

Gender Differences in Coffee Consumption and Its Effects in Young People

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ABSTRACT

This study aimed to examine gender differences in coffee consumption and awareness of its effects in young people. To examine the above problem, a survey was conducted in 1189 young people (567 males aged 19.3 ± 1.5 years; 622 females aged 19.1 ± 1.2 years). The coffee consumption rate was significantly higher in males (50.8%) than in females (32.8%). In the coffee consumption group, no significant differences were found in the reasons for consumption, the components of coffee, and its effects on health. In the coffee nonconsumption group, significant gender differences were noted in the reasons for avoiding coffee; females (64.8%) disliked its taste more than males (39.4%). More young people of both genders in the consumption group were aware that coffee contains caffeine (79.9% - 86.5%) as compared with the nonconsumption group (67.0% - 74.2%). However, few people in both groups were aware about the components other than caffeine. In addition, more people in the nonconsumption group were unaware of the adverse effects of coffee on the body. The results of this study demonstrated that young males drink coffee more than young females. Among those who avoided coffee consumption, females disliked its taste more than males. Many people regardless of coffee consumption were aware about the components of coffee, but few knew about the other ingredients in this beverage. In addition, few people were aware of the negative effects of coffee on the health and body.

Keywords: Young; Males; Females; Coffee; Ingredients

1. Introduction

Coffee is a luxury drink that is widely consumed by people all over the world (70% - 80%) [1]. Coffee has a relaxing effect and it alleviates stress [2]. In addition, regular coffee drinking has been reported to reduce the risk of diabetes mellitus, hepatic cirrhosis, rectal cancer, cardiovascular disease, and other illnesses [3-9]. According to Garzaro *et al.* in 2011 [10], majority of the 100 subjects found the tested coffee-flavored iced dessert pleasant, on the basis of the Organoleptic-Sensorial Questionnaire (OSQ), in terms of taste, aspect, texture, and smell. No statistically significant differences were observed between the male and female subjects. Many people in Japan drink coffee regardless of age or gender [2]. However, gender differences in coffee consumption have not been adequately determined, although Yamazawa *et al.* [11] reported gender differences in coffee-flavored desserts and coffee consumption.

People drink coffee for different reasons, and these

reasons may differ between males and females. Mirmiran *et al.* [12] reported gender as a factor influencing nutrient consumption. Du *et al.* [13] demonstrated that females have higher interest in the nutrients than males. Thus, knowledge about coffee may also differ between males and females.

Many studies have examined the effects of coffee consumption [5-9]. Information about the advantages and disadvantages of coffee consumption is easily available through the media. Compared with the nonconsumers, coffee consumers have more interest in and more knowledge about the various components in this beverage and its effects on the body. In addition, the sanative properties of coffee as a luxury drink have been the focus of one recent study [14]. However, coffee drinkers may have overly high expectations of the beneficial effects of coffee on health.

In this study, the effects of coffee consumption were examined in terms of gender differences in young people.

2. Methods

1) Survey Method and Participants

A survey was administered to 1528 young people and data was gathered from subjects from a range of occupational fields, such as students, office workers, teachers, etc. Therefore, specific criteria for subject selection were not prepared. The survey (**Table 1**) was created with

Table 1. Survey items.

