

Effectiveness of Chin Tuck in Prevention of Aspiration in Acquired Neurological Population: A Systematic Review

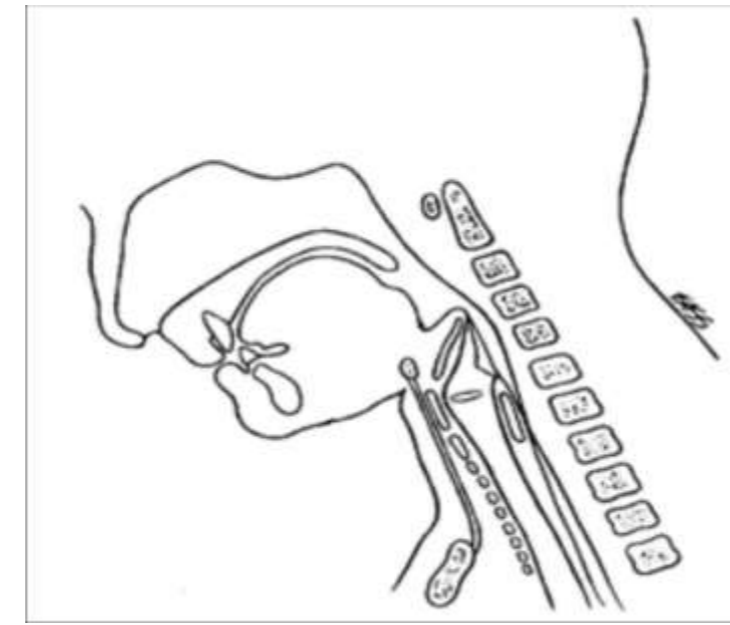
Authors: Atharva Bhagwat^{1*}, Beatrice Manduchi², Margaret Walshe³

Institution: Department of Clinical Speech and Language Studies, Trinity College Dublin



INTRODUCTION

Chin tuck manoeuvre or “Chin down” is the most commonly used postural manoeuvre in the management of neurogenic oropharyngeal dysphagia, specifically in the prevention of aspiration. This strategy widens the valleculae and propels the tongue base posteriorly towards the pharyngeal wall to stop the food/fluid from penetrating the airway, thus narrowing the opening of airway and lowering the risk of aspiration.^{1,6,7} However, the evidence for its use in this population is unclear.



RESEARCH QUESTION

1. What is the effectiveness of chin tuck in prevention of aspiration in acquired neurological population?
2. Does chin tuck help in reduction or elimination of pharyngeal residue?
3. Does chin tuck help in prevention of adverse events in acquired neurological population?

METHODS

- All published and unpublished controlled clinical trials (CCTs) and randomized controlled trials (RCTs) investigating the effectiveness of chin tuck in adult acquired neurological populations to eliminate aspiration were sought.
- Twelve electronic databases (AMED; academic search complete; Cochrane library; CINAHL; EMBASE; HSE library; google scholar; CENTRAL; scopus; psycINFO; web of science and MEDLINE) were searched from inception to April 2018.
- Additionally, grey literature search were conducted which included: Australasian digital theses, index to theses, ISI web of knowledge conference proceedings.
- Journals were hand searched from 1991-April 2018.
- No language restrictions were imposed.
- Two independent reviewers extract the data of included studies.
- Assessment of quality of study was conducted using the Cochrane risk of bias tool² and GRADE tool³ was used to check the quality of evidence.

