Review article

Oropharyngeal dysphagia and its related health problems in Iranian elderly people: A scope of work for the future

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ABSTRACT

Introduction: The proportion of elderly people around the world is increasing. One of the key factors of this longer life is healthy aging. Iran is one among many countries with a changing demographic profile, due to the rapid increase in the aging population. One of the health threatening problems of elderly people is dysphagia. Dysphagia can affect between 13–91% of elderly people around the world. The purpose of this article is to review the status of oropharyngeal dysphagia and its related health problems in Iran.

Methods: Databases in the English and Farsi languages were used. The inclusion criteria were relevant articles to dysphagia which had available online abstract or full text, were carried out in Iran and participants were aged ≥50 years. All duplicate articles, those restricted to esophageal dysphagia and case reports were excluded.

Results: A total of 2482 documents were screened. Only 3 articles were identified that were related to dysphagia in elderly people in Iran. There was very limited information about the swallowing status of the elderly in Iran. The data in this population showed: 41.2% of nursing home residents, 50% of stroke patients suffered from dysphagia.

Conclusions: The health status of elderly people in Iran, and dysphagia related health problems such as malnutrition and oral health is poor. Therefore, there is a need to consider this problem in a systematic multidisciplinary manner. Hence, policymakers, researchers, health care providers, industries and society should work together to improve the quality of care for these people.

1. Introduction

The global population is increasing, with the largest growth being in the older age groups [1]. The key reason for this is improvements in sanitation, vaccination and health care in general. The demographic profile in Iran is also changing rapidly with an increase in survival leading to more people living into old age [2]. Longer life span increases the extent of opportunities for a person and society, but it heavily depends on “health” as a key factor [1,3]. According to the World Health Organization (WHO), “Healthy Aging” is defined as the process of developing and maintaining the functional ability that enables well-being in older age” [2] Good health and absence of long term conditions is key to health ageing [3], emphasizing the need to address the health problems associated with increasing age, irrespective of their socioeconomic background [4]. Important socioeconomic factors, such as food and nutrition, housing, access to safe and portable water adequate sanitation, safe and healthy working conditions, and a healthy environment all assist the promotion and improvement of the health of older people [2].

Iran is among the developing countries whose demographic profile is changing from a relatively young country to a more aging one [2,3]. Based on estimations in 2015, around 10% of population was older than 60 years [2]. In only 35 years’ time, this proportion will increase to about 33% of population (around one in three) with much faster pace of change than was in the past [2,3].

Dysphagia is thought to be increasingly common with greater age. The inability to eat and drink safely may result in infection, hospital admission and increased mortality. The purpose of this article is to review the status of oropharyngeal dysphagia and its related health problems in Iran. There is very limited information about the swallowing status of older people in Iran. The available data in this population showed that there is a need to consider this problem in systematically. To reach this goal policymakers, researchers, health care providers, industries and society should work together to improve the
quality of care for these people.

1.1. Geriatric syndrome

Due to the high prevalence of Oropharyngeal Dysphagia (OD) in the elderly people, its multifactorial causes, symptoms, co-morbidities and complications, which can affect the functional ability and the mental health of the person, scientists [5] and professional societies such as European Society for Swallowing Disorders (ESSD) and the European Union Geriatric Medicine Society (EUGMS) have introduced OD [6] as a geriatric syndrome. Being considered a geriatric giant, OD needs attention from a multidisciplinary view and must be managed by trained health care professionals in a team [5–11].

1.2. Oropharyngeal dysphagia

Eating and drinking in older people is affected by changes in taste and smell (sensory and memory), poor dentition, weakness and sarcopenia of the suprayoid and pharyngeal muscles affecting the swallow and co-morbid conditions such as cardiorespiratory disease, stroke, dementia and Parkinson’s disease [12]. OD is recognized by WHO (ICF, code b5105) [7,13] and is defined as a symptom of swallowing dysfunction which can cause difficulty and inability to form and move a bolus safely and effectively from the oral cavity to the esophagus and is known to adversely affect health [7,13]. Mental health disorders are often overlooked as etiological factors for OD. Depression and anxiety are recognized as risk factors to increase disability and disease burden in the older population. They affect the quality of life and well-being of old-aged people [14]. Prevalence of depression in older people varies between countries and cultures (0.4%–35%) [15]. The prevalence is even higher in institutionalized older people (45%) [16]; 36.7% of the older people in Iran who were referred to a health care center had depression [17].

