

## Presenting Author

Bottin Jeanne  
Hydration and Health Department  
Danone Nutricia Research  
Palaiseau  
France

## Title

Hydration in children: From fluid intake to cognitive performance

## Abstract

Water is the most abundant component of the body and is crucial to many functions. In children, maintaining adequate fluid intake and hydration is of specific importance not only for physiological reasons but also for the adoption of healthy and sustainable drinking habits. To assess hydration in children, the quantity of what they drink (total fluid intake, TFI) may be compared to the adequate intake for water from fluids set by health authorities such as the European Food Safety Authority (EFSA). In the Liq.In<sup>7</sup> cross-sectional surveys involving 6469 children (4-17 yrs) from 13 countries, 60% of children did not meet the EFSA adequate intake for water from fluids. Beyond fluid quantity, the quality of what children drink is important for health. In these surveys, the contribution of sugar-sweetened beverages and fruit juices to TFI in children exceeded that of water in 6 out of 13 countries.

Urinary biomarkers such as urine osmolality, urine specific gravity, and urine colour may also be used to assess hydration. Among these, urine colour can be reliably self-assessed by children above 8 years of age. To date, while there are no widely-accepted specific cut-off values for urine concentration to define adequate hydration in children, the available literature suggests that many children have highly concentrated urine, indicating insufficient fluid intake. This is worrisome since the results of a new intervention investigating the effect of hydration on cognitive performance in children revealed that children demonstrated poorer executive function during low fluid intake compare with high fluid intake. Considering the results of the Liq.In<sup>7</sup> surveys showing that, at school – where children spend a significant amount of time and require optimal cognitive performance – children drink only 14% of their TFI, it is pertinent to encourage the promotion of water intake at school to support adequate hydration as well as optimal cognition in children.

## Key references

Iglesia *et al.* Total fluid intake of children and adolescents: cross-sectional surveys in 13 countries worldwide. *Eur J Nutr.* 2015 Jun;54 Suppl 2:57-67

Kavouras *et al.* Validation of a urine color scale for assessment of urine osmolality in healthy children. *Eur J Nutr.* 2016 Apr;55(3):907-15

Bougatsas *et al.* Fluid consumption pattern and hydration among 8-14 years-old children. *Eur J Clin Nutr.* 2018 Mar;72(3):420-7

### **Presentation - Key messages**

- Many children do not drink sufficient amounts of water and drink too many sugar-sweetened beverages; therefore, healthier drinking habits should be encouraged from the youngest age
- Daily hydration can easily be self-monitored by children via observation of urine colour
- Inadequate hydration has consequences for cognition, thus the promotion of water intake at school should be encouraged