Coffee ingestion (Yes or No)	
Reasons of coffee consumption	
Consumers	1. To wake up
	2. Relaxed
	3. Breath freshener
	4. Delicious
	5. Health-related
	6. Stress reduction
Reasons of coffee nonconsumption	
Nonconsumption	1. Stopped by doctor
	2. Dislike the taste
	3. Harmful for the body
	4. Expensive
Ingredient included in coffee (Free answer)	
Awareness on effects of coffee on health	
Consumers	1. Nonexpectant
	2. Diabetes mellitus prevention
	3. Cancer prevention
	4. Diet
	5. Metabolic syndrome prevention
	6. Resolution of stress
Awareness on effects of coffee to health	
Nonconsumption	1. Unknown
	2. Diabetes mellitus prevention
	3. Cancer prevention
	4. Diet
	5. Metabolic syndrome prevention
	6. Resolution of stress
Awareness on negative effects of coffee to body	
Consumers and Nonconsumption	1. Unknown
	2. Stomach problems
	3. Close to a restroom
	4. Become to loose stools
	5. Dehydration
	6. Trembling hand
	7. Getting palpitations
Consumption of drinks besides coffee	
Consumers and Nonconsumption	1. Coffee drink
	2. Refreshing drinks with coffee
	3. Green tea
	4. Tea
	5. Juice
	6. Milk
	7. Water
	8. Carbonated drink
	9. Sports drink

reference to questionnaires from previous studies [2,15]. Survey items were selected on the basis of presence or absence of coffee consumption, reasons for coffee consumption or nonconsumption, ingredients in coffee, the effects of coffee on health, and preferred alternative drinks (see **Table 1**). Participants responded freely regarding the ingredients in coffee. Participants responded to questions included in the other survey items with a “yes” or “no.”

2) Data Analysis

The chi-squared frequency test (χ^2 test) was used to clarify gender differences for each question item. The significance level in this study was set at $p < 0.05$, which was adjusted using the Bonferroni method.

3. Results

Validity testing determined that data for 1189 respondents (567 males aged 19.3 ± 1.5 years; 622 females aged 19.1 ± 1.2 years) were useful for the purposes of the analysis. Thus, the response rate was 86.9%. The coffee consumption group comprised 288 males and 204 females, whereas the coffee nonconsumption group comprised 279 males and 418 females.

Table 2 shows the results for coffee consumption based on gender differences. The coffee consumption rate was significantly higher in males (50.8%) than in females (32.8%). Incidentally, coffee nonconsumption rate was significantly higher in females. Participants were grouped into those who drink coffee (coffee consumption group) and those who do not (coffee nonconsumption group).

Tables 3-7 show the reasons for coffee consumption (**Table 3**), ingredients in coffee (**Table 4**), and awareness of the positive (**Table 5**) and negative (**Table 6**) effects of coffee on health in the coffee consumption group. Consumption of drinks other than coffee (**Table 7**) with regard to gender differences in the coffee consumption group are shown in **Table 7**. Response rates in males and females were similar (1.7% - 46.2% vs. 0.0% - 46.1%) for all items regarding reasons for consumption. Hence, no significant gender differences were found in responses to these items, although approximately 50% respondents answered that coffee helped them to wake up or that they considered it delicious. Most respondents of both genders (approximately 80%) knew that coffee contains caffeine, but few were aware of other ingredients in coffee (4.9% - 5.4%). No significant gender differences were noted regarding the effects of coffee on health; males and females responded similarly (1.0% - 85.1% vs. 1.0% - 83.3%) for all items in this category. More than their 80% answered to “not expectation” for the above-stated in particular. Similar response rates were identified for males and females (2.8% - 42.0% vs. 2.0% - 40.7%) for all items regarding the negative effects of coffee on health;

Table 2. Coffee consumption by gender.

	Males (n = 567)		Females (n = 622)		χ^2	p
	n		n			
Coffee consumption	288	(50.8%)	204	(32.8%)	39.6*	0.00
Coffee nonconsumption	279	(49.2%)	418	(67.2%)		

*p < 0.05.

Table 3. Gender differences regarding reasons for consuming coffee.

