Neuromuscular Electrical Stimulation as a Novel Treatment of Dysphagia: A Meta-Analysis of Efficacy and Safety

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Abstract:

Introduction: Dysphagia is a common and debilitating condition that impairs normal swallowing function. Research indicates that 15-22% of adults over 50 experience it, with hospital and long-term care facilities showing an increased rate of 40-60%. Dysphagia can cause malnutrition, dehydration, aspiration pneumonia, and social isolation, significantly reducing the patient's quality of life. However, current treatment approaches, including compensatory strategies, postural adjustments, and exercises, have limited efficacy. As a result, alternative therapies are being explored, yet no systematic review or meta-analysis evaluating neuromuscular electrical stimulation as a treatment for dysphagia.

Objectives: To determine the effectivity of neuromuscular electrical stimulation for improving swallowing function in dysphagia patient.

Method: This study was conducted using the Preferred Reporting Item for Systematic Review and Meta-analysis (PRISMA). We systematically searched PubMed, Cochrane, Embase, and ScienceDirect for literature up to 4 April 2023. The included documents were screened and assessed for risk of bias

using the Cochrane Risk of Bias 2.0. Effect estimates were pooled using random-effects meta-analysis using Review Manager 5.4.

Results: Fourteen studies culminating a total of 743 participants were included with low risk of bias. Neuromuscular electrical stimulation (NMES) depicts a significant swallowing function recorded by Penetration-Aspiration Scale (PAS) (HR = 1.97; Z = 4.21; p=0.002; 95% CI: 0.39-9.86) and Functional Oral Intake Scale (FOIS) (HR = 2.79; Z = 4.1; p = 0.0002; 95% CI: 1.29-6.03). Moreover, NMES also improved patient life in general by lowering the pain score and increasing the quality of life.

Conclusion: NMES therapy shows a more significant improvement in oral function on dysphagia patients compared to traditional therapy. Therefore, NMES are proven efficacious for dysphagia therapy and recommended to be used in guidelines as supportive non-pharmacological therapy.

Keywords: *Dysphagia, NMES, therapy, non-pharmacological*