economic status, is an education and type of living. When people are unable to prepare food for themselves, they usually do not have control over the choice of quality food included in their diet. This should continue to be subject of investigations about the cause of malnutrition in the elderly, because of this view, malnutrition depends only on conscious change in eating habits, and not depend on bad mastication or chewing the food. So it will mention that adequate nutrition of a living organism, whether they are teeth in the mouth or there aren't any teeth, it should be based on three essential ingredients, without which it can not function, and they are: Ca, P and vitamins. D.

As the most widespread mineral in the human body is calcium (Ca), which plays a major role in developing and maintaining the normal function of bones, as well as teeth. The active role of calcium in building bone tissue can confirm that calcium is essential in strengthening the jaw bones. The calcium can be added to the diet in many ways. A number of products are rich in calcium and a complement of calcium to facilitate adequate intake of this mineral. These are products of cranberry juice (or cocktail in combination with other fruits), cereal, waffles, to orange juice and flour. It can also be administered via tablets, syrup and suspensions. They must be kept at room temperature away from moisture and sunlight, liquid forms should be frozen. Calcium is best absorbed in the form of citrate, malate or through certain types of juices. Calcium citrate has in antacids better absorbed when taken in a meal and plenty of water.

Recommended daily intake of calcium is: Adult 800 mg; for pregnant women and young people 1200 mg.; for people over 50 years 1000mg. daily and calcium in combination with vitamin D. For best absorption of calcium should be taken max. 500 mg.

With the intake of calcium reduces bone loss and fracture risk. Calcium is also used for other organ systems, which play a role in lowering blood pressure and cholesterol. Supplements of calcium and vitamin D3 are useful in the prevention of tooth loss in adults.

Phosphorus (P) is important in bone mineralization, to maintain the specified pH of the body for energy production.

Phosphorus is quite common in daily food, in the form of phosphates. Phosphorus with calcium in the form of hydroxyapatite plays an important role in building bones. It is present in the blood and soft tissues in the form of phosphoprotein, phospholipids and nucleic acids. Many plant of foods contain bioactive little phosphorus, but it does not mean that people who eat a lot of plant and unprocessed food leads to a lack of phosphorus.

With consumption of phosphorus it contributes to normal energy metabolism achievements, and it also has a role in the functioning of cell membranes and helps to maintain healthy bones.

It is important to emphasize that adults in the EU are on average daily entered between 1017 and 1422 mg. phosphorus, which is well above the recommendations. For bone health is critical to a proper balance of calcium and phosphorus.

Vitamin D plays a role in overall support for preventing health of the muscular and skeletal system, including dentures and gums. Recent studies have investigated the relationship of the density of the jawbone (alveolar bone), osteoporosis and loss of teeth. They came to the conclusion that the health of periodontal apparatus depends on a high concentration of vitamin D in the blood<sup>(4-6)+</sup>

Vitamin D3 is known in the history of medicine as "anti" or also known as the "sunshine" vitamin. This vitamin has a major impact on physical processes, particularly in the metabolism of calcium and its balance in the body, improves its exploitation of the digestive system and is important for normal growth and mineralization of bones and teeth. Vitamin D3 is produced by ultraviolet light (sunlight) and depends on the time of day, season, skin pigmentation, the living environment. The production of vitamin D3 can be reduced or not produced during the winter. In the food it can be found in fatty fish - mackerel, salmon, tuna, can be found in milk, orange juice and cereals. It is very difficult to get the required amount of vitamins from food, so supplements are necessary for bone health (multivitamin supplements of calcium). Vitamin D3 plays a major role in protecting the bones of the body.

The required amount of vitamin D3: for adults 50 years 400-800 IU per day; for over 50 years from 800 to 1000 IU per day. Some people need more vitamin D3, so the upper limit is 4,000 IU a day designated by the Institute of Medicine (IOM).

All this that was said is important, because prosthodontic result in resorption of alveolar ridges, which is inversely proportional to the respective conditions retaining dentures as prosthetic devices.

#### 4. Conclusion

Advice on proper nutrition and dental health should focus on health promotion and should follow the guidelines for general healthcondition<sup>15</sup>. It should be based on the basis of nutritional abilities of each individual separately and includes the consumption of different types of healthy food.

Healthcare professionals should take the advices to their patients about nutrition.

Oral health should be viewed as separate from general health. In older patients, due to insufficient information, they neglect their oral health. It should be emphasized that despite their tooth loss, partially or completely, the hygiene of the oral cavity should not be neglected for a moment, if they wear a prosthetic replacements. Every patient who regularly maintain oral hygiene and regularly visits the dentist, no matter how many natural teeth has been left in his mouth and what prosthetic replacements possesses, he has corresponding occlusion which helps him with the mastication ie crushing and processing of food, and thus helps to continue his intake of nutrients necessary for his health.

The only message that should be sent to the wearers of prosthetic replacements by health workers is that with total and partial dentures is possible regular and normal diet, but require longer adaptation period for appropriate use and acceptance by the body.

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