



FACTORS ASSOCIATED WITH SOFT AND ENERGY DRINKS CONSUMPTION BY UNIVERSITY STUDENTS IN ALEXANDRIA EGYPT

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ABSTRACT

Purpose: The aim of this study was to determine the frequency of the consumption of soft and energy drinks by university students, and to identify the factors affecting the consumption rates.

Method: The study included 400 university students in the age group 18-24 years. Data were collected on the frequency of the consumption of soft and energy drinks, reasons for consumption, types consumed, and the factors affecting the consumption rate. These factors included the sex of the students, BMI, sources of advice to use energy drinks, knowledge about its constituents and side effects.

Findings: The results showed that 34.8% and 5.8% of the students used soft and energy drinks at least once daily respectively. Consumption rates were higher among male, overweight and obese students. The main reasons for using soft drinks were dieting (25.6%), good taste (18.0%), hot weather (16.3%). Energy drinks were used to stay awake or as a refreshment (28.2%), for more energy (22.7%), and for better sports performance (20.9%) where the coach was the effective source of advice to use energy drinks. Caffeine was identified as the main constituent of energy drinks by 29.1% of the students. Being nervous and having an increased heart rate were the main side effects felt by students.

Value: For the first time, the results present the rate of consumption of soft and energy drinks by university students in Egypt. A higher consumption rate and the increased sugar intake contributed to the high prevalence of overweight and obesity. The study identifies the factors affecting the consumption rates, which are needed to plan a nutrition education programme.

Keywords: Soft drinks; energy drinks; university students; BMI; sex; reasons for use; side effect; Egypt.

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INTRODUCTION

Entry to university may represent a critical period for unhealthy weight-related behaviour that may lead to an increased prevalence of overweight and obesity in this age group. University students experience a steady increase in body weight (Vella-Zarb and Elgar, 2009; Gross, 2008).

Peltzer et al. (2014) reported the results of a study on the nutritional status of 321 Egyptian university students that showed that the body weight of 46.6% of the students was normal, 38.8% were overweight and 12.5% were obese. University students develop a new set of food habits that may have a lasting effect on educational achievement (Mishra and Arya, 2013). They enjoy more freedom in choosing their meals than school students, and they spend more time on university premises where food is available in numerous cafeterias and outlets. Unfortunately, students tend to consume fast foods, sweets and high carbohydrate, fatty foods in addition to an excessive consumption of soft beverages: intake of vitamins and minerals may be low (Crombie et al., 2009). West et al. (2006), reported that 65% of students consume some form of sugar sweetened beverages daily. Sugars and soft drinks contribute 8-9% of the total energy intake of both children and adolescents. One can of soda provides 150 calories and 40-50g of sugar, which is equivalent to 10 teaspoons. The increased rate of consuming beverages and soft drinks has been linked to the epidemic of weight gain (Malik et al., 2006) and obesity (Bray et al., 2004).

A strong association was reported between the increased rate of soft drink consumption and eating fast food (Verzeletti et al., 2010), watching television during meals (Bere et al., 2008), availability of soft drinks at home (Grimm et al., 2004), higher socio-economic level of the family (Vereecken et al., 2005), and skipping the morning meal (Metthys et al., 2007).

The exact rate of consuming soft drinks in Egypt is not known, however, it is thought to be high among university students. The impact of excessive consumption of soft drinks on the nutritional status of university students was not evaluated. The only available study was published recently by El-Anasri and Beckhoff (2015), which reported no correlation between soft drinks and perceived stress.

During the last few years, energy drinks have become popular in Egypt. Numerous brands are available in supermarkets, sports clubs and even in university cafeterias. Energy drinks are a type of beverage containing caffeine as their main active ingredient. They may also contain other ingredients such as sugars, artificial sweeteners, taurine, glucuronolactone, ginseng, B vitamins and L.carnitine (Pennay and Luman, 2012). Specific ingredients in individual energy drinks vary widely (Seifert et al., 2011). An aggressive marketing campaign was initiated to promote energy drinks that focus on their stimulant effects, improved performance, increased attention, boosting energy, enhancing mental alertness and decreased feeling of tiredness (Higgins et al., 2010).