		Males (n = 288)		Females (n = 204)		χ^2	p
		n		n			
1. To wake up	Yes	133	(46.2%)	94	(46.1%)	0.00	0.98
	No	155	(53.8%)	110	(53.9%)		
2. Relaxed	Yes	104	(36.1%)	61	(29.9%)	2.07	0.15
	No	184	(63.9%)	143	(70.1%)		
3. Breath freshener	Yes	106	(36.8%)	61	(29.9%)	2.54	0.11
	No	182	(63.2%)	143	(70.1%)		
4. Delicious	Yes	133	(46.2%)	94	(46.1%)	0.00	0.98
	No	155	(53.8%)	110	(53.9%)		
5. Health-related	Yes	5	(1.7%)	0	(0.0%)	3.58	0.06
	No	283	(98.3%)	204	(100.0%)		
6. Stress reduction	Yes	11	(3.8%)	4	(2.0%)	1.40	0.24
	No	277	(96.2%)	200	(98.0%)		

Table 4. Gender differences regarding awareness of components in the coffee consumption group.

		Males (n = 288)		Females (n = 204)		χ^2	p
		n		n			
1. Caffeine	Yes	249	(86.5%)	163	(79.9%)	3.77	0.05
	No	39	(13.5%)	41	(20.1%)		
2. Polyphenol	Yes	14	(4.9%)	11	(5.4%)	0.07	0.79
	No	274	(95.1%)	193	(94.6%)		

Table 5. Gender differences regarding awareness of the positive effects of coffee on health in the coffee consumption group.

		Males (n = 288)		Females (n = 204)		χ^2	p
		n		n			
1. Nonexpectant	Yes	245	(85.1%)	170	(83.3%)	0.27	0.60
	No	43	(14.9%)	34	(16.7%)		
2. Diabetes mellitus prevention	Yes	3	(1.0%)	2	(1.0%)	0.00	0.95
	No	285	(99.0%)	202	(99.0%)		
3. Cancer prevention	Yes	4	(1.4%)	5	(2.5%)	0.75	0.39
	No	284	(98.6%)	199	(97.5%)		
4. Diet	Yes	7	(2.4%)	4	(2.0%)	0.12	0.73
	No	281	(97.6%)	200	(98.0%)		
5. Metabolic syndrome prevention	Yes	5	(1.7%)	1	(0.5%)	1.54	0.22
	No	283	(98.3%)	203	(99.5%)		
6. Resolution of stress	Yes	31	(10.8%)	19	(9.3%)	0.28	0.60
	No	257	(89.2%)	185	(90.7%)		

no significant gender differences were found for this parameter. Approximately 40% respondents of both genders answered that they were unaware of any negative

effects of coffee or that they found the need to be close to a restroom after drinking coffee. For questions regarding alternative beverages, significant gender differences were

Table 6. Gender differences regarding awareness of the negative effects of coffee on the body in the coffee consumption group.

		Males (n = 288)		Females (n = 204)		χ^2	p
		n		n			
1. Unknown	Yes	121	(42.0%)	74	(36.3%)	1.64	0.20
	No	167	(58.0%)	130	(63.7%)		
2. Stomach problems	Yes	70	(24.3%)	57	(27.9%)	0.82	0.36
	No	218	(75.7%)	147	(72.1%)		
3. Close to a restroom	Yes	106	(36.8%)	83	(40.7%)	0.76	0.38
	No	182	(63.2%)	121	(59.3%)		
4. Become to loose stools	Yes	30	(10.4%)	27	(13.2%)	0.93	0.34
	No	258	(89.6%)	177	(86.8%)		
5. Dehydration	Yes	12	(4.2%)	8	(3.9%)	0.02	0.89
	No	276	(95.8%)	196	(96.1%)		
6. Trembling hand	Yes	8	(2.8%)	4	(2.0%)	0.34	0.56
	No	280	(97.2%)	200	(98.0%)		
7. Getting palpitations	Yes	15	(5.2%)	2	(1.0%)	6.40	0.01
	No	273	(94.8%)	202	(99.0%)		

Table 7. Gender differences regarding consumption of other drinks in the coffee consumption group.

