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Prevalence of Energy Drinks Consumption among Adolescents and Young Adults in Makkah, KSA

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Abstract

Energy drinks are a carbonated beverage containing high amount of caffeine and sugar as well as added vitamins and other substances. **Objective:** to estimate the prevalence of energy drink consumption among adolescents and young adults in Makkah, KSA. **Methods**: cross sectional study was conducted during the academic year 1437 H. The study included 1190 participants. A convenience sample of 1190 participants (521 female – 669 male) were recruited of the study. They were categorized into two groups based on their age; group 1: 575adolescents (12-19 year) and group 2: 615young adults, aged (>19-25 year). Self-administered questionnaire was used to assess the prevalence of energy drink consumption. Questionnaire included five items: a) Demographic characteristics; b) Anthropometric measurements; c) Food Habits; d)Knowledge and believes; and E) Medical history. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS) program, Version 20.0.Differences between males and females in respect of frequency of energy drinks intake were assessed by conducting a Chi-Square test. P- Value of less than 0.05 was considered to indicate statistical significance. **Results**: nearly half of the participants (46.73%) were consume energy drink. About (33.33%) from young adults male were consumed energy drinks while driving. Among young adult male who consumed energy drink, about 27.2% were drank more than 2 cans per day. 43.88% of young adult male were drank energy drink in the exam period. The most favorite energy drink was Code Red. **Conclusion:** energy drinks consumption is common practice among adolescents and young adults in Makkah, Saudi Arabia. We recommend further studies to evaluate the side effects of energy drinks consumption and factors that increase the consumption between adolescents and young adults. Also we recommend that handling of energy drinks to be under the supervision of the Ministry of Health.

Keywords: Energy drinks, Adolescents, Young adults

1. Introduction

There is no standard definition of an "Energy drink", but Energy drink is a non-alcoholic drink. It contains a lot of ingredients such as caffeine, taurine (an amino acid) and vitamins **(NHS, 2014)**. There is another definition considered energy drinks as beverages contain caffeine in combination with other ingredients of herbal extracts such as ginseng, ginkgo biloba, and guarana, sugar derivatives, including glucuronalactone and ribose, amino acids such as taurine, derivatives of amino acid as carnitine, and B vitamins. These ingredients provide the consumers with extra energy **(Backer and Baeissa, 2014)**. Other definition has defined energy drinks as caffeinated beverage designed to enhance alertness and provide a huge of energy **(Faris, 2014)**.

Originally energy drinks were introduced firstly in Japan during the 1960s, and became increasingly popular in Europe during the 1980s and 90s, possibly due to the rise of rave culture **(NHS, 2014)**. Hence, more than 500 new energy drinks had been launched worldwide by 2006, and beverage companies were reaping the financial rewards of the 5.7-billion-dollar energy drink industry **(Bawazeer and AlSobahi, 2013)**. In 2013, the global market for these beverages was more than 39 billion United States dollar (US). It is estimated that in 2021 the global value of energy drinks market will exceed 61 billion US dollar **(Research and Markets, 2015)**.

There are many brand names of energy drinks such as Red Bull, Monster, Rockstar, Full Throttle, Daredevil, Havoc, Rage, Bawls, Who's Your Daddy, Whoop Ass, and Extreme Ripped Force **(Tripathi, 2011)**. Some of the more purchased brand names in Saudi Arabia are: Red Bull, Bison, Power Horse, Bugzy, Code Red and Boom Boom **(Backer and Baeissa, 2014)**.

Several behavioral problems are positively associated with frequent consumption of energy drinks. These problems such as fighting, substance abuse, smoking, failure to wear a seatbelt, and drinking alcohol **(Musaiger and Zagzoog, 2013)**. Increased use has come with increased problems, and adolescents make up a significant portion of those negatively impacted by heavy caffeine use. In 2011, nearly 1500 energy-drink-related emergency department visits by individuals aged 12 to 17 were reported **(Polak *et al.*, 2016)**.

Caffeinated drinks are frequently consumed by children and adolescents to enhance academic achievement and athletic performance. Some young athletes consume caffeinated drinks encouraged by coaches **(Temple, 2009)**.

It was reported that energy drinks are available to buy in more than 140 countries, and half of the consumers of these drinks consisted of children, adolescents, and young adults **(Musaiger and Zagzoog, 2013)**. In the European Union, it is estimated that 30% of adults and 68% of adolescents consume energy drinks **(NHS, 2014)**. Moreover, the consumption of energy drinks tested in 16 European countries proved to be even higher, nearly 68% of adolescents (10–18 years) and 18% of children (3–10 years) report consuming energy drinks **(Agostoni *et al*., 2015)**. In Germany, energy drinks are consumed by 30%-50% of adolescents and young adults **(Musaiger and Zagzoog, 2013)**, while in Turkey, the prevalence reported was 32.6% **(Bawazeer and AlSobahi 2013).** In United Arab Emirates, 92% of college students have consumed energy drinks **(Musaiger and Zagzoog 2013)**. Regarding to the prevalence of consumption, the highest energy drinks consumption is among secondary school and university students, decreasing in older age groups. These drinks are consumed by 30%–50% of adolescents, with 31% of 12–19-year-olds admitting to regular energy drinks consumption **(Seifert *et al.*, 2011**; **Sanchis *et al.*, 2015**; **Higgins *et al.*, 2015)**.

