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THE WATER PREFERENCES IN THEIR HOME COUNTRIES AND IN TURKEY OF FOREIGN STUDENTS STUDYING AT THE KARADENİZ TECHNICAL UNIVERSITY MEDICAL FACULTY

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ABSTRACT

Introduction

Students from foreign countries may exhibit different water preferences when they begin living in a foreign country compared to in their home countries.

Study aims

To evaluate the water consumption preferences, the reasons for these and perceptions of water quality in Turkey among foreign students at the Karadeniz Technical University (KTU) Faculty of Medicine.

Materials and Methods

This descriptive study was performed with 51 foreign students at the KTU Faculty of Medicine. A questionnaire developed by the authors and investigating the water preferences of foreign students in their home countries and in Turkey was used as a data collection tool.

Results

Seventyfour point five percent (74.5%) of students used tap water for drinking in their home countries and 74.5% also used packaged water. In Turkey, however, 98% preferred packaged water in school and 64.7% preferred dispenser size water in their places of residence. Tap water was more employed for other domestic purposes. Additionally, 76.9% of students reported that the quality of packaged water was better in their home countries and 64.3% reported that the quality of dispenser size water was better. Meanwhile, 80% of students thought that packaged waters were of good quality in Turkey, and 94.9% that dispenser size water was of good quality.

Conclusions

In their home countries, students prefer tap and packaged water for drinking purposes, while in Turkey they prefer packaged and dispenser size water for drinking and tap water for other domestic purposes.

Key words: water preferences, drinking water, tap water, packaged water, university students

INTRODUCTION

Humans need water to survive. They either drink the water they need, or consume it in their food. They may even unwittingly consume it in the form of water vapor from their surroundings. In addition to survival, they also need water for personal and domestic purposes.

The different characteristics of water may affect people's decisions regarding which water to use for their different needs. These features include physical characteristics such as taste, smell and color (1). In addition to the properties of water, their views regarding its being healthy and easily available may also affect their preferences.

The population of Turkey also contains a number of settled foreign nationals. These include students coming to Turkey for educational purposes. Foreign students may experience anxieties concerning the type of water to consume for different purposes when living in a country far from their own. This may give rise to a change in water preferences.

Karadeniz Technical University (KTU) in Trabzon teaches students from various provinces and countries. It's being the oldest university in the Eastern Black Sea region and the high quality education it provides may influence students' selection of this university (2). Do these students' water use preferences change when living in a new country? Which waters do they prefer, and why? Our scan of the literature revealed no previous studies examining water use preferences in their home countries and in a new country among people moving to a country for various reasons.

Our study was intended evaluate the water consumption preferences, the reasons for these and perceptions of water quality in Turkey among foreign students at the KTU Faculty of Medicine.

MATERIALS AND METHODS

The research population in this descriptive study consisted of 73 foreign students studying at the KTU Medical Faculty. We aimed to contact the entire study population. Approval was obtained from the KTU Faculty of Medicine Dean's Office before the study commenced. Names and surnames, countries of origin and class details were obtained for all foreign students at the KTU Faculty of Medicine from the Coordinator's Office. In the light of the information obtained from the Coordinator's Office, foreign students were interviewed between 1 and 12 December, 2016, and the research data were collected. Foreign students at the preparatory school or in years 1, 2 or 3 were interviewed in the lecture halls where they normally study, year 4 and 5 students in the internship classroom where they were at the time of data collection, and year 6 students were visited in the wards and clinics of the departments where they were working as interns. Students were informed of the purpose of the study and that information obtained from them would be used for scientific purposes only. Statements that 'I agree to participate in the study' were regarded as verbal consent. Fifty-one (69.9%) students were interviewed, and all

those interviewed agreed to take part in the study. The remaining 22 (30.1%) foreign students could not be contacted, for reasons such as poor attendance or temporary suspension of studies. Thirteen of the foreign students agreeing to participate were from Iran, 12 from Azerbaijan, six from the Netherlands, five from Tanzania, three from Afghanistan, two from Bulgaria, two from Yemen, two from Greece, one from Australia, one from Austria, one from Chechnya, one from Palestine, one from Ruanda and one from Tajikistan.

