

Eight glasses a day – the perils of pseudoscience?

At a meeting the other day I noticed someone drink from a bottle of water. This is not unusual, of course. But it reminded me of past pressure from my children to buy bottled water. I had resisted – after all, Cape Town tap water is pretty good! However, not long afterwards I was informed with great conviction, ‘You must drink eight glasses of water a day, everyone knows it, mama, it’s scientific!’ Mumbling some response, I privately undertook to verify the statement. So what is the evidence for this widely accepted assertion?

The most informative and enjoyable review I found was one by Valtin, reporting on extensive literature searches and consultation with nutritionists.¹ He found ‘no scientific studies’ in support of this recommendation. In fact, it seems one of its earliest mentions was in the obituary of a respected nutritionist. Dr Stare ‘was an early champion of drinking at least six glasses of water a day’. In addition, ‘A former colleague ... found the following passage’ in a book that Dr Stare co-authored in 1974: ‘How much water each day? This is usually well regulated by various physiological mechanisms, but for the average adult, somewhere around 6 to 8 glasses per 24 hours and this can be in the form of coffee, tea, milk, soft drinks, beer, etc. Fruits and vegetables are also good sources of water.’¹

The current precise recommendation of ‘at least eight glasses of water a day’, which often excludes other fluids, is quite clearly contrary to the above imprecise one. Valtin goes on to state that there is a ‘... large body of published experiments that attest to the precision and effectiveness of the osmoregulatory system for maintaining water balance’. In other words, our own built-in mechanism reduces (or increases) urine output and tells us to drink when we need to.

This discussion is naturally limited to normally active healthy people, often the target of this recommendation. Large or very small volumes may be indicated in various disease and activity states. Valtin goes on to dispel myths like ‘thirst is too late’ and ‘dark urine means dehydration’, but the analogy I found most useful is that insisting on at least eight glasses of water a day ‘... is akin to arguing that our homes run on electricity, and that, therefore, every house needs at least 1,000-ampere service’.¹

What about the preference for bottled water – is it better? The Canadian Entrepreneur website reports:² ‘... average per-capita consumption of bottled water grew from 11 US gallons to 21 gallons between 1996 and 2006. Consumption of milk dropped

from 22.7 to 19.5 gallons over the 10-year span ...’, and also states that ‘in these troubled economic times, consumers are happily paying for something they used to consider – and can still get – free’. Two reasons are usually given for avoiding tap water. The chemicals used for cleaning may alter the taste,³ and in some settings, water may not be adequately purified.⁴ However, there have also been instances where bottled water was found to contain more bacteria than tap water.⁵

Although water is good, too much of it may cause harm, as Noakes *et al.*⁶ first reported 20 years ago. Endurance sport can lead to cardiac failure and other complications in predisposed people; however fluid intake is also important and has been the subject of recent recommendations.⁷

So it would seem that water, like most things in life, is good in moderation; and although bottled water may be preferable in certain situations it is not always superior to tap water. You may be thinking, ‘What about “walking evidence”? Besides, lack of scientific evidence is not the same as evidence of lack of effectiveness, or in this case of health benefit, from large volumes of water.’ I agree, but until we have objective scientific studies confirming the benefit of ‘at least eight glasses of water a day’ it is not a scientifically justifiable recommendation. Not to mention the personal ‘inconvenience [and] expense’¹ (and, might I add, the ‘bathroom-associated’ national economic loss – a peril we cannot afford!).

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3. Whelton AJ, Dietrich AM, Burlingame GA, Schechs M, Duncan SE. Minerals in drinking water: impacts on taste and importance to consumer health. *Water Sci Technol* 2007; 55(5): 283-291.
4. Kassenga GR. The health-related microbiological quality of bottled drinking water sold in Dar es Salaam, Tanzania. *J Water Health* 2007; 5(1): 179-185.
5. Raj SD. Bottled water: how safe is it? *Water Environ Res* 2005; 77(7): 3013-3018.
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