INESSS
LE SAVOIR PREND FORME

APRIL 2022

Classification of Thickened Liquids for Dysphagia

English summary

Une production de l'Institut national
d'excellence en santé
et en services sociaux (INESSS)

Québec

SUMMARY

Classification of Thickened Liquids for Dysphagia

Introduction

Dysphagia, a swallowing disorder (i.e., difficulty in swallowing) can have harmful consequences on both the nutritional state of patients and the quality of their lives. Thickening liquids is a common practice in the management of dysphagia. Thickened liquids flow less quickly, giving the dysphagic person better control when swallowing. It is important to be able to measure and classify the consistency[1] of liquids in a valid and reliable manner, since a liquid that is too thick or insufficiently thickened can cause deleterious effects.

A variety of systems for measuring and classifying the consistency of liquids exists around the world, and there is no consensus on this matter. For several years in Quebec, the Bostwick consistometer, a device used in the food industry, has been widely used in health care facilities to measure and classify thickened liquids. In 2015, a new international initiative was launched: The International Dysphagia Diet Standardization Initiative (IDDSI). This classification system measures the consistency of liquids by means of a vertical flow test in a syringe. The IDDSI is attracting increased interest among members of various professional groups and is being implemented in several countries around the world and elsewhere in Canada. However, its possible introduction in Quebec is not welcomed by everyone. The coexistence of the IDDSI and the classification system that uses the Bostwick consistometer appears to be a source of organizational confusion and raises concerns for the safety of users.

In order to ensure excellence in practices and efficient use of resources, the MSSS has mandated INESSS to assess the value of the two classification systems for thickened liquids, i.e., the IDDSI and the classification using the Bostwick consistometer that is currently used in Quebec, in terms of clinical effectiveness, safety and organization of care and services, based on the information available in the scientific literature.

[1] Consistency is a general term to describe the degree of fluidity of a liquid. According to various definitions, consistency can refer in particular to the general characteristics of a liquid, the way a liquid is perceived to the touch or in the mouth, or the resistance to the flow of liquids due to gravitational force. There is no single measurement of the consistency of liquids [Hadde and Chen, 2021], nor is there consensus as to the physical properties of liquids that have the greatest clinical significance for the management of dysphagia [Barbon and Steele, 2018].

Methodology

INESSS carried out a review of the scientific literature in order to identify the available information for assessing the value of the IDDSI and the Bostwick consistometer with respect to measuring and classifying the thickened liquids used for people with dysphagia. The following were consulted for the period of 2010 to September 2021: MEDLINE, EBM Reviews, Embase and CINAHL. Based on the Framework for Assessing the Value of Health and Social Services Interventions [INESSS, 2021], the following dimensions were considered : clinical (efficacy, safety, metrological qualities, clinical applications), organizational (feasibility, implementation), population (accessibility), economic (costs) and sociocultural (acceptability, cultural aspect).

Results

Thirty-four scientific papers were selected; of these, 27 focused on the IDDSI, five on both classification systems and two on the Bostwick consistometer. Highlights of the results are reported below.

Commonalities between the two classification systems

- Data on clinical impacts and cost-benefit ratios is virtually non-existent.
- Although there is a good correlation between the measurements obtained using the IDDSI and those resulting from the classification using the Bostwick consistometer, the correspondence is not precise. These measurements are therefore not interchangeable, and no conversion is possible from one to the other.
- Both systems have excellent intra-rater fidelity, i.e., a good stability of the results obtained by the same rater from the same sample.
- Both measurement tools are quick and easy for workers to use.
- There is limited correlation between the wording of these tools and the wording used for the pre-thickened preparations and commercial thickeners. However, the commercial products used in the studies identified did not formally adopt either of these classifications.
- In any event, since the consistency of thickened liquids can vary depending on many factors that are beyond the control of manufacturers (e.g., temperature, thickening time, product freshness), it seems unlikely that a commercial product will exactly match a standardized nomenclature in all circumstances.

