

The Water Craze

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Abstract

I was taken aback when an elderly patient confessed dejectedly that she didn't drink the eight glasses of water her physician had prescribed. I was astounded to learn that water loading for all comers pervades medical practice. But how robust is the scientific evidence and how did this come about? Innovations in clinical practice are usually based on accumulations of scientific breakthroughs. These are first published in medical journals and then trumpeted 24/7 in the media. Yet I could not recall a single scientific study on the benefits of increased water consumption.

SA Fam Pract 2009;51(5):393-394

A systematic search of the medical literature turned up a blank. Recently I came across comments of Dr Heinz Valtin, which stimulated me to address this issue. Dr Valtin is an emeritus professor of physiology at Dartmouth Medical School, an authority on kidney function and water balance, on which subjects he has authored several textbooks. After an exhaustive ten-month search of the literature, Dr Valtin likewise could not identify a single published paper relating to daily water requirements.¹

Apparently, in the 1940s the Food and Nutrition Board of the Institute of Medicine offered recommendations on food and water needs. As a rough rule of thumb, it suggested drinking one milliliter of water for every calorie eaten. This equals roughly two quarts or eight 8-ounce glasses daily. An important proviso followed: "Much of this (water) can be gathered from the food that we eat." So in fact, if one eats a healthy diet, no additional water may be required.

The minimum daily requirement of liquid has been defined. Those residing in moderate climates lose about 500 milliliters or 16 ounces of water daily. This is referred to as the obligatory fluid loss, and includes water mandatorily excreted by kidneys, insensible water loss from skin through evaporation, as well as water shed in tears, eliminated in menstrual fluid, semen, and faeces. Such losses are readily replaced by the high content of water in solid food and by the fact that most people consume beverages such as coffee, tea, fruit juices, wine, and alcohol.

Is there any benefit though from additional fluid intake? A prevailing notion is that drinking more water may help with constipation. But the water one drinks is excreted by the kidneys, not by the intestines. Another popular myth is that more water helps with weight loss. No scientific evidence supports the greater efficacy of dieting when water intake is increased. Nor does water dousing help combat kidney stones, urinary tract infection, or bladder cancer.

Could eight glasses of water daily inflict harm? As a physician, I have been concerned with disruption of sleep by nocturia. Excess water accentuates the physiological tendency to excrete more fluid when one is recumbent during the night. Elderly males are especially predisposed to nocturia. They invariably suffer from benign prostatic hypertrophy (BPH), which sensitises the bladder neck to spasm even when the bladder stores modest amounts of urine. Being roused multiple times during the night diminishes the restorative qualities afforded by sleep and may play a role in the ubiquity of depression among the aged.

Another, but far less frequent, adverse consequence of excess water intake is hyponatraemia or water intoxication. It is rarely encountered among elderly who are taking powerful diuretics, such as lasix. A diuretic is commonly prescribed for largely innocuous, gravity-dependent ankle swelling. When coupled with an 8-glasses-of-water regimen, substantial dilution of body sodium may lead to adverse neuropsychological effects.

So far I have evaded discussing how bingeing on water came about. In fact, I do not know. However, the innocent statement from the Food and Nutrition Board of the Institute of Medicine, some sixty years ago, is an unlikely source. Nor do I think the medical profession was a significant actor in launching the practice. It took far more powerful voices. Aggressive beverage marketers like Coca-Cola and PepsiCo are more likely suspects. In the short span of a few years their water brands, Aquafina and Dasani, became blockbuster successes.

The current market for bottled water is huge and growing. Revenues from global soft drinks and bottled water sales this year are anticipated to exceed US\$146 billion. The US is the largest consumer in the world.² This has led the Wall Street Journal to gush that bottled water is the next best thing to oil and gold.

A variety of factors are driving demand. Topmost in my view is the medicalisation of every aspect of life and the erroneous view that we are prone to dehydration unless constantly replenished. Additional factors are the perception that bottled water is safer and tastier than municipal water. In most industrialised countries, however, and especially in the United States, tap water is far more stringently regulated and more frequently monitored than bottled water. For example, New York City has tested its water supply 430,000 times in a single year.³ Municipalities provide high-quality potable water. The sobering fact is that 25% of bottled water, including popular brands such as Aquafina and Dasani, are merely filtered tap water processed close to their distribution point.

If bottled water is without health or safety advantage, wherein is its popularity? When tap and bottled water are compared in blind tests, the source is unidentifiable. The choice is therefore not driven by taste. Perhaps the appeal relates to enhancing self-image. Carrying a small bottle was pioneered by super-models to suggest elegance, high fashion, and affluence. Marketing is particularly focused on women, who drink more bottled water than men. Possibly, as with other articles of consumption, the appeal is not related to the intrinsic utility of the product but in the message it conveys. Being able to afford a product, far costlier than tap water, proclaims wealth and success.

Indeed bottle water is very costly. Dasani and Aquafina sell for about five US cents an ounce, while municipal water sells for less than one US cent a gallon. Even gasoline, at current exorbitant prices, is 40%. Indeed bottled water puts Big Oil to shame.

I am persuaded that for those living in developed countries, drinking bottled water should shame the user. Today a billion people lack reliable access to safe drinking water. Dirty water spews disease. According to the World Health Organization, unclean water accounts for 80% of global disease and kills about five million people annually. It is worth pondering that merely a quarter of the spending on bottled water could provide safe sanitation and clean water for the wretched of the earth.

Even for those who cannot muster a sense of charity for the afflicted, self-interest should cause them to hesitate when resorting to bottled water. Producing and transporting plastic bottles consumes prodigious quantities of oil and other fossil fuels. Non-biodegradable plastic adds to litter and solid waste, which crowds landfills. It has been estimated that to produce the bottles that Americans consumed in 2006 required in excess of 17 million barrels of oil and increased global warming by adding 2.5 million tons of CO₂. That is why I embrace the view of Tom Standage, author of a book about the history of water and other drinks: "Tap water is not so abundant in the developing world. And that is ultimately why I find the illogical enthusiasm for illogical water not simply peculiar, but distasteful."⁴

The practising physician ultimately needs to deal with the mundane question of an individual patient, "How much water should I drink a day?" Unfortunately this important question cannot be readily answered. To respond concretely one must have a wealth of information. For example, how does water requirement vary with age, with gender, with level of activity, with composition of diet, with daily calorie intake, with body mass index, with psychological stress, with type of occupation, in pre- and post-menopausal women, with presence and type of chronic ailments, on and on. A doctor does not treat humankind but a specific

unique person. To do so responsibly, one needs prodigious amounts of sound evidence-based information.

The physician, dealing with problems of the here and now, cannot wait for the definitive data. Uncertainty is the province of the professional. Herein a complex synthesis is required of a sound education in the basics, guided by a wealth of well assimilated experience, restrained by knowledge that all actions have unintended consequences, and chaperoned by solid common sense.

So what is my response to the simple water question? First, a sense of thirst, though weakened by age, is a good litmus for fluid intake. Eight ounces of liquid with a meal should suffice for those not running a marathon or living in the tropics. If the urine is scanty and concentrated, an extra eight ounces is advisable.

While diffident about the broad question of how much, I would not hesitate being judgmental when it relates to bottled water and carting it as though an indispensable amulet of healthy living. Bottled water is not a medical but a moral issue. As Voltaire cautioned, "Those who make us believe absurdities can make us commit atrocities." Resorting to bottled water as a routine practice is indeed an atrocity against the environment and against common sense.

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"The Water Craze" by Dr Bernard Lown was originally published by ProCor as "Lown RCTs (Random Clinical Thoughts): The Water Craze" on June 16, 2008.

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