Caffeine is the primary constituent responsible for the effects of energy drinks. Although there is no recommended requirement for caffeine, low doses between 12.5mg and 100mg improve cognitive performance and mood (Smith and Rogers, 2000). When reasonable doses of caffeine are used, physical performance will be improved by reducing reaction time and improving attention performance, power of concentration, endurance and anaerobic performance (Smith, 2002; Alford et al., 2001). However, such effects may be also attributed to the synergetic effect between glucose and caffeine when consumed together (Scholey and Kennedy, 2004).

The health hazards induced by the excessive consumption of energy drinks are primarily related to their high caffeine content. An overdose of caffeine, more than 250mg, may promote diuresis (Riesenhuber et al., 2006), irritability, nervousness, sleeplessness, arrhythmia and upset stomach (Winston et al., 2005), increased heart rate and mean arterial blood pressure (Bichler et al., 2006).

Miller (2008) reported that the rate of consumption of energy drinks by young adults in the age group 18 to 25 years is increasing to the extent that it raises a great concern regarding its possible adverse health effects. Producers of energy drinks target young adults through well designed marketing advertisements using mass media. Petroczi et al. (2008) reported that over 40% of young elite British athletes reported energy drinks as the most widely used supplement. The most common energy drink, Red Bull, contains

80mg of caffeine.

The literature review did not reveal any studies on the pattern of consumption of soft and energy drinks among young adults in Egypt. This study was designed to determine the frequency of consumption of soft and energy drinks by university students in Alexandria, Egypt, and to determine the factors associated with the consumption of both types of drink.

SUBJECTS AND METHODS

The subjects of this study were male and female students from Alexandria University, Egypt. The study was conducted during the period March to June 2015, and included 400 students in the age group 18 to 22 years who were studying humanities, commerce or law. The sample size was determined using Epi-info version 6 program and using a 95% confidence, 5% error, an expected prevalence of regular intake of soft drinks of 85.1% (Bere et al., 2008), and assuming a design effect of 2: the resulting minimum sample size amounted to 390, and the sample size was rounded to 400 students. The study sample was taken using a stratified sampling technique. Stratification was based on the number of students enrolled in each faculty and their sex.

Students studying Medicine, Pharmacy or Nursing were excluded because of the possibility that they could have acquired some knowledge about the subject of the study through their educational programme. Students suffering from chronic diseases such as diabetes or hypertension were not included in the study. Otherwise, all students in the target group were included in the study.

A predesigned questionnaire was formulated, pre-tested using a sample of 30 students. According to the outcome, the questionnaire was modified and used to collect data from each student through a private interview. Students were informed about the aim of the study and, after they consented to participate in the study, they were requested to provide information on age, frequency of consuming soft drinks weekly and the type of drink commonly consumed. The consumed drinks were classified in four groups; the first group included all sweetened carbonated beverages, the second group included all diet soft

drinks that did not contain any sugar, the third group covered all fresh juices that were consumed without added sugars, and the final group included bottled juices. The students were asked about the main reason for consuming soft drinks.

The second part of the questionnaire was used to collect data on the frequency of consuming energy drinks. The students were asked about their most commonly used brand, the reason for using energy drinks, the sources of advice in using it, and they were also asked about their knowledge of its major constituent. Students were asked to report the most common side effect felt after consuming the energy drink.

The body weight of each student was measured to the nearest 0.1kg using a digital scale, and height was measured to the nearest 0.1cm using standard techniques (Gibson, 2005). Body weight and height were used to calculate the body mass index (BMI) by dividing weight in kg by height in metres squared. Students were classified according to their body mass index as underweight when the BMI was 18.5kg/m² or less, normal when the BMI was >18.5 and less than 25kg/m², over weight when the BMI was >25 and less than 30kg/m² and obese when the BMI was 30kg/m² or more (WHO, 2000).

The data were entered and verified for errors and data analysis was undertaken using a PC with IBM SPSS Statistics version 21.0. The 0.05 level was used as the cut off value for statistical significance and the following statistical measures were used. Counts and percentages were used for describing and summarizing qualitative data, Arithmetic mean (), Standard deviation (SD) were used as measures of central tendency and dispersion respectively for quantitative data. The Chi square (χ^2) was used to test the association between two qualitative variables or to detect difference between two or more proportions. Analysis of variance was used to compare between several means.

The study plan and the contents of the questionnaire were approved by the ethics committee of the High Institute of Public Health, Alexandria University. The interview and the measurements were taken following all privacy procedures and all collected data were kept confidential.

