

## • Global Views

# Optimal fluid intake in daily diet: Avicenna's view

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### ABSTRACT

Adequate daily water consumption is an important factor of keeping regular homeostasis. However, the best quantity of daily water consumption for a healthy individual is not virtually stated in the literature. Despite the dearth of evidence-based recommendations, it is commonly thought that ingesting eight glasses of water a day is good for a healthy person. Avicenna had a unique viewpoint. He believed that daily water intake depended on numerous elements together with age, intercourse, body temperament, season, occupation and various internal and external elements. He also cited a few essential and useful measures regarding proper water consumption, which have additionally been emphasized in Islamic hadiths.

**Keywords:** Avicenna; traditional Persian medicine; daily water intake; optimal fluid intake; balance, water; drinking

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### 1 Introduction

As it comprises the primary part of our body, we want water to preserve ourselves healthy. Human beings need this vital fluid to maintain adequate tissue perfusion, which is required to deliver fuel to the end-organs<sup>[1]</sup>. We respond to fluid deficits through the sense of thirst, which stimulates consumption of water or other fluids<sup>[2]</sup>.

Many people believe that water is superb for their health, but how much water should we drink to keep ourselves healthy without bringing on health problems? It is commonly thought that we have to drink eight glasses of water every day; however, such inspiration for healthy individuals is poorly supported by evidence-based research. It should be tailored individually regarding

daily water need that is truly estimated by urine output volume<sup>[3,4]</sup>.

The literature mostly addresses to the complications of drinking too much water. But how much is too much? Hyponatremia, water intoxication and insomnia are some of the complications of excessive water drinking<sup>[3]</sup>. Moreover, patients with renal failure or congestive heart failure have further physiological limits on healthy levels of water consumption. However, there is no special consideration for the risks of excessive water consumption in normal healthy individuals.

On the other hand, recurrent dehydration followed by intermittent water drinking increases the risk of kidney disease and exacerbates hypertension<sup>[5]</sup>. For this reason, a balanced daily water intake is crucial for health

maintenance.

A study in the United States on children under 10 years of age showed no association between water intake and ambient temperature<sup>[6]</sup>. In addition, Perrier *et al*<sup>[7]</sup> found that urine color was correlated with daily water intake and urine specific gravity; lower water intake was accompanied by more colorful urine and increased urine specific gravity<sup>[7]</sup>. However, in hot weather, daily water needs rise due to the increase in rate of water loss through sweat. Other factors such as age, gender and employment may contribute to water balance beyond seasonality<sup>[8,9]</sup>. Moreover, daily water intake may affect people's mood. A recent study in women showed a relationship between total daily water intake and negative/positive mood. Lower water intake was correlated with a more negative mood<sup>[10]</sup>.

In this study we reviewed the most important traditional Persian medical encyclopedia, *Al-Qanun Fil-Tibb (The Canon of Medicine)*. Additionally, MEDLINE, Embase, Scopus, Iranmedex and Science Iranian Database were searched, focusing on the keywords of "traditional medicine", "water intake", "fluid" and "complementary and alternative medicine", in order to identify relevant literature.

## 2 Avicenna's opinion about water drinking

Avicenna (980–1037 CE), the great Persian scholar of the Islamic Golden Age (the 9th–12th century CE)<sup>[11]</sup>, believed that daily water demand is not the same in different individuals<sup>[12]</sup>. The determinant variables mentioned in his book, "The Canon of Medicine", comprise *mezaj* (temperament), health status, age, gender, season, place, habits, occupation and others. As a Muslim physician, most of his medical views were in accordance with the Islamic hadiths quoted from the Muslim prophet (PBUH). Avicenna believes that drinking water with or just after meals causes a delay in gastric function and disturbs digestion. In addition, he prohibits drinking two (or more) different types of water together (*e.g.*, drinking water with a piece of ice in it) and recommends that drinking should be in the form of "sipping"<sup>[13]</sup>.

It is recommended in hadith quoted from the Muslim prophet (PBUH) that the water should not be drunk in one breath and anyone who is concerned about his/her health should sip water slowly at least in three breaths. Drinking water in one breath causes liver disease in the long term<sup>[14]</sup>. According to Islamic hadiths, it is also banned to drink in a standing position. Moreover, using water that has been warmed with sunshine (especially in a cupric container) has been proposed as one of the causes of vitiligo<sup>[14]</sup>.

It should be kept in mind that the volume of water consumed should be adjusted with the body's need and

fluid loss. Drinking water more than the body demand causes frailty and weakness. Avicenna emphasizes the avoidance of excessive water intake. He believes that too much water would quench the innate heat (*hararat-e-gharizi*). This is the basal internal heat needed to convey normal homeostasis and metabolism in the body<sup>[13]</sup>.

Drinking water should be fresh, soft and should not cause a feeling of heaviness. Soft fresh water enhances the appetite and helps the digestion without causing flatulence. This kind of water warms and cools faster than hard water<sup>[13]</sup>.

According to Avicenna's belief, water is considered to be the *mobadreh* (escort) of the foods, which enhances the penetration of nutrition into the organs. Digestion of food is impossible without water; however, excess water disturbs the digestion. Water alleviates the heat of the stomach and liver, relieving thirst. It is necessary for excretion of the wastes and makes the skin smooth and soft. On the other hand, indulgence in drinking water causes darkening of the skin. Sleepiness, aggravation of joint disease, *sue-al-qoniah* (fatty liver) and edema are the other complications of excessive water intake<sup>[13]</sup>.

## 3 Proper time for water drinking

The best time for drinking water is when a person is really thirsty. Water should be cold enough to relieve thirst. Drinking too much lukewarm water not only does not relieve the thirst, but also causes an increase of wetness in the body, and makes it susceptible to gastrointestinal disturbances and other diseases<sup>[15]</sup>. According to Avicenna and the Islamic sages, drinking water, especially cold water after physical activity, sauna, long bath or intercourse, is harmful for the body, because it will quench the innate heat. Avicenna believes that the innate heat or the internal heat is derived from essential wetness (*rotoobat-e-gharizi*) or essence of life and since it is not a renewable resource, its end is the end of one's life<sup>[15]</sup>. In addition, drinking cold water on an empty stomach, after a long night of sleep, or in the time of rage or fright, is harmful to the body<sup>[15]</sup>.

## 4 Special considerations

Children and young adults need more water because they generally have a warm temperament<sup>[16,17]</sup>. Conversely, the elderly need less water, and drinking too much water exacerbates their problems, especially gastrointestinal disorders and osteoarthritis<sup>[18]</sup>.

The existence of morbid matters and phlegm in the stomach causes the sensation of thirst, in response to which the person is driven to drink water without relief. These people usually state that drinking hot water or other

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