Studies on the consumption of energy drinks in Saudi Arabia are scarce, despite the obviously noticed consumption of these drinks in different community setting. This notice was reinforced by the Global Energy Drinks Report 2012, which unraveled that Saudi Arabia was ranked among the top ten countries with the consumption of energy drinks **(Faris, 2014)**. In Jeddah, 31.9% of males and 24.7% of females consume energy drinks 1-2 days per week **(Musaiger and Zagzoog, 2013)**, and In Hail, about 46% of the study participants consume energy drinks **(Faris, 2014)**. For these reasons the present study aimed to estimate the prevalence of energy drinks consumption among adolescents and young adults in Makkah, KSA.

2. Subjects and methods

2.1. Design:

A cross-sectional study was conducted during the academic year 1437 H. The study included 1190 participants.

2.2. Subjects:

A convenience sample of 1190 participants (521 female – 669 male) were recruited of the study. The participants were students from different public schools and different medical and applied medical sciences departments of Umm Al-Qura University (UQU).They were categorized into two groups based on their age; group 1: 575 adolescents (12-19 year),and group 2: 615young adults, aged (>19-25 year).

2.3. Settings and Protocol:

The study was carried out at both schools and colleges in Makkah, Saudi Arabia. Schools and colleges are affiliated to the Ministry of Education. The study includes both Saudi and non-Saudi students. Approval of research was obtained from the Clinical Nutrition department administration and schools administrators. All students were informed about the nature and the purpose of the study. They were also informed that their participation in this study is voluntary and they have the right to withdraw at any time without any penalization, and all their answers will be kept confidential and anonymous.

2.4. Tools:

Self-administered questionnaire:

The questionnaire was included five sections: a) Demographic characteristics: age, gender, number of family member, family income and the level of mother's education; b) Anthropometric measurements: included the weight, height, and body mass index (BMI) for the participants; c) Medical history: It included questions about the medical history of the studied participants such as sleeping disorders, severe thirst, or headaches, etc.; d) Food Habits: it included questions focused on number of meals per day and the practice of energy drinks consumption; e) Knowledge and believes: the questions in this section were focused on the participant knowledge and believes about composition and impact of energy drinks.

The validity of the questionnaire was verified by a pilot study in which 20 questionnaires were evaluated. Based on the comments, collected several questions from the final questionnaire were modified to improve clarity. These questionnaires were not processed in the final analysis.

Questionnaires were distributed among the female students between regular class periods, and for male, questionnaire was distributed as an electronic form. Both were encouraged to answer honestly.

2.5. Measurements:

Body weight was measured for females using an electronic scale. Participants were asked to remove their heavy outer garments and their shoes. Height was measured by using a measuring tape, with the shoulders in relaxed position and arms hanging freely. BMI was estimated by dividing weight in [kg] by height squared meter (m^2). Participants whose age >19-25 was measured and categorized according to their BMI which categorized based on the following criteria of CDC (table A).

Table (A): Categories of BMI (CDC, 2015)

BMI(kg/m^2)	Classification
<18.5	Under weight
18.5 to 24.9	Healthy weight
25 to 29.9	Over weight
>30	Obese

BMI for the participants whose age 12-19 was measured and categorized by using BMI for age Saudi growth chart for girls, ~~(see Appendix 3)~~, and BMI for age Saudi growth chart for boys ~~(see Appendix 4)~~, according to the following criteria of CDC (table B). From the same age group, 112 participants of boys were excluded from measuring BMI, because the resources were not available to take the measurements.

Table (B): Categories of BMI for age(CDC, 2015)

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Normal or Healthy Weight	5th percentile to less than the 85th percentile
Overweight	85th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

2.6. Statistical analysis:

Collected data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) program, version 20.0. Descriptive statistics were run to summarize the collected data, and the results were displayed in frequencies and percentages. Differences between males and females in respect of frequency of intake were also assessed by conducting a Chi-Square test. P- Value of less than 0.05 was considered to indicate statistical significance.

3. Results

3.1. Socio-demographic data and weight status of the participants

The socio-demographic characteristics of the study sample are presented in table (1). (56.2%) of the students were male, while female students represented (43.8%) of the sample. Regarding the number of family member, (75.9%) of students had a more than 5 members in the family. Moreover, (56.8%) of the sample had family income of >9000 Saudi Riyal (SR) per month, and more than half of students had mother's educational level of Secondary or university.

