



## Awareness and Reasons for Consumption of Energy Drinks among Students of Albaha University, Saudi Arabia

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### Article History

Received: 26 September 2020

Reviewed & Revised: 27/September/2020 to 31/October/2020

Accepted: 01 November 2020

E-publication: 10 November 2020

P-Publication: November - December 2020

### Citation

Abuobaida E. E.Abukhelaif, Ali Yahya B Alzahrani, Hamed Ahmed H Alghamdi, Fahad Ali S Al-Ghamdi, Abdulaziz Saleh M Alzubaidy. Awareness and Reasons for Consumption of Energy Drinks among Students of Albaha University, Saudi Arabia. *Medical Science*, 2020, 24(106), 4125-4132

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## ABSTRACT

*Introduction:* Energy drinks are widespread among university students and its consumption amongst them is of particular apprehension since this youthful group of people, busy in academic search is a best objective for the sponsors of energy drinks, with potentials to improve energy, encourage wakefulness, escalation of alertness and increase mental and physical performance, in addition students report using energy drinks as a way to help them stay awake, sharpen their examination-taking skills, or get through homework as well as drinking them during high energy activities. *Material and method:* A cross-sectional survey carried out from March 2020 to June 2020 among students of Albaha University. The total sample sizes composed of 252 males and 152 females from different faculties. A self-administrated questionnaire was designed to obtain data on student demographics, energy drink ingestion patterns, linked adverse effects, and awareness of the harmful properties of energy drinks. Data were analyzed using SPSS program version 24 (SPSS, Inc, Chicago, IL, USA). *Results:* A total of 450 questionnaires were administered and 404 questionnaires were completed by the participant. Two thirds of respondents 252(62.4%) were males' with mean age of 20.6 years, and females 152(37.6%) with mean age of 20.8 years. Fifty two percent of them (211; 52.4%) reported current use of energy drinks, with males (56.3%) showed more usage than females (42.4%); ( $p = 0.001$ ), and those who were more elderly were least likely to use EDs ( $p = .001$ ). Drives let the respondent to consume EDs, showed that students use energy drinks for different reasons among these, 55.4% of the respondents said that enhancing academic performance (Studying for exams) was the main purpose for using energy drinks, followed by "to keep awake and improved alertness and attention as for driving" (17%) and "Increased physical activity" (13%), whereas only 11.7% ( $n = 47$ ) did not show any reason for their using energy drinks. The effects on health that the respondent feel after consumption of energy drinks, most students surveyed, 58.2% tell that energy snacks they used were harmless, and (66.7%) agreed that energy drinks were a good source of energy and increased their physical activity, 44.7% felt that the drinks Improved alertness and attention and increase their ability to stay awake while 22.6% show unpleasant effects. *Conclusion:* Low consumption rate of energy drinks among Albaha University students, with unsatisfactory knowledge about health risk of energy drinks. There is a necessity to educate students about the prospective dangers of EDs and more research and associated improved public awareness is needed about energy drinks and understanding of their effects.

**Keywords:** Energy Drinks, university Student, Awareness, Albaha

## 1. INTRODUCTION

Energy drinks are type of beverages having increased nutritious value due to added vitamins and minerals that have shown vigorous worldwide growth in attractiveness (Reissig et al., 2009). In Saudi Arabia each year, new energy drinks become obtainable (Sulaiman O. Aljaloud, 2016). Energy drink intake has become widespread among university students (Oterivet et al., 2007) and also is considered an emerging health risk behavior among students at Saudi Universities (Alsunni & Badar, 2011; Ghaith & Ibrahim, 2020; Alamri, 2020). These energy drinks are widespread among university students and its consumption amongst them is of particular apprehension since this youthful group of people, busy in academic search is a best objective for the sponsors of energy drinks, with potentials to improve energy, encourage wakefulness, escalation of alertness and increase mental and physical performance, in addition students report using energy drinks as a way to help them stay awake, sharpen their examination-taking skills, or get through homework as well as drinking them during high energy activities or using the masa mixer with alcohol (Pennay et al., 2011; Abdulghani et al., 2013) Although energy drinks are branded to help prevent sleepiness, moderate tiredness, and temporarily augment concentration for work or academics when drunk within reason (Malinauskas et al., 2007; McLellan & Lieberman, 2012), overconsumption of energy drinks can also cause various health problems and side effects such as tachycardia, hypertension, dehydration, and insomnia (Lohsoonthorn et al., 2013; Reissig et al., 2009) and serious withdrawal symptoms have arisen from an increased caffeine tolerance because of the overuse of energy drinks (Reissig et al., 2009; Alsunni & Badar, 2011; Arria et al., 2014; Arria & O'Brien, 2011).

