The importance of hydration and education: challenges and opportunities

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The essentiality of water for life is beyond doubt. In spite of being a key element for maintaining a proper health status, until the last years it has not received sufficient research and educational attention. In this context, up to date three national (including one international) hydration congresses have been held in Spain, and we’re at the moment honoring the Opening Act of a fourth one at Toledo. The main conclusions of these previous conferences were that it warrants further scientific attention and concern regarding the diverse aspects that constitute the field of hydration research, and that hydration assessment is an emerging research area which comprises nutritional, exercise, behavioral and biochemical sciences. Both observational and experimental studies are needed to address causality as well as effectiveness.

At this point, I would like to address the importance of involving not only health professionals in the hydration field, recognizing that they are ideally placed to advise and educate on the benefits of proper hydration status and the best ways to achieve this, but also the educators at the different levels. Therefore, at the CEU San Pablo University and through the Spanish Nutrition Foundation we will encourage efforts to include the hydration issues at the school and university curriculum. Nutritional education typically focuses on food intake and physical activity. Both are of critical importance, but incomplete, since the quantity and quality of the fluids we drink every day can have a significant impact on our well-being and long-term health. The process of educating on hydration in primary and secondary schools, and later at the universities may play a key role in different lifestyles acquisition for adult life. It seems clear to me that an hydration education programme, by using a combination of traditional tools and new technologies, should be mandatory and not only a recommendation or conclusion of this Congress.

A good nutritional education promotes health through learning, adaptation and acceptance of healthy eating habits according to one’s own food culture and scientific knowledge in nutrition. It can be promoted from different areas by acting at multidisciplinary levels: the family is a good place to practice it, as the individual from birth shares the meals with the rest of the family and a relationship of closeness and affection between the members; Schools, that are a fundamental social environment for children and teenagers, many attempts have been made in schools for promoting healthy behaviors in youth, including eating habits and healthy physical activity. Moreover, since in many cases children do lunch in the cafeteria (most of them eat in the cafeteria five days a week for 9 months a year) the classroom is also a good place to promote knowledge on hydration. Currently in Spain, food and nutrition knowledge are covered by several subjects, such as knowledge of the Rural, Social and Cultural Environment (Primary School), Science and Physical Education (Secondary School) and Applied Anatomy and Physical Education (High School), but as a whole it represents a minimum percentage in school education. Law on Food Security and Nutrition was recently adopted, which set the basis for planning, coordination and development of strategies and actions to promote information, education and health in the field of nutrition. They will help to raise public awareness of healthy hydration and encourage sustainable healthy hydration habits, by sharing scientific research, educational materials and practical tools.

Key words: education, hydration status, curriculum, obesity prevention.

DOI:10.3305/nh.2015.32.sup2.10259

Gaining awareness of the hydration role in health

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Over the last decades nutrition related issues have gained focus in science, epidemiology and social research areas. While in the first half of the 20th century malnutrition, protein and vitamin research deserved most interest, new research areas emerged in the 80s and accumulated evidence brought nutrition and diet related issues to the front line of public and private agendas. Water is essential for life and accounts for 60% of an adult human body composition. However, hydration and water needs have not been subject for abundant research until recent years, except for certain areas such as Pediatrics, specific conditions or athletics performance. In the United States of America (USA), the Institutes of Medicine (IOM) issued Dietary Reference values for water intake in 2004. The European Food Safety Authority (EFSA) published a Scientific Opinion on Dietary Reference Values for water in 2010. Adequate Intakes (AI) in that document were derived from a combination of observed intakes in population groups with desirable osmolality.
values of urine and desirable water volumes per energy unit consumed. Those reference values for total water intake included water from drinking water, beverages of all kind, and from food moisture; and they only apply to conditions of moderate environmental temperature and moderate physical activity levels (PAL 1.6). The Spanish Society of Community Nutrition (SENC) published recommendations for a Healthy Hydration in 2008.

This 2nd International-4th Spanish Hydration Congress reflects the increasing interest on water, hydration and beverages as part of the whole diet, the physiological relevance and influence on health and wellbeing. The scientific program includes different presentation formats, such as conferences, round tables and a debate. It also provides ample space for open participation of young researchers in 12 different sessions. Among other themes, the following issues will be discussed: methods for assessment of fluid intake and hydration status; hydration in different physiological contexts; energy balance, hydration, eating habits and dietary patterns; fluid intake and hydration status in different population groups; genetic influence on hydration status; the role of hydration in short and long term health; hydration, the brain and cognition and several topics related to hydration, physical activity, sports medicine and sport performance.

National and international experts will meet and debate in this event contributing to highlight recent advances in research, to debate controversial areas and to seed new ideas to fill in the existing gaps. Furthermore, the valuable contribution of younger researchers will fuel discussions and enhance the exchange of experiences.

Key words: hydration, diet, health, research, dietary reference values.

DOI:10.3305/nh.2015.32.sup2.10380

Opening Remarks: The burden of disease attributable to hydration in Europe


Dehydration occurs when the body loses more water than it takes. It is often accompanied by disturbances in the body’s mineral salt or electrolyte balance, especially in the concentrations of sodium and potassium.

Population at particular risk of hypohydration are on the one hand, the very young who are engaged in professions where fluid homeostasis is regularly challenged and on the other, the elderly. Limited data are available on the prevalence of hypohydration, but there is evidence to suggest that this may be relatively common among the European elderly population. The percentage of population with an inadequate intake of water may vary from 5 to 35% in the different European countries.

While the burden of disease from inadequate water, sanitation and hygiene is well known in developing countries, the consequences of an inadequate water intake in Europe are far from being well understood. Recent researches into the risk of disease (falls and accidents, bowel, metabolic and kidney diseases), disability (cognitive function, physical performance, headache) and death are confirming the importance of poor hydration to overall disease burden and quality of life in Europe.

Moreover, the number of hospitalizations for dehydration has steadily increased in recent decades. In this case, dehydration increases the health care burden in a direct way, as a disease itself. But sometimes, dehydration appears as a comorbidity condition in some diseases. Dehydration has been defined as the second most common comorbidity factor, occurring in 14% of all hospitalizations. In addition to its individual clinical impact, dehydration also represents an important public health issue by imposing a significant economic burden. Depending on the degree or magnitude of the dehydration in hospitalized patients their costs may increase from 7% to 8.5%. Higher costs will be associated with an increase in the hospital mortality, as well as with an increase in the utilization of intense short and long term care facilities, readmission rates and hospital resources, especially among those with moderate to severe hyponatremia. Dehydration represents a potential target for intervention to reduce healthcare expenditures and improve patients’ quality of life.

Improving drinking habits during working and leisure time, developing comprehensive hydration guidelines for healthcare professionals and patients would be cost-effective means of addressing the burden of hypohydration in Europe. Given the extent of the problem and its under-acknowledgment, will the Commission engage in a pan-European research and awareness-raising strategy on the burden of hypohydration in Europe? Will the Commission address the burden of dehydration in the elderly as part of its action plan on active ageing to be proposed in the near future?

Key words: hydration status, public health, Europe.

DOI:10.3305/nh.2015.32.sup2.10260