		Males (n = 288)		Females (n = 204)		χ^2	p
		n		n			
1. Coffee drink	Yes	37	(12.8%)	30	(14.7%)	0.35	0.55
	No	251	(87.2%)	174	(85.3%)		
2. Refreshing drinks with coffee	Yes	25	(8.7%)	15	(7.4%)	0.28	0.60
	No	263	(91.3%)	189	(92.6%)		
3. Green tea	Yes	162	(56.3%)	134	(65.7%)	4.44	0.04
	No	126	(43.8%)	70	(34.3%)		
4. Tea	Yes	59	(20.5%)	77	(37.7%)	17.78*	0.00
	No	229	(79.5%)	127	(62.3%)		
5. Juice	Yes	86	(29.9%)	50	(24.5%)	1.71	0.19
	No	202	(70.1%)	154	(75.5%)		
6. Milk	Yes	89	(30.9%)	49	(24.0%)	2.80	0.09
	No	199	(69.1%)	155	(76.0%)		
7. Water	Yes	103	(35.8%)	72	(35.3%)	0.11	0.92
	No	185	(64.2%)	132	(64.7%)		
8. Carbonated drink	Yes	84	(29.2%)	32	(15.7%)	12.04*	0.00
	No	204	(70.8%)	172	(84.3%)		
9. Sports drink	Yes	69	(24.0%)	16	(7.8%)	21.70*	0.00
	No	219	(76.0%)	188	(92.2%)		

*p < 0.05/9 = 0.0056.

found in the percentage of drinkers of tea (20.5% vs. 37.7%), carbonated drinks (29.2% vs. 15.7%), and sports drinks (24.0% vs. 7.8%). Female respondents consumed tea (20.5% vs. 37.7%) more than males, whereas males consumed more carbonated drinks and sports drinks than females.

Tables 8-12 show the reasons for coffee nonconsumption (**Table 8**), components of coffee (**Table 9**), and awareness of the positive (**Table 10**) and negative (**Table**

11) effects of coffee on health in the coffee nonconsumption group. Consumption of drinks other than coffee in terms of gender differences in the coffee nonconsumption group are shown in **Table 12**. Significant gender differences were found for the survey items regarding the taste and cost of coffee. More females disliked the taste of coffee (64.8%) than males (39.4%), but responses to the latter survey item were extremely few (0.2% - 5%). Significant gender differences were found in the aware-

Table 8. Gender differences regarding reasons for coffee nonconsumption.

		Males (n = 279)		Females (n = 418)		χ^2	p
		n		n			
1. Stopped by doctor	Yes	1	(0.4%)	1	(0.2%)	0.08	0.77
	No	278	(99.6%)	417	(99.8%)		
2. Dislike the taste	Yes	110	(39.4%)	271	(64.8%)	43.58*	0.00
	No	169	(60.6%)	147	(35.2%)		
3. Harmful for the body	Yes	9	(3.2%)	10	(2.4%)	0.44	0.51
	No	270	(96.8%)	408	(97.6%)		
4. Expensive	Yes	14	(5.0%)	1	(0.2%)	18.15*	0.00
	No	265	(95.0%)	417	(99.8%)		

*p < 0.05/4 = 0.0125.

Table 9. Gender differences regarding awareness of ingredients in the coffee nonconsumption group.

		Males (n = 279)		Females (n = 418)		χ^2	p
		n		n			
1. Caffeine	Yes	207	(74.2%)	280	(67.0%)	4.13	0.04
	No	72	(25.8%)	138	(33.0%)		
2. Polyphenol	Yes	9	(3.2%)	33	(7.9%)	6.44*	0.01
	No	270	(96.8%)	385	(92.1%)		

*p < 0.05/2 = 0.025.

Table 10. Gender differences regarding awareness of the positive effects of coffee on health in the coffee nonconsumption group.