Regarding weight status of the participants, table (2) shows the distribution of participants according to the body mass index (BMI). The results showed that (68.8%) of female students were normal weight compared to (37.2%) of male students. About (30.5%) of male students were overweight, while from female students (12.7%) were overweight. There was highly statistically significant difference between male and female students regarding their weight status.

3.2. Medical history:

Results of medical history of the sample (table3) revealed that both males and females participants were comparable regarding the suffering from severe thirst, hypertension, and heart disease (p >0.05). On the contrary, there are highly significant differences between males and females in relation to the sleeping disorders, suffering from headache**,** and smoking behavior**.**

3.3. Energy drinks consumption:

Figure 1 shows that out of the 1190 studied participants (46.73%) were consumers, and more than half of the participants (53.27%) were non-consumers. Figure 2 shows the distribution of consumption between male and female. The result demonstrated that (70.33%) from male were consumed energy drinks, compared to (29.67%) from female. Also figure 3 demonstrates the distribution of consumption among adolescents and young adults. The results showed that more than half (55.39%) of young adults were consumed energy drinks, compared to (44.61%) of adolescents. For the

habit of drinking energy drinks while driving, figure 4 shows the distribution of male sample according their responses regarding the consumption of energy drinks while driving. The results demonstrated that (33.33%) from male of age >19-25 were consumed energy drinks while driving, and (46%) from the same age group were sometimes consumed compared to (20.67%) were not consumed.

Table (4) showed the distribution of sample according to their consumption of energy drinks habits. Regarding to the consumption of energy drinks among male and female, the results showed that among male of age >19-25, 15.96% were consumed energy drinks and (47.07%) were consumed it sometimes compared to (7.95%) consumed and (21.76%) sometimes consumed energy drinks from female of the same age group. Moreover, from male and female of age group 12-19 that consume energy drinks, (14.29%) and (11.7%), respectively, consumed energy drinks daily, while from age group >19-25, (12.66%) and (8.45%) of male and female, respectively, were daily consumed energy drinks. Also, from the studied sample who daily consume energy drink, (27.28%) of male of age 12-19, and (50%) from the female of age >19-25 were consumed more than 2 cans of energy drinks per day. Almost half of the male of group age >19-25 who consumed energy drinks were consumed energy drinks during the exam periods, and to overcome the apathy and lethargy (43.88% and 41.35% respectively).

3.4 Knowledge and believes

Table (5) shows the distribution of sample according to their knowledge and believes. The results revealed that (18.09%) from male of group >19 – 25 year versus (17.99%) from female of the same group were believed that energy drinks increase the ability to concentrate. Moreover, (63.48%) of the male of age 12-19 year and (77.13%) of the male of age >19-25 versus (69.15%) of the female of age 12-19 year and (86.19%) of the female of age >19-25 were believed that energy drinks contain caffeine. Regarding the knowledge about if energy drinks contain vitamins or not, the study showed that (11.17%) of men aged >19-25 believed that the energy drinks contain vitamins against (5.86%) of women in the same age group.

4. Discussion

Energy drinks refer to beverages that contain caffeine in combination with other ingredients that claims to provide its consumers with extra energy. Energy drinks are widely promoted as products that increase alertness and enhance physical and mental performance. Furthermore, consumption has grown very rapidly since they were first introduced in Saudi Arabia at the beginning of 2000. It has been estimated that the energy drinks market will double its income in Saudi Arabia between 2012 and 2016 **(Business Monitor International, 2012)**.

Results of the current study indicate that about (46.73%) of the study participants in Makkah were energy drinks consumers. In agreement with (46%) in Hail (Faris, 2014), and nearly agreement with (51%) in United State **(Malinauskas *et al*., 2007)**, and Ghana (62.2%) **(Buxton and Hagan, 2012)**.

The result revealed that the majority of consumers (70.33%) were male, while (29.67%) of consumers were females. These findings are similar to the result in King Fahad Medical City in Saudi Arabia, which found that higher proportion of consumption (76.6%) in males group, compared to less consumption (23.4%) in females group **(Mustafa *et al.*, 2015)**. In addition, this study agreed with another study who found that men consumed energy drinks more than women (**Faris, 2014)**. Another study performed on students from a university of the central Atlantic region of the United States reported a significant higher proportion of females consuming energy drinks compared to males (53%, 42%), respectively **(Malinauskas *et al.*, 2007).** This finding conflicts with our result.

The study found that (50.08%) of the young adults were consumed energy drinks. This result agreed with **(Seifert *et al.,* 2011)** who reported that energy drinks were consumed by (50%) of young adults. On the other hand, this percentage is less than what was reported in **(Mustafa *et al*., 2015)** who revealed that the total consumption among young adults was (71%), and the least compared to Jacob et al., (2013), who reported that (92%) of college students were consumed energy drinks.

The results of the present study found that (63.03%) from young adults males, and (29.71%) from females, were energy drinks consumers. This result was nearly agreement with another study showed that energy drinks consumption among young adults was (61.5%) for males and (12.3%) for females **(Bawazeer and Alsobahi, 2013)**.