A questionnaire developed by the authors and investigating the water preferences of foreign students in their home countries and in Turkey was used as a data collection tool. Participants completed the questionnaire in the presence of the authors. This consisted of 23 questions in four sections. The first part contains 11 questions inquiring into sociodemographic characteristics (age, sex, country and city of origin, marital status, current academic year, parental education levels, place of residence in Trabzon, total monthly expenditure and presence of chronic disease). Section 2 consists of one question involving daily fluid consumption.

The third section contains five questions concerning students' water preferences in their home countries for such different purposes as drinking, cooking and washing-up and the reasons for these, the frequency of water stoppages, how they met their water needs in the event of stoppages and their ideas concerning water quality. In the fourth section, students were asked the same questions as in the third part, but this time in reference to Turkey.

Once the questionnaires had been completed, the data were checked by the authors and transferred to computer. SPSS 23.0 software was used for data analysis. At statistical analysis of descriptive data, categorical variables were expressed as number and percentage and constant variables as mean, standard deviation minimum (min) and maximum (max) values.

RESULTS

Based on the information obtained from the 51 individuals interviewed, the participants' mean age was 20.9 ± 2.9 (min: 18 – Max: 32) years, 35 (68.6%) were male and 20 (39.2%) were in year 1. Data concerning subjects' sociodemographic and personal characteristics are shown in Table 1.

Table 1. Sociodemographic and personal characteristics of the foreign students in the study

Age (Mean \pm SD) (n=51)	20.9 \pm 2.9 (Min: 18 - Max: 32) years	
Sex (n=51)	N	%
Male	35	68.6
Female	16	31.4
Relationship status (n=51)		
No relationship	34	66.6
Girl/boyfriend	14	27.5
Engaged	2	3.9
Married	1	2.0
Academic year (n=51)		
Preparatory	1	2.0
Year 1	20	39.2
Year 2	11	21.6
Year 3	5	9.8
Year 4	13	25.5
Year 5	1	2.0
Father's education level (n=51)		
University	45	88.2
High school	4	7.8
Literate	1	2.0
Illiterate	1	2.0
Mother's education level (n=51)		
University	32	62.7
High school	16	31.4
Middle school	2	3.9
Illiterate	1	2.0
Place of residence (n=51)		
Private student hostel	15	29.4
At home, alone	14	27.5
At home with a friend	14	27.5
Public student hostel	6	11.8
At home with family	1	2.0
At home with relative	1	2.0
Monthly expenditure (TL)	1249.0 \pm 372.1 (Min: 550 - Max: 3000)	
Presence of chronic disease (n=51)		
No	49	96.1
Yes	2	3.9

When foreign students were asked about their water choices in their home countries, 38 (74.5%) stated that they preferred tap water for drinking, 38 (74.5%) preferred packaged water and 25 (49.0%) preferred dispenser size water. When their water preferences in Turkey were classified in terms of school or place of residence, 50 (98%) drank packaged water in school and 33 (64.7%) drank dispenser size water at home. Distributions of types of water selected for drinking purposes by students in their home countries and in Turkey (Trabzon) are shown in Table 2.

Table 2. The drinking water preferences in their home countries and in Turkey (Trabzon) of the students in the study

Drinking water preferences	In their home countries		In Turkey (Trabzon)			
			School		Place of residence	
	n	%	n	%	n	%
Packaged water	38	74.5	50	98.0	26	51.0
Tap water	38	74.5	3	5.9	24	47.1
Dispenser size water	25	49.0	12	23.5	33	64.7
Village / spring water	7	13.7	2	3.9	2	3.9
Well water	2	3.9	2	3.9	1	2.0

When students were asked about the types of water they preferred when cooking and preparing tea/coffee in their home countries, 48 (94.1%) used tap water for cooking and 45 (88.2%) when making tea/coffee. When asked about the types of water they used for the same purposes in Turkey, 41 (80.4%) used tap water for cooking and 34 (66.7%) when making tea/coffee. Distributions of types of water used for cooking and making tea/coffee by students in their home countries and in Turkey (Trabzon) are shown in Table 3.

