Effectiveness of game-based oromotor exercises on laryngeal elevation in healthy adults

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Introduction

Background

- Swallowing difficulties may lead to serious complications such as pneumonia, malnutrition, and dehydration (González-Fernández et al., 2013).
- Airway protection mechanisms including laryngeal elevation is vital for preventing aspiration of ingested materials into the lungs (Jafari et al., 2003).
- Swallowing exercises like effortful pitch glide are supported by studies to have effect in strengthening muscles that supports laryngeal elevation (Miloro et al., 2014).
- Patient compliance to long-term swallowing exercises is only 40% (Shinn et al., 2013).

Purpose

- The purpose of this study was to examine the pitch glide exercise game developed by the Swallowing Research Laboratory's effectiveness in improving participant's adherence to the exercise routine.

Hypothesis

- It is anticipated that participants in the group with game-based oromotor exercise (OME) will have higher adherence in carrying out OME at home than participants in group with traditional OME.

Method

Inclusion criteria

- Do not have self-reported or diagnosed with speech problems or swallowing problems or impaired oromotor function;
- Aged 18 or above;

Participants

- 24 healthy participants aged 18 - 88 years were recruited from the community.
- 4 was excluded from data analysis due to mistake in instruction delivery to ensure findings accuracy.

Procedure

Day 1
- Participants' laryngeal function were assesd through oromotor tasks
- Instructed to practice effortful pitch glide exercise 5 sets of 5 per day (25 trials/day)

Experimental Group
- Practised with games for 7 days
- Automatic in-app log

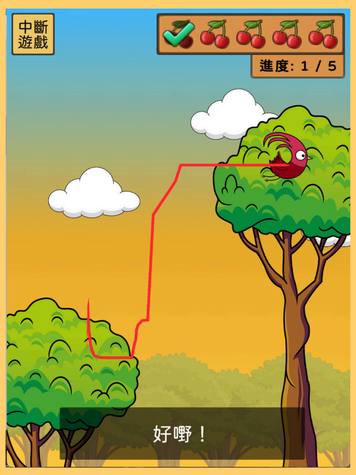
Control Group
- Practised with written instruction for 7 days
- Self-filled paper log

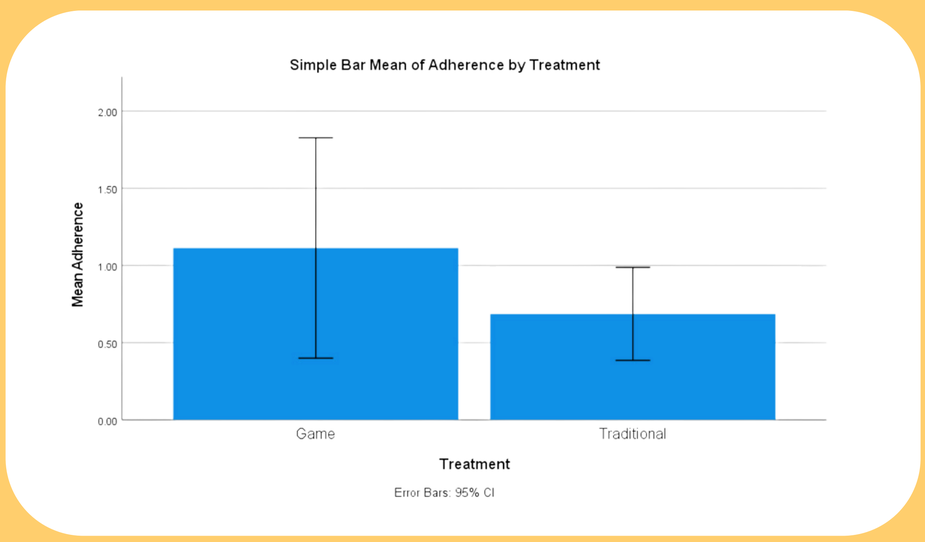
Day 8
- Participants' laryngeal function were assesd again
- Complete questionnaire

Result

Adherence

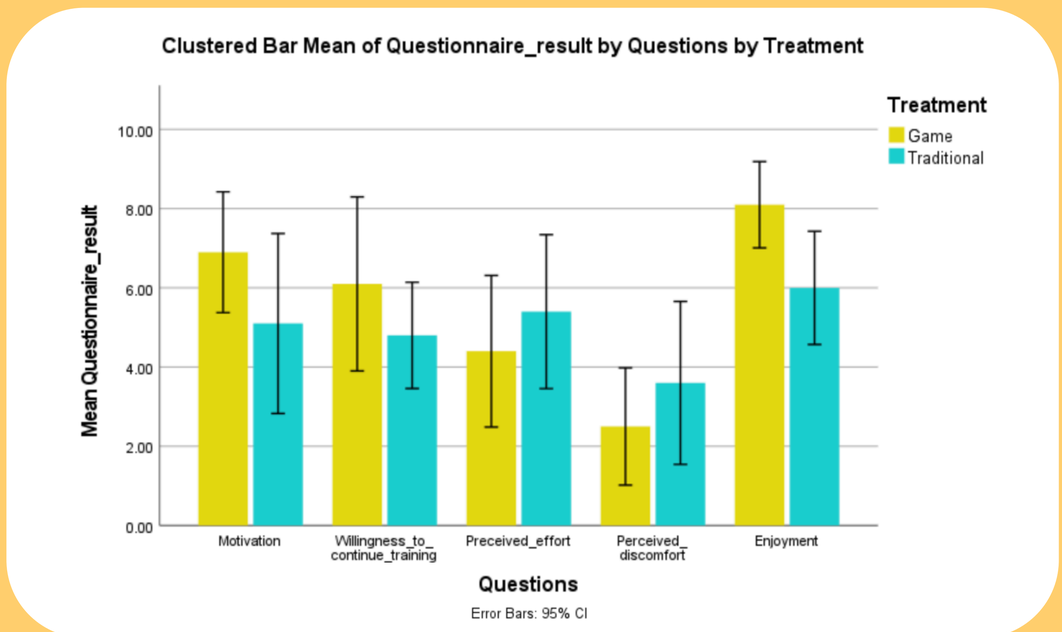
- For adherence, the game-based OME group reported higher adherence than the traditional OME group (game-based M = 1.11, SD = 1, traditional M = 0.69, SD = 0.42).
- This difference was not statistically significant; t(18) = 1.25, p = .23; and represented a medium-sized effect (d=.56).





Questionnaire

- The game-based OME group reported the incorporation of games into exercises, the reward system, provision of encouragements and points system as major motivators to completing the oromotor exercises.



Conclusion

Discussion

- The result suggested that game-based oromotor exercise may contribute to higher adherence rate among participants.
- Game-based oromotor exercise may lead to better treatment outcomes as it is discovered that patients who can consistently perform swallowing exercises have a lower risk of developing stenosis, receiving a G-tube, or worsening their diet (Duarte et al., 2013).

Recommandations for future research

Recruit participants with swallowing disabilities
- it is recommended that participants with conditions such as stroke, Parkinson's disease and head and neck cancer that led to dysphagia be seek out for investigation.
- Help gain insight on gamified swallowing exercise's effect in clinical use.

A longer training period for the participants
- Studies have noted that swallowing intervention was often provided five times per week for 4 weeks (Choy et al., 2022).
- a longer training period can reflect intervention use in typical clinical practice.

Clinical implications

- It is suggested that clinicians should incorporate more game elements in swallowing intervention for adults to increase adherence and improve teatment outcomes.

Reference list