In Saudi Arabia, research on the intake of energy drinks by students at different education levels is limited. A study done among students aged 13 to 18 years revealed that 80% of adolescents drink energy drinks at least once per week, with males consuming more than females (90%, 68%), (Musaiger & Zagzoog, 2005). Another study by them found that 55% of Saudi adolescents consumed energy drinks one or more times each week. In another study done by Al-Hazzaa et al., (2011) in the three central towns of Saudi Arabia (Riyadh, Jeddah, and Al Khobar), presented that 16.3% of young male age 14 and 19 years utilize energy beverages frequently every week. However, none of these studies examined a large and representative sample of youth and young adults.

Al Baha Province is the smallest of the 13 provinces of Saudi Arabia with an area of 15,000 square kilometers. To our knowledge, no study was conducted particularly in Albaha area. Therefore, the objective of this study was to access the usage patterns of energy drinks among university students in Albaha; Saudi Arabia.

## 2. MATERIALS AND METHODS

### Setting

A cross-sectional survey carried out from March 2020 to June 2020 among students of Albaha University (a university in Al Baha city, the capital of Al Baha province, Saudi Arabia. It is a community- bases university that was established in 2006).

### Sample size and sampling

Our study population constitutes of Albaha University male and female students among them a sample was drawn using multistage, stratified, cluster random sampling technique. Firstly, university students were stratified by faculties, within each faculty a simple random sample was used to ensure that each faculty was adequately represented. The minimum sample size was determined within  $\pm 0.05$  of the total students with a 95% confidence level. The total sample sizes composed of 252 males and 152 females from different faculties (i.e. The faculty of Medicine, Arts and Social Science, Engineering and faculty of Business and Commerce; including students of all study levels). The data were collected and Approval for the study was obtained from the Ethical Committee of Faculty of Medicine; Albaha University.

### Data collection

A letter clarifying the aims, assurance of confidentiality, and specification of the date, time, and place to fill in the questionnaire was provided to the selected students by their class monitors. The investigators and research assistants for data collection were educated and trained before. In addition, the students who were willing to participate were guaranteed of their right to discontinue from the study at any time and for any purpose. If a student had any query related to the questions, the investigator conveyed clarification.

### Questionnaire

A self-administrated questionnaire was designed to obtain data on student demographics, energy beverage ingestion patterns, accompanying unwanted effects, and awareness of the hostile effects of energy beverages.

The questionnaires were designed to collect data correlated to energy drink habit – significances of habit, regularity forms, kinds used most frequently, amount of drink and unwanted effects after use. The questionnaire composed of two sections. The questionnaire composed of three main sections. The first one includes some basic information (demographic) about the respondents, including sex, age, faculty, education level, and type of education. The second section which the main questionnaire consisted of twenty questions developed to assess students' awareness of the topic of soft drink. The answer scale included the type of Lickert's fivefold scale where 5 points were allocated for the answer (strongly agree), 4 points for (agree), 3 points for (neutral), 2 points for (disagree), and 1 point for the answer (strongly disagree). The third section included multiple choice questions regarding the regularity of energy drink intake and the motives that students drink or did not drink energy drinks, the time of day that energy drinks were consumed and the brands that were chosen most often. An informed consent form explaining the aims of the study which had to be completed before get into the questionnaire was circulated to all students at Albaha University using their university email accounts.

### Data analysis

Data were analyzed using SPSS program version 24 (SPSS, Inc, Chicago, IL, USA). Also descriptive statistics analysis was done with mean, median and relative frequency. *P* value of  $< 0.05$  was regarded as statistically significant.

## 3. RESULTS

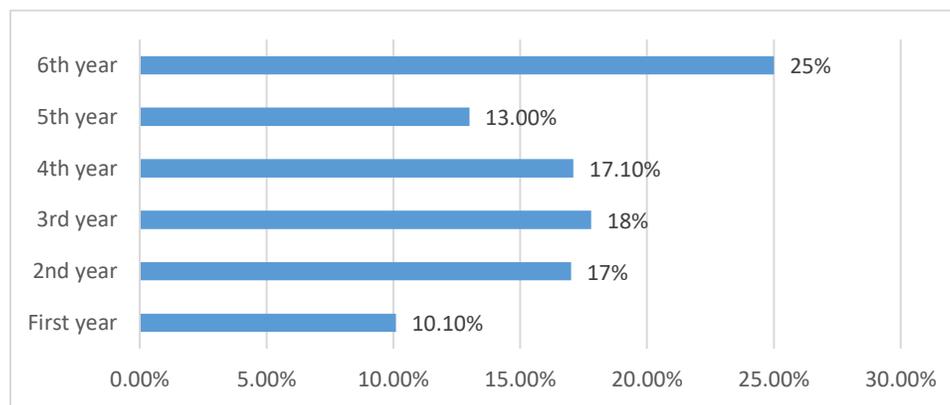
A total of 450 questionnaires were administered and 404 questionnaires were completed by the participant, with a respondent rate of 89.8%. Two thirds of respondents 252(62.4%) were males' with mean age of 20.6 years), and females 152(37.6%) with mean age of 20.8 years. Students were fairly equally distributed between those with a health related educational background (faculty of Medicine and Applied Medical Sciences) and non-health education (faculty of Administrative and financial sciences, Science, faculty of Education and The faculty of Arts and Humanities), Regarding living situation, more male than female students lived in a rented house, whereas more female than male students lived in a student house or with a family as shown in Table (1).

