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WATER CONSUMPTION HABITS OF FAMILIES IN CONSUMER SOCIETY

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ABSTRACT

Introduction and Objective
To meet water needs of families, it is important to know the kind of water they use, their usage reasons and storage conditions, to raise awareness of the community and individuals about the water usage habits in terms of directing water policy. So, this research was planned to determine the water consumption habits of families.

Material and Method
The universe consisted of the families living in seven districts in the center of the Avanos District, Nevşehir and the sample was 126 voluntary families. The data were collected with the face-to-face interviews using a 20-question questionnaire created in the light of the literature and descriptive statistics (number, percentage distribution) and chi-square analysis were used in the evaluation.. The research was conducted with necessary permissions.

Results
63.4% of the families preferred bottled water to drink. The reasons are its suitibility for patients (55.8%), children (51.8%) elderly people (50%), and its quality (54.8%), naturality (50%), cleannes (56.9%) and healtiness (56.9%). 89.1% of those using bottled water used

plastic bottles. Besides, 64.1% and 26.2% found tap water lime and expensive respectively. 32.7% were found to obtain information about the water from commercials, and education and income status did not affect their water consumption habits (p> 0.05).

Conclusion
In line with these findings, it is proposed that public health professionals should lead families to obtain information about water consumption habits from related official institutions and organizations, and commercials affecting people should direct them towards the creation of a conscious society, and incentive activities should be promoted.

INTRODUCTION

Water is directly related to all internal reactions of living things, and the conversion of foodstuffs and their residues into solution, the disposal of them after being used in bodies depends on water. Approximately 70% of our body, about 80% of blood and 90% of a developing embryo is water (1). These values reveal the importance of water. Besides these, the regulation of the pH balance of the body, the transport of nutrients to the tissues and cells, the occurence of metabolic reactions in the cells in the aquatic environment, the vast majority of the hormones and secretions consisting of water and the regulation of heat in the body all reveal the importance of water in human life. Water loss in the human body causes negative effects such as thirst, the decline in physical activity, the deterioration of body temperature, headaches, fatigue, trembling, fainting and loss of consciousness (2). The fulfillment of the cell's vital activities and body functions is possible with the protection of the body's water balance(1).
Despite the fact that every living creature has right to access to clean water for free as one of the most essential parts of life, the uncontrollable consumption of water, environmental pollution and industrialization, access to clean water resources are rapidly diminishing, It is not possible to protect the bacteriological standards of waters and ensure the health of the people in a community. In many countries in the world, bacteriological pollution-related diseases cause major outbreaks and loss of life. Among the causes of infant deaths, water borne diseases also play an important role (3). Each year, 250 million people are suffering from water borne epidemics and about 10 million people are losing their lives (4,5). For this reason, the inability of people to meet their water needs adequately and safely is becoming an important public health problem. Water, which is such a precious asset for the existence and development of life, is very common on earth. However, safe drinking water for people is not available everywhere. Water resources are exposed to extreme chemical and radioactive pollution. It is obvious that the use of thousands of lethal chemicals and mining activities contaminate drinking water and irrigation water resources chemically, radioactively and biologically as well as domestic wastes, industrial wastes and chemicals used as agricultural fertilizers. Water is the most important source of life in plants, animals and human life. Whatever the cause is, water's exposure to pollution is an undeniable fact that threatens the health of all living beings that need water. (3) Water pollution is a major worldwide problem, and 7 million people die from water borne diseases per year. Water related problems affect the least developed countries most. 34% of the total population of developing countries is under moderate or severe water stress. It has been determined that two-thirds of low-income countries will face moderate or severe water stress in 2025 and other low-income countries that are not under stress in terms of consumption will face a crisis due to the absence of institutional and technological capacities in pollution and in the use of water resources.
Worldwide, the proportion of the population accessing healthy water to the total population is 82%. This rate is 99% in industrialized countries, 66% in developing countries, 38% in Africa, 63% in Asia and the Pacific, 77% in Latin America and Caribbean, 77% in North Africa and the Middle East and 93%. 1.4 billion people (approximately 20% of the world's population) lack sufficient drinking water and 2.3 billion people long for healthy water (6). This reality has increased the value of water, changed in consumers' water consumption