Regarding to adolescents, our result indicates that (43.13%) of the adolescents were energy drinks consumers, (62.09%) from male, and (37.9%) from female. These findings agreed with **(Musaiger and Zagzoog, 2013)** who found that (45%) of adolescents were drunk energy drinks, (71.3%) from male, and (35.9%) from females. Also the result was nearly agreement with (Seifert et al., 2011) who found that 30% of adolescent were consumed energy drinks

Regarding the anthropometric measurements, we assessed the weight status of the participants according to the body mass index (BMI) that possibly be correlated with energy drinks consumption. Current study showed higher incidence of overweight and obesity between males group compared to their counterparts females. We found that (30.5%) of males group are considered overweight, and (19.6%) are obese, on the other hand, (12.7%) and (7.9%) of the females group are overweight and obese, respectively. These findings could be positively correlated with energy drinks consumption. This study was reported about half (52.56%), and more than half (63.03%) of adolescents and young adults of males group, respectively, were energy drinks consumer, either regularly or sometimes, compared to lower prevalence amongst females (33.33%) in adolescents, and (29.71 %) in young adults females. These results showed an agreement with several reports of **(Gibson, 2008) and (Salmon *et al.*, 2006)** that have indicated a relationship between energy drinks and sugar-sweetened soft drinks, and the increased incidence of obesity amongst children and adolescents. In the last decades, increased incidence of obesity has been correlating with the dramatic increase in energy drinks consumption**,** a matter that requires more research and further clarification to assess the obesogenic effect of energy drinks. In support of these studies, **(Seifert *et al*., 2011)** have shown that additional calories from energy drinks consumption may increase blood glucose levels, BMI, and low self-esteem. Further, poor-quality sleep that is one of the adverse effects of caffeine is associated with elevated BMI and development of metabolic disorders **(Hong, 2013)**. Interestingly, there is some limited evidence showed that consumption of low-calorie energy drinks during training or weight loss trials may provide ergogenic benefit and promote a small amount of additional fat loss. Theoretically, ingestion of energy drinks prior to exercise may increase energy expenditure, which over time could help manage and promote weight loss. In support of this theory, studies have shown that ingestion of caffeine (e.g., 200-500 mg) can increase acute (1-24 hours) energy expenditure, chronic (28 days) energy expenditure, and elevate plasma free-fatty acid and glycerol levels. Collectively, these findings suggest that the stimulant properties of caffeine contained in energy drinks beside the other ingredient such as synephrine and l-carnitine, can elevate an individual metabolic rate as well as elevate the rate of lipolysis in the body and promote weight loss, but still no known effects of these additional ingredients at dosages found in energy drinks **(Campbell *et al*, 2013).**

Results of the medical history of the sample revealed that both males and females participants were comparable regarding the suffering from severe thirst, hypertension, and heart disease ($p > 0.05$). On the contrary, there are highly significant differences between male and female in relation to the sleeping disorders, suffering from headache, smoking behavior, and diabetes. Our study reported that headache are the most noted health issue in our sample, which represents (16.89%), followed by insomnia and sleeping disorders (11.7%). This problem is touched on by other studies. For example; **(Mustafa *et al*., 2015)** found that the use of energy drinks was mostly associated with the side effects of headache (14%) followed by palpitations (13%), and the majority of the sample of that study did not report any side effects associated with the use of energy drinks. Many previous studies have reported similar side effects **(Attila and Cakir, 2011).** Also (**Bawazeer and Alsobahi, 2013)** reported heart palpitations (20%) as the most common side effect of energy drinks, then insomnia (10%), headache and tremors (5.7%).

A positive association was found between frequent consumption of energy drinks and behavioral problems such as smoking, which showed that smokers consume energy drinks more commonly than non-smokers **(Ibrahim *et al.*, 2014)**. This result is agreed with our study which found that males group were consumed energy drinks more than females, (70.33%, 29.67%), respectively, and regarding to smoking behavior, the results showed that (31.1%) of males were smoker, compared to (7.7%) of their females counterparts. More research in the Gulf Co-operation Council states should examine the association of energy drink consumption with risky behaviors such as smoking, and mixing energy drinks with nonmedical prescription drugs (Alhyas et al., 2015).

In the current study, we found that (13.3%) of adolescents drank energy drinks on a daily basis, of them (21.2%) drink more than two cans per day. This percentage is less than that reported in **(Faris, 2014)**, who found that (64%) of energy drinks consumers drink it on a daily basis, and (36%) of the daily consumers drink more than two cans every day.