**Table 1.** Demographic characteristic of study participants

Items	Males 252 (62.4%)	Females 152 (37.6%)	Total 404 (100%)	P
Age in years: mean (range)	20.6 (18-28)	20.8 (17-26)	20.7 (17-28)	0.05
Academic year (%)				0.001
First year	20.0	13.5	17.1	
2 <sup>nd</sup> year	19.0	14.5	16.8	
3 <sup>rd</sup> year	16.0	17.2	16.5	
4 <sup>th</sup> year	15.1	18.0	16.5	
5 <sup>th</sup> year	13.9	19.0	16.4	
6 <sup>th</sup> year	15.2	17.8	16.5	
Type of living situation (%)				0.001
Student house	30.5	41.7	36.0	
Rented house	43.1	24.0	33.6	
With family	26.4	34.3	30.4	

### Energy drink pattern

Among respondent students, fifty two percent of them (211; 52.4%) reported current use of energy drinks, with males (56.3%) showed more usage than females (42.4%); ( $p = 0.001$ ), and those who were more elderly were least likely to use EDs ( $p = .001$ ) as shown in table (2). Energy drink consumption was most common among sixth grade students; as shown in Figure 1.

**Fig. 1.** Consumption rate of energy drinks among study participants

### Reasons for use of energy drinks

Regarding drives let the respondent to consume EDs, table (2) showed that students use energy drinks for different reasons among these, 55.4% of the respondents said that enhancing academic performance (Studying for exams) was the main purpose for using energy drinks, followed by "to keep awake and improved alertness and attention as for driving" (17%) and "Increased physical activity" (13%), whereas only 11.7% ( $n = 47$ ) did not show any reason for their using energy drinks.

### Source of information on energy drinks

As shown in table (2) most of our respondents (54.7%) told that their main source of information on energy drinks was family member or friend, followed by marketing stores (28.9%), and less than 15% of college students reported their sources of information as being online, physician, nutritionist or dietician means.

**Table 2.** Usage and information of energy drinks among study participants

Items	frequency	%	p
Do you currently take an energy drink?	211	(52.4%)	<b>0.001</b>
<b>What is the main reason of using energy drinks?</b>			<b>0.005</b>
Enhancing academic performance (Studying for exams)	234	(55.4%)	
To keep awake		17%	
Increased physical activity		13%	
For its taste		2.9%	
No specific reason		1.7%	
<b>From whom do you get information about energy drinks?</b>			<b>0.001</b>
Family or friends		54.7%	
Nutritionist or dietician		5.6%	
Marketing stores		28.9%	
Online source		7.2%	
Other		<b>3.6%</b>	

### Health effects of energy drinks

Regarding the effects on health that the respondent feel after consumption of energy drinks, most students surveyed 58.2% reveal that the energy drinks they used were safe, and (66.7%) agreed that energy drinks were a good source of energy and increased their physical activity, 44.7% felt that the drinks Improved alertness and attention and increase their ability to stay awake while 22.6% show Unpleasant effects. Among those of Unpleasant effects by the energy drinks consumers. Most (62.6%) feel arrhythmias (16.4%) feel insomnia (13.3%), increased urination and (8.7%) feel restlessness were the common side effects experienced as shown in Table 3.

**Table 3.** Effects of energy drinks among study participants

Properties	N (%)
Elevation of concentration	216 (53.6)
Awake from sleep	72 (17.8)
Recovery of fatigue	11 (2.6)
Stress relief	14 (3.4)
untoward effects	91(22.6%)

## 4. DISCUSSION

Energy drink intake has grown very fast since they were first introduced in Saudi Arabia at the beginning of 2000; and it is expected that this growth will continue. University students are the target age of the marketing campaigns that showcase and sponsor sports, racing, and athletic events to which adolescents have free access (Seifert et al., 2011).

In our study the rate in energy drinks consumption by university student in Albaha is relatively low in comparison with other areas of Saudi such as in Jeddah, Riyadh and Dammam this may be due local cultural attitudes in addition to the availability of broad range of different brands of energy drinks (Abdulrahman & Zagzoog, 2014; Seba et al., 2015).