1.3. Prevalence of oropharyngeal dysphagia

International studies show that the prevalence of OD among the population who are 65 years old or more is 13% [12], which can be higher in the frail elderly hospitalized for acute illnesses (47%) [12], nursing home residents (40–60%) [18] and institutionalized older persons (51%) [12]. OD will affect 80% of the elderly patients with Alzheimer disease, 60% of older people with Parkinson disease [7], 37–78% of the elderly people with stroke [8] and rises into 91% in the elderly people with Community Acquired Pneumonia (CAP) [13]. Variations in the prevalence of OD in particular elderly patients, depend on the differences in diagnostic methods (instrumental or clinical) [7]. The prevalence will be higher and more accurate when the instrumental methods, such as Video Fluoroscopy of Swallowing (VFS) and/or Fibroptic Endoscopic Evaluation of Swallowing (FEES), are used [7]. In one study performed on the elderly people who denied any difficulty in swallowing, more than 63% of patients had problems in swallowing parameters according to VFS examination [19]. To clarify the prevalence of oropharyngeal dysphagia in Iran, a review of the literature was carried out.

2. Methods

Databases in the English and Farsi languages were used and these included, Google Scholar, PubMed, Science Direct, Medline, Magiran and Iranmedex. The key words were, deglutition, swallowing, dysphagia (Table 1). The inclusion criteria were relevant articles which in English or Farsi languages, were related to, deglutition/swallowing/dysphagia, had available online abstracts, and were carried out in Iran. All unrelated or duplicate articles, those restricted to esophageal dysphagia and case reports were excluded.

3. Results

Total of 2482 documents were screened (Fig. 1). According to our inclusion and exclusion criteria, only one article [20] and one dissertation [21] were found. Also, there was an article which was about the benefits of early dysphagia intervention on stroke patients ≥60 years old [22] (Table 2).

4. Discussion

Data from Iran showed that 41.2% of the elderly people in a nursing home residential center in Isfahan had OD [20]. Also, among the retired staff of Isfahan Medical University 25.36% of had oropharyngeal dysphagia in the oral phase and 12.31% had OD in the pharyngeal phase of swallowing [21]. In another study conducted among stroke patients, more than 50% of the participants suffered from dysphagia which showed the increasing prevalence of dysphagia among the elderly people with disease co-morbidity [22]. These data were collected through non – instrumental protocols and were in line with the results from other countries [12,18].

There is lack of evidence about the prevalence of OD in other groups such as hospitalized elderly patients, or older patients with co-morbidities such as Parkinson, Alzheimer’s disease, etc. in Iran. On the other hand, dysphagia may be accompanied by other health problems which are mentioned below. Hence, there are lots of gaps in our country which should be considered as important issues for researchers and professionals in Iran to investigate (Fig. 2).

4.1. Presentation of oropharyngeal dysphagia

Identifying swallowing problems in older people is difficult, as people may have adapted to/ compensated for gradual changes. Common symptoms are prolonged meal times, food refusal coughing, choking, changing voice, and pain with swallowing or multiple swallows. Clinically recurrent or low grade fever, recurrent chest infection, and weight loss may suggest OD, [5,8,13].

4.2. Oral health status of the elderly people in Iran

The WHO has made Oral health of older people one of the key issues affecting their quality of life (self - esteem and well-being). Tooth loss, dental caries, periodontal diseases, xerostomia (reduced chewing performance, limited food choice) and oral cancers are the most prevalent problems in older people [23].

