Original Article:

An Evaluation of Adults' Water and Fluid Consumption

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Abstract: Aim: This study was aimed to determine the daily water and fluid consumption of health professionals. Methods: The sample included 313 subjects (female: 222, male: 91) between 22 and 49 years of age. The questionnaire solicited demographic information from the participants and asked about their fluid consumption and its frequency. The principal variable was gender. To analyze the data statistically, tables of means, standard deviations (X±SD) and percentage (%) values were used. When identifying the fluid intake of healthcare staff, the independent t test was used to account for gender. Results: The fluid consumption of the participants was examined, and the average was 2.262.6±845.2 mL. The mean consumption of water was 1,404.0±719.8 mL. Other significant fluid intake included black tea at 314.4±147.9 mL, instant coffee at 160.5±522.2 mL, milk/ayar/kefir at 157.7±134.8 mL, soft drinks at 61.6±104.7 mL, fruit juice at 72.5±103.9 mL. It was also found that the gender differences in total fluid and soft drink consumption were statistically significant (p<.05), while the consumption of other drinks did not vary significantly by gender (p>0.5).

Conclusion: To precisely determine water and fluid intake, studies should be planned and conducted with large samples using standardized assessment tools.

Key Words: Health professional, fluid, water, consumption.

Introduction: Human body weights range from 55 to 65% water. Every organ system in the bodies needs water to function.(1) Optimum health calls for sufficient water consumption since our body's cells need it to metabolize nutrients, to eliminate waste, for insulation, cooling and to maintain appropriate moisture levels of ear, nose and throat tissues.(2) Water effectively hydrates our bodies.(3) Drinking water has been linked to associated better diets, superior health behaviors and reduced risk of chronic disease.(4,5) Two sources fulfill the human body's need for water: food and fluids.(3) The EFSA has determined that approximately 20-30% of humans' total water intake is in their foods, while fluids of all kinds account for 70-80% of it.(6) The water and fluid needs of individuals vary. They are determined by factors such as diet(7,8), demographics(9), physical exercise or the lack thereof, climate and environment.(10,11) The water in beverages and foods determine a diet's energy density.(12) While the high water content of all beverages can hydrate our bodies, they often also provide calories.(13) Drinking sweetened beverages leads increased caloric intake, obesity and other health problems(14) such as headaches, irritability, drowsiness, low appetite and impaired concentration.(15) Healthy diets do not use fluids as calorie or nutrient sources, and healthy people should drink water to meet their needs for fluids.(16) Although water is so critical for life and optimizes human performance, precise values for men and women's daily water and fluid needs have not been established by scientific or clinical consensus.(17) The long and intense working hours of health professionals, environmental conditions and changes caused by stress can influence the fluid requirements of the human body. Working with this assumption, this study aimed to determine the daily water and fluid consumption of health professionals.
Material and Methods:
This study involved 313 subjects (female: 222, male: 91) between 22 and 49 years of age. Its voluntary participants reside in Ankara and work as healthcare staff in hospitals. A questionnaire and face to face interviews were used to collect the research data. The questionnaire solicited demographic information from the participants and asked about their fluid consumption and its frequency.

Drinks with similar qualities were combined, and the daily average fluid consumption was calculated. A catalogue of food photographs was used to attain the actual values of fluid consumption.(19)

The principal variable was gender. To analyze the data statistically, tables of means, standard deviations (±SD) and percentage (%) values were used. When identifying the fluid intake of healthcare staff, the independent t test was used to account for gender. An alpha level of <.05 was used as the threshold for statistical significance.

Results and Discussion:
Of the participating health professionals, 70.9% (n=222) were female and 29.1% (n=91) were male. Their average age was between 22 and 49 years. Its voluntary participants, 14.1% had graduated from vocational high schools, 60.7% had undergraduate degrees, and 25.3% had postgraduate degrees. Of the participants, 51.1% were nurses/biologists or other healthcare staff.

A pilot study participated said they rarely or never consumed certain drinks, and these drinks were excluded from the study. The pilot study participants said they rarely or never consumed certain drinks, and these drinks were excluded from the study. The principal variable was gender. To analyze the data statistically, tables of means, standard deviations (±SD) and percentage (%) values were used. When identifying the fluid intake of healthcare staff, the independent t test was used to account for gender. An alpha level of <.05 was used as the threshold for statistical significance.

