

Assessment of Attitude Towards Energy Drink and Its Consumption Pattern Among Adolescents in Saudi Arabia

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Abstract: Public consumption of energy drinks has greatly increased over the past decade with the majority of users being adolescents and adults less than 35 years of age.

The purpose of this study was to determine the prevalence of energy drink consumption and its consumption pattern among adolescent students.

Materials and methods: It was a cross sectional study. Five intermediate and secondary schools were chosen from different sectors in Riyadh city. Sample size was 300 adolescents. Data was collected using a self administered questionnaire included data evaluating attitude towards ED and its consumption pattern.

Results: Prevalence of ED consumption among adolescents in KSA was 80% and 48% of them used to consume one can or more/day. The most reported factor related to selection of a particular energy drink product was taste. To feel refreshed was the first reason of ED consumption followed by peer pressure. The most motivating advertisements to consume ED were that on TV. Males had more positive attitude towards consuming ED than females. Factors predicting healthy behavior restricting ED consumption were negative attitude towards ED and decreased number of friends consuming ED.

Conclusion: Majority of adolescents in KSA used to consume energy drinks and about half of them used to consume one can or more/day. The attitude of adolescents towards energy drinks was in the positive way especially in males.

Recommendations: Health education campaign should be directed to adolescents in KSA concerning ED and their possible health effects.

Keywords: Adolescents, energy drinks, attitude, consumption pattern.

I. INTRODUCTION

An energy drink (ED) is a type of beverage which is purported to boost mental or physical energy. They generally contain large amounts of caffeine and other stimulants. Energy drinks are targeted mainly to young adult consumers. Public consumption of energy drinks has greatly increased over the past decade with the majority of users being adolescents and adults less than 35 years of age. [1],[2] Many studies reported improvement of mental and physical performance following ED consumption. [3-6] However, these benefits pale in comparison to the adverse effects of caffeine-containing energy drinks, including increased blood pressure. [7],[8], elevated blood glucose.[9], potential to foster dehydration and/or dependence.[10]

According to a self-report survey, energy drinks are consumed by 30–50 % of young adults and adolescents in the USA [11]. There has been little research regarding energy drink consumption patterns among adolescents in the Kingdom of Saudi Arabia (KSA). The purpose of this study was to determine the attitude of adolescents towards energy drink consumption, the prevalence of energy drink consumption among adolescent students and reasons for which they are using these ED.

II. METHODOLOGY

Study design: Cross sectional

Study population: Male and female adolescent students aged (12-18) years in Riyadh city, KSA.

Sampling technique: A stratified sampling technique was used. Riyadh city includes four main sectors: North, South, East and West sector. Two lists for governmental and private high schools at each sector were made and one school was randomly chosen from each list. That made up of 8 schools. After passing through the administrative process and taking the approval from Ministry of education, 5 schools were approved, representing different sectors; 3 of them are governmental and 2 are private.

Study setting: Five intermediate and secondary schools were chosen from different sectors in Riyadh city (Named: 43 secondary school for females, 204 intermediate school for females, RowadAl Aoloum school for females, Amr bin Qais intermediate school for males, Al-Ofuq secondary school for males). Three classes were randomly selected from each school, from 1st, 2nd and 3rd grades. All students in each class were asked to participate (375 students) and 300 of them agreed to fill the questionnaire, response rate was 80%

Sample size: 133 male and 167 female

Data collection: data was collected using a self-administered Questionnaire included:

- 1- Demographic data including (age, sex, family income, academic performance, father's level of education)
- 2- Data evaluating attitude and perceived benefits of ED consumption (level of agreement with looking civilized when consuming ED, having the belief that ED has a good impact on academic performance, physical and mental health, feeling free to have ED in front of parents and teachers and thinking that ED is not suitable for pregnant women and children)
- 3- Data evaluating consumption pattern of ED such as frequency of its consumption, reasons for which they are using these ED, factors affecting selection of certain energy drink product, mixing energy drinks with other substance and usual time of its consumption during the day
- 4- Data evaluating healthy behavior restricting ED consumption such as frequency and duration since starting its consumption, trial of stopping its consumption, whether he/she usually offers it to friends or guests at home and reading the ingredient label of ED.