Table 3. Types of water used for cooking and making tea / coffee by students in their home countries and in Turkey (Trabzon)

Types of water	In their home countries				In Turkey (Trabzon)			
	For cooking		For making tea / coffee		For cooking		For making tea / coffee	
	n	%	n	%	n	%	n	%
Tap water	48	94.1	45	88.2	41	80.4	34	66.7
Dispenser size water	11	21.6	22	43.1	20	39.2	31	60.8
Packaged water	3	5.9	11	21.6	13	25.5	25	49.0
Village / spring water	2	3.9	3	5.9	2	3.9	2	3.9
Well water	2	3.9	2	3.9	1	2.0	1	2.0

Forty-seven of the students in the study (92.2%) using tap water for drinking in their home countries reported doing so because it is easily available and 42 (82.4%) because it is economical; 26 (92.9%) of the students using dispenser size water reported doing so because it is safe and 25 (89.3%) because it is healthy; and 27 (69.2%) of those using packaged water reported doing so because it is portable and healthy and 5 (62.5%) of those using village/spring water reported doing so because it is healthy and economical.

Forty-four (86.3%) of the students using tap water for drinking purposes in Turkey (Trabzon) reported doing so because it is easily available and 43 (84.3%) because it is economical; 32 (82.1%) of those using dispenser size water reported doing so because it is safe and 29 (74.4%) because it is healthy; 42 (84.0%) of those using packaged water reported doing so because it is portable and 29 (58%) because it is healthy; 2 (50.0%) of those using village/spring water reported doing so because it is healthy and economical and 2 (66.7%) of those using well water reported doing so because they liked it. Reasons for their preferences for drinking purposes in their home countries and in Turkey are shown in Table 4.

Table 4. Reasons for preferences for drinking purposes in their home countries and in Turkey (Trabzon) among the foreign students in the study

Reasons for preferring tap water*	In the home country		In Turkey (Trabzon)	
	n	%	n	%
Because it is easily available	47	92.2	44	86.3
It is economical	42	82.4	43	84.3
It is healthy	35	68.6	28	54.9
Because everyone uses it	24	47.1	18	35.3
Because I like the taste-smell-color	15	29.4	10	19.6
Because it is soft	13	25.5	5	9.8
Reasons for preferring dispenser size water*				
Because it is safe	26	92.9	32	82.1
Because it is healthy	25	89.3	29	74.4
Because it is easily obtained	17	60.7	21	53.8
Because it is economical	12	42.9	19	48.7
Because it is easy to store	7	25.0	10	25.6
Reasons for preferring packaged water*				
Because it is portable	27	69.2	42	84.0
Because it is healthy	27	69.2	29	58.0
Because it is economical	25	64.1	25	58.0
Because it is easily obtained	24	61.5	33	66.0
Reasons for preferring village / spring water*				
Because it is healthy	5	62.5	2	50.0
Because it is economical	5	62.5	2	50.0
Because I like the taste-smell-color	1	12.5	2	50.0
Reasons for preferring well water*				
Because I like the taste-smell-color	1	50.0	2	66.7
Because it is healthy	1	50.0	1	33.3
Because it is economical	1	50.0	1	33.3
*More than one option was selected.				

When the students in the study were asked to assess the quality of the water they used in their home countries, 31 (60.8%) of those using tap water described tap water as 'good quality,' 30 (76.9%) of those using packaged water described packaged water as 'good quality,' 18 (64.3%) of those using dispenser size water described dispenser size water as 'good quality,' 3 (37.5) of those using spring water described spring water as 'average quality' and one (50.0%) of those using well water described well water as 'very good quality.'

When the participants were asked to assess the waters they used in Turkey (Trabzon), 27 (52.9%) of those using tap water described tap water as 'good quality,' 40 (80.0%) of those using packaged water described packaged water as 'good quality,' 37 (94.9%) of those using dispenser size water described dispenser size water as 'good quality,' 2 (50.0%) of those using spring water described spring water as 'good quality,' and 2 (66.7%) of those using well water described well water as 'average quality.' The participants' opinions regarding the quality of the waters they used in their home countries and in Turkey (Trabzon) are shown in Table 5.

Table 5. Foreign students' opinions regarding the quality of the waters they used in their home countries and in Turkey (Trabzon)