Important etiological causes include poor oral hygiene habits and poor nutrition [24]. Oral hygiene habits can be evaluated by the number of times in a day a person cleans their teeth (uses a tooth brush and dental floss) [25]. In a study in Iran, the elderly people had the worst oral hygiene habits in the whole population. Only 2.0% of people aged 65–70 years and 3.4% of people aged 55–64 years brush ≥2 times a day and floss ≥1 a day; this shows the very poor oral hygiene and can predict the poor oral health among this population [9,10,24,26].

Periodontal disorders (93.7%) and caries (88.4%) are the most prevalent dental disorders among the older people in Iran [25]. The most prevalent denture-related problems included denture stomatitis (45.6%) and hyperplasia denture (33.3%) [25]. Institutionalized older people are frail and vulnerable, a study in one region found that 84% of institutionalized elderly people had at least one oral mucosal lesion and most lesions were found in the tongue (36.1%) followed by the palate (19.4%) [27]; in another region of Iran, oral mucosal lesions were even higher [28].

4.3. Complications of oropharyngeal dysphagia

OD has two life threatening complications:
1. The efficacy problem which is defined as insufficient oral intake,
and results in malnutrition and dehydration; 2. The safety problem which increases the risk for aspiration pneumonia [8]. Aspiration pneumonia is caused by aspiration of colonized oropharyngeal material [9]. Studies showed that poor oral health could increase the risk of pneumonia is caused by aspiration of colonized oropharyngeal material of their swallowing problem [29]. Also, dysphagia and mental health shame, embarrassment, social isolation and loss of self-esteem can lead to increased length of hospitalization; hospital readmissions; high risk of morbidity and mortality; high risk of mental health disorders such as anxiety and depression; decreased quality of life; high risk of morbidity and mortality; and finally death [7,8,12,13,18].

Mental health can be affected by OD. Patients with OD may show shame, embarrassment, social isolation and loss of self-esteem because of their swallowing problem [29]. Also, dysphagia and mental health disorders which derived from it can affect daily living activities and quality of life of patients [30]. These problems can affect the patients' compliance and adherence to the treatment [31].

4.4. Nutritional status of the elderly people

Good nutrition is important to maintain health. Older people are less efficient at utilizing protein and energy [2,3,33]. Protein-energy malnutrition is associated with muscle loss, falls, the development of pressure ulcers, infections, and increased risk of death [34]. The etiology of poor nutrition in older people is often multifactorial with social (loneliness, poverty, lack of access, abuse), psychological (dementia, depression, phobias) and medical (polypharmacy, dysphagia, malabsorption) all being important [35,36]. Many elderly people in the world suffer from malnutrition: 32.8% of hospitalized elderly people in newly admitted in the hospital and 47.2% of old people in residential care centers in New Zealand [38], and 14% of population over 65 years old in the United Kingdom [39]. On the other hand, there is scarcity of information concerning the nutritional needs of this specific group [33].

Prevalence of malnutrition in Iran is in line with the studies conducted throughout the world. Studies show that malnutrition is seen in 12% of free living elderly people [40] and 10.3% of residents in nursing homes [41] in Iran. A recent study showed that 2% of the elderly people who had medical reports in health services were malnourished [42].

4.5. Hydration

Dehydration is another relevant factor to nutritional status of elderly people. Dehydration is a term to reflect physiological states in which there is an imbalance between liquid intake and loss of it and the accompanying sodium status which is very common in elderly [43]. This imbalance in fluids and electrolytes that are essential for brain and body functions can adversely affect the ability to maintain high level of cognition and energy, regulate body temperature, absorb nutrients and eliminate toxins [44]. It is estimated that one – third of residents in nursing facilities who have cognitive problems suffer from dehydration [45]. Mentes (2006) reported that 31% of nursing home residents suffer from dehydration during a 6-month study [46].

According to our knowledge there is no study in Iran which investigates the hydration problems of elderly people. Therefore, this topic would be an interesting one for future studies.