Statistical analysis:

Data collected were coded; tabulated and statistical analysis was done using the statistical package of social science (SPSS) version 16.0. The applied tests were chi-square and ANOVA and 0.05 level was used as a cutoff point of significance. Multiple associations were evaluated in a multiple linear regression model. This procedure allowed the estimation of the strength of the association between each independent variable and the dependent variable taking into account the potential confounding effects of the other independent variables.

Ethical approval

Formal request letters from King Saud University (KSU) were directed to each school enrolled in the study. All students enrolled in the study gave verbal consent and agreed to participate in the research. The study was conducted in accordance with the ethical standards of the KSU University.

III. RESULTS

Demographic characteristics of the study population:

Table (I) demonstrates some characteristics of the study population. Male to female ratio was nearly 1:1, while the number of adolescents from intermediate schools constituted 65.3% . As regards family size, about half of participants belonged to large families of seven or more members. Regarding monthly pocket money of the participated students, about 25% reported not having regular monthly pocket money and nearly 50% had less than 100 SR per month.

Table (1): Demographic characteristics of the population sample (n=300)

Demographic	Group	N	Percentage
Sex	Male	133	44.3
	Female	167	55.7
school stages	intermediate	196	65.3
	secondary	104	34.7
Pocket money (SR/month)	Not having regular monthly pocket money	74	24.7
	less than 100	152	50.7
	100 - 500	60	20.0
	500 – 1000	6	2.0
	More than 1000	8	2.7
Family size	3	10	3.3
	4 to 6	82	27.3
	7 to 10	153	51.0
	More than 10	55	18.3

Attitude of adolescents towards ED consumption:

Table (2) demonstrates attitude towards ED among adolescents in KSA. Most of participants had neutral attitude towards ED consumption (62.2%). It was found that positive attitude towards consuming ED was among males, those at intermediate schools and those with all of their friends consuming ED.

Table (2): Attitude towards energy drinks among adolescents in KSA

Factors	Attitude score	P value of ANOVA	
	X ± SD		
Sex			
	Male	33.5 ± 8.1	0.000**
Female	29.6 ± 7.1		
School stages			
	Intermediate	32.6 ± 7.9	0.001**
Secondary	29.5 ± 7.3		
Number of friends who drink			
	no one	31.2 ± 7.7	0.002**
	Few	30.8 ± 8.1	
	mostly	30.1 ± 7.1	
all of them	34.3 ± 8.2		

**p< 0.01

Healthy behavior (restricting ED consumption) among Adolescents in KSA:

Regarding healthy behavior (restricting ED consumption) among adolescents, it was found that more than one third of them had a poor healthy behavior and only 10.2% had a satisfied one. Table (3) illustrates factors affecting healthy behavior restricting ED consumption among adolescents. It was found that healthy behavioral score decreased significantly with both positive attitude towards ED and increased number of friends consuming ED. It was also found that healthy behavior did not change significantly with sex, adolescents' mothers working status or school stage. The multiple linear regression in table (4) shows factors predicting healthy behavior restricting ED consumption among adolescents. Factors entered the regression of model were: attitude score towards ED and number of friends consuming ED. It was found that they both can significantly predict individuals' healthy behavior.

Table (3): Factors affecting healthy behavior towards ED among adolescents

Factors	Behavior score	P value of ANOVA
	X ± SD	
Sex		
	Male	13.4 ± 3.0
Female	13.2 ± 2.4	
attitude category		
	negative	15.8 ± 1.7
neutral	13.9 ± 2.7	

positive	12.4 ± 2.5	
the work of mother		0.5
work	13.4 ± 2.7	
House-wife	13.2 ± 2.5	
Number of friends who drink		0.004**
no one	14.2 ± 2.6	
Few	14.1 ± 2.4	
mostly	13.4 ± 2.8	
all of them	12.5 ± 2.6	

**p< 0.01

Table (4): Multiple linear regression analysis for variables predicting healthy behavior restricting ED consumption

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	SE	Beta		
(Constant)	18.541	.872		21.262	.000
attitude score towards ED	-.102	.021	-.289	-4.889	.000
Number of friends who consume ED	-.621	.189	-.194	-3.289	.001

a dependent variable: healthy behavior score SE, Standard error t, corresponding t value

Consumption pattern of ED among adolescents in KSA:

