



## Review Article

## Oropharyngeal Dysphagia in Elderly People

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## ABSTRACT

The number of elderlies in the world is increasing and healthy aging has become a salient issue. A health threatening factor quite prevalent among the elderlies is dysphagia. Dysphagia causes severe complications and may have negative effects on the functional ability of patients; therefore, it is known as a geriatric syndrome. Oropharyngeal dysphagia is a difficulty or an inability of forming the bolus in the mouth and safely moving it from the mouth to the esophagus. It is also interrelated to other health problems such as malnutrition and oral health. Dysphagia, malnutrition and oral health disorders are likely to cause life-threatening aspiration pneumonia in patients. As a geriatric syndrome, dysphagia should be diagnosed and managed by a multidisciplinary team of professionals. Beside health care professionals, other groups such as policymakers, researchers and scientists, industries, health funders, and the society can have their own unique role to improve the quality of care for the elderlies suffering from dysphagia.

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## Background

The population of elderlies in the world is increasing [1]. The growth in the number of elderlies can provide a positive opportunity for the society to benefit from the elderlies' experiences and knowledge; additionally, the long life span is beneficial for the elderlies themselves as they can enjoy/use more opportunities in life [1, 2]. "Health" is a key factor which affects these opportunities. If the elderlies experience healthy aging, their ability to perform (different) tasks will differ slightly from that of youngers, which will have a positive effect on the person and society. Yet if these added years decrease the physical and mental capacity of a person, however, it burdens the society [1, 2]. Some factors such as food and nutrition affect "healthy aging" [2].

Swallowing has four phases: 1) in oral preparatory phase the liquid or solid food is placed in the mouth, chewed if necessary and mixed with saliva to form a bolus and placed in the middle of the tongue. At this stage lips, cheeks, tongue, teeth and salivary glands play an important role to make a bolus. In elderlies, masticatory function is impaired due to tooth loss, increased number of weak mastication cycles and decreased saliva production. 2) In oral propulsive phase the bolus is pushed back to the mouth and is transferred to the pharynx. In elderlies' bolus propulsion forces are reduced; Therefore, it may cause oral and pharyngeal residues. 3) In pharyngeal phase the bolus is transferred through the pharynx and the upper esophageal sphincter (UES) will then be opened so that the bolus can go through the esophagus. During this phase if the UES is not opened at the right time the bolus volume held in the hypopharynx will increase which in turn the risk of bolus overflow in the laryngeal vestibule will increase. Thus, it has the potential to increase the risk of unsafe

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swallowing. 4) In esophageal phase the peristalsis movements of esophagus will transfer the bolus to the lower esophageal sphincter (LES) and the relaxed LES will open allowing the bolus to be transferred to the stomach [3].

Dysphagia is a Greek term which means a disease or an illness in eating and swallowing that may affect the nutritional status of a patient. Dysphagia is recognized by WHO (ICF, code b5105) and is defined as a difficulty or an inability to form the bolus in the mouth and move it from the mouth to the stomach. In an anatomical point of view, dysphagia can result from two major causes: oropharyngeal dysphagia (OD) and esophageal dysphagia [3]. OD is a health problem which is defined as a difficulty in forming and moving a bolus safely and or effectively from the mouth to the esophagus [4]. OD causes severe complications such as malnutrition, dehydration, and aspiration pneumonia. It also has psycho-social complications such as: anxiety, panic and avoidance of eating with others. These complications have the potential to increase the length of hospitalization and readmission to the hospital, as well as decrease the quality of life of a person. Therefore, high risk of mortality and morbidity may be a consequence of these complications in the patients [3-6].

Reduction in cortical plasticity, sensory capacity, olfactory and taste sense, dental status, muscle function, saliva and tissue elasticity as well as skeletal changes will make elderlies susceptible to OD [5]. Prevalence of OD among the aging population is considerable and differs from different contexts and patients; 13% in the population who are 65 years old or more, 47% in the frail elderly hospitalized for acute illnesses, 40-60% in nursing home residents and 51% in institutionalized elderlies. OD will affect 80% of the elderlies with Alzheimer disease, 60% of elderlies with Parkinson's disease, 37-78% of them with stroke and rises into 91% in the elderlies with Community Acquired Pneumonia (CAP) [7]. However, differences in diagnostic methods (clinical or instrumental) can make variations in the prevalence [3]. Instrumental methods such as Video Fluoroscopy of Swallowing (VFS) and/or Fibrotic Endoscopic Evaluation of Swallowing (FEES) present higher and more accurate data than clinical ones [3]. Scientists found that the elderlies, who said "they do not have any difficulty in swallowing", had problems in swallowing parameters according to VFS examination (more than 63% of patients) [8].

According to the mentioned points, dysphagia is a prevalent condition in elderlies and is associated with many different etiologies. It has many complications that may have an adverse effect on the functional abilities of a person. Hence, it is a risk factor for high risk of death in elderlies. Therefore, dysphagia is a common "geriatric giant" [9]. Geriatric syndromes should be diagnosed and managed in a multidisciplinary team [6, 9]. Although dysphagia is a geriatric syndrome and its management needs a multidisciplinary point of view, patients with dysphagia receive fragmental and inadequate diagnostic and therapeutic modalities [3]. In a study which was done

in Iran, health care providers were not fully aware of the important roles of speech therapists, nutritionists and dentists or dental nurses in diagnostic and management process of dysphagia [10]. Therefore, the aim of this review article is to highlight the:

1. inter-relationship between dysphagia and malnutrition
2. inter-relationship between oral health, dysphagia, and malnutrition
3. roles of dysphagia, malnutrition, and oral health in inducing aspiration pneumonia

in order to make the professionals aware of the multidisciplinary approach to dysphagia diagnosis and management so that they can improve the quality of care for the elderly patients.