RESULTS

Data presented in Table 1 show that the mean intake of soft drinks by male students was 4.69 times weekly, which was significantly higher, $t=7.2$, $P=0.001$, than that reported by female students (3.45 times weekly). The results show that male students consumed soft drinks at a higher rate than female students, as 41.5% of the males consumed soft drinks seven times or more weekly as compared with 28.2% by female students. The results show that only 13.3% of the male students did not use soft drinks; such a ratio was significantly higher among female students (29.7%): the difference was statistically significant, $X^2 = 21.8$, $P=0.001$.

The results also show that 60.7% of the male students and 83.0 % of the female students did not use energy drinks. The mean weekly consumption by male students was 1.72 times weekly, which was significantly high than that reported by female students (0.71): the difference was statistically significant, $t= 3.8$, $P=0.001$.

The data also show that 8.5% of male students used energy drinks seven times or more weekly, and the majority of users (18.6%) consumed energy drinks 1-3 times weekly. The corresponding rates for female students were 3.3% and 8.0% respectively: the difference was statistically significant, $X^2= 25.1$, $P=0.001$.

The results presented in Table 2 show that 14.5% of the students were underweight, 22.2% were overweight and 11.5% were obese. The mean consumption of soft drinks was 2.88 times weekly by underweight students, and significantly increased to 4.7 times weekly by obese students: the difference was statistically significant $F=13.0$, $P=0.003$. The data also show that 45.7% of the obese students consumed soft drinks seven times or more weekly; this ratio was as low as 18.9% among underweight students. The data show that 31.1% of students from the latter group did not consume soft drinks as compared with around 21% of the overweight and obese students; the lowest rate of consumption was noted among students with normal body weight (1.9%). The differences were statistically significant, $X^2=43.7$, $P=0.001$.

The results show the mean weekly consumption of energy drinks was 1.31 times weekly by underweight students; this increased significantly

to 3.28 times weekly by obese students. The difference was statistically significant, $F= 13.7$, $P=0.002$. The data show that only 30.4% of students from the latter group did not consume energy drinks as compared with 70.7% of the underweight students. In addition, the frequency of consumption was associated with the BMI. The results show that 6.9% of students with a BMI of less than 18.5kg/m² consumed energy drinks seven times or more weekly as compared with a rate of 19.6% among obese students. The lowest consumption of energy drinks was noted among students with normal weight and overweight students.

The types of soft drinks consumed by male and female students were significantly different, $X^2= 10.3$, $P=0.017$ (Table 3). The overall results show that the rate of consuming sweetened soft drinks was high (47.1%) followed by diet drinks (25.6%). The data show that male students consumed sweetened soft drinks at a rate higher than that of female students, 51.5% and 42.3% respectively. On the other hand, the rate of consuming diet drinks was higher by female students when compared with their male counterparts, 31.6% and 20.3% respectively. Fresh fruit juices were the least consumed soft drink, consumed by only 11.9% of the students, and was consumed at a relatively higher rate by female students (14.7%). Bottled fruit juices were consumed by 15.4% of the students and were more preferred by male students (19.0%).

The types of energy drinks consumed did not show significant variation with the sex of the students. The most commonly consumed energy drink was Power Horse (39.1%), followed by Red Bull (29.1%), and Bold (19.1%). Other brands such as Monster, Burn, Nalue, Mike Tyson and Blue Jeans were consumed at much lower rates.

Results presented in Table 4 show that the type of soft drink consumed was significantly associated with the BMI of the students, $X^2= 22.5$, $P=0.007$. The data show that the highest rate of consuming sweetened soft drinks (54.2%) was reported by students with normal body weight, followed by underweight students (45.0%). Only 30.6% of obese students consumed sweetened soft drinks. Students from the latter group consumed diet soft drinks at the highest rate (36.3%), such ratio declined to 7.5% among underweight students. Fresh fruit juices were consumed by 20.0% of the

underweight students and at much lower rates by students with higher body mass indices. The results also show that both underweight and obese students consumed bottled fruit juices at relatively high rates, 27.5% and 22.2% respectively.

The type of energy drinks used did not show significant variation with the body mass indices of the students. Red Bull was the most commonly used energy drink, especially among students with normal body weight (34.5%), while Power Horse was equally consumed by both normal weight and obese students (37.5%). Bold was preferred by underweight students (23.5%), and at a lower rate by students with higher body mass indices.