		Males (n = 279)		Females (n = 418)		χ^2	p
		n		n			
1. Unknown	Yes	224	(80.3%)	332	(79.4%)	0.08	0.78
	No	55	(19.7%)	86	(20.6%)		
2. Diabetes mellitus prevention	Yes	2	(0.7%)	2	(0.5%)	0.17	0.68
	No	277	(99.3%)	416	(99.5%)		
3. Cancer prevention	Yes	8	(2.9%)	13	(3.1%)	0.03	0.85
	No	271	(97.1%)	405	(96.9%)		
4. Diet	Yes	5	(1.8%)	23	(5.5%)	5.97	0.02
	No	274	(98.2%)	395	(94.5%)		
5. Metabolic syndrome prevention	Yes	3	(1.1%)	7	(1.7%)	0.43	0.51
	No	276	(98.9%)	411	(98.3%)		
6. Resolution of stress	Yes	32	(11.5%)	27	(6.5%)	5.42	0.02
	No	247	(88.5%)	391	(93.5%)		

Table 11. Gender differences regarding awareness of the negative effects of coffee on the body in the coffee nonconsumption group.

		Males (n = 279)		Females (n = 418)		χ^2	p
		n		n			
1. Unknown	Yes	173	(62.0%)	234	(56.0%)	2.50	0.11
	No	106	(38.0%)	184	(44.0%)		
2. Stomach problems	Yes	43	(15.4%)	66	(15.8%)	0.02	0.89
	No	236	(84.6%)	352	(84.2%)		
3. Close to a restroom	Yes	58	(20.8%)	97	(23.2%)	0.57	0.45
	No	221	(79.2%)	321	(76.8%)		
4. Become to loose stools	Yes	19	(6.8%)	30	(7.2%)	0.03	0.85
	No	260	(93.2%)	388	(92.8%)		
5. Dehydration	Yes	2	(0.7%)	9	(2.2%)	2.22	0.14
	No	277	(99.3%)	409	(97.8%)		
6. Trembling hand	Yes	4	(1.4%)	7	(1.7%)	0.06	0.80
	No	275	(98.6%)	411	(98.3%)		
7. Getting palpitations	Yes	4	(1.4%)	6	(1.4%)	0.06	0.80
	No	275	(98.6%)	412	(98.6%)		

Table 12. Gender differences regarding consumption of drinks other than coffee in the coffee nonconsumption group.

		Males (n = 279)		Females (n = 418)		χ^2	p
		n		n			
1. Coffee drink	Yes	18	(6.5%)	36	(8.6%)	1.09	0.30
	No	261	(93.5%)	382	(91.4%)		
2. Refreshing drinks with coffee	Yes	17	(6.1%)	34	(8.1%)	1.03	0.31
	No	262	(93.9%)	384	(91.9%)		
3. Green tea	Yes	180	(64.5%)	325	(77.8%)	14.69*	0.00
	No	99	(35.5%)	93	(22.2%)		
4. Tea	Yes	42	(15.1%)	121	(28.9%)	18.03*	0.00
	No	237	(84.9%)	297	(71.1%)		
5. Juice	Yes	114	(40.9%)	156	(37.3%)	0.88	0.35
	No	165	(59.1%)	262	(62.7%)		
6. Milk	Yes	95	(34.1%)	108	(25.8%)	5.47	0.02
	No	184	(65.9%)	310	(74.2%)		
7. Water	Yes	127	(45.5%)	207	(49.5%)	1.07	0.30
	No	152	(54.5%)	211	(50.5%)		
8. Carbonated drink	Yes	81	(29.0%)	78	(18.7%)	10.22*	0.00
	No	198	(71.0%)	340	(81.3%)		
9. Sports drink	Yes	79	(28.3%)	74	(17.7%)	11.00*	0.00
	No	200	(71.7%)	344	(82.3%)		

*p < 0.05/9 = 0.0056.