## Review of Literature

### *The Relationship between Malnutrition and Dysphagia*

According to WHO, malnutrition refers to "deficiencies, excesses or imbalances in a person's intake of energy and /or nutrients" [11]. Malnutrition itself is a severe geriatric syndrome which can cause increased hospital stay, increased risk of infection and increased risk of mortality [12]. OD can result in decreased or inadequate food and/or liquid intake, so it can cause malnutrition [13]. In a study on 1662 elderlies who were consecutively hospitalized with acute diseases, the patients with dysphagia presented increased prevalence of malnutrition [12]. Also, protein-calorie malnutrition has the potential to alter nerve and muscle functions which can promote dysphagia [14]. Moreover, malnutrition can result in muscle mass reduction and, therefore, have the potential to interrupt the recovery of dysphagia in patients [15]. Therefore, scientists believed in the relationship of these two geriatric syndromes [6] so that they should be viewed in a multidisciplinary manner in elderlies [6].

### *The Relationship between Oral Health, Dysphagia and Malnutrition*

Oral health is an integral part of general health; therefore, healthy oral tissues (teeth, gum, mucosa and tongue) as well as good oral function affects positively on it. Healthy teeth and functional dentition are the prerequisites for chewing and swallowing. Therefore, they play an important role in food selection and having a healthy rich diet in fruits and vegetables which may cause an acceptable Body Mass Index (BMI) [16, 17]. Studies have confirmed the relationship between oral health, swallowing and being at risk of malnutrition and dehydration [16]. Also, poor oral health signs such as reduction in salivary flow and candidiasis may induce difficulties in chewing and swallowing in elderlies so, they may indirectly cause malnutrition [18]. Candidiasis may affect chewing, swallowing and salivary flow negatively so that it may cause difficulties in lubrication and the cohesion of the bolus. Thus, they can lead to unpleasant chewing and swallowing [18].

### *Aspiration Pneumonia, Dysphagia, Malnutrition and*

## Oral Health

When oropharyngeal contents (saliva, food, liquids) or gastric ones are mistakenly moved into the larynx or respiratory system instead of the esophagus, it is called aspiration. "Aspiration pneumonia" is defined as the development of pneumonia (a respiratory disease) in the patients who show oropharyngeal aspiration [19]. Aspiration pneumonia is a major problem in elderlies which increases hospitalization, cost of care, and risk of death in this population [20].

Studies have shown that aspiration pneumonia does not affect all patients who have oropharyngeal aspiration [20]. Therefore, developing aspiration pneumonia depends on dysphagia and other factors [20, 21]. Dysphagia, malnutrition and poor oral hygiene are amongst the most important factors which can render the patient prone to aspiration pneumonia [20, 21]. In a healthy mouth, colonization of some bacteria acts as a barrier against that of respiratory pathogens. Poor oral health reduces these bacteria and changes the balance of gram- positive microorganism into gram- negative ones [22]. Aspiration of these respiratory pathogens (gram-negative ones) with saliva, food or liquids, which is a consequence of dysphagia and poor oral health, makes the patient susceptible to aspiration pneumonia [22]. Also, malnutrition depresses the immune system of the elderlies and has the potential to increase the risk of aspiration pneumonia [21]. Hence, aspiration pneumonia is defined as a multifactorial phenomenon and no single factor can predict it [20].

## Discussion

According to the statement that oropharyngeal dysphagia is a geriatric syndrome and the evidences which show the relationship between dysphagia and other health threatening conditions, dysphagia diagnosis and management needs a multidisciplinary approach [3, 6, 7, 9]. In a multidisciplinary team, several professionals such as doctors, nurses, speech therapists, dieticians, dentists and/or dental nurses can work together to improve the quality of care for these patients [3, 7, 10]. Doctors and nurses can play an important role in screening patients who are at risk of dysphagia via interview, physical exam and dysphagia screening tools such as Eating Assessment Tool – 10 (EAT-10). Speech therapists are the professionals who can play an important role in clinical and instrumental assessment of OD and treat the problems according to the assessment results. Dentists and/or dental nurses can improve the oral hygiene of the patients [4, 7, 10].

## Conclusion

Dysphagia is a life threatening condition which relates to other problems such as malnutrition and poor oral health. These three conditions can increase the risk of aspiration pneumonia; Therefore, they can cause death [3, 6, 9]. As a "geriatric syndrome" dysphagia should be managed in a multidisciplinary team in which each

professional plays an important role [7, 9, 10]. All of these professionals should be trained so that they can work together to improve the quality of care for elderlies with dysphagia [9, 10]. Not only health care professionals can work for the best, but also there are other groups who can play an important role in improving the quality of care for these patients. Other parties beside health care professionals are policymakers, researchers and scientists, industries, health funders, and society [7]. Each of these groups has the potential to play a positive and unique role in improvement of the quality of care for patients with dysphagia [7].

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