Table 1: Fluid intake of healthcare staff by gender (n=313)

<table>
<thead>
<tr>
<th>Fluids</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
<th>p value</th>
<th>(% intake)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water (mL)</td>
<td>1514.3± 781.5</td>
<td>1358.6± 689.7</td>
<td>1404.0± 719.8</td>
<td>&lt;.05</td>
<td>64.5</td>
</tr>
<tr>
<td>Black tea (mL)</td>
<td>321.7± 143.5</td>
<td>311.3± 148.8</td>
<td>314.4± 147.9</td>
<td>&lt;.05</td>
<td>14.5</td>
</tr>
<tr>
<td>Turkish coffee/Coffee (mL)</td>
<td>160.6± 49.6</td>
<td>160.5± 53.1</td>
<td>160.5± 52.2</td>
<td>&lt;.05</td>
<td>7.4</td>
</tr>
<tr>
<td>Milk/ayran/kefir (mL)</td>
<td>156.5± 123.4</td>
<td>158.2± 139.5</td>
<td>157.7± 134.8</td>
<td>&lt;.05</td>
<td>7.3</td>
</tr>
<tr>
<td>Soft drinks (mL)</td>
<td>103.6± 124.9</td>
<td>44.4± 89.9</td>
<td>61.6± 104.7</td>
<td>&lt;.05</td>
<td>2.9</td>
</tr>
<tr>
<td>Fruit juice (mL)</td>
<td>75.3± 102.3</td>
<td>71.4± 104.7</td>
<td>72.5± 103.9</td>
<td>&lt;.05</td>
<td>3.4</td>
</tr>
<tr>
<td>Total (mL)</td>
<td>2454.4± 860.9</td>
<td>2184.1± 827.8</td>
<td>2262.6± 845.2</td>
<td>&lt;.05</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The fluid consumption of the participants was examined, and the average was 2,262.6±845.2 mL. The mean consumption of water was 1,404.0±719.8 mL. Other significant fluid intake included black tea at 314.4±147.9 mL, instant coffee at 160.5±52.2 mL, milk/aryan/kefir at 157.7±134.8 mL, soft drinks at 61.6±104.7 mL and fruit juice at 72.5±103.9 mL. The distribution of total fluid consumption was examined, and it was found that water (64.5%) was the fluid most consumed. It was also found that the gender differences in total fluid and soft drink consumption were statistically significant (p<.05), while the consumption of other drinks did not vary significantly by gender (p>.05).

Table 2: Beverage consumption frequency of health staff (n=313)

<table>
<thead>
<tr>
<th>Fluids</th>
<th>Everyday</th>
<th>5-6 per week</th>
<th>3-4 per week</th>
<th>1-2 per week</th>
<th>Never or less than once a week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Water (mL)</td>
<td>313</td>
<td>100.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Black tea</td>
<td>278</td>
<td>88.8</td>
<td>9.2±1</td>
<td>0.3±1</td>
<td>5.1±1</td>
</tr>
<tr>
<td>Instant coffee</td>
<td>54</td>
<td>17.3</td>
<td>196.1±15.5</td>
<td>17.5±15.4</td>
<td>17.3±15.2</td>
</tr>
<tr>
<td>Milk/ayran/kefir</td>
<td>30</td>
<td>9.7</td>
<td>165.1±50.8</td>
<td>15.9±42.3</td>
<td>13.4±42.9</td>
</tr>
<tr>
<td>Soft drinks</td>
<td>10</td>
<td>3.2</td>
<td>134.2±20.4</td>
<td>6.4±27.6</td>
<td>27.6±24.3</td>
</tr>
<tr>
<td>Fruit juice</td>
<td>12</td>
<td>3.8</td>
<td>123.8±26.3</td>
<td>8.3±13.4</td>
<td>17.3±220</td>
</tr>
</tbody>
</table>

Each fluid's consumption frequency was examined and it was found that all the participants drank water everyday (100%). Water was followed by black tea (88.8%), which is the most popular beverage in Turkey. The consumption frequency of other fluids was instant coffee (17.5%) and milk/aryan/kefir (15.9%). These are consumed three or four times a week at most. Those who consume soft drinks everyday form the smallest group (3.2%). The rate of individuals who drink fruit juice once or twice a week is the highest (13.7%).

Water is absolutely necessary for life. Drinking it has few negative effects, while its positive effects are clear.(1) The water our bodies need can be supplied with various fluids including water, milk, tea, fruit juices, coffee, and soft drinks.(20) Therefore, the types of fluid that people consume should not be disregarded.(7)

The daily water consumption of the participants was 1,404.1±717.7 mL. By gender, women drank 1,358.6±689.7 mL and males drank 1,514.3±781.5 mL. This difference was not statistically significant (p>.05). This study's participants were found to consume sufficient water according to the Turkish Dietary Guidelines(21) (1,200-1,500 mL). However, this amount was lower than it is in some other countries.(6,22,23) This may have resulted from the fact that people have different diet patterns in Turkey. Kant et al.(8) determined that the daily water intake of females was 2,897 mL and that of males was 3,467 mL while Drewnowski et al.(12) found it was 1,129±26 mL for females and 1,69±33 mL for males. On the other hand, other studies in the relevant literature found that males consumed less fluid than females.(24-26)

Studies have shown that water is the primary beverage for people of all ages. Water accounts for 58.0%, 75.0% and 80.0% of the fluid consumption of children, adolescents and adults, respectively.(27) This study found that the percentage of water in total fluid consumption was 64.5%. In similar studies, this rate was found to be above 50.0%.(28) Water consumption being at the required level is important for adequate hydration.(29)

Water specifically plays a key role in the prevention of obesity and the health problems it causes. It is a critical point that water contains no calories and contributes to health by replacing other beverages. This shows the importance of determining the daily consumption of water. The correct amount of consumption can only be calculated through the determination of the amount of water included in other consumed food and beverages. This will also sustain healthy living.