Several reasons for using energy drinks have identified from the reviewed studies. The current study revealed that almost more than half of the male of group age >19-25 who consumed energy drinks were consumed or sometimes consumed energy drinks during the exam periods, and to overcome the apathy and lethargy (62.02%, 73.84%), respectively. The result in agreement with **(Alhyas *et al*., 2015)** who reported that university students frequently mentioned using energy drinks to boost their energy for studying especially during exams. Another study in the Faculty of Medicine, King Fahad Medical City, reported that the most important reasons for energy drink use included studying **(Mustafa *et al.*, 2015).** Also **(Bawazeer and AlSobahi, 2013)** found that the

students consumed energy drinks to get energy in general (32.8%) and while studying for exams or finishing a project (31.4%).

About (81.03%) of the male students of group age >19-25 were consumed energy drinks before exercise to improve athletic performance. This finding was agreed with the result of **(Alhyas *et al.*, 2015),** who revealed that university students frequently mentioned using energy drinks to promote athletic performance.

In this study, almost half of the young adults of males and females were thought that energy drinks help to stay up late (52.66%, 52.3%), respectively. Also **(Faris, 2014)** mentioned that different factors had been reported to trigger adults and adolescents to consume energy drinks, such as for being more active and energized, enjoying the taste, stay awake for a longer time, or to improve the physical and mental activities.

The study revealed that (33.33%) from male of young adults group were consuming energy drinks, and (46%) from the same group were sometimes consuming energy drinks while driving. This result was in agreement with the result of (Mustafa et al., 2015)who agreed that energy drink consumption is a popular practice among college students to enhance alertness or provide a short-term energy boost which creates a need for more energy in general, and while driving an automobile for a long period of time. Another result of (Malinauskas et al., 2007) was agreed with our result, which found that students consumed energy drinks while driving a car for a long period of time was (45%). In Saudi Arabia, females are not allowed to drive a car, which explains why none of the female consumed energy drinks for this particular reason (Bawazeer and AlSobahi, 2013).

Regarding the favorite energy drink, the study revealed that most of the students who consume energy drinks, Code Red was there favorite energy drink [(70.14%) of males and (65.96%) of females from the age group of 12-19, and (61.18%) of males and (52.11%) of females from the age group of >19-25]. This result disagreed with **(Mustafa *et al*., 2015)**, who found that Red Bull was the most popular energy drink in the study. In addition, our result was disagreed with **(Faris, 2014)**, who found that 260 (28.82%) of energy drink consumers commonly consume Bison. This change in popularity from year to year could be due to advertisement, word of mouth between students or price change that happened in that period.

According to the knowledge and believes, this study found that (59.3%) of adolescence did not believe that energy drink helps to improve concentration and focus. Regarding this point, the result of **(Jacob *et al*., 2013)** found that around (85%) of the respondents thought that energy drinks would enhance cognitive performance and brain development.

Current study showed that more than half (52.52%) of young adults thought that energy drinks help to stay up late. Furthermore, **(Alsunni and Badar, 2011)** were conducted a study on university student which found that the reason for consume energy drinks to stay awake longer, was the next commonest reason after giving company to friend, in both males (21.25%) and females (22.58%).

In the study, we found that (82.94%) from males of age group 12-19 years versus (81.21%) from females of the same age group were not familiar with energy drinks components. Also in **(Musaiger and Zagzoog 2013),** about half of the adolescents (47% male; 52.3% female) did not know the ingredients of the energy drinks ($p<0.006$). Moreover, another study showed that more than two thirds (69.6%) of females secondary school students did not even know the active ingredients of energy drinks **(Aluqmany *et al*., 2013).**

Caffeine is the main active ingredients of the energy drinks, our findings revealed that (63.48%) from male of age group 12-19 years, and (69.15%) from female of the same age group were known the main component. In agreement with (**Musaiger and Zagzoog, 2013),** (53.2%) of males and (48.3%) of females were known that these drinks contained caffeine ($p<0.001$). On the contrary, another earlier study reported that more than half of the students knew about one or more components of energy drinks but a large number did not know about the presence of caffeine **(Alsunni and Badar, 2011).**

Regarding the knowledge about vitamins content in the energy drinks, **(Musaiger and Zagzoog, 2013)**revealed that (27.2%) of males and (5.8%) of females were known that energy drinks contain vitamins ($p<0.001$). In agreement with this study, we found that (11.17%) of men aged >19-25 believed that energy drinks contain vitamins against (5.86%) of women in the same age group. The higher prevalence of energy drinks consumption amongst males group could be positively correlated with their knowledge about its vitamins content, which can lead to claimed health related benefits of energy drinks.

A soft drink is a drink that typically contains carbonated water, sweeteners, and either natural or artificial flavors. In fact, there are manifest differences in the ingredients of energy dinks and soft drinks. In **(Musaiger and Zagzoog, 2013),** the majority of adolescents (67%) viewed energy drinks as soft drinks. However, in our study

(81.91%) of the adolescents were known that energy drinks are differ from soft drinks. This revealed a great improvement of awareness towards the nature of energy drinks during the last two years.

