

# CLINICAL EVIDENCE SUMMARY\*

## Effectiveness of diet modification on dietary nutrient intake, aspiration, and fluid intake for adults with dysphagia: a meta-analysis of randomized controlled trials



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### Objective

To evaluate the effectiveness of diet modifications on aspiration risk, dietary nutrient intake, and fluid intake in adults with dysphagia.

### Participants:

Adults diagnosed with dysphagia.

### Materials and Methods:

- A **Meta-Analysis of Randomized Controlled Trials**
- Comprehensive literature search: EMBASE, Cochrane Library, Ovid-Medline, CINAHL, Web of Science, and PubMed until November 2023.
- Included **16 RCTs** involving **1,812 participants**.
- Quality assessed using the Cochrane Risk of Bias Assessment tool 2.0.
- Data analyzed with Comprehensive Meta-analysis 3.0 focusing on pooled Hedges' g and odds ratios

### Results:

1. Thickened fluids (TFs) **significantly reduced aspiration risk (OR: 0.59)**.



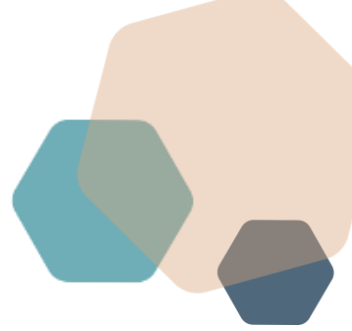
#### Factors Explaining the Reduced Risk of Aspiration with Thickened Fluids

- ✓ **Increased Bolus Properties:** Thickened Fluids enhance bolus cohesiveness and viscosity, reducing spillage into the trachea.
- ✓ **Controlled Fluid Flow:** Thickened Fluids slow fluid flow, allowing better glottal closure and improved swallowing coordination.
- ✓ **Reduced Pharyngeal Residues:** Thickened Fluids prevent pooling in the oral cavity and pharynx, decreasing aspiration risk.
- ✓ **Resistance to Enzymatic Breakdown:** Gum-based Thickened Fluids maintain bolus integrity, minimizing oral residues.
- ✓ **Stable Viscosity:** Gum-based Thickened Fluids prevent fluid accumulation in the pharynx, reducing aspiration during swallowing.

\*The summary of the published article has been developed solely for the purpose of dissemination. It is important to note that Nestlé Health Science did not participate in the research, funding, or execution of this study.

## Results:

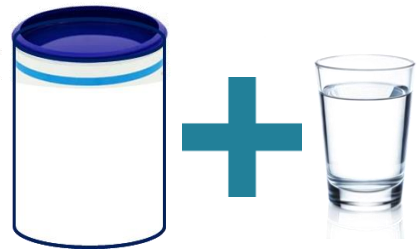
2. Texture-modified diets demonstrated a small to medium effect in increasing energy intake (Hedge's g: 0.37, 95% CI: 0.05–0.68) and a medium effect on enhancing protein intake (Hedge's g: 0.37, 0.56, 95% CI: 0.13–0.99). A non-significant increase in the intake of fat, carbohydrates, sodium, and fiber with TMDs was observed.



### Mechanisms Behind Increased Dietary Energy Intake with Texture-Modified Diets (TMDs)

- ✓ **Improved Bolus Cohesion and Adhesion:** Enhanced bolus properties allow for more efficient consumption and larger food portions.
- ✓ **Ease of Mastication:** The smooth texture of TMDs requires less effort for chewing, facilitating easier transport through the oropharyngeal and esophageal phases.
- ✓ **Enhanced Sensory and Intake:** The smooth consistency stimulates saliva secretion, enhancing swallowing initiation and bolus formation, which contributes to smoother consumption experience.
- ✓ **Increased Dietary Protein Intake:** Fortification of TMDs with protein-rich ingredients and supplements ensures adequate protein levels to meet nutritional needs; blending and pureeing make proteins easier to swallow.

3. Thickened Fluids combined with a Water Protocol significantly increased fluid intake



This meta-analysis of randomized controlled trials highlights the effectiveness of thickened fluids in reducing aspiration risk, thereby promoting safer swallowing practices for adults with dysphagia.

Additionally, the combination of thickened fluids with a water protocol significantly enhances fluid intake.

Overall, TMDs and TFs are valuable strategies to improve dietary intake while ensuring swallowing safety by minimizing aspiration risks.