Summary of the strengths and limitations of the IDDSI

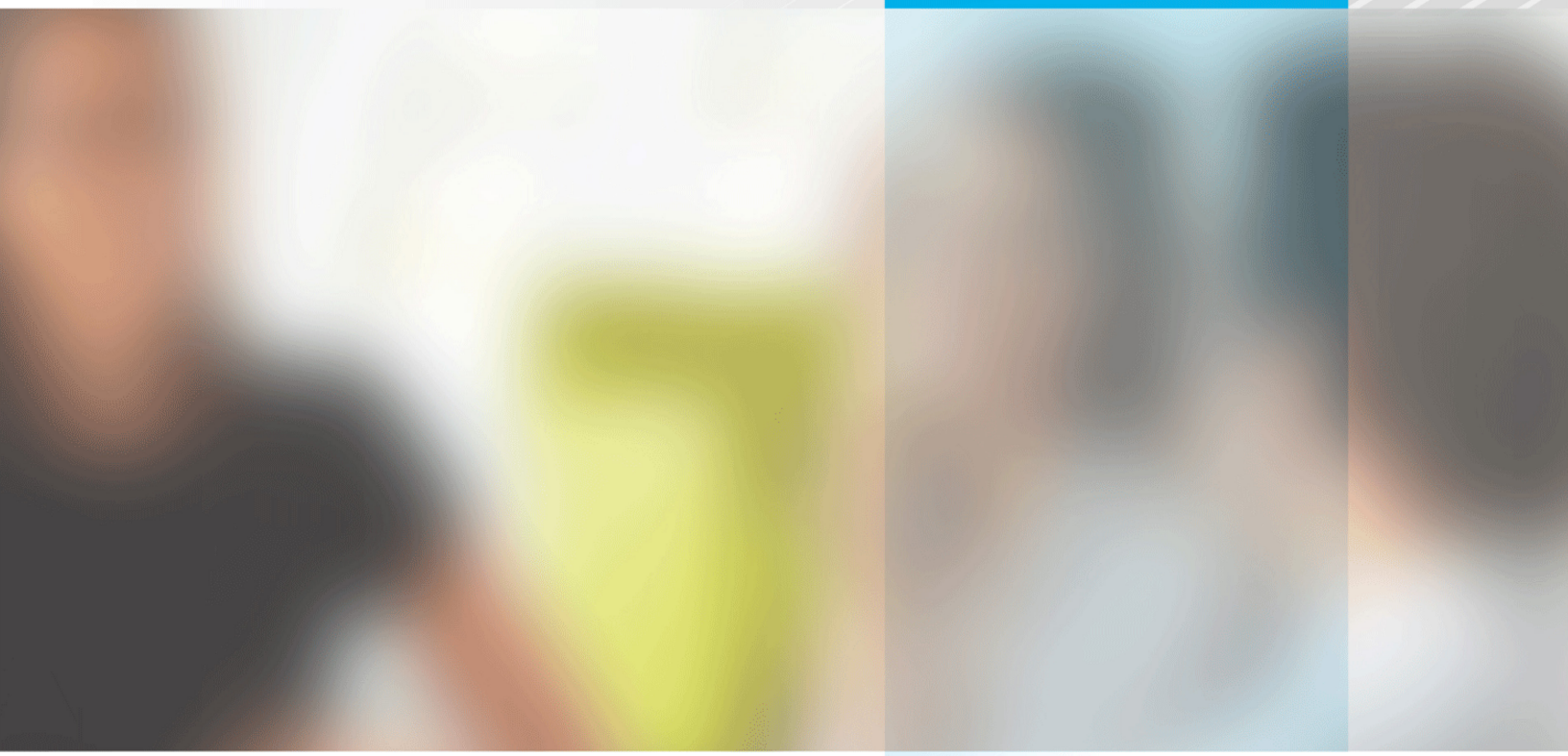
- In terms of content validity (i.e., the ability to adequately reflect the construct to be measured), the IDDSI stems from a well-documented development process.
- A dozen studies generally report a good construct validity for the IDDSI, i.e., that the measurements obtained with this tool are generally consistent with the expected theoretical results. For example, relationships are observed between the results obtained with the IDDSI and other measurements of fluid consistency.
- Inter-rater fidelity, i.e., the stability of the results obtained by two different raters, is high according to two studies. However, it is important to use a specific type of syringe to avoid measurement errors.
- The IDDSI syringe test is better at discriminating among thin liquids than the Bostwick consistometer. This can be considered a strength since it seems to be more clinically advantageous to be able to differentiate among thin liquids than very thick liquids. Finally, since the IDDSI does not discriminate as well among very thick liquids, the IDDSI fork drip or spoon tilt test is more appropriate.
- The IDDSI can classify all thickened liquids since the measurement scale is continuous, with no gaps between levels. On the other hand, doubt may arise when measurements are taken at the transition points between levels.
- Potential clinical applications of the IDDSI in the management of dysphagia have been documented. For example, standardized IDDSI recipes have been developed to improve the thickened liquids used for dysphagia assessment and intervention. In addition, a tool for assessing the degree of dysphagia, the IDDSI Functional Dysphagia Scale, is currently being validated.
- The IDDSI offers many free tools on its website in order to promote its use and implementation.
- The cost of the equipment used for the IDDSI (syringes, spoons, forks) is minimal.
- Since it is readily accessible, the test can be carried out where food is served (e.g., in every care unit) in order to check whether the consistency has changed since the liquid was thickened.
- The IDDSI could even be accessible to users and their family/caregivers, given its low cost and ease of use. In principle, this would allow them to adapt their own recipes and make their own assessments as to whether they comply with the recommendations given to them by professionals. However, this use at home was not examined in the articles that we reviewed.