In our study, male students showed higher proportion in consumption of energy drinks in comparison to female students this finding is similar to other studies that have reported similar findings nationally in Saudi studies (Alrasheedi, 2016; Musaiger & Zagzoog, 2013; Abdulrahman & Zagzoog, 2014), and internationally (Hidiroglu, 2013; Azagba et al., 2014). This may be referred to the characteristics of male in general because males always were ahead in taking more extortions, elaborate in extra physical activity, in addition this may due to peer companions, uncaring behavior among male university students specially during exam preparation time which let them in stress.

Our study reveal that energy drink consumption was most common among sixth grade students, this may be related to heavy load of information needed so as the student can pass the competition among other graduated medical students in addition to the

stress of external examiners and other factors. This finding needs more elaborations as we do not find similar finding during our literature search.

Regarding drives or reasons among the respondent to consume EDs, our study showed that students use energy drinks for different reasons among these, 55.4% of the respondents said that enhancing academic performance (Studying for exams) was the main purpose for using energy drinks, followed by "to keep awake and improved alertness and attention as for driving" (17%) and "Increased physical activity" (13%), whereas only 11.7% (n = 47) did not show any reason for their using energy drinks. Our finding was the same as study done at Umm Al-Qura University, Saudi Arabia (Bawazeer & AlSobahi, 2013), in which the main reason for energy drink consumption among college students was to support studying for exams or completing a project.

Our finding look not that similar to findings in other studies in which the benefits experienced by the consumers, "capability to beconscious longer at evening" was the generally utmost shared (Alabbad et al., 2019; Alsunni & Badar, 2011). Our finding is differ in this manner from a study done in the Rabigh University in Saudi Arabia in which "enjoyment" was the most common driver which reported by all the students except by those of the preparatory years, most of whom answered "no benefit" (Murad & Rafeeq, 2016). In addition, a totally different finding was in a study carried out in Hail, in which the "taste" was the topmost reason (Epuru et al., 2015). Another dissimilar finding was in another study among students at Taibah University, in which 25.6% of responders showed "increased vitality" and 20.8% "alertness" as the driver (Aluqmany, 2011).

With regard to source of information on energy drinks our study reveal that most of our respondents (54.7%) told that their main source of information on energy drinks was family member or friend, followed by marketing stores (28.9%), and less than 15% of college students reported their sources of information as being online, physician, nutritionist or dietician means. These results were similar to study done in Saudi Arabia (Sulaiman & Aljaloud, 2016) in which majority of college students (n = 185; 54.7%) reported a family member or friends as being their main source of information regarding energy beverage , followed by facts collected from retail stores , and other (n = 57; 16.9%). These finding raise a problem that need to fully addresses and discussed as university students these days depend on technology as their chief source for so many types of educational information.

Regarding the effects on health that the respondent feel after consumption of energy drinks, in our study most respondent students 58.2% reveal that the energy drinks they used were safe, and (66.7%) agreed that energy drinks were a good source of energy and increased their physical activity, 44.7% felt that the drinks Improved alertness and attention and increase their ability to stay awake while 22.6% show Unpleasant effects. Among those of unpleasant effects by the energy drinks consumers. Most (62.6%) feel arrhythmias (16.4%) feel insomnia (13.3%), increased urination and (8.7%) feel restlessness were the common side effects experienced. These findings were similar to a study from Abha; Saudi Arabia in which a correlated behavior symptoms in male and female students of hyperactivity/inattention with the consumption of energy drinks (Alsamghan et al., 2016; Ibrahim et.al., 2014; Epuru et al., 2015). In other study (Alsunni & Badar, 2011); most (52.61%) consumers reported no adverse effect of the energy drinks. Other studies (Murad & Rafeeq, 2016; Arriaet al., 2014; Arria & O'Brien, 2011; McCusker et al., 2006; Alrasheedi, 2017) reveal increased urination, insomnia, abnormal heart rhythm, and irritability were the most frequent adverse effects.

## 5. CONCLUSION

Our study showed a low consumption rate of energy drinks among Albaha University students, with unsatisfactory knowledge about health risk of energy drinks. There is a necessity to educate students about the prospective dangers of EDs and more research and associated improved public awareness is needed about energy drinks and understanding of their effects.

### Funding

This study received no specific grant from any funding organization.

### Conflict of Interest

The authors declare that they have no conflict of interest.

### Informed consent

Informed consent was obtained from all individual participants included in the study.

### Ethical approval

The study was approved by the Medical Ethics Committee of Faculty of Medicine, Albaha University (Ethical approval code - REC/PAT/BU-FM/2019/0060).

**Data and materials availability**

All data associated with this study are available upon request to the corresponding author.

**Peer-review**

External peer-review was done through double-blind method.

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