ness of polyphenol as a component of coffee; however, the response rate for this survey item was extremely low (3% - 8%). Most males and females (approximately 70%) knew that coffee contains caffeine. No significant gender differences were found in awareness of the effects of coffee on health; responses from males and females were similar (1.1% - 80.3% vs. 1.7% - 79.4%) for all items. More than their 80% answered that they were unaware of the positive effects of coffee on health. Answer rates for males and females were similar (0.7% - 62.0% vs. 1.4% - 56.0%) for all items regarding the negative effects of coffee on health, so no significant gender differences were found for these items. Approximately 50% males and females answered that they were unaware of the negative effects of coffee on health. For questions regarding alternative beverages, significant gender differences were found in the percentage of drinkers of green tea (64.5% vs. 77.8%) and tea (15.1% vs. 28.9%), carbonated drinks (29.0% vs. 18.7%), and sports drinks (28.3% vs. 17.7%). Females consumed more tea than males (20.5% vs. 37.7%), and males consumed more carbonated drinks and sports drinks in the coffee nonconsumption group.

Tables 13-15 show gender differences regarding awareness of ingredients (**Table 13**) and awareness of the positive (**Table 14**) and negative (**Table 15**) effects of coffee on health and the body between the coffee consumption and nonconsumption groups. A significant group difference was found only for caffeine. More respondents

in the consumption group were aware of the effects of caffeine, but more than 65% respondents in the nonconsumption group also were aware of this fact. No significant differences were found in the awareness of the effects of coffee on health between both groups (1.1% - 10.8% for the consumption group vs. 0.5% - 9.3% for the nonconsumption group). No significant group differences were found in responses indicating lack of awareness of negative effects of coffee on health and need to be close to a restroom. More respondents in the nonconsumption group (>50%) were unaware of the negative effects of coffee on health, and more respondents in the consumption group (approximately 40%) indicated the need to be close to a restroom after drinking coffee. In addition, more respondents in the consumption group reported stomach problems due to coffee consumption (27.9% vs. 15.8%).

4. Discussion

The present study results indicated that more young males (50.8%) drank coffee than young females (32.8%). According to Yamazawa *et al.* [11], gender differences in preferences for sweet coffee were related to coffee drinking habits. Rodenburg *et al.* [16], comparing coffee consumption among 4 groups of smoking and nonsmoking males and females, found that nonsmoking females consumed less coffee. The present study result indicated that females drank Japanese tea or green tea more often than males in both the coffee consumption and nonconsump-

Table 13. Gender differences between the consumption and nonconsumption groups in terms of awareness of ingredients in coffee.

		Consumption		Nonconsumption		χ^2	p	
		n	%	n	%			
Males	1. Caffeine	Yes	249	(86.5%)	207	(74.2%)	13.5*	0.00
		No	39	(13.5%)	72	(25.8%)		
	2. Polyphenol	Yes	14	(4.9%)	9	(3.2%)	0.97	0.32
		No	274	(95.1%)	270	(96.8%)		
Females	1. Caffeine	Yes	163	(79.9%)	280	(67.0%)	11.2*	0.00
		No	41	(20.1%)	138	(33.0%)		
	2. Polyphenol	Yes	11	(5.4%)	33	(7.9%)	1.31	0.25
		No	193	(94.6%)	385	(92.1%)		

*p < 0.05/2 = 0.025.

Table 14. Gender differences between groups in terms of awareness of the positive effects of coffee on health.

