



Impact of oral health on diet and nutrition

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Is masticatory function considered a critical first step in oral processing of food materials for nutrient acquisition and utilization



- ▶ *An individual's oral health status has a profound impact on his/her acquisition and utilization of nutrients and interchangeably the nutrients an individual consumes determine the state of oral health by preventing tooth loss and oral diseases.*
- ▶ *Intact neurocognitive functions and dentition are essential in mastication to achieve coordinated movements of the teeth and tongue to help propel the food material for ingestion and subsequent nutrient absorption.*

the Global Burden of Disease 2015 study (GBD 2015) reports that oral health continues to decline, with an estimated 3.5 billion affected worldwide with oral disease. Untreated caries in permanent teeth continues to be the most prevalent oral condition in the world.

- ▶ *Although cancers of the oral cavity and lip are on the decline, it remains the eighth most common cancer in developing countries*
- ▶ *Despite the decline of edentulism in the world, it remains the leading cause of disability adjusted life-years among all oral conditions.*

- ▶ *Sensorial and Physiologic Aspects of Mastication* Before food enters the oral cavity, anticipatory processes in the brain are conditioned by memory to stimulate saliva

Mastication

Importance of physiological masticatory function for healthy life

Influence of masticatory function on memory

Mechanical role of the tongue in mastication and swallowing

Oro-pharyngeal cancer

Importance of Physiological Masticatory Function for Healthy Life

- ▶ *teeth are no longer a vital organ for humans, but remain the means by which efficient and successful masticatory function takes place*
- ▶ *Chewing function is directly connected to neuromuscular activation of the masticatory muscles, produces the necessary force to grind the bolus.*
- ▶ *The masticatory forces influence the physiology of the craniofacial region.*
- ▶ *The capacity to “adapt to load” is certainly linked to neural control.*
- ▶ *This system is highly efficient in normal physiological condition*

Influence of Masticatory Function on Memory and Cognition during Development and Ageing

- ▶ *Changes in chewing patterns can impair memory and cognitive activity during development, while poor prosthodontics (mainly badly fitting or nonexistent prostheses) can promote cognitive impairment during ageing.*
- ▶ *the impairment of masticatory function negatively influences the ability to learn and may even play a part in the onset of mental illness and addictive disorders*
- ▶ *Regarding childhood, one of the malocclusions most responsible for altering and unbalancing masticatory function is crossbite*

There are many pathologies able to alter the physiology of mastication.

1. During development there are alterations which are (a) acquired, (b) congenital and (c) hereditary

The most widespread masticatory alterations are due to caries (pain and loss of teeth) and malocclusions. 1b. Congenital pathologies may affect the bones in conditions such as cleft and lip palate, or muscles, in prematurity or spastic tetraparesis. 1c. Many hereditary pathologies affect craniofacial development.

2. *Different therapies* are required during ageing, but with the same aim of restoring masticatory function as much as possible.

In the elderly, the most widespread masticatory alterations are due to edentulism caused by various problems (caries, periodontitis, trauma).

In the elderly, there are many pathologies that may alter masticatory function and nutrition, such as tumours and neuropathologies. Special attention should be paid to any decay of motor coordination that arrives slowly and sneakily (with or without a stroke), deteriorating the masticatory function that then evolves in favour of soft boluses. Thus, an understanding of the relationship between masticatory function and cognitive capacity (during childhood and in later life) is important in the fields of both general health and dentistry, for individuals and society.

Mechanical Role of the Tongue in Mastication and Swallowing

- ▶ Swallowing dysfunctions which impact nutrition can be due to localized lesions of the tongue due to infections or inflammation.
- ▶ elderly hospitalized patients with oropharyngeal candidiasis infections had lower daily energy and protein intakes as well as lower serum albumin, zinc, and vitamin C levels than those without infection
- ▶ Multiple swallowing deficiencies (aphagia, dysphagia, globus pharynges, etc.) arise from the loss of tongue function due to neurological damage as a consequence of a stroke or from a neurodegenerative disease or simply due to ageing.

Oropharyngeal Cancers: The Nexus between Nutrition and Cancer

Nutritional deficiencies with head and neck cancers can occur before diagnosis

Frequent in patients with oral malignancies are poor diet quality and unhealthy lifestyles

The importance of nutritional status as a predictor of head and neck cancer survival

Conclusion

Continued studies in cohorts with various ranges of age utilizing validated diet assessments, anthropometry, and dietary biomarkers coupled with a comprehensive dental exam are critical to progress our current understanding. Oral health is imperative to our survival, to nourish our bodies, and to mediate energy balance. In the masticatory process, intact cognitive function is equally important as competent dentition. Masticatory process is essential in modulating hormones for energy balance. For instance, when healthy subjects were given carbohydrates as a liquid (carbonated beverage) and a solid (jelly beans), total daily energy intake increased during the liquid intervention and, consequently, a significant increase in body weight and BMI was observed. Mastication requires concerted movements of the tongue to prepare masticated food for swallowing and the timing must be precise to avoid aspiration of liquids or asphyxiation.