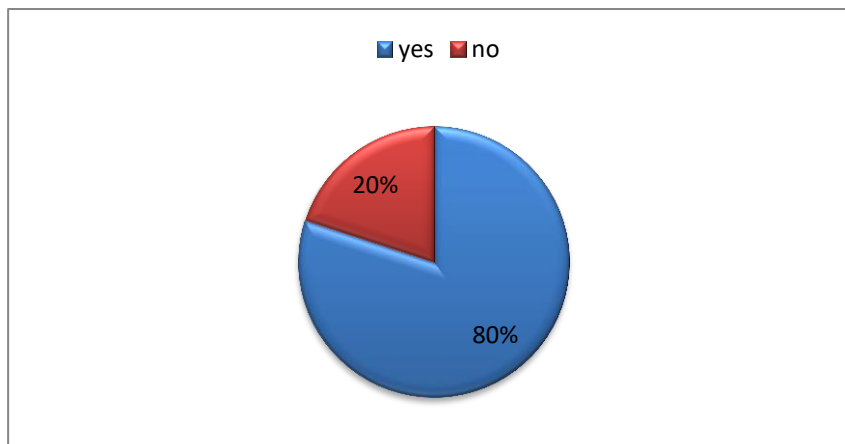


Figure (1): Prevalence of ED consumption among adolescents in KSA

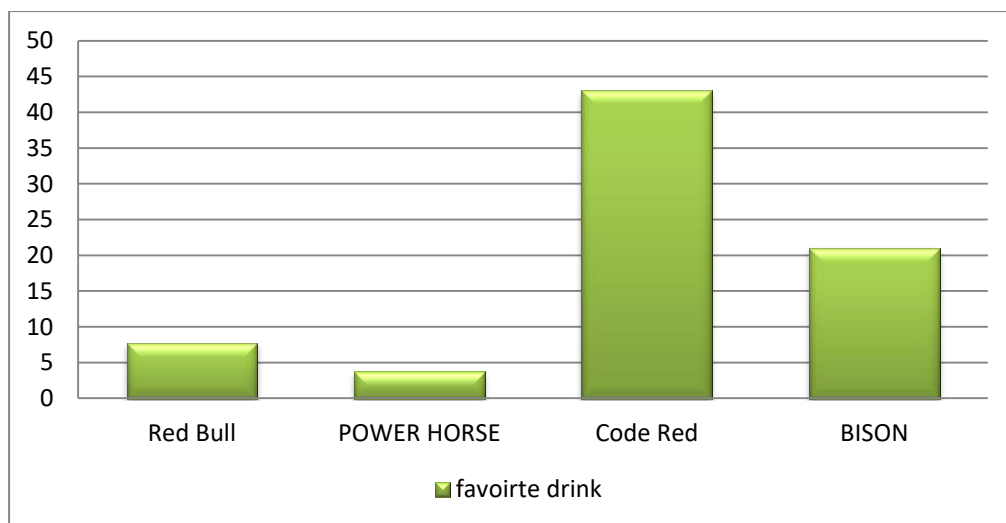


Figure (2): Favorite energy drink among adolescents in KSA

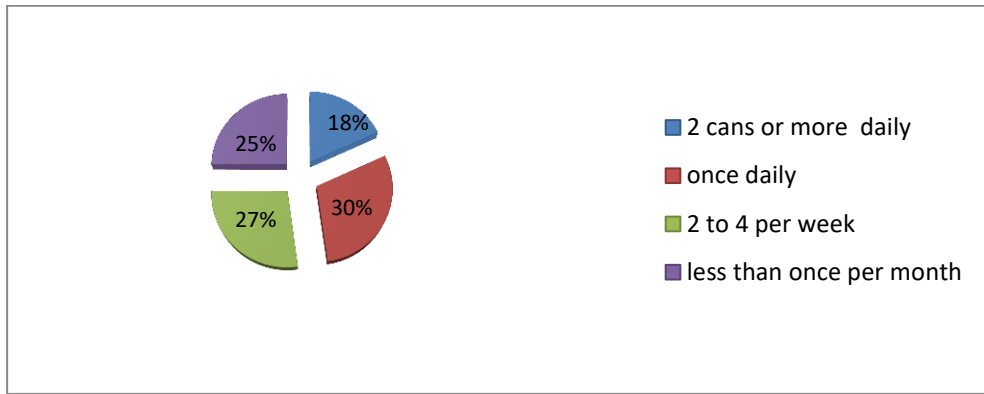


Figure (3): Frequency of ED consumption among adolescents

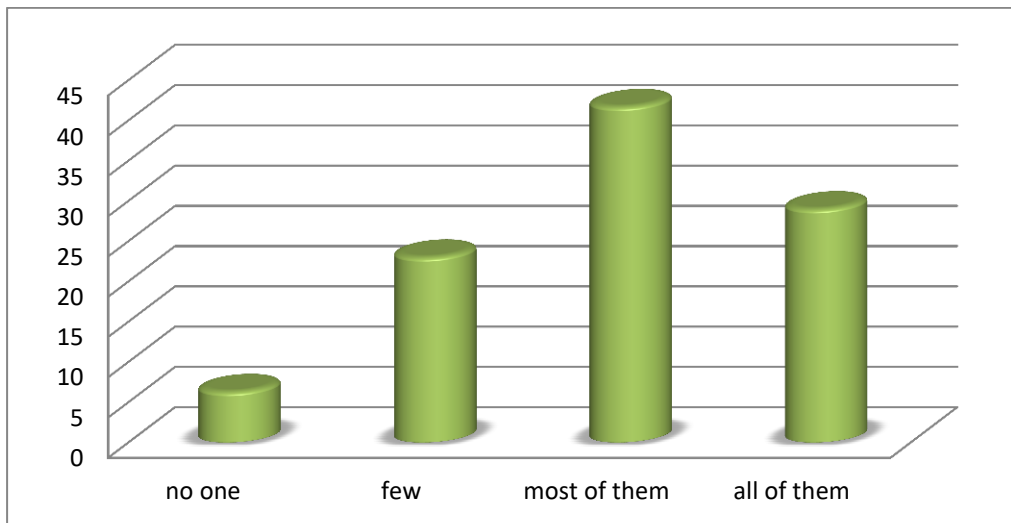


Figure (4): Having friends who consume ED

Prevalence of ED consumption among adolescents in KSA was 80% (Figure 1). The most commonly reported ED product was Code Red drink then Bison drink (Figure 2). About half of those reported consuming ED (48%) reported consumption of one can or more/day, and 27% consumed ED 2-4 times per week (Figure 3). More than two thirds of consumers (71%) reported that all or the majority of their friends used to consume ED (Figure 4).