Conclusion

In conclusion, the researchers concluded that the consumption of energy drinks is relatively high amongst adolescents and young adults. The consumption of male (70.33%) ishigher than of female (29.67%), and in adolescents (44.61%) was less than in young adult (55.39%). Also (52.66%) of adults male and (52.3%) of female adults werebelieved that energy drinks help to stay up late, and about(33.33%) from male of age >19-25 were consumed energy drinks while driving. It is clear from the results that this phenomenon spreads highly among adolescents and young adults in Saudi Arabia, so the researchers recommend further studies to investigate the factors associated with energy drink consumption among adolescents and young adults. Also it is important to recommend that the handling of energy drinks must be under the supervision of the ministry of health.

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Table (1): Demographic, social, and economical characteristic of the participants

Variable	Frequency	%
Age (year)		
12-19		
Male	293	51.0
Female	282	49.0
Total	575	100
>19- 25		
Male	376	61.1
Female	239	38.9
Total	615	100
Gender		
Male	669	56.2
Female	521	43.8
Total	1190	100
Family member		
≤ 3	63	5.3
4	82	6.9
5	142	11.9
>5	903	75.9
Total	1190	100
Monthly income level		
≤ 3000	137	11.5
>3000 -5000	147	12.4
>5000 – 9000	230	19.3
>9000	676	56.8
Total	1190	100
Mother's educational level		
Master or PhD	193	16.2
Secondary or university	650	54.5
Primary or intermediate	278	23.4
Illiterate	70	5.9
Total	1190	100

Table (2): Classification of sample based on weight status **(*M= 557/ **F=521)**

Weight status	Male		Female		*P*
	N	%	N	%	
Under weight	71	12.7	55	10.6	0.000
Normal weigh	207	37.2	359	68.8	
Over weight	170	30.5	66	12.7	
Obese	109	19.6	41	7.9	
Total	557	100.0	521	100.0	

* M= Male ** F= Female

Table (3): Distribution of sample according to the medical history

Medical History Questions	Male		Female		*P*
	No.	%	No.	%	
Sleeping disorders and insomnia					
Yes	71	10.6	69	13.2	
Sometimes	283	42.3	278	53.4	.000
No	315	47.1	174	33.4	
Total	669	100.0	521	100.0	
Suffer from severe thirst					
Yes	95	14.2	59	11.3	
Sometimes	277	41.4	195	37.4	.051
No	297	44.4	267	51.2	
Total	669	100.0	521	100.0	
Suffer from headache					
Yes	77	11.5	124	23.8	
Sometimes	296	44.2	243	46.6	.000
No	296	44.2	154	29.6	
Total	669	100.0	521	100.0	
Suffer from heart palpitation					
Yes	62	9.3	66	12.7	
Sometimes	206	30.8	186	35.7	.019
No	401	59.9	269	51.6	
Total	669	100.0	521	100.0	
A smoker					
Yes	145	21.7	16	3.1	
Sometimes	63	9.4	24	4.6	.000
No	461	68.9	481	92.3	
Total	669	100.0	521	100.0	
Have diabetes					
Yes	10	1.5	3	0.6	
No	659	98.5	518	99.4	.047
Total	669	100.0	521	100.0	
Have hypertension					
Yes	13	1.9	15	2.9	
No	656	98.1	506	97.1	.156
Total	669	100.0	521	100.0	
Suffer from heart disease					
Yes	6	0.9	4	0.8	
No	663	99.9	517	99.2	0.269
Total	669	100.0	521	100.0	

Table (4): Distribution of sample according to their food and consumption of energy drinks habits

