

1. Background

In Taiwan, the 65-year-old population has officially exceeded 14% defined by the United Nations in 2018 and has become an **elderly society**. The number of elderly people is still rising. Dysphagia is a condition involving perceived or real difficulty in forming or moving a bolus safely from the oral cavity to the esophagus (Baijens LW et al. 2016). **Dysphagia was classified as a geriatric syndrome** in the white paper published by the European Society for Swallowing Disorders (ESSD). It is not rare that elderly people without conscious disturbance but with abnormal swallowing function are **admitted repeatedly to the hospital due to aspiration pneumonia**. Common measures such as food thickener or nasogastric tube insertion does not solve the problem completely. Foreign body sensation caused by nasogastric tube will also reduce the quality of life.

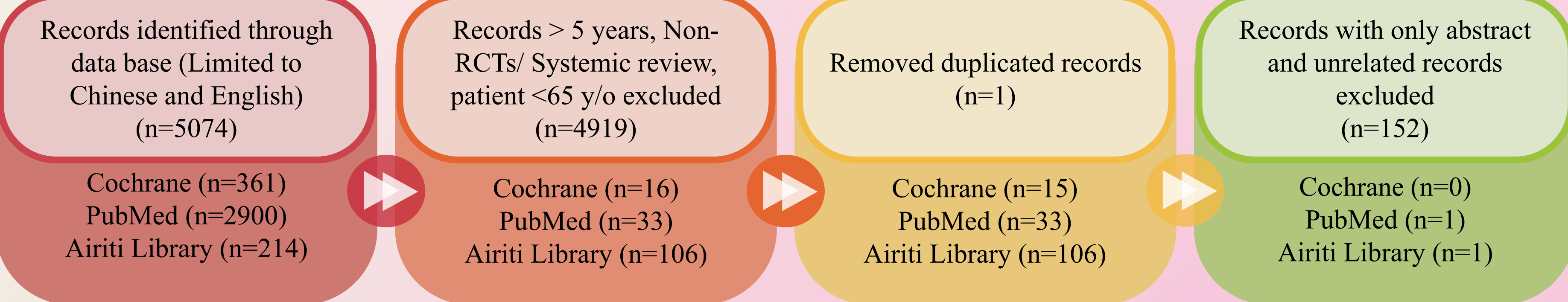
2. Problem

Can swallow training reduce the risk of dysphagia in the elderly?

3. PICO

P : Elderly
I : Received swallowing training
C : Did not received swallowing training
O : Risk reduction of dysphagia

