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WHAT AND HOW MUCH SHOULD WE DRINK PER DAY?

it remains a question on everyone's lips..

The information explosion in the science of nutrition very often creates the impression that available information is contradictory. Consequently, it is no longer easy to distinguish between fact, misinformation and fiction. The Nutrition Information Centre of the University of Stellenbosch (NICUS) was established to act as a reliable and independent source of nutrition information.

Good hydration is vital for good health and well-being. There is increasing evidence that a low water intake or mild dehydration may be linked with the risk of chronic diseases. Did you know that even mild dehydration can affect mood negatively? Data showed that not only mood but also performance tend to be impaired by dehydration in children. Like in children, cognition tends to be impaired when the elderly are dehydrated.

What should we drink per day?

In healthy adults fluid intake is regulated by thirst. Water is an essential nutrient for life and is considered as the ideal drink to quench thirst and ensure hydration. Ironically, it is very often ignored as part of our dietary recommendations.

Despite the fact that water is considered as the ideal fluid to drink, many people choose alternatives and prefer other drinks such as cool drinks, fruit juices, coffee, tea, milk or sport drinks. These beverages may or may not contribute to the daily energy intake of the individuals consuming them depending on their composition. For instance, a glass of ordinary sweetened carbonated cool drink provides at least 418 kJ and a glass of artificially sweetened cool drink less than 5 kJ making the latter by far a better choice for an overweight inactive adult. The

increase in the incidence of obesity and lifestyle diseases such as diabetes, obesity and heart disease certainly require of us to create awareness on the importance of better food and drink choices as one of the interventions which help attain and maintain a healthy body weight throughout our lives. To make sound choices even more difficult, or rather interesting, is the fact that consumers are faced with a host of products and functional foods/drinks that offer anything from micronutrient enriched water to “cancer fighting teas”, such as green tea, to a host of other products offering “miraculous” health benefits. With the plethora of such beverages, consumers may often not only need some guidance on sound choices to quench their thirst, but also on how to include such beverages as part of their daily varied diet.

How much?

The National Research Council (NRC) recommends a daily water intake of approximately 1ml/kcal energy expenditure. The 8 glasses of water per day is based on this recommendation and on the average weight of a 70kg male. No single formula fits every individual or every situation and water intake recommendations also depend on other factors such as activity, humidity, climate, body temperature and body composition. More recently both the European Food Safety Authority (EFSA) and the Institute of Medicine (IOM) in the USA have published gender- and age-specific recommendations on water intake. However, they took slightly different approaches in determining their recommendations. The IOM concluded that it was not possible to give an estimated average requirement due to extreme variability in water requirements that cannot be explained by different metabolism, variability in environmental conditions and activity. The Institute of Medicine (IOM) established the Adequate Intake (AI) for total water to prevent dehydration. Based on a wide range of normal hydration status of the population, the AI was established according to the median total fluid intake (water, fluid from food and other drinks). The AI's for sedentary men and women (aged 19-50 years) is 3.71 and 2.71 liters per day respectively. Solid food and digestion of food also contributes to this recommendation. Drinking fluids represents approximately 81% of total water intake resulting in a recommended intake of 3.0 l per day for men (~12 glasses of 250 ml) and 2.2 l per day (~9 glasses of 250 ml) for women.

EFSA used population surveys from European countries with average intakes varying from 720 mL/day to over 2621 mL/day. EFSA used population surveys from European countries with average intakes varying from 720 mL/day to over 2621 mL/day. They recommend 2.0 l per day for men and 1.6 l per day for women.

Water is part of every body cell comprising, on average, 50% of body weight in women and 60% in men. Every system and function in the body depends on water. For example, water aids in the digestion of food, carries nutrients to cells and provides a moist environment for ear, nose and throat tissues. The amount of fluid consumed per day is approximately equivalent to the amount lost. Mild dehydration affects a wide range of cardiovascular and thermoregulating processes and responses. Dehydration of 3-5% of body weight decreases physical strength and performance, and is the primary cause of heat exhaustion. Daily turnover of water is approximately 4% of total body weight and even higher proportions in children. Water losses from the lungs and skin (insensible losses; 500 – 1000 ml/day) are responsible for approximately half of the daily turnover and sensible losses from stools (50 – 100 ml/day) and urine account for the rest of the daily losses. Yet, despite of changes in body composition and function as well as the environment, most healthy people manage to regulate daily water balance well across their lifespan.