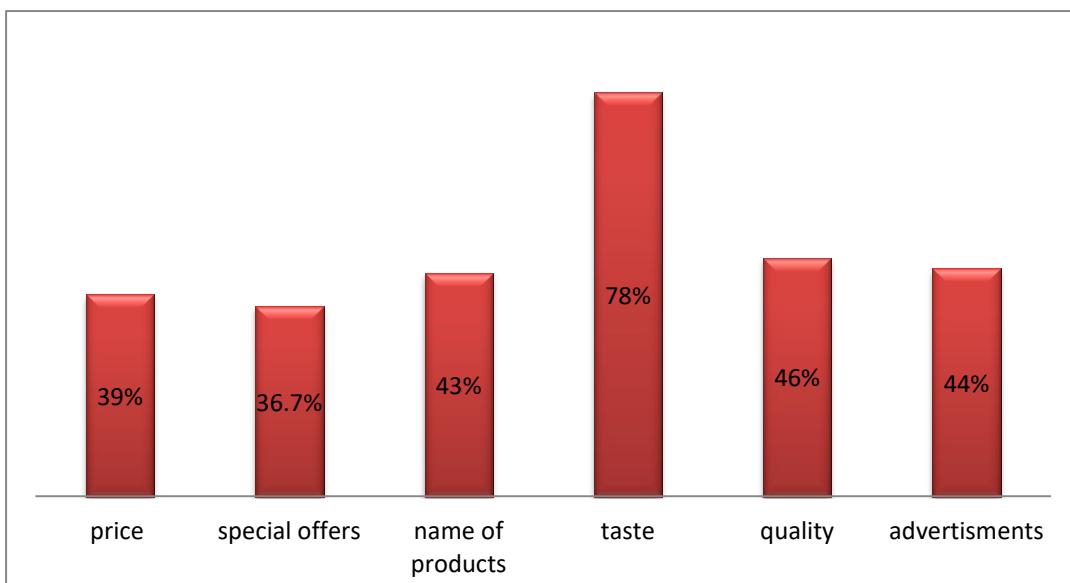


Figure (5): Factors related to selection of a particular energy drink product

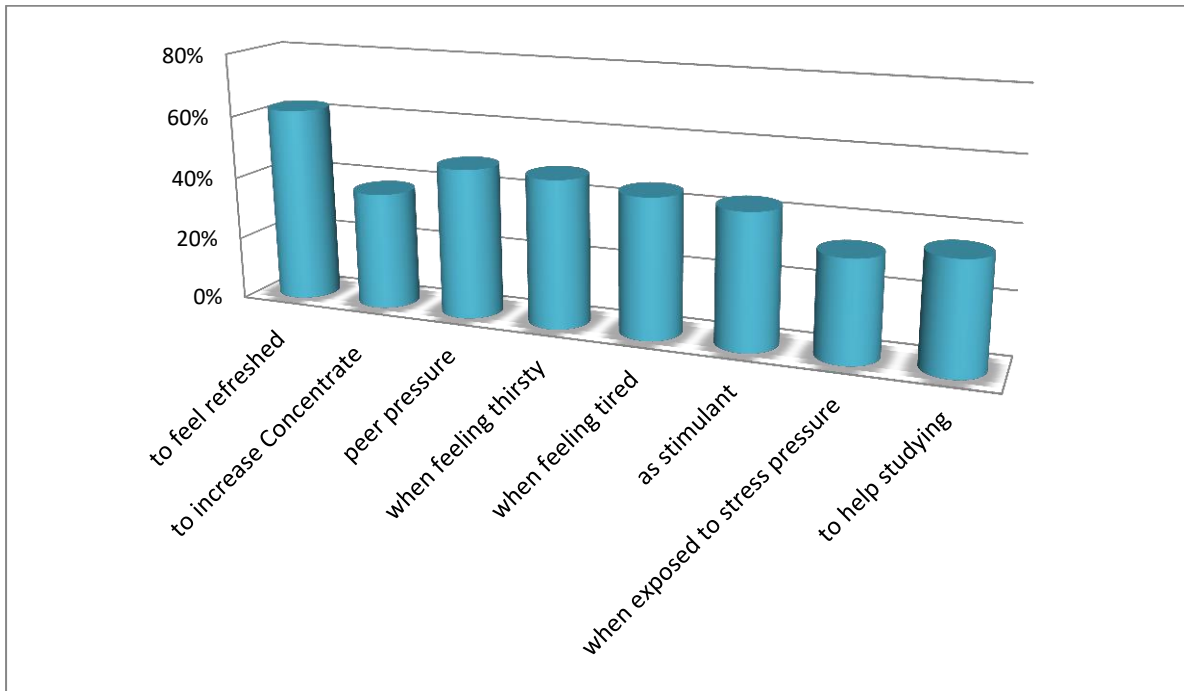


Figure (6): Reasons for ED consumption

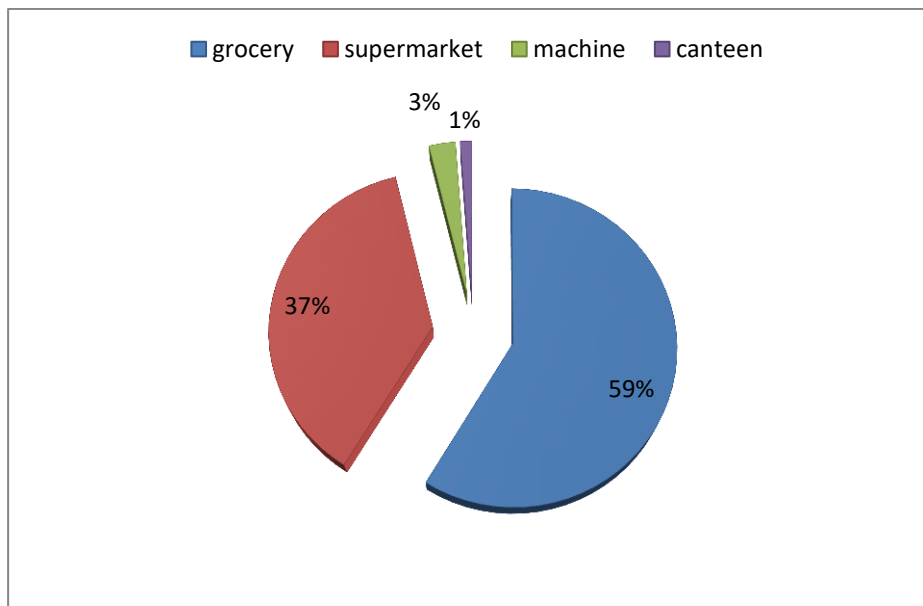


Figure (7): Availability of energy drinks

As regard factors related to selection of a particular energy drinks product, Figure (5) demonstrates that taste was the first factor (78% of students agreed), followed by quality of ED (46%) and the least reported factors were special offers and price (36.7% and 39% respectively). Regarding reason for ED consumption; Figure (6) demonstrates that to feel refreshed was the first reason (62% of students agreed), followed by peer pressure (47.7%) then when feeling tired and as a stimulant (37.3%), the least reported factor was when exposed to stress (32%).

As regard availability of energy drinks, the most common way that respondents purchased energy drink was at grocery store followed by supermarket and only 1%reported purchasing ED from school canteen(figure 7). The most motivating advertisements to consume ED were that on TV followed by the internet and the least were those in magazine and newspapers (figure 8).

Regarding time of consumption of ED, most of adolescents reported they always consume ED in the evening (45.1%) and about one fourth of them (26.8%) during studying, the least percentage (8.2%) reported early in the morning (Figure 9).