The frequency of consuming soft drinks was significantly associated with the reasons for consumption ($X^2=19.7$, $P=0.003$). The results show that 18.0% of the sample used soft drinks because they like the taste; the majority of this group (42.9%) consumed soft drinks 1-3 times weekly. The data illustrate that 11.2% of the subjects used soft drinks to help digestion. Out of this group 40% used it between 1 and 3 times weekly, and another 37.15% used it 7 times or more weekly. The corresponding figures among those using soft drinks out of habit were 46.8% and 32.3% respectively. Soft drinks were available at the home of 13.8% of the sample, and 53.5% of them used soft drinks seven times or more weekly. Hot weather was the reason given by 16.3% of the sample, and 51.0% of these used it 1-3 times weekly. Dieting was mentioned as the reason for using soft drinks by 25.6% of the subjects, and the majority (61.3%) used it seven times or more weekly (Table 5).

The results presented in Table 6 show that the reasons for using energy drinks were not significantly associated with frequency of consumption. The reasons given were to keep awake or as refreshment and for good taste (28.2%), for more energy (22.7%) and for better performance in sports (20.9%). However, it was noted that 39.1% and 34.8% of the latter group used energy drinks 4-6 times weekly or at least once daily. The source of advice to use energy drinks significantly affected the frequency of consumption, $X^2 = 12.7$, $P=0.013$. When friends were the source, 56.2% of the students used energy drinks 1-3 times weekly. A similar consumption rate was reported by 52.9% of the students when consumption was in response

to TV advertisement. On the other hand, when the coach was the source of advice, 42.9% of the students consumed energy drinks at least once daily and another 32.1% consumed it 4-6 times weekly.

Knowledge about the major constituent of the energy drinks also significantly affected the frequency of its use ($X^2 = 15.1$, $P=0.019$). The majority of underweight students who did not know the composition of energy drinks (86.5%) used it 1-3 times weekly. The results show that 29.1% of the students knew that caffeine was the major constituent, and the majority of them used the drinks either 4-6 times weekly or more than once daily, 40.6% and 31.3% respectively. Only 15.5% reported that taurine was a main constituent and used it at rates comparable to those who mentioned caffeine. A lower proportion of the students (12.8%) mentioned that energy drinks contain either ginseng, amino acids, Guarana or herbs. Around one-third of this group used energy drinks 1-3 times weekly, and another third used it 4-6 times weekly.

The data show that side effects felt after using energy drinks were not associated with the frequency of usage. The results show that 36.4% of the students did not have any side effects, 20.0% mentioned that they felt nervous or jittery. Increased urination and heart rate were felt by 15.4% of the sample, and only 12.7% developed insomnia after consuming energy drinks.

DISCUSSION

Soft drinks could be a major source of caloric intake for university students. One 355ml can of sweetened soft drink provides at least 146 calories. Sweetened canned juices contain at least a similar amount of sugar that is derived from the natural sugar contents in addition to the added sugar. Soft drinks could contribute a large proportion of the daily sugar intake which is very high (FAO, 2013).

The caloric value of energy drinks varies between 27 and 41 calories per 100ml. They are used not only for their caloric value but basically for their caffeine and taurine content. It was noted that the energy content of all drinks are expressed in a manner confusing to the consumer. Contents may be expressed as calories/100ml or energy/100ml, or expressed as a percentage of the total daily caloric requirements.

The results show that male students consume

more soft drinks as they spend more time outside their home than female students, and consequently would like to have refreshment in the form of soft drink. At the same time they eat more frequently in fast food outlets and usually have soft drinks with fast food. In addition, female students care more about maintaining their body weight and probably some of them would like to lose weight by avoiding the unnecessary calories in a soft drink. This was reported in a study among university students in Malta (Cafai and Camilleri, 2011).

The consumption of energy drinks has increased markedly during the last ten years (Heckman et al., 2010). The results show that the frequency of consuming energy drinks is much lower than soft drinks (Table 1), however, it is expected that the frequency of consumption will increase as a result of aggressive advertising campaigns, the increasing number of varieties of energy drinks available on the market, and their availability in supermarkets and sports and social clubs.

Available data show wide variability in the rate of using energy drinks by university students. Alsunni and Badar (2011) reported that 54.6% of male and 26.1% of female Saudi university students are regular users of energy drinks, while Firis et al. (2014) reported that 15% of young adults in Denmark use energy drinks on weekly basis. The results of this study show that only 39.3% of males and 17% of females are using energy drinks, which is relatively lower than that reported in other studies. Male students consume more energy drinks because some of them practice sports and they would like to improve their performance by having one or two drinks before starting their exercise. Students who consume energy drinks to improve performance use it more frequently (Table 6).