		Consumption		Nonconsumption		χ^2	p	
		n	%	n	%			
Males	1. Diabetes mellitus prevention	Yes	3	(1.0%)	2	(0.7%)	0.17	0.68
		No	285	(99.0%)	277	(99.3%)		
	2. Cancer prevention	Yes	4	(1.4%)	8	(2.9%)	1.50	0.22
		No	284	(98.6%)	271	(97.1%)		
	3. Diet	Yes	7	(2.4%)	5	(1.8%)	0.28	0.60
		No	281	(97.6%)	274	(98.2%)		
	4. Metabolic syndrome prevention	Yes	5	(1.7%)	3	(1.1%)	0.45	0.51
		No	283	(98.3%)	276	(98.9%)		
	5. Resolution of stress	Yes	31	(10.8%)	32	(11.5%)	0.07	0.79
		No	257	(89.2%)	247	(88.5%)		
Females	1. Diabetes mellitus prevention	Yes	2	(1.0%)	2	(0.5%)	0.54	0.46
		No	202	(99.0%)	416	(99.5%)		
	2. Cancer prevention	Yes	5	(2.5%)	13	(3.1%)	0.21	0.65
		No	199	(97.5%)	405	(96.9%)		
	3. Diet	Yes	4	(2.0%)	23	(5.5%)	4.14	0.04
		No	200	(98.0%)	395	(94.5%)		
	4. Metabolic syndrome prevention	Yes	1	(0.5%)	7	(1.7%)	1.52	0.22
		No	203	(99.5%)	411	(98.3%)		
	5. Resolution of stress	Yes	19	(9.3%)	27	(6.5%)	1.63	0.20
		No	185	(90.7%)	391	(93.5%)		

tion groups. In short, young females may choose to drink tea rather than coffee more often than young males. In contrast, Yamamoto *et al.* [17] reported that 68% female students responded that they like coffee. In this study, only approximately 50% female respondents considered coffee to be delicious, even in the coffee consumption group. These results may indicate that young females may not drink coffee regularly, although they may like it. Further studies are required to examine the relationship between coffee consumption and preference for the taste of coffee.

In the coffee consumption group, approximately 50% respondents reported that the reason they liked to drink

coffee was because it helped them wake up or because they liked its taste. Caffeine in coffee has a stimulating effect on the central nervous system [18]. Many people who drink coffee expect to feel awake. To consume the same food and drinks regularly, it is very important that a person considers them delicious. Many respondents of both genders in this study drank coffee for its taste. In addition, almost all respondents (approximately 80%) knew that coffee contains caffeine, but few knew about for the other ingredients in coffee (4.9% - 5.4%).

More females (64.8%) than males (39.4%) in the coffee nonconsumption group reported that they disliked the taste. Maruyama *et al.* [19] examined gender differences

Table 15. Gender differences between groups in terms of awareness of the negative effects of coffee on the body.

		Consumption		Nonconsumption		χ^2	p	
		n	%	n	%			
Males	1. Unknown	Yes	121	(42.0%)	173	(62.0%)	22.7*	0.000
		No	167	(58.0%)	106	(38.0%)		
	2. Stomach problems	Yes	70	(24.3%)	43	(15.4%)	7.02	0.008
		No	218	(75.7%)	236	(84.6%)		
	3. Close to a restroom	Yes	106	(36.8%)	58	(20.8%)	17.7*	0.000
		No	182	(63.2%)	221	(79.2%)		
	4. Become to loose stools	Yes	30	(10.4%)	19	(6.8%)	2.34	0.127
		No	258	(89.6%)	260	(93.2%)		
	5. Dehydration	Yes	12	(4.2%)	2	(0.7%)	7.00	0.008
		No	276	(95.8%)	277	(99.3%)		
	6. Trembling hands	Yes	8	(2.8%)	4	(1.4%)	1.24	0.266
		No	280	(97.2%)	275	(98.6%)		
	7. Getting palpitations	Yes	15	(5.2%)	4	(1.4%)	6.23	0.013
		No	273	(94.8%)	275	(98.6%)		
Females	1. Unknown	Yes	74	(36.3%)	234	(56.0%)	21.3*	0.000
		No	130	(63.7%)	184	(44.0%)		
	2. Stomach problems	Yes	57	(27.9%)	66	(15.8%)	12.8*	0.000
		No	147	(72.1%)	352	(84.2%)		
	3. Close to a restroom	Yes	83	(40.7%)	97	(23.2%)	20.4*	0.000
		No	121	(59.3%)	321	(76.8%)		
	4. Become to loose stools	Yes	27	(13.2%)	30	(7.2%)	6.05	0.014
		No	177	(86.8%)	388	(92.8%)		
	5. Dehydration	Yes	8	(3.9%)	9	(2.2%)	1.61	0.204
		No	196	(96.1%)	409	(97.8%)		
	6. Trembling hands	Yes	4	(2.0%)	7	(1.7%)	0.07	0.799
		No	200	(98.0%)	411	(98.3%)		
	7. Getting palpitations	Yes	2	(1.0%)	6	(1.4%)	0.22	0.636
		No	202	(99.0%)	412	(98.6%)		