RESULTS

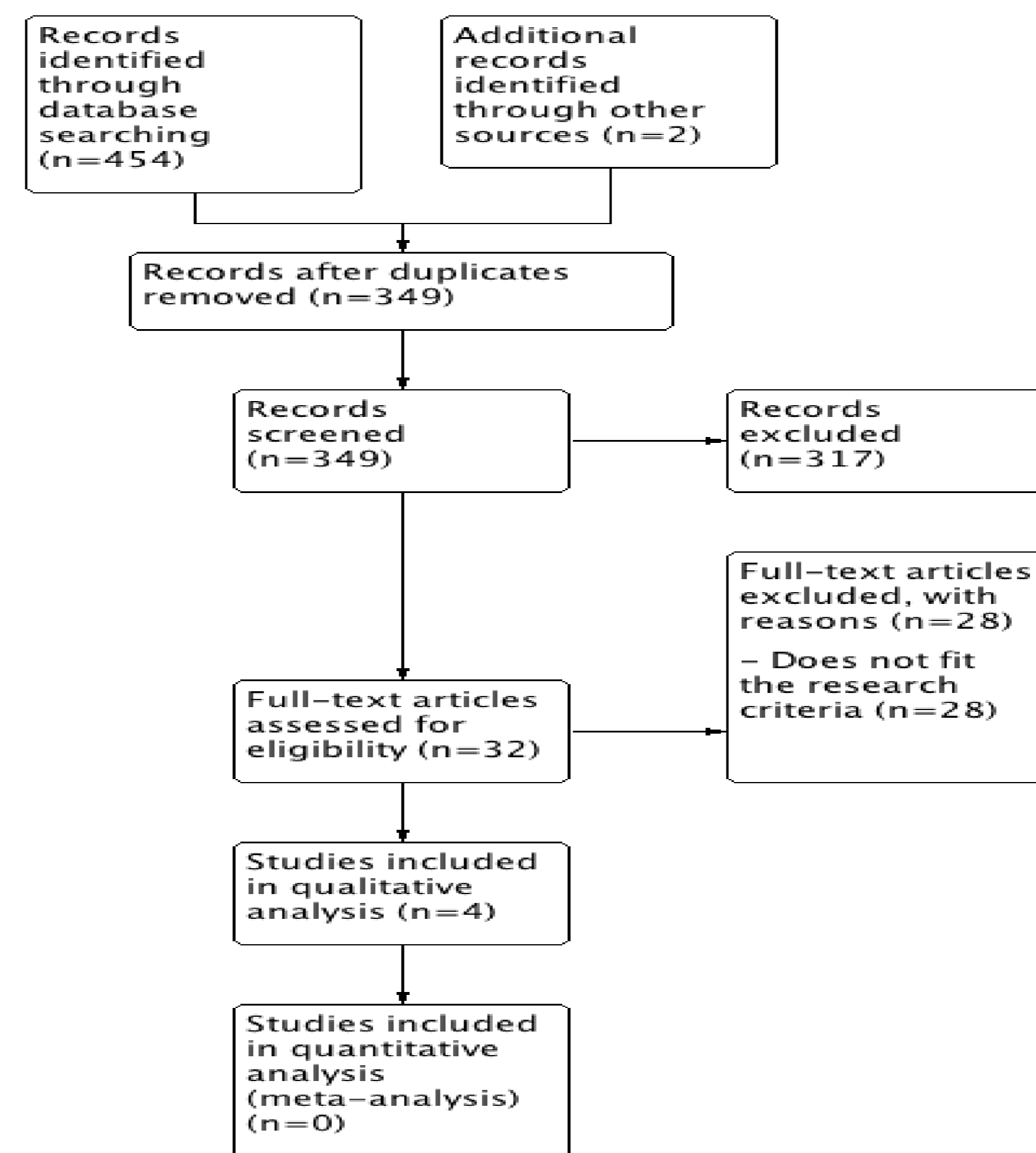


Fig 1: PRISMA flow diagram

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Ertekin et al., 2001	?	?	?	?	?	?	?
Logemann et al., 2008	?	?	?	?	?	?	?
Robbins et al., 2008	?	?	?	?	?	?	?
Terré & Mearin 2012	?	?	?	?	?	?	?

Table 1: Risk of Bias

Four studies^{4,5,8,9} met the inclusion criteria for this review. Along with chin tuck different comparison interventions were used in these studies. The acquired neurological conditions were studied across all studies.

Population	Primary Outcomes	Secondary Outcomes
Stroke	Effective in prevention of aspiration	Limited benefit for reduction of pharyngeal residue
TBI	Effective in prevention of aspiration	Limited benefit for reduction of pharyngeal residue
Parkinson's	Limited benefit in prevention of aspiration	Benefit in reduction of adverse events
Dementia	Limited benefit in prevention of aspiration	Benefit in reduction of adverse events

Two RCTs design studies^{5,8} had the least bias present. The overall quality of the evidence as per the GRADE tool was “low”.

CONCLUSION

This review has found no strong evidence to support the effectiveness of the intervention. This is due to the methodological quality and heterogeneity of the included studies. This review can only conclude that the studies included in this review suggested benefits with chin tuck in prevention of aspiration, adverse events and in reducing pharyngeal residue, but which might vary from patient to patient depending upon the severity of dysphagia.

ACKNOWLEDGEMENT

The authors would like to thank Isolde Harpur (Assistant Librarian) at TCD for her help in this project.

REFERENCES

1. Leigh JH, Oh BM, Seo HG, Lee GJ, Min Y, Kim K, et al. Influence of the chin-down and chin-tuck maneuver on the swallowing kinematics of healthy adults. *Dysphagia*. 2015;30(1):89-98.
2. Higgins JP, Altman DG, Gøtzsche PC, Jüni P, Moher D, Oxman AD, Savović J, Schulz KF, Weeks L, Sterne JA. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. *Bmj*. 2011 Oct 18;343:d5928.
3. Schünemann H, editor. *The GRADE handbook*. Cochrane Collaboration; 2013.
4. Ertekin C, Keskin A, Kiyiloglu N, Kirazli Y, On AY, Tarlaci S, Aydoğdu I. The effect of head and neck positions on oropharyngeal swallowing: a clinical and electrophysiologic study. *Archives of physical medicine and rehabilitation*. 2001 Sep 1;82(9):1255-60.
5. Logemann JA, Gensler G, Robbins J, Lindblad AS, Brandt D, Hind JA, et al. A randomized study of three interventions for aspiration of thin liquids in patients with dementia or Parkinson's disease. *J Speech Lang Hear Res*. 2008;51(1):173-83.
6. Ra JY, Hyun JK, Ko KR, Lee SJ. Chin tuck for prevention of aspiration: effectiveness and appropriate posture. *Dysphagia*. 2014;29(5):603-9.
7. Johnson DN, Herring HJ, Daniels SK. Dysphagia management in stroke rehabilitation. *Current Physical Medicine and Rehabilitation Reports*. 2014 Dec 1;2(4):207-18.
8. Robbins J, Gensler G, Hind J, Logemann JA, Lindblad AS, Brandt D, et al. Comparison of 2 interventions for liquid aspiration on pneumonia incidence: a randomized trial. *Ann Intern Med*. 2008;148(7):509-18.
9. Terré R, Mearin F. Effectiveness of chin-down posture to prevent tracheal aspiration in dysphagia secondary to acquired brain injury. A videofluoroscopy study. *Neurogastroenterol Motil*. 2012;24(5):414-9, e206.