

LETTERS

VOLUNTARY, NONINTENTIONAL DEHYDRATION AND HEALTH

The study by Kenney et al. on the prevalence of inadequate hydration among US children¹ underscores a major public health issue but addresses only some of it. The extent of involuntary (nonintentional) dehydration in the population is probably much higher than 54%. In adults, the maximal capacity of the kidney to concentrate urine is about 1200 milliosmoles. However, in children it is lower and increases with age, which means that the study's 800-milliosmole cutpoint for dehydration only traced children who were in a state of severe fluid deficit. Children who were moderately and mildly dehydrated were ignored. This is important because even a two percent dehydration level can adversely affect health and function, thus implying that almost all are at risk.

It is worth adding some additional severe consequences of long-lasting dehydration. Prolonged periods of highly concentrated urine is associated with bladder, colorectal, and breast cancers^{2,3} and urolithiasis. If chronic involuntary dehydration starts in childhood and lasts for life, then many will eventually confront the consequences. Even mild and short-term ill effects of dehydration are of

major concern. These effects may include increased risk of occupational and road accidents, reduced productivity secondary to reduced executive functions, mood changes, cognition, and suboptimal learning and interpersonal relationships.⁴⁻⁶

It is important to address the potential bias of first morning urine samples. Even in well-hydrated children, the effect of antidiuretic hormone at night produces highly concentrated urine in the first morning specimen. In future studies it seems that midday and evening samples are better suited to reflect hydration, while first morning samples should be ignored.

Insensible water loss might be an important root cause for dehydration for all. Global warming causes increased insensible water loss to populations not used to living in a hot environment and thus did not develop the necessary physiological and adaptive drinking habits. In addition, the prolonged exposure to air-conditioning and heating might contribute to increased insensible water loss, especially in winter, thus augmenting dehydration for long periods.

Promotion of drinking water together with the availability of cheap and safe water have the potential to ameliorate many of the ailments that accompany chronic unintentional dehydration. In such circumstances, one should be aware that some people might take the recommendations to the extreme. Compulsive water drinkers are at risk for electrolyte imbalance and reduced ability to concentrate urine when acutely needed. ■

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