habits and played a major role in their preference to use bottled water because they consider it to be cleaner and more reliable as drinking water. In Turkey, the average annual consumption of bottled water per capita is an average of 126 liters in 2009, and 128 liters in 2010. Considering that annual per capita consumption is 189 liters in Italy, 165 liters in Germany and 123 liters in Spain, the consumption of bottled water in Turkey seems to be reaching the consumption levels in the European Union (EU) countries (7).
The microbiological quality of some brands' drinking water dispensers they put on the market for consumption is closely related to the hygienic quality of the water and the containers used during filling. Because of this, the containers where water is stored may become polluted depending on the conditions and duration of use and pump's contact with water may constitute a potential risk for public health (8). In Turkey, unhealthy conditions may be encountered, especially during the distribution to houses or due to the conditions violated by producers during bottled water production (7). According to the research, many types of plastics have features that will adversely affect human health. These are especially developmental and endocrine system disorders and cancers (9). For this reason, in order to meet water needs of families, who are the smallest unit of society, it is important to know the kind of water they prefer to use (tap or bottled water etc.), their usage reasons and storage conditions, to raise awareness of the community and especially individuals about the water usage habits in terms of directing water policy. Therefore, this research was planned to determine the water consumption habits of families.

MATERIALS AND METHODS

Type of the Study
This study was designed to identify the water consumption habits of families and the factors affecting these habits.

Location and Time of the Study
The research was conducted with the families living in seven districts within the central borders of Avanos District of Nevşehir Province.

Universe and Sampling
The number of families was determined depending on the number of dwellings. In this context, as a result of the analyzes made by the Turkish Statistical Institute (TSI), the household records were taken on a basis of the population of Avanos District of Nevşehir province, neighbourhood and street. According to TSI records, the total number of dwellings constituting the research universe is 6640. The sample size for this group was calculated as 237, the universe was 6640, the frequency of occurrence of the event was 0.20, and the significance level was 0.05 (95% probability). The total number of families planned to be included in the study from the seven neighbourhood was 237 (Table 1). Stratified sampling method was used in determining the number of households to be sampled from each location. Within the scope of the study, after determining how many dwellings were to be taken from each neighbour, the dwellings were reached by the snowball method. The study was completed with a total of 126 families because some families did not open their doors to the people they did not know or some families opened their doors but refused to participate in the study due to the security problems.

Table 1. Distribution of dwellings sampled from the surveyed population

Name of the Neigbourhood	Number of the dwellings in the neigbourhood	Target number of the dwellings planned to be reached	Number of the dwellings accepting to participate in the study
Alaaddin	391	(391/6640) x237=14	9
Bahçelievler	1855	(1855/6640)x237=66	35
Cumhuriyet	1269	(1347/6640)x237=48	23
Karaseki	1347	(1347/6640)x237=48	22
Orta	344	(344/6640) x237=12	9
Yeni	536	(536/6640) x237=19	11
Yukarı	898	(898/6640) x237=32	17
Total	6640	237	126

Data Collection Tools

The data were collected using a questionnaire assessing the socio-demographic characteristics of families and their habits about water consumption.

Survey form

This form consists of 20 questions; 2 questions regarding the socio-demographic characteristics of the individuals living in the family (sub-headings exist; age, gender, marital status, education level, occupation, income level, health problems) and 18 questions determining the water consumption habits of the families.

Data Collection

The data were collected by senior nursing students and faculty members via face to face interview. Before the data were collected, the students were informed about the research by the researchers.