Summary of the strengths and limitations of the classification using the Bostwick consistometer currently practiced used in Quebec

- With respect to content validity, the Bostwick consistometer is an instrument that is well recognized in the food industry for measuring the consistency of food and liquids. However, the theoretical basis and process leading to its use for people with dysphagia are not well documented in the scientific literature on dysphagia.
- The construct validity of this classification system deserves further study since the measurements obtained with this tool are only partially consistent with the expected theoretical results, and relatively few studies have been carried out on this subject.
- The inter-rater fidelity is unknown.
- The Bostwick consistometer makes little discrimination among slightly thickened liquids, but it does a better job of distinguishing very thick liquids than the IDDSI. It seems to be more clinically advantageous to be able to discriminate among thin liquids than very thickened liquids.
- The consistency ranges used in Quebec do not allow for the classification of all liquids since there are wide gaps among them, i.e., pudding (3 to 5 cm), honey (7 to 9 cm) and nectar (13 to 15 cm). This can be considered an advantage if the goal is to prepare recipes with a very precise consistency but can cause uncertainty in the use of a number of products.
- A few training courses on this classification are available, but they are accessible to only a limited number of professionals.
- This classification has been in use in Quebec for several years already.
- With a cost approaching $1,000, the Bostwick consistometer is not easily accessible to home users and their family/caregivers.

Conclusion

This review of the scientific literature identified the information available on two classifications of thickened liquids used for the management of dysphagia: the IDDSI and the classification using the Bostwick consistometer currently used in Quebec. The information collected on the IDDSI seems to give it certain advantages, particularly in terms of validity, alignment with international standards and research in dysphagia, accessibility of training materials and tools, as well as the possibility of being used where food is served, including at home. Nevertheless, both methods are still empirical, and neither is a clear standout in terms of demonstrating clinical benefits. Consideration must also be given to the fact that a change in the classification system could have organizational implications of unknown magnitude.



Siège social

2535, boulevard Laurier, 5e étage
Québec (Québec) G1V 4M3
418 643-1339

Bureau de Montréal

2021, avenue Union, 12e étage, bureau 1200
Montréal (Québec) H3A 2S9
514 873-2563
inesss.qc.ca

Institut national d'excellence en santé et en services sociaux
Québec