Variable	Male				Female			
	12-19		>19-25		12-19		>19-25	
	N	%	N	%	N	%	N	%
How many meals do you take in a day?								
> 4	22	7.03	18	4.79	20	7.09	14	5.86
3-4	167	59.74	198	52.66	121	42.91	93	38.91
< 3	104	33.23	160	42.55	141	50.0	132	55.23
Total	293	100.0	376	100.0	282	100.0	239	100.0
Do you consume energy drinks?								
Yes	43	14.68	60	15.96	26	9.22	19	7.95
Sometimes	111	37.88	177	47.07	68	24.11	52	21.76
No	139	47.44	139	36.97	188	66.67	168	70.29
Total	293	100.0	376	100.0	282	100.0	239	100.0
If you drink it, How often do you drink it?								
Daily	22	14.29	30	12.66	11	11.71	6	8.45
3-6 in a week	29	18.83	45	18.98	9	9.57	5	7.04
< 3 in a week	103	66.88	162	68.36	74	78.72	60	84.51
Total	154	100.0	237	100.0	94	100.0	71	100.0
If daily, How many cans in a day?								
1	8	36.36	14	46.67	5	45.45	1	16.67
2	8	36.36	10	33.33	5	45.45	2	33.33
>2	6	27.28	6	20.00	1	9.10	3	50.0
Total	22	100.0	30	100.0	11	100.0	6	100.0
What is your favorite energy drink?								
Red Bull	10	6.49	56	23.62	11	11.71	17	23.94
Code Red	108	70.14	145	61.18	62	65.96	37	52.11
Power Horse	6	3.89	22	9.28	4	4.25	5	7.04
Others	30	19.48	14	5.92	17	18.08	12	16.91
Total	154	100.0	237	100.0	94	100.0	71	100.0
Do you consume energy drinks in the exam period?								
Yes	6	3.89	43	18.14	11	11.71	10	14.08
Sometimes	44	28.57	104	43.88	24	25.53	18	25.35
No	104	67.54	90	37.97	59	62.76	43	60.57
Total	154	100.0	237	100.0	94	100.0	71	100.0
Do you consume energy drinks to overcome the apathy and lethargy?								
Yes	20	12..98	77	32.49	12	12.76	10	14.08
Sometimes	33	15.38	98	41.35	18	19.15	11	15.49
No	101	65.58	62	26.16	64	68.09	50	70.43
Total	154	100.0	237	100.0	94	100.0	71	100.0
Do you consume energy drinks for the purpose of improving athletic performance?								
Yes	7	4.54	19	8.02	2	2.12	0	0.00
Sometimes	11	7.14	34	14.35	9	9.57	4	5.64
No	136	88.32	184	77.64	83	88.29	67	94.36
Total	154	100.0	237	100.0	94	100.0	71	100.0
If yes or sometimes, when?								
Before exercise	11	61.12	47	81.03	5	45.46	2	50.0
During exercise	1	5.55	2	3.45	3	27.27	0	0.0
After exercise	6	33.33	9	15.52	3	27.27	2	50.0
Total	18	100.0	58	100.0	11	100.0	4	100.0

Table (5): Distribution of sample according to their knowledge and believes

Variable	Male				Female			
	12-19		>19-25		12-19		>19-25	
	N	%	N	%	N	%	N	%
Do you think that energy drinks increase the ability to concentrate?								
Yes	32	10.92	68	18.09	22	7.8	43	17.99
No	166	56.66	212	56.38	175	62.06	151	63.18
I don't know	95	32.42	96	25.53	85	30.14	45	18.83
Total	293	100.0	376	100.0	282	100.0	239	100.0
Do you think that energy drinks help to stay up late?								
Yes	116	39.59	198	52.66	110	39.01	125	52.3
No	100	34.13	132	35.11	101	35.82	74	30.96
I don't know	77	26.28	46	12.23	71	25.18	40	16.74
Total	293	100.0	376	100.0	282	100.0	239	100.0
Do you think that energy drinks contain caffeine?								
Yes	186	63.48	290	77.13	195	69.15	206	86.19
No	107	36.52	86	22.87	87	30.85	33	13.81
Total	293	100.0	376	100.0	282	100.0	239	100.0
Do you know what the components of energy drink are?								
Yes	50	17.06	134	35.64	53	18.79	67	28.03
No	243	82.94	242	64.36	229	81.21	172	71.97
Total	293	100.0	376	100.0	282	100.0	239	100.0
Do you think that energy drinks contain vitamins?								
Yes	25	8.53	42	11.17	25	8.87	14	5.86
No	268	91.47	334	88.83	257	91.13	225	94.14
Total	293	100.0	376	100.0	282	100.0	239	100.0
Do energy drinks differ from soft drinks?								
Yes	229	78.16	302	80.32	242	85.82	180	75.31
No	64	21.84	74	19.68	40	14.18	59	24.69
Total	293	100.0	376	100.0	282	100.0	239	100.0

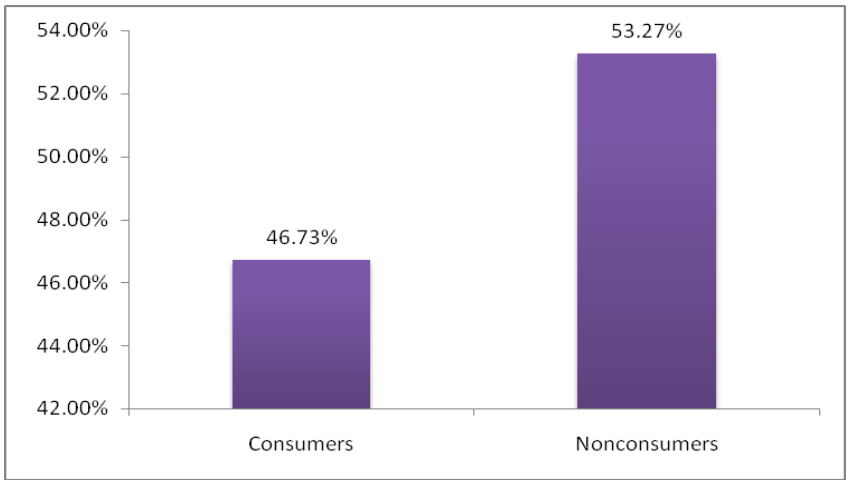

Figure (1): Distribution of energy drinks consumers and non-consumers among the participants