Independent variables of the research; The education and income level of the family

Dependent variable of research; The water consumption habits of families

Inclusion criteria in the research;

- the families who lived in the specified neighborhoods
- the families who agreed to participate in the study

Non-inclusion criteria in the research;

- the families who did not live in the specified neighborhoods
- the families who refused to participate in the study

Evaluation of Data

The data obtained from the study were evaluated in the computer environment. Descriptive statistics (number, percentage distribution) and chi-square analysis were used in the evaluation of the data.

Limitations of the Study

Due to the security problems, fewer samplings have been reached than planned. Therefore, the results obtained in this research can be generalized only to the individuals in this sample group.

Ethical Principles of the Study

To carry out the research, written permission was obtained from the Ethics Committee of Hacı Bektaş Veli University (2016.11.04-2016.11.05, 24.11.2016) and verbal approval was received from the province governorship (26794494-600-E.1284, 04.11.2016) and participants.

RESULTS

45.2% of the surveyed families had a minimum wage, 39.7% had an income over minimum wage and 46.7% had at least one high school graduate.
When the type of water preferred by the families was examined (Table 2), it was seen that 63.4% of the families preferred to use bottled water, 66.7% preferred tap water to cook food, and 86.6% used tap water for home cleaning and bathing. It was also found that 66.4% of the families used bottled water at home for any reason.

Table 2. Distribution of Families in terms of Prefered Water Type (n = 126)

Water uses	Bottled n (%)	Tap n (%)	Spring n (%)
Drinking	78 (63.4)	27 (22.0)	21 (14.6)
Cooking	24 (20.0)	80 (66.7)	22 (13.3)
Cleaning, bathing etc.	15 (12.6)	103 (86.6)	8 (8.0)

The examination of the reasons affecting the water type preferences of the families showed that (Table 3), 55.8% of the families found it useful for patients, 51.8% for children and 50% for elderly, and 54.8% found it quality, 50% natural, 56.9% clean and 57.1% healthy . In addition, 64.1% and 26.2% of the fmilies found water lime and expensive respectively.

Table 3. Distribution of Families According to their Reasons of Water Preference (n = 126)

Reasons	Bottled water n (%)	Tap water n (%)	Spring water n (%)	No idea n (%)
Natural	63 (50.0)	30 (23.8)	17 (13.4)	16 (12.8)
Clean	72 (57.1)	29 (23.0)	13 (10.3)	12 (9.6)
Healthy	72 (57.1)	28 (22.2)	15 (11.9)	11 (8.8)
Quality	69 (54.8)	29 (23.0)	12 (9.6)	16 (12.6)
Expensive	77 (61.1)	33 (26.2)	7 (5.6)	9 (7.1)
Lime water	28 (22.2)	81 (64.3)	5 (4.0)	12 (9.5)
Suitable for Children	65 (51.8)	41 (32.5)	8 (6.1)	12 (9.6)
Suitable for elderly	63 (50)	42 (33.3)	11 (8.8)	10 (7.9)

The percentages of information sources of water (Table 4) were distributed as; 32.7% from commercials, 17.2% from news, 11.3% from the related institutions and organizations and 38.8% received information from more than one source.
48.9% of the families using bottled water used 5 liter bottles, 28.3% used 19 liter bottles and 47.3% preferred brand names. 89.1% of the families using bottled water (n = 90) used plastic bottles, 34.5% did not know that the storage conditions affect the water use period, and 48.2% did not know that water should be stored in cool and sunless places. 71.4% of families using bottled water dispensers were found not to know the frequency of changing its pump.

Table 4. Distribution of the Families According to the Information Source of Water (n=126)

Information Source	n (%)
Commercials	41 (32.7)
News	22 (17.2)
Related Institutıons and organizations	14 (11.3)
All sources	49 (38.8)

In Table 2. revealed that while the consumption rate of tap water was 9.5%, the consumption of bottled water was 26.2% in high school graduates. There was no significant difference between the education level of the family and the preferred water type and bottled water storage conditions (p> 0.05)

Table 5. Distribution of the Families According to their Education Level(*) in terms of Some Variables