The frequency of consuming both soft and energy drinks was strongly associated with the increase in BMI (Table 2). Pereira and Odegaard (2013) concluded that the consumption of artificially sweetened beverages may lead to weigh gain, and Field et al. (2014) reported that the frequency of consuming sports drinks is associated with greater increase in BMI. Soft drinks increase body weight by increasing the overall energy intake due to its consumption on top of a regular diet. Soft drinks have become an integral

part of the Egyptian diet as they are consumed with meals as well as between meals.

The consumption of energy drinks is mostly associated with special needs such as practicing sports, or the need to overcome the desire to sleep in order to study for longer periods of time (Table 6). It was noted that around 14.5% of underweight students were consuming energy drinks: this is due to their interest in increasing their body weight. Normal weight students were the least likely to consume energy drinks, mostly because they did not feel any need for the extra energy or stimulation of the energy drinks.

The caffeine content of energy drinks available on the market varies between 80mg and 300mg, and may contain up to 35g of sugar (Clauson et al., 2008). It is the primary source of caffeine for its users (Bray et al., 2004). The similarity in the rate of consuming different brands of energy drinks by male and female students is due to the fact that all students are exposed to the same advertising campaigns that promote energy drinks. In addition, many students would derive their information about energy drinks from their peers and would consume the same brand as their friends (Table 6).

The type of soft drinks consumed by students varied with their body mass indices. Underweight students who wished to increase their body weight and students with normal body weight consumed sweetened soft drinks at the highest rates, while obese students who wished to avoid the extra calories used diet soft drinks. The same trend was also noted in the pattern of consumption of juices. Underweight students were the highest consumers of both fresh and canned juices because they felt that they needed the additional calories (Table 4). On the other hand, obese students consumed bottled juices at the lowest rate (11.6%) to avoid the sugar added to the bottled drinks, and were more eager to consume natural juices without the added sugar (22.2%). Students with normal body weight were the highest consumers of bottled juices (53.2%) because they did not have a problem with their body weight and would avoid the high price of the more expensive natural juices (Table 4).

The reasons given by the subjects for consuming soft drinks significantly affected the frequency of consumption (Table 5). The results show that those

who liked the taste used soft drinks infrequently, although one third of this group liked the taste enough to use it daily. Estima et al. (2011) reported that taste and flavour were one of the main driving forces for dietary choices and the main factor in choosing and purchasing beverages, while 13% claimed they drank these beverages when thirsty. The results show that only a small percentage of the students used soft drinks to help digestion, however, the data show that 37.1% used it at least once daily suggesting that they might suffer from chronic indigestion. Availability at home seemed to encourage students to use soft drinks more frequently; this is in agreement with Grimm et al.'s (2004) study, who reported that availability at home and family habits was associated with increased soft drink consumption. When such drinks were available, more than half the students consumed them at least once daily. In order to reduce the consumption of soft drinks, the family should not make them available at home, and students should exert some effort to get their own drinks from outside the home. The weather in Alexandria is mild throughout the year even during summer: this was reflected in the small proportion of students who used soft drinks for refreshment during hot days, and around 50% used it infrequently. The results show that dieting was the reason given by 25.6% of the students for using soft drinks, and 61.3% of them used it seven times or more weekly. This group usually used diet soft drinks as a replacement for sweets, fruit or other energy supplying drinks. It gives them a sweet taste without the complementary added sugars.

The results presented in Table 6 show that 28.2% of the students used energy drinks to keep awake; this allows them to study for longer hours. Similar results were reported by Malinauskas et al. (2007). A similar proportion used energy drinks simply for refreshment and good taste at a limited rate because of its high price when compared to soft drinks. It was noted that 22.7% of the students consumed energy drinks for its energy contents and did not resort to natural foods which could provide more calories without any side effects.

The results show that 20.9% of the sample used energy drinks for better performance in sports events; this factor was reported in other studies

(Buxton and Hagan, 2012). This group usually derived their advice from their coach or trainer and consumed energy drinks at a higher frequency. Trainers encouraged students to use energy drinks especially prior to sports events without paying attention to its possible health hazards.

