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Dietary Guidelines in the world


Hydration status, energy balance, dietary pattern, emotional balance and environmental sustainability are nowadays key axes for action in community nutrition and public health. Many countries have included recommendations about water and fluid intake in their Dietary Guidelines (DG). In some cases, DG graphical icons include a water tap, a glass of water or a traditional container, such as Argentina, Germany, Belgium, France, Switzerland or China. In other cases, the recommended amount of water and fluids is represented by a specific number of glasses of water. Such an icon has been more frequently used in designs targeted to older population groups.

The European Food Safety Authority (EFSA) as well as U.S. bodies have issued Dietary Reference Values for water intake for all age and sex population groups. Overall, recommended figures are slightly higher in the American recommendations. In any case and under basal conditions, water intake should be 1 mL per kcal, which means about 2.3 – 2.5 L per day.

Different life stages, certain diseases, participation in sport, pregnancy and lactation can all impact on hydration needs. Environmental conditions and certain characteristics of the diet influence water requirements as well. In certain disease conditions fluid and electrolyte requirements can be increased in variable amounts. e.g. fever, diarrhea, vomiting, kidney stones. Individuals living in hot climates also have higher water requirements as a consequence of water losses due to extra sweating.

Evaluation of beverage intake and adequacy to water requirements has not deserved much attention in most nutritional surveys. Some recently published data suggest that fluid intake is below recommended intake levels in significant proportions of the population. Water intake depends on eating and drinking habits as well as day-to-day variations in dietary choices. These are influenced by the time of day and drinking occasion, seasonality, taste preferences, availability and access to foods and drinks; convenience, attitudes towards foods or ingredients, perceptions about product quality and safety, cultural differences or even weight management concerns.

Food based DG are evidence based recommendations which should consider current population dietary practices and intake levels, as well as social and cultural contexts. The 2013 Australian Dietary Guidelines recommend limiting intake of drinks containing added sugars such as sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters and energy drinks and encourage consumption of water. The U.S. DG 2015 Committee advice to eat more water and less sugary drinks. The Committee report encourages the food industry to continue reformulating and making changes to certain foods to improve their nutrition profile, such as lowering sodium and added sugars content.

Health authorities issuing recommendations specifically targeted to children agree that water must be the first choice and recommend limited consumption of sugary soft drinks, fruit juices and smoothies containing sugar, as well as flavored dairies with added sugar.

Reports which include specific recommendations for beverage consumption classify beverages according to their energy and nutrient content, particularly, energy, sugar, sodium and fat, but also other constituents. This was the approach considered by the Spanish Society of Community Nutrition (SENC) to develop the Spanish Recommendations for a Healthy Hydration in 2008 along the Healthy Hydration Pyramid symbol. This set of recommendations was the result of a consensus meeting between several scientific societies considering different population groups. The meeting was convened by SENC in Zaragoza during Expo 2008 devoted to water as a unique theme.

The Healthy Hydration Pyramid classifies beverage options into four different levels and advises consumption for each level considering individual and group characteristics. Beverages classified in the first level are advised as the first and prevalent option. This level includes tap water and bottled water with low mineral content. Beverages classified in the second level include non-caloric options, including coffee and tea with no added sugar and non-caloric drinks, as well as water with higher mineral content. The third level includes beverages useful for hydration purpo-
ses which also supply additional energy and nutrients, such as fresh pressed fruit and vegetable juices, milk, soya and cereal based drinks, soups, gazpacho, etc. Finally, the fourth level includes sugar sweetened beverages which are recommended to be occasionally consumed. There is no evidence to support the contribution for hydration purposes of alcoholic beverages, including fermented beverages such as wine, cava and beer and therefore, such drinks are not included in the Healthy Hydration Pyramid.

Recent data from the ANIBES study on food consumption and energy balance in the Spanish population show that water and fluid intake is below recommended levels, especially in adults and elderly population. A Healthy Beverage Index has been recently tested and preliminary results report positive associations between higher HBI scores and more favorable lipid profiles; hypertension risk in adults, although further research is needed. Adequate water and fluid intake contributes to health and wellbeing.

Key words: dietary guidelines, health, beverages, hydration.

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Water intake and hydration indices in healthy adults; the European Hydration Research Study (EHRS)

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Hydration status is linked to health, wellness and performance. Consequently, it is of public health interest to evaluate hydration status of population groups and to relate it with water intake from foods and beverages.

In this study, our objective was to evaluate hydration status, water intake and the output of 7 consecutive days in healthy adults in summer and winter. It was studied in three European countries (Spain, Germany and Greece).

The volunteers living in Spain, Germany or Greece (n=577, 40±12 y, (50.2 % males)), 25.06±4.62 kg/m2 BMI have participated in an 8-day study protocol during summer and winter. Total water intake was evaluated from food and drink records gathered in 7 day diaries. Hydration status was measured in 24h urine samples collected for 7 days and in blood samples collected on days 1 and 8 of the protocol. Hydration indices in urine (24h volume, specific gravity, colour, sodium and potassium concentration) and blood (haemoglobin, haematocrit and osmolality) were associated with water intake.

Total water intake was 2.63±0.98L/day, water from beverages 2.09±0.94L/day, water from foods 0.63±0.31 L/day, 24h urine volume 1.65±0.88 L/day, 24h urine osmolality 628±219 mOsmol/kgH₂O, 24h specific gravity 1.020±0.07, 24h sodium concentration 117±5 mEq/L, 24h potassium concentration 50±18 mEq/L, colour 4.2±1.4, haemoglobin 14.7±1.7 g/dL, haematocrit 43±4% and serum osmolality 294±9 mOsmol/kgH₂O. Water intake was higher in summer than in winter (p<0.001). Water intake was associated negatively with urine specific gravity, urine colour, urine sodium and potassium concentration (p<0.01). Applying urine osmolality cut-offs for hydration status, 21% of participants were hyperhydrated, 60% euhydrated and 19% dehydrated. Predictors for urine osmolality were age, country, gender and BMI but not season or physical activity.

Hydration indices on a large number of free-living individuals are provided. Most participants were euhydrated but a substantial number showed evidence of over- or under-hydration. Seasonal differences on total water intake were observed.

Key words: Hydration status, water intake, urine hydration indices, blood hydration indices, seasonality.

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