Why is water the best possible choice?

Water is highly recommended for daily fluid intake. Despite the focus on hydration and de-hydration in many official reports, some studies have shown that plain water consumption is associated with better diets, better health behaviours, and lower burden for chronic disease. It provides no additional energy, which makes it very ideal for any overweight or inactive adult. It also provides variable amounts of minerals such as calcium, magnesium, fluoride, depending on its source.

In most developed Western societies diets are reported to provide an excess of total energy, which is associated with obesity and the related profiles of the so-called diseases of lifestyle. Although plain water fulfills almost all the fluid needs of healthy adults, individual preferences, perceived needs, taste, cultural, social and other factors have led to the availability of a great variety of beverages on the market. Some of these beverages may contribute significantly to the total daily energy and the daily intake of other nutrients. Indeed, depending on the frequency and amounts consumed, the intake of energy and/or other nutrients may become inappropriately high.

South Africa faces the burden of infectious diseases (such as HIV/AIDS and tuberculosis) existing alongside diseases of lifestyle (non-communicable diseases) such as undernutrition, overnutrition, diabetes, hypertension and cancer. The rise of diet-related non-communicable diseases accounts for 28% of the burden of disease in South Africa, and is thought to be linked to the process of societal transition, urbanisation and westernisation from a traditional rural

lifestyle – the South African a ‘nutritional transition’. The specific dietary and lifestyle changes observed is in patterns of consumption of food, alcohol and tobacco, reduction in physical activity, and a shift to a diet high in sugar, salt and saturated fat.

South African adolescents and school children are at an increased risk to environmental factors that cause obesity. Specifically, they are more likely to consume sugar sweetened drinks, less likely to compensate for “fast food” energy, and consume more energy-density foods (e.g., sweets, chocolate, and chips).

Therefore in South Africa, as observed in many countries, the fundamental cause of obesity and overweight is an energy imbalance between energy consumed and energy expended:

- an increased intake of energy-dense foods that are high in fat or added sugars; and
- an increase in physical inactivity due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanisation/development.

Recommendations for South Africans:

- **Water** fulfills almost all the fluid needs of healthy adults. Women should drink at least 4 glasses (250ml) and men at least 6 glasses (250 ml) of clean safe water per day. Children should drink water when thirsty and limit their intake of milk to 600 ml per day (From the age of 5 years all children and adults should drink low fat or fat free milk) and fruit juice to 240 ml per day.
 - Drinks should not contribute to more than 14% of total daily energy intake.
 - Schools should encourage children to meet their fluid needs with water and ensure the provision of clean safe water as well as limit the availability of other cool drinks/juices.
- **Sweetened cool drinks**, such as carbonated cool drink drinks should be limited to no more than 240 ml (approximately one standard cup). These drinks should be avoided by diabetics and inactive overweight adults and children.
- **Fruit and vegetable juices** (100% juices) and **sports drinks** should be limited to no more than 240 ml (approximately one standard cup).
- **Diet- or artificially-sweetened cool drinks** could replace sweetened drinks in a varied diet (up to four servings of 240 ml (approximately one standard cup).
- **Unsweetened coffee and tea:** Adults should limit their intake of caffeine drinks to no more than 4 cups of coffee per day or 8 cups of tea per day. Preferably, these should be with fat free or low fat milk and no sugar.

Access the South African Food Based Dietary Guidelines and recommendations for healthy eating and weight loss at: <http://www.sun.ac.za/english/faculty/healthsciences/nicus/how-to-eat-correctly>.

For further, personalized and more detailed information, please contact NICUS or a dietitian registered with the Health Professions Council of South Africa

References from the scientific literature used to compile this document are available on request.

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