Water intake can also be obtained from beverages other than water. The recommended amount of daily fluid intake might vary by country. For example, the United Kingdom recommends 1500-2500 mL/day, while France recommends consuming 1500 mL/day, and the World Health Organization recommends 1500 mL/day for all countries.(30) This study found that the average total fluid intake of participants was 2,262.6±845.2 mL (2,184.1±827.8 mL females;
2,454.4±860.9 mL for males), and this difference was statistically significant (p<.05). The total fluid consumption of males was higher than that of females. This may be due to their greater body mass and need for more calories. Other studies have shown that male participants had a higher total fluid intake than female participants.(15,20,25,31)

Other than water, tea was the beverage most consumed (314.4±147.9 mL) (Table 1). The rate of those who consume tea every day was also the highest (88.8%). Iran also has a high rate of tea consumption (404±25 mL).(20) Tea is popular because it is produced in Turkey, is easy to access in professional environment and is a traditional beverage.

Instant coffee is the third drink in total daily fluid intake (7.4%). The mean value of its daily consumption was 160.5±52.2 mL. It did not vary statistically by gender (p>.05). In their studies, Hedrick et al.(18) found this value to be 189±33.0 mL and Billof-Jensen et al.(32) found it to be 115 mL. In Turkey, instant coffee is not a popular drink. However, the consumption amount is high. This may be because health professionals have busy working hours and also work night shifts.

Dairy products are commonly seen as healthy and nutritious and are often cited as important elements of a good diet,.(33, 34) In this study, the average daily milk (milkeayran/kefir) consumption of the health professionals was found to be 157.7±134.8 mL and did not vary statistically by gender (p>.05) (Table 1). The participants who consumed milk, kefir and ayran daily were 20.0%, 1.3%, 7.6% (mean: 9.7%) (Table 2) respectively. Ayran is consumed more than milk and kefir but the frequency of ayran is less than both other drinks. According to the Turkish Nutrition Guidelines, it is recommended that the daily consumption of milk and milk derivatives for adults is 500 mL.(21) This study found that the participants drank less (157.7±134.8) than this. Other studies in the relevant literature have also found low consumption of milk and milk derivatives.(12,26,32,35)

This study found that males drank significantly more soft drinks (103.6±124.9 mL) than females (44.4±89.9 mL.) (p<.05). Other studies have also demonstrated that males consumed higher amounts of soft drinks than females.(35-37)

It is good that the consumption of soft drinks is low, and that 77.6% of the participants never consume these drinks or do so less than once a week (Table 2). Soft drinks have a negative effect on daily caloric intake since they contain sugar, which can lead to obesity. Moreover, obesity may increase the frequency of some chronic diseases.(38-39)

The participants' average daily consumption of processed fruit juice is 72.5±103.9 mL (Table 1). It is a positive outcome that this amount and rate of consumption is low (daily consumption is only 3.8%). Although it contributes to the daily fluid intake, processed fruit juice should not be consumed regularly since it contains sugar and empty calories. Fresh fruit juice, which was not consumed regularly by this study's participants, is a better choice than the industrial juices since the natural beverages contribute to the recommended daily amount of fruit consumption. It is estimated that Turkey has a sufficient production of fruit and vegetables; however, people usually prefer processed beverages instead of fresh ones, which is a disturbing outcome. To reverse this situation, individuals should be informed about the benefits of fruit and vegetables and their recommended daily amounts of consumption. With this purpose, the consumption of fresh fruit juice should be promoted via printed and visual media.

Conclusions:
The most critical issue in the assessment of fluid intake is the determination of daily water consumption. Determining the fluids in other beverages and foods is important for calculating the total amount of fluids. The study content was designated based on the amounts in fluids and the frequency of their intake. It was found that the participants consumed water and fluids at the recommended levels. The consumption of water should specifically be promoted. Tea is a traditional beverage in Turkey. Thus, the amount of its consumption in Turkey is different from other countries. Although instant coffee has only recently been adopted by Turkish culture, it is consumed in large amounts. This may have resulted from the participants' working conditions. It is thought that adults have low milk consumption since it is seen as a drink for children. Soft drinks and processed fruit juices should be consumed infrequently in small amounts due to the calories they contain. To precisely determine water and fluid intake, studies should be planned and conducted with large samples using standardized assessment tools. These studies' outcomes can be used to determine the average amounts of fluid and water intake in their countries.

Limitation:
This study did not consider the fluid amounts in foods. Only the amounts of water and fluid were calculated.

Acknowledgment:
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23. Institute of Medicine (IOM) Has established adequate of water by gender and age. For adults (>18 Years) 2.7 L (females) And 3.7 L (males) was recommended as adequate intake; 2004.