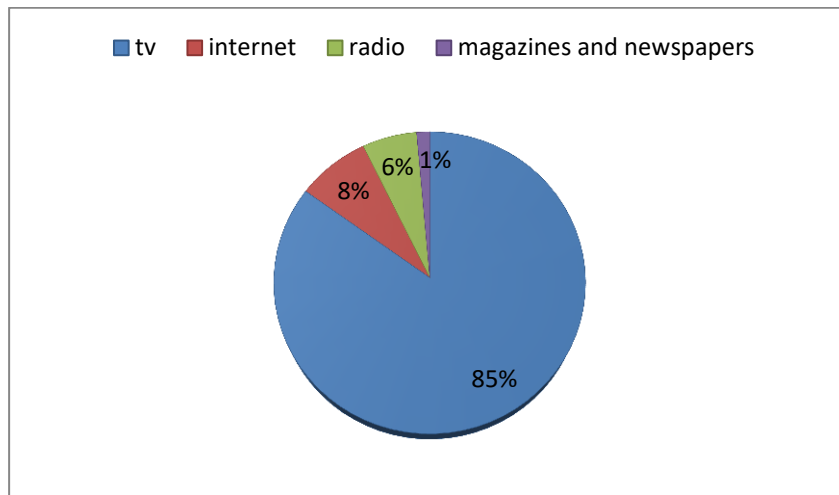


Figure (8): Advertisement that motivate respondents to consume ED

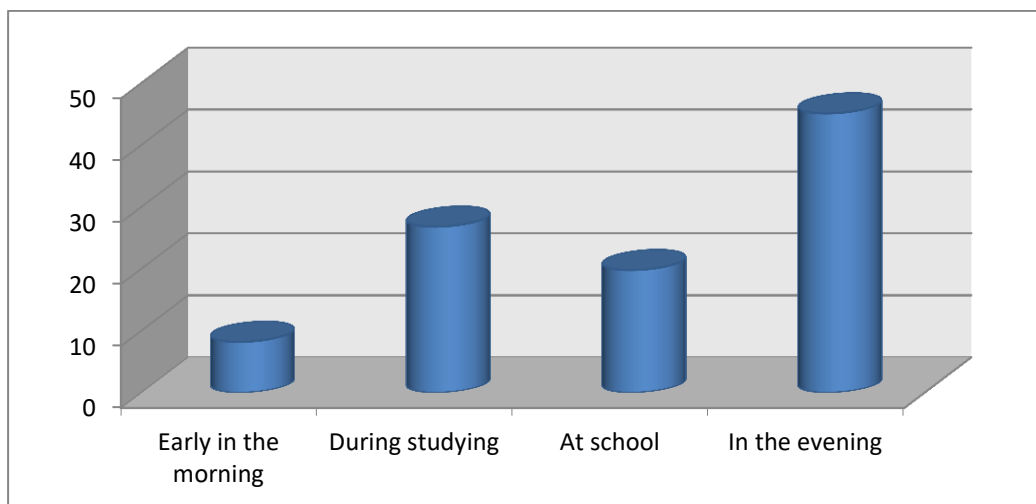


Figure (9): Preferred time of ED consumption among adolescents

IV. DISCUSSION

Energy drinks are marketed to young adults aged from 18 to 30 years as a stimulant, which is why energy drinks have names that convey strength, power, speed, and sexuality. ED are broadly regarded as helping adolescent students stay focused and alert to improve their academic performance, to socialize, and to provide them with a boost of energy to temporarily restore mental alertness or wakefulness when they are experiencing fatigue or drowsiness. The present study revealed the high prevalence of ED consumption among adolescents (80%) and about half of them consume one or more can of ED per day which is considered a very high daily intake rate. These results suggested the need to plan health education programs to particularly correct some wrong perceptions that adolescents have regarding the benefits of energy drinks and also create awareness among adolescents about the side effects of excessive intake of energy drinks. In 2007 Malinauskas *et al*, conducted a survey of energy drink consumption patterns among college students and they reported that 51% of participants used to consume greater than one energy drink each month in an average month for the current semester (defined as energy drink user). The majority of users consumed energy drinks for insufficient sleep (67%), to increase energy (65%), and to drink with alcohol while partying (54%). [12]

While the present study did not reveal a strong association between ED consumption and stress exposure, Pettit M *et al* in 2011, who confirmed an association between perceived stress and selected energy drink consumption items. Participants with higher levels of perceived stress revealed higher averages for days per week during the past 30 days on which energy drinks were consumed. besides, participants characterized by higher levels of perceived stress reported larger numbers of energy drinks consumed on any occasion during the past 30 days. [13]

On the other hand, Buxton C, *et al.* conducted a survey of energy drinks consumption practices among student -athletes in Ghana. They found that most of the participants (62.2%) reported consuming at least one can of energy drink in a week. A high proportion (53.6%) of the respondents who drink energy drinks indicated that they did so to replenish lost energy after training or a competition. Other reasons given as to why energy drinks were consumed by the study participants included to provide energy and fluids to the body (25.9%), to improve performance (9.8%) and to reduce fatigue (5.4%).[14]