4.6. Nutritional support

Malnutrition, dehydration and dysphagia are co-morbid disorders and must be diagnosed as early as possible in the elderly people because all of them can threaten the health status of the old person. In order to avoid or reduce serious consequences of malnutrition and dehydration in elderly people with dysphagia nutritional interventions are mandatory in this population [12]. Nutritional support ranges from standard oral nutrition, texture modified food, and thickened fluid to complete enteral and parenteral nutrition, which can be chosen according to the type and extent of swallowing problem [6,12]. To our knowledge, there

Table 1
The data bases and keywords we used for searching the articles.

<table>
<thead>
<tr>
<th>Data bases</th>
<th>Keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOOGLE SCHOLAR</td>
<td>Iran and aging or old aged or elderly and swallowing or deglutition or dysphagia or feeding</td>
</tr>
<tr>
<td>SCIENCE DIRECT</td>
<td>Iran AND deglutition AND elderly</td>
</tr>
<tr>
<td></td>
<td>Iran AND deglutition AND &quot;old aged&quot;</td>
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<td></td>
<td>Iran AND swallowing AND elderly</td>
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<td></td>
<td>Iran AND swallowing AND &quot;old aged&quot;</td>
</tr>
<tr>
<td></td>
<td>Iran AND &quot;deglutition disorder&quot; AND elderly</td>
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<tr>
<td></td>
<td>Iran AND &quot;deglutition disorder&quot; AND &quot;old aged&quot;</td>
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<tr>
<td></td>
<td>Iran AND dysphagia AND &quot;old aged&quot;</td>
</tr>
<tr>
<td></td>
<td>Iran AND dysphagia AND elderly</td>
</tr>
<tr>
<td>MAGIRAN</td>
<td>Swallow or Dysphagia or Deglutition</td>
</tr>
<tr>
<td>IRAN MEDEX</td>
<td>Swallow or Dysphagia or Deglutition or Swallowing disorder and Iran</td>
</tr>
<tr>
<td>SID</td>
<td>Swallow or Dysphagia or Deglutition or Swallowing disorder</td>
</tr>
<tr>
<td>IRAN DOC</td>
<td>Swallow or Dysphagia or Deglutition or Swallowing disorder</td>
</tr>
<tr>
<td>Comprehensive Information System for Medical Sciences Thesis</td>
<td>Swallow or Dysphagia or Deglutition or Swallowing disorder</td>
</tr>
</tbody>
</table>

* For these resources we used both English and Farsi key words.
is no kind of well-prepared food with different viscosities (such as pureed food) appropriate for patients with dysphagia. Families prepare food for their patients at home and there is a debate whether the consistency conforms to the one that the swallowing therapist has suggested or not. In addition, adding thickeners in order to modify the liquid viscosity is one of the methods to increase the ability of oral intake in patients with dysphagia [47]. Although this treatment has limitations such as increased residue, decreased palatability and intake compliance, there are benefits that outweigh these, including protection of the airway and safety when swallowing. To our knowledge in Iran, there is a lack of such agents so that the patients and professionals are deprived to using such thickeners in the therapies.

4.7. Aspiration pneumonia in old-aged people

Aspiration pneumonia is a severe complication of dysphagia with many various definitions [12]; a common definition is a pulmonary infection due to aspiration of the liquid, food or saliva, colonized with respiratory pathogens, into the lungs and it has a radiological evidence of condensation [13]. Symptoms may be non-specific (fever, headache, nausea, vomiting, myalgia, confusion or discomfort) and/or specific (cough, dyspnea, noisy breathing, and choking or pleuritic chest pain) [12]. In the absence of dysphagia, aspiration pneumonia may not be considered and only identified at autopsy [12,48].

With increasing age, the proportion of pneumonia thought to be secondary to aspiration increases [49]. The presentation in older people may be non-specific when compared to younger adults. Appetite loss, lethargy, fluctuating consciousness and delirium are among the most frequent symptoms among the elderly people [49].