* $p < 0.05/7 = 0.007$.

in taste preference in a group of junior high school students, and reported that taste differs between males and females. Most youth have tasted coffee at least once in their lives. Hence, more females may dislike the taste of coffee based on their past experience, and thus do not choose to drink. In addition, almost all respondents of both genders (70%) in the nonconsumption group knew that coffee contains caffeine, but few knew about the other ingredients in coffee. According to Du *et al.* [13], knowledge and attitude regarding nutrients differ between males and females. However, young people who do not drink coffee may not be interested in it, regardless of gender.

No gender differences were found in responses to the items regarding the effects of coffee on health. More than 80% respondents expected no adverse effects, particularly in the coffee consumption group. In Japan, it is widely known that tea drinking has healthy effects. According to Matsui [20], about 50% of nonsugar tea drink-

ers found its health benefits very appealing and hence have chosen this beverage. In Japan, coffee is a luxury drink, unlike refreshing drinks such as tea. Approximately 50% respondents in the coffee consumption group drank coffee because they liked its taste. Thus, people who drink coffee regularly may do so because they enjoy its taste and expect to experience its positive effects, such as helping them to feel awake.

No intergroup gender differences were found in the responses to items regarding the positive and negative effects of coffee on health. More than 80% of respondents in the coffee consumption group and 40% - 50% of those in the coffee nonconsumption group were unaware of these effects. Because coffee has been part of human diet for more than 1000 years [1], many researchers have studied its effects on health. The benefits of coffee for humans have been disputed [21]. However, the present results suggested that the effects of coffee on health are not widely known to young people. Because most respondents

in the consumption group and more than 65% of those in the nonconsumption group knew that coffee contains caffeine, it is considered that the caffeine is a widely known component among young people. However, no significant gender differences between the consumption and nonconsumption groups were found regarding the effects of coffee on health. In Japan, alternative healthy drinks such as water or lactic acid bacteria beverages have been manufactured. In addition, many people recognize the healthy effect of tea [20].

On the other hand, the risk of myocardial infarction and glaucoma are increased by coffee consumption [22, 23]. However, regarding the adverse effects of coffee on the body, both male and female respondents in the nonconsumption group (>50%) were unaware of these effects, and approximately 40% of those in the consumption group were unaware of these effects. In addition, approximately 40% of those in the consumption group felt the need to be close to a restroom after drinking coffee. Many studies have reported results of tests of coffee from the medical and pharmaceutical viewpoints [3-7]. The media also frequently reports the effects of coffee. However, the adverse effects of coffee consumption may not be adequately reported. Therefore, young people may know little about these effects regardless of their preference for coffee. It is necessary to spread awareness regarding the positive and negative effects of coffee on health, regardless of coffee consumption. Similar to the coffee-drinking habit of westerners, many Japanese, including the youth, tend to drink coffee during business or social meetings. Moreover, coffee can be freely ordered at a coffee-specialty store, tea shop, or fast food center and can be easily bought at a supermarket or from vending machines. Such circumstances are responsible for giving rise to many coffee drinkers.

5. Conclusion

In conclusion, in this study, young males reported drinking more coffee than young females. Among coffee nonconsumers, females disliked the taste of coffee more often than males. Many young people know that coffee contains caffeine, but few know about other components of this beverage. In addition, few people know the positive and negative effects of coffee on health.

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