Types of water used in their home countries	Very poor		Poor		Moderate		Good		Very good	
	n	%	n	%	n	%	n	%	n	%
Tap water (n=51)	2	3.9	2	3.9	12	23.5	31	60.8	4	7.8
Packaged water (n=39)	0	0.0	0	0.0	8	20.5	30	76.9	1	2.6
Dispenser size water n=28)	0	0.0	0	0.0	7	25.0	18	64.3	3	10.7
Village / spring water (n=8)	1	12.5	1	12.5	2	25.0	3	37.5	1	12.5
Well water (n=2)	0	0.0	0	0.0	1	50.0	0	0.0	1	50.0
Types of water used in Turkey (Trabzon)										
Tap water (n=51)	2	3.9	0	0.0	18	35.3	27	52.9	4	7.8
Packaged water (n=50)	0	0.0	3	6.0	5	10.0	40	80.0	2	4.0
Dispenser size water n=39)	0	0.0	0	0.0	2	5.1	37	94.9	0	0.0
Village / spring water (n=4)	0	0.0	0	0.0	2	50.0	2	50.0	0	0.0
Well water (n=3)	0	0.0	0	0.0	2	66.7	0	0.0	1	33.3

DISCUSSION

Foreign students' drinking water preferences may vary from those in their home countries when they begin living in a new country. On the basis of our study, foreign students largely (74.5%) prefer tap water, packaged water (74.5%) and dispenser size water (49%) for drinking purposes in their home countries. In Turkey, preferences may differ between school and place of residence. In school, packaged water is most popular (98%), while dispenser size water is preferred where students live (64.7%). The preference for tap water at school was 5.9%. In a study of university students in Tokat, Önder et al. determined that 97.5% preferred packaged water at school (3). In a study of university students in America, Demirci et al. observed that students mainly drank packaged water outside the home, and tap water inside the home (4). Garcia et al. determined that 75% of students, academics and personnel living on campus in Mexico preferred packaged water at home and in the university (5). Foreign students generally prefer packaged water for drinking in Turkey, but use packaged water and tap water in their home countries. Although providing safe and healthy tap water is a basic responsibility of local administrations, the high level of packaged water use on both sides suggests that perceptions of tap water are unfavorable. The variation in drinking water preferences between school and where they live may derive from the absence of appropriate environments for drinking tap water in school and easier access to packaged water.

Water can be used for many other purposes apart from drinking, such as cooking making tea/coffee, washing, domestic cleaning and bathing. The foreign students in this study generally preferred tap water for cooking and making tea/coffee in their home countries and also in Turkey. The levels of tap water use for cooking and making tea/coffee were higher in their home countries. Greater preferences for tap water for these purposes were also reported by Ufack et al. in the Trabzon city center and by Özcan et al. in Nevşehir (6, 7). Although tap water was largely preferred for general use, the lower levels of tap water use in Turkey suggest that students are less trustful of tap water than packaged water.

The reasons for people's preferences for waters for drinking may vary. The reasons for the preferences for drinking water among the foreign students in this study in their home countries and in Turkey were parallel to one another. The main reasons for their preferences for drinking were the easily availability and economical nature of tap water, the fact that dispenser size water is safe, healthy and easily available, that packaged water is portable and healthy, that village/spring water is healthy and economical and that they like the taste, smell and color of well water. Packaged waters were preferred because they are healthy in a study of individuals aged over 18 living in Edirne by Karakuş et al. (1). In a review of water versus packaged water use by Doria et al., people living in Canada and France were reported to prefer packaged water

for organoleptic reasons such as taste, smell and color (8). Borlu et al. evaluated ready water use in the Family Health Center in Kayseri and reported that packaged waters were preferred due to being more portable and regarded as cleaner than tap water (9). This suggests that foreign students and the general community are concerned about the health safety of tap waters. The perception that packaged waters are healthier and safer may be due to information about the properties and contents of the water appearing on the labeling and to their health benefits being emphasized in advertising. The fact that information about the quality of tap water is not as easily available as it is for packaged waters may mean that people choose tap water on the basis of its being more easily available and economical.

People assess the quality of water on the basis of characteristics such as taste, smell and color. The majority of the foreign students in our study assessed the quality of the waters they used in their home countries and in Turkey as good. This suggests that students choose the water they use because they think it is of good quality.

CONCLUSIONS

In conclusion, foreign students at the KTU Faculty of Medicine choose tap and packaged water for drinking in their home countries and both packaged and dispensed waters in Turkey. They choose tap water for other domestic purposes in both their home countries and in Turkey. They regard the quality of the waters they use in their own countries and in Turkey as good.

The safety of tap water in Turkey may be a factor that affects students and other visitors from foreign countries in their selection of Turkey. Local administrations must ensure that tap water is 'healthy' and 'safe' and must announce to the community that they have done this.

COMPETING INTERESTS

All authors hereby have declared that no competing interests exists.

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