Only 33.6% reported that they did not know the major constituent of energy drinks. A good proportion mentioned that caffeine was the major constituent followed by taurine. Other components such as ginseng, Guarana, amino acids and herbs were also reported by a small proportion of students. The labels of almost all energy drinks list the major constituents in an obscure way, but the results clearly suggest that students use the drink without reading the label.

The results show that around two thirds of the students (63.6%) reported feeling negative side effects after consuming energy drinks. The most common side effect was being nervous and jittery. Alsunni and Badar (2011) reported that the most common side effect was increased urination in males and insomnia in females. This did not modify the frequency of consumption, which was more motivated by the desire to upgrade performance or stay awake to study for longer hours, or following the advice of their coach, or more simply to enjoy its taste.

The results of this study present for the first time the frequency of consuming soft and energy drinks by university students in Egypt, and the factors associated with the consumption pattern such as sex, BMI, and the reasons for consuming both types of drinks. The results are essential for the planning of a nutrition education programme to inform the students about the adverse effects of the excessive consumption of sugar through both drinks that may contribute to the extra calorific intake that may lead to overweight and obesity. The programme should concentrate on the adverse side effects that could be induced by high caffeine intake. The main limitation of this study is that we did not analyse the sugar contents of both drinks and the caffeine contents of energy drinks as this would require a specialized study.

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BIOGRAPHICAL NOTES

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Table 1 Frequency of intake of soft and energy drinks by male and female university students

Frequency of intake	Sex				Total	
	Male		Female			
Soft drinks	No.	%	No.	%	No.	%
7 times or more/wk	78	41.5	61	28.8	139	34.8
4-6 times/wk	31	16.5	19	8.9	50	12.5
1-3 times/wk	54	28.7	69	32.6	123	30.7
Never	25	13.3	63	29.7	88	22.0
Total	188	100	212	100	400	100
Mean ± SD	4.69± 1.2		3.4± 2.2		4.02± 1.7	
	X2= 21.8				P= 0.001	
Energy drinks						
7 times or more/wk	16	8.5	7	3.3	23	5.8
4-6 times/wk	23	12.2	12	5.7	35	8.7
1-3 times/wk	35	18.6	17	8.0	52	13.0
Never	114	60.7	176	83.0	290	72.5
Total	188	100	212	100	400	100
Mean ± SD	1.72± 2.4		0.71± 1.2		1.16± 1.9	
	X2= 25.1				P= 0.001	

Source: Compiled by author from data obtained during fieldwork

Table 2 Frequency of intake of soft and energy drinks by students with variable body mass indices

Frequency of intake	Body mass index							
	< 18.5		18-		25-		30+	
Soft drinks	No.	%	No.	%	No.	%	No.	%
7 times or more/wk	11	18.9	72	34.8	35	39.3	21	45.7
4-6 times/wk	7	12.1	25	12.1	12	13.5	6	13.0
1-3 times/wk	22	37.9	69	33.3	23	25.9	9	19.6
Never	18	31.1	4	1.9	19	21.3	10	21.7
Total	58	14.5	207	51.8	89	22.2	46	11.5
Mean ± SD	2.88± 1.7		4.05± 2.9		4.34± 2.0		4.70± 2.1	
	X2= 43.7				P= 0.001			
	F= 13.0				P = 0.003			
Energy drinks								
7 times or more/wk	4	6.9	5	2.4	5	5.6	9	19.6
4-6 times/wk	6	10.3	9	4.4	9	10.1	11	23.9
1-3 times/wk	7	12.1	18	8.7	15	16.9	12	26.1
Never	41	70.7	175	85.5	60	67.4	14	30.4
Total	58	14.5	207	51.8	89	22.2	46	11.5
Mean ± SD	1.31± 1.9		0.58± 0.41		1.29± 1.17		3.28± 2.8	
	X2= 62.2				P=0.001			
	F=13.7				P=0.002			

Source: Compiled by author from data obtained during fieldwork

Table 3 Types of soft and energy drinks commonly consumed by male and female university students

Types of drinks	Sex				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Soft drinks						
Sweetened drinks	84	51.5	63	42.3	147	47.1
Diet drinks	33	20.3	47	31.6	80	25.6
Fresh juice	15	9.2	22	14.7	37	11.9
Bottled juices	31	19.0	17	11.4	48	15.4
Total	163	100	149	100	312	100
	X ² = 10.13			P= 0.017		
Energy drinks						
Red Bull	22	29.7	10	27.8	32	29.1
Power horse	31	42.9	12	33.3	43	39.1
Bold	13	17.6	8	22.2	21	19.1
Others	8	10.8	6	16.7	14	12.7
Total	74	100	36	100	110	100
	X ² = 1.4			P= 0.703		