4. Literature search



5. The CASP appraise and judge the quality of evidence of randomized controlled trial.

Wakabayash et al. (2018) *1		Chen et al. (2018)*2	
1. Did the trial address a clearly focused issue?	Yes, This article aims to investigate whether resistance training of swallowing muscles can improve dysphagia in dysphagia.	Yes, This article aims to investigate whether interventional swallowing training can improve dysphagia in elderly patients compared with routine health management.	
2.Was the assignment of patients to treatments randomised?	Yes, Subjects were randomly assigned to the experimental group (n = 49) and the control group (n = 55) using a computer-generated random number table.	Yes, Using sealed envelopes, randomly draw lots and divide them into 2 wards in the intervention group and 2 wards in the control group. There are 84 people in both the experimental group and the control group (n = 84).	
3.Were patients, health workers and study personnel ‘blind’ to treatment?	No, Participants and researchers were not double blinded.	No, Patients, medical caregivers, and data analysts all know the experimental group and control group without blind testing.	
4.Were the groups similar at the start of the trial?	Yes, The basic characteristics of the experimental group and the control group did not reach statistical differences (p > .05).	Yes, The distribution of general data did not differ between the experimental and control groups (p > .05).	
5.Aside from the experimental intervention, were the groups treated equally?	Yes, A handbook for dysphagia rehabilitation is provided.	Yes, In addition to the intervention measures, both the experimental group and the control group had routine health management in the ward without unequal treatment.	
6.Were all of the patients who entered the trial properly accounted for at its conclusion?	No, The attrition rate is 12.5%. Although the attrition rate is less than 20%, the final results analysis does not include the number of attrition, so it does not meet the ITT.	No, The attrition rate is 13.7%, and the attrition rate is less than 20%, but the final result analysis does not include the number of attrition, which is not in line with ITT.	
7.How large was the treatment effect?	NNT=23, that is, 3 months after receiving the intervention, 1 out of every 23 cases improved their dysphagia.	NNT = 5, that is, 90 days after receiving the intervention, 1 out of every 5 cases improved their dysphagia.	
8.How precise was the estimate of the treatment effect?	This study showed that there was no significant difference in the evaluation of dysphagia between the experimental group and the intervention of swallowing muscle resistance exercise (95% CI - 5.48~1.44, p = 0.252).	The swallowing function of patients in the experimental group was improved compared with that in the control group (67.1% vs. 44.5%), and there was a statistical difference between the two groups (p = .001).	
9.Can the results be applied in your context?	Yes, It is a Japanese study, the participants are elderly people over 80 years old, moderately dependent on daily living ability, and EAT-10 dysphagia ≥ 3 points °	Yes, This study was conducted in Mainland China. Most of the participants were over 80 years old. They were completely independent in daily life, with normal cognitive function but mild or above impairment of swallowing function.	
10.Were all clinically important outcomes considered?	Yes, The primary outcome was to explore the effect of swallowing muscle resistance training on improving dysphagia, and the secondary outcome was tongue movement and hospitalization rate.	Yes, The primary outcome was to investigate the effect of swallowing training on improving dysphagia, and the secondary outcome was the incidence of aspiration pneumonia and malnutrition.	
11.Are the benefits worth the harms and costs?	Yes, This study did not specify the total cost, and there was no significant difference in the improvement of dysphagia between the experimental group and the control group, but the improvement rate of dysphagia associated with sarcopenia was slightly higher than that of other diseases.	Yes, This study did not state the total cost, but the swallowing function of the patients in the experimental group was better than that of the control group, the incidence of aspiration pneumonia was lower than that of the control group, and the incidence of malnutrition was lower than that of the control group.	
Level of evidence	Level 2	Level 2	

6. Literature comparison

Wakabayash et al. (2018) *1		Chen et al. (2018)*2	
Dysphagia Outcome Assessment Tool	EAT-10*3	SSA *4	
Conditions for accepting cases of dysphagia	≥3 points	≥Secondary dysphagia	
Dysphagia Improvement Criteria	Improve to <3 points	Drop ≤ 1 point	
Intervention plan	Place	day care center	ward
	Number of days	90 days	90 days
	Frequency	Nearly 1/2 of the participants performed swallowing exercises less than twice a week	≥30 minutes per day
Swallowing exercise	lip movement	X	O
	tongue movement	O	O
	laryngeal vocal movement	X	O
	head and neck flexion	O	O
Statistical results of intervention and control group	Improved swallowing function p value	<i>P</i> =0.252	<i>P</i> =0.001
	EER*5	23%	67%
	CER*6	19%	44%
	RRR*7	0.24	0.51
	ARR*8	5%	23%
	NNT*9	23	5

7. completion

The swallowing training method and intensity of Chen et al. (2018) caused 1 out of every 5 people in the intervention group to reduce the improvement level by ≥ 1 point; while Wakabayash et al. (2018) improved the difference *p* = 0.252 and 1 out of every 23 people improved hard to swallow.

8. discuss

Based on the above, **the training site, frequency and time** will affect the improvement rate, so it is necessary to pay attention to the preparation and compliance of the training plan during actual training or health education, such as maintaining ≥ 30 minutes per day for 90 days. Chen et al. (2018) document template operation , in order to improve the training effect.

*1The effects of resistance training of swallowing muscles on dysphagia in older people A cluster, randomized, controlled trial(Wakabayashi, H et al. 2018)

*2The effectiveness of a multi-disciplinary intervention for deglutition disorder in elderly inpatients (Chen et al. 2018)

*3EAT-10: Eating Assessment Tool-10

*4SSA: standardized swallowing assessment

*5EER: Experimental Event Rate

*6CER: Control Event Rate

*7RRR: Relative risk reduction

*8ARR: Absolute risk reduction

*9NNT: Number needed to treat