The preferred type water (n=126)	Primary n (%)	Secondary n (%)	High School n (%)	University and over n (%)	P
Bottled water	18 (14.3)	10 (7.9)	33 (26.2)	24 (19.0)	
Tap water	12 (9.5)	4 (3.2)	12 (9.5)	5 (4.0)	0.178
Others	1 (0.8)	2 (1.6)	2 (1.6)	3 (2.4)	
Bottled water storage conditions (n=90)					
Suitable	16 (17.8)	11 (12.2)	32 (35.6)	24 (26.7)	0.253
Unsuitable	3 (3.3)	0 (0)	1 (1.1)	3 (3.3)	

(*)Education level of the family; The educational level of the family was considered as the education level of the person with the highest educational level living in the family.

DISCUSSION

It is noteworthy that the studies on bottled water consumption are limited in the literature. In this section, the findings of our study are discussed within the scope of the related literature. In our study, it was found that 66.4% of the families used the bottled water at home for any reason and 63.4% of them used it as drinking water. In a study by Ekmekçi Bal, it was reported that the bottled water consumption rate was 54.4% and 99.32% of the bottled water were consumed as drinking water (2). In our study, the consumption of bottled water was also high, which is parallel with the similar studies in the literature (10,11).

The reasons for choosing water types are as follows: compared with bottled water, the families did not find tap water natural (23.8%), healthy (22.2%), quality and clean (23.0%). It is thought that the increase in the use of bottled water by the families may be due to these reasons. It is striking that the participants preferred to use bottled water although they found it expensive (61.1%). There is a similar study in the literature supporting this finding (2). In the studies investigating factors that affect bottled water drinking habits; it was found that there have been studies confirming commercials to be effective (11,12,14), and less effective or not effective. (14, 15). In our study, commercials were ranked first (32.7%) among the sources of information about water. It is stated in the literature that while advocating to prevent lack of water, companies cause the unrealibility of consumers to increase by spending millions of dollars on advertising of bottled water (15).

In the literature, it is stated that education level is an effective variable on consumer behavior (16). Similarly, there are studies confirming that training on water consumption

behavior is effective (2,15,17,18). In another study, it was argued that education affected environmental perceptions and thus shaped the choices for water consumption (19). In our study, however, no significant difference was found between the education level and the preferred water type and the storage conditions of bottled water ($p > 0.05$). The small number of samples in this study is an important limitation and is thought to affect the relationship between the variables.

In the literature, the cleaning and disinfection of water dispensers are stated to be closely related to the hygienic quality of drinking water offered for consumption (20). Therefore, water can be contaminated depending on water dispensers, water contact with the pump, the condition and duration use pose a potential risk to public health (8,21). In a study by Ekmekçi Bal, it was indicated that almost half of the participants had no idea about the cleaning or replacing the pumps. It is remarkable that in our study, this rate was higher (71.4%). In addition to this finding, the fact that most of the families (89.1%) use plastic bottles and 48.2% do not know that water should be stored in a cool, sunless place is important for health issues.

CONCLUSIONS

In this study, in which consumers' water consumption habits were examined, it was determined that 66.4% of consumers used bottled water. Bottled water was found to be preferred for being suitable for children, patients and elderly, and for its quality, naturality and healthiness. However, the majority of the families were found to have insufficient knowledge of water consumption and storage conditions. In the light of these results, the nurses and other health workers working in 1st step health services are proposed to organize educational programs to improve the consciousness of healthy water consumption, to provide guidance and counseling for families about obtaining information from the official institutions and establishments related to water and implementation and community based activities should be carried out on water consumption.

Competing Interests

All authors hereby have declared that no competing interests exist.

Author Participations

AÖ participated in the study design, writing the protocol, data collection, managing the analyses of the study, and writing all versions of the manuscript. ŞŞK participated in the study design, performed the statistical analysis, as well as writing all versions of the manuscript. KÖ participated in the managing the analyses of the study and in the writing all versions of the manuscript. FS participated in the data collection and in the managing of the analyses of the study. All authors read and approved the final manuscript.

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