4.8. Scope of work for future

Although there are very limited studies concerning OD in older people in Iran, the available data confirms the reality that OD is very prevalent in this population. To the best of our knowledge, there is no specific and routine diagnosis and management planning for OD in our hospitals, rehabilitation centers, clinics, and/or nursing home centers. In a study from Iran, patients who were diagnosed with stroke and severe dysphagia did not receive any specialized management for their dysphagia problem during their hospital stay and up to three years after their stroke [50].

OD is a geriatric syndrome [5,6,9–11]. Management of OD needs to be multidisciplinary and interdisciplinary from trained and knowledgeable staff experienced in the care of old and potentially frail patients [2]. To reach this goal, some countries such as Japan, Korea and Spain provide algorithms for management of OD in the older people.

Table 2

<table>
<thead>
<tr>
<th>Articles Included [reference number]</th>
<th>Country</th>
<th>City</th>
<th>Type of paper</th>
<th>Type of study</th>
<th>Participants</th>
<th>Results</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
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<td>Barikroo et al. [20]</td>
<td>Iran</td>
<td>Isfahan</td>
<td>Article</td>
<td>Descriptive- analytic cross sectional</td>
<td>Nursing home residents in Isfahan</td>
<td>Oropharyngeal dysphagia (68)</td>
<td>The prevalence of dysphagia was significant</td>
</tr>
<tr>
<td>Ladani &amp; Farahani [21]</td>
<td>Iran</td>
<td>Isfahan</td>
<td>Dissertation</td>
<td>Descriptive cross sectional</td>
<td>Retired staff of Isfahan Medical University</td>
<td>Aspiration (2) Oral dysphagia (30) Pharyngeal delay (1) Pharyngeal dysphagia (17)</td>
<td>Dysphagia is prevalent in elderly people especially, swallowing problems in oral phase are the most prevalent one.</td>
</tr>
<tr>
<td>Bakhshi et al. [22]</td>
<td>Iran</td>
<td>Tehran</td>
<td>Article</td>
<td>Randomized Control Trial</td>
<td>Stroke patients</td>
<td>Oropharyngeal dysphagia (271)</td>
<td>The prevalence of Oropharyngeal dysphagia was significant. Early intervention plays an important role in recovery of patients with dysphagia.</td>
</tr>
</tbody>
</table>

Fig. 1. Study Flow Chart.
according to their patient characteristics, priorities and facilities [51,52,13]. Clavé et al. suggested a diagnostic algorithm to early detection of the older patients with OD [53] and the implantation of oral care (Minimal Massive Intervention (MMI)) to reduce the risk of aspiration in the older population [13]. MMI is a simple cost-effective intervention which uses very simple and economic measures [13], evidence. Indicates an improved survival rate in hospitalized older patients with OD by decreasing the risk of aspiration pneumonia and decreasing hospital readmission [54].

The implementation of a simple cost effective diagnostic algorithm [53] with the MMI [54] in Iran should be undertaken to improve the care of older people in health care settings for those older people identified to have OD, rehabilitation should be performed to improve the swallowing function of the patient (Momanski). One of the most common treatments for OD is behavior therapy [55]. In Iran, speech therapists are licensed and eligible to provide dysphagia rehabilitation to the patients. One of the barriers in this domain is that speech therapy services are not supported by insurance companies; therefore, it imposes financial burden on the patients and their families, which can affect the patients’ follow up for their treatment.

The management of dysphagia in older people needs a multidisciplinary approach. Policymakers, researchers, health care providers, industries health funders and society should pay special attention to it in Iran. Care of older people will only improve if all parties work closely together (Fig. 1). Research is required, in Iran, to highlight the gaps in health care provision, the cost to society and health care to stimulate discussion and change.

5. In conclusion

Although there is very limited information about the epidemiological data on dysphagia among the older people in Iran, all the available evidence shows the need for systematic management of dysphagia in a multidisciplinary fashion. There are many limitations to reach a multidisciplinary systematic management in Iran; this can be solved if several groups such as policy makers, researchers, healthcare professionals, industries, and society work together. Implementation of a dysphagia diagnostic algorithm and minimal massive intervention...
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References


