

Hydration in Europe

- Water is an essential macro nutrient that is often overlooked.
- Maintaining adequate hydration is important to ensure optimum physical and mental health of both children and adults.
- Many European adults and children are not drinking enough to meet the EFSA recommendations on adequate intake of water and may be at risk of metabolic disease such as obesity and type 2 diabetes.
- The type of fluid consumed must be considered while recognising that water is the healthiest option, being both natural and calorie free, as part of a healthy diet
- increased water consumption would result in improved health with associated cost benefit

Water the forgotten nutrient

Water is an essential macronutrient that is often overlooked in dietary recommendations and guidelines. It is the largest component of our bodies, and it changes as we age. At birth approximately 80% of body weight is water. This gradually decreases as the child develops and plateaus in adulthood at approximately 60-65%. However, total body water (TBW) gradually decreases to about 55% in older adults. Total body water varies depending on many factors including adiposity, musculature, and sex e.g., young male adults will have a higher TBW than females of the same age and weight.

Recommendations on the adequate intake of water

The European Food Safety Authority (EFSA) was one of the first organisations to recognise the importance of water as a nutrient and to make recommendations on adequate intakes (AI)(1). It is often assumed that thirst is the best indicator of water needs and that recommendations are not necessary. However, drinking may quench thirst without fully repleting the body's cells. In addition, thirst is not the best indicator of under hydration or dehydration in children or the elderly. Recommendations are essential to inform the public as to how to maintain a healthy hydration status. It is

important to recognise that water is consumed in fluids and in food; EFSA estimated that in Europe food provides approximately 20% of TWI. This estimate was based on data available at the time however more recent evidence suggests that this may be an underestimation (2–4). The EFSA AI recommendations for total water intake (TWI) and the calculated fluid intake are shown in Table 1. Intake data available to the panel were limited and derived from population surveys that used a variety of assessment tools that were not validated for the assessment of water and/or fluid intake (5). Given that several surveys of European populations have now been published (4,6–8), some of which have used a validated fluid intake diary (9–11), it is perhaps now timely for the recommendations to be revised. In addition, it is essential that food based dietary guidelines in Europe include water and fluids. Assessing water and/or fluid intake is challenging (6) and therefore it may be difficult for the public to assess their intake. The easiest way for a member of the public to check that they are well hydrated is to monitor urine colour. Urine that is pale in colour, and therefore dilute, is an indicator of adequate hydration; dark coloured urine is passed when someone is dehydrated. Validated urine colour charts are available for adults, children and pregnant women (12–14).

European drinking patterns

Water and fluid intakes across Europe are highly variable (8,15) ranging from reported intakes of 559 mL/day in Hungarian adults to approximately 2500 mL/day in Sweden (8). A significant number of adults in Europe don't drink enough fluid to meet the EFSA recommendations for AI of water. Again, this is highly variable e.g., 26% of German adults are consuming less than the recommended volumes compared with nearly 70% in France and 65% in Poland (11). Reports have also shown that a substantial percentage of European children do not meet the recommendations (16). There is increasing evidence linking low fluid intake to an increased risk of metabolic disease (17). The number of low drinkers has been reported to be as high as 90% in France (10). It is also important to consider the types of fluid consumed especially

sugar sweetened beverages (SSB). Several surveys have shown that children and adolescents in Europe consume significant volumes of SSB (18). A recent Spanish study reported that 40% of children (4-9 years) and 50% of adolescents (10-17 years) consumed at least one serving of SSB per day (19).

Hydration and health

The importance of water and fluid intake, and hydration in both physical and mental health is increasingly being recognised. It is no longer just about quenching thirst but about optimising health by reducing health risks associated with low fluid intake. There is mounting research showing that low fluid intake, or its biomarkers, is associated with an increased risk of metabolic disease (17,20,21), including obesity, type 2 diabetes, cardiovascular disease and mortality. With increasing obesity, and associated non-communicable diseases, in Europe it is vital to consider the role that healthy hydration may play in mitigating these diseases. Adequate hydration is also important in cognition; ensuring adequate hydration has been shown to improve cognition in children (22,23) and adults (24), and improve mood (25,26). Ensuring adequate hydration would bring many benefits to adults and children in terms of performance at school and work, and mental well-being.

Conclusion

Water is an essential macronutrient and adequate intakes are important for maintaining optimum physical and mental health. Drinking to satisfy thirst may not result in the body's cells being hydrated therefore, it is important to that people ensure they are drinking enough to meet the recommended AI levels. Many people in Europe do not drink enough to meet the European recommendations and may therefore be at increased risk of metabolic diseases. In addition, significant levels of SSB consumption may be contributing to the increased incidence of obesity, type 2 diabetes, and cardiovascular disease. It is vital to recognise the importance of healthy hydration and to implement policies and programmes accordingly. Water is the healthiest

option, being both natural and calorie free. Increasing water consumption would result in improved health with associated cost benefits.

Table 1 EFSA recommendations for the adequate intake of daily total water intake and calculated fluid intake based on 20% of water being consumed in food

Age and physiological classes		Total adequate water intake (L/day)	Fluid intake (≈ 80%) (L/day)	
Children	1-2 years	1.1 – 1.2	0.9 – 1.0	
	2-3 years	1.3	1.0	
	4-8 years	1.6	1.3	
	9- 13 years	Boys	2.1	1.7
		Girls	1.9	1.5
	> 14 years		Same as adults	Same as adults
Adults	Men	2.5	2.0	
	Women	2.0	1.6	
Elderly		Same as adults	Same as adults	

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