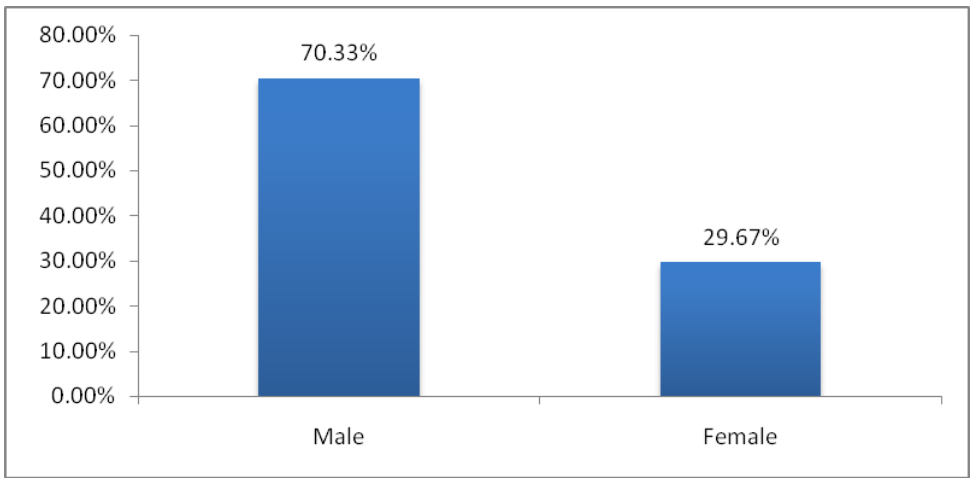

Figure (2): Distribution of consumption between male and female

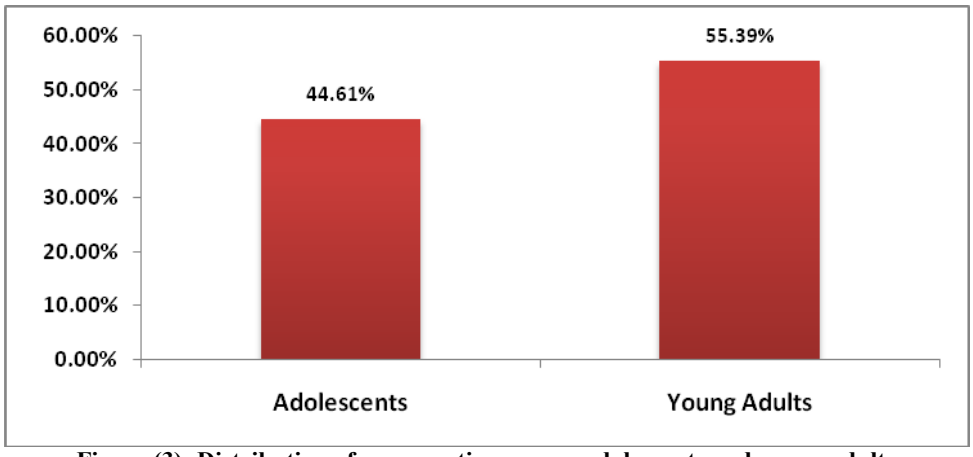

Figure (3): Distribution of consumption among adolescents and young adults

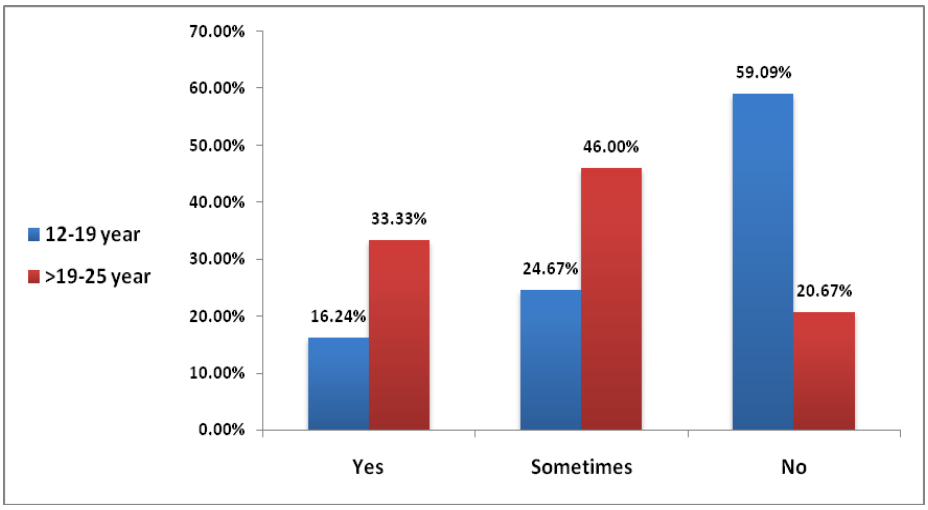

Figure (4): Distribution of male sample according their responses regarding the consumption of energy drinks while driving