Source: Compiled by author from data obtained during fieldwork

Table 4 Types of soft and energy drinks commonly consumed by university students with variable body mass indices

Type of drinks	Body mass index							
	< 18.5		18-		25-		30+	
	No.	%	No.	%	No.	%	No.	%
Soft drinks								
Sweetened drinks	18	45.0	90	54.2	28	40.0	11	30.6
Diet drinks	3	7.5	43	25.9	22	31.4	12	36.3
Fresh juice	8	20.0	16	9.6	8	11.4	5	13.9
Bottled juices	11	27.5	17	10.3	12	17.2	8	22.2
Total	40	128	166	53.2	70	22.2	36	11.6
	X ² = 22.5				P= 0.007			
Energy drinks								
Red Bull	5	29.4	11	34.5	7	24.1	9	28.1
Power horse	6	35.5	12	37.5	13	44.8	12	37.5
Bold	4	23.5	6	18.6	5	17.2	6	18.8
Others	2	11.8	3	9.4	4	13.9	5	15.6
Total	17	100	32	100	29	100	32	100
	X ² = 1.7				P= 0.996			

Source: Compiled by author from data obtained during fieldwork

Table 5 The reasons for consuming soft drink by students and its relationship to the frequency of weekly consumption

Reasons for consumption	Frequency of weekly consumption						Total	
	1-3 times		4-6 times		7 times or more			
	No.	%	No.	%	No.	%	No.	%
Likes the taste	24	42.9	13	23.2	19	33.9	56	18.0
Helps digestion	14	40.0	8	22.9	13	37.1	35	11.2
Just habit	22	46.8	7	14.9	18	32.3	47	15.1
Available at home	15	34.9	5	11.6	23	53.5	43	13.8
Hot weather	26	51.0	8	15.7	17	33.3	51	16.3
Dieting	22	27.5	9	11.3	49	61.3	80	25.6
Total	123	38.5	50	16.0	139	44.5	312	100
	X2= 19.7				P= 0.033			

Source: Compiled by author from data obtained during fieldwork

Table 6 Factors associated with using energy drinks in relation to the frequency of weekly consumption

Variables	Frequency of weekly consumption						Total	
	1-3 times		4-6 times		7 times or more			
	No.	%	No.	%	No.	%	No.	%
• Reason for intake								
Sports performance	6	11.6	9	25.7	8	34.8	23	20.9
To stay awake	15	28.8	10	28.6	6	26.1	31	28.2
More energy	13	25.0	7	20.0	5	21.7	25	22.7
Refreshment/taste	18	34.6	9	25.7	4	17.4	31	28.2
	X2= 6.8				P= 0.343			
• Source of advice								
Friends/ peers	27	51.9	15	42.9	6	26.0	48	43.6
Coach	7	13.5	9	25.7	12	52.2	28	25.5
T.V advertisement	18	34.6	11	31.4	5	21.8	34	30.9
	X2= 12.7				P= 0.013			
• Knowledge about major constituents								
Do not know	32	61.5	10	28.6	5	21.7	37	33.6
Caffeine	9	17.3	13	37.1	10	43.5	32	29.1
Taurine	6	11.6	7	20.0	4	17.4	17	15.5
Others	5	9.6	5	14.3	4	17.4	14	12.8
	X2= 15.1				P= 0.019			

Continue: Table 6 Factors associated with using energy drinks in relation to the frequency of weekly consumption

Variables	Frequency of weekly consumption						Total	
	1-3 times		4-6 times		7 times or more			
	No.	%	No.	%	No.	%	No.	%
• Common side effects								
None	24	46.2	12	34.3	4	17.4	40	36.4
Nervous/jittery	9	17.3	7	20.0	6	26.1	22	20.0
Increased urination	7	13.5	5	14.3	5	21.7	17	15.4
Insomnia	5	9.6	6	17.1	3	13.1	14	12.7
Increased heart rate	7	13.5	5	14.3	5	21.7	17	15.4
Total	52	100	35	100	23	100	110	1
	X2= 6.7				P= 0.865			

Source: Compiled by author from data obtained during fieldwork