In the present study there was no significant difference between adolescent males and females as regard prevalence of consumption (82% vs 77% respectively) or frequency of consumption of ED. In contrary to these findings, Babu K *et al* reported that a higher proportion (81.2%) of the respondents who indicated that they drank energy drinks were males compared with 18.8% females. However, it is important to note the wide gender disparity (148 males to 32 females) in that study sample. [15]

The present study highlighted the profound effect of peer pressure on adolescents, where about 70% of adolescents enrolled in the study reported having most or all of their friends used to consume ED, moreover, the high number of friends used to consume ED was one of the predictors of unhealthy behavior with high rate of ED consumption among adolescents as elicited by linear regression data analysis.

Matching with these results are the results of Ward A., who reported that knowledge, attitudes, and peer influence significantly contributed to energy drink consumption. In his study, seeing a warning label on energy drink cans significantly increased the odds that participants abstained from consuming energy drinks. [16]

The full impact of energy drinks on individuals has yet to be determined as they are relatively new on the market and there is little research examining them especially in Saudi Arabia .

V. CONCLUSION

According to the present study it was found that 80% of adolescents in KSA used to consume energy drinks and about half of them used to consume one can or more/day. Positive attitude towards consuming ED was among males, those at intermediate schools and those with all of their friends consuming ED. Furthermore, the major reasons for adolescents to purchase energy drinks rather than other kinds of drinks were that they would like to feel refreshed and peer pressure. Furthermore, the most important factors affecting selection of certain ED product were taste and quality of product. The brand positioning of energy drinks in adolescents mind is in good position and price of energy drinks does not have effect to their brand position. Healthy behavior restricting energy drinks consumption was significantly influenced by attitude towards ED and number of friends consuming ED.

VI. RECOMMENDATIONS

Further researches should be carried out concerning short and long-term health effects of ED.

Health education campaign should be directed to adolescents concerning ED and their possible deleterious health effects.

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