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Original Article

Energy Drinks Consumption and Awareness Among Secondary School Students in Benghazi- Libya

Hajer Omar [1]*, Asma Omar [1], Aisha Muhammed [2], Mahmoud Elderbi [3]

[1] *Department of Pharmacology, Faculty of Medicine, Omar Elmukhtar University, Albayda, Libya*
[2] *Department of Physiology, Faculty of Medicine, Omar Elmukhtar University, Albayda, Libya*
[3]*Department of Pharmacology and Toxicology, Faculty of Pharmacy, University of Benghazi, Benghazi, Libya.*

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***Hajer Omar.** *Department of Pharmacology, Faculty of Medicine, Omar Elmukhtar University, Albayda, Libya. Mobile phone: (+218) 923045717.*
hajer_alzaroug@yahoo.com

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ABSTRACT

Background and Objectives: Recently consumption of energy drinks has become popular among young people especially athletes and students. In this study we investigate the consumption frequency and pattern among secondary school students. **Methods**: 480 secondary school students were participated in this study. Data was gathered using a self-response questionnaire that mainly focused on the patterns of consumption and knowledge of the students about energy drinks effects among consumers. **Results**: Out of 480 students, 165 (34.38%) of the participants were consumers, while 315 (65.63%) were none consumers. The result showed that the majority of the consumers (65.63%) have adequate knowledge about physical and mental effects of energy drinks. However, 63.54%of them do not know the ingredients of the energy drinks. **Conclusion**: About one third of the participants were energy drinks consumers, most of them were not a regular consumer. Our study shows a good knowledge about energy drinks physical and mental effects among participants.

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INTRODUCTION

Energy drinks (ED) that contain higher amount of caffeine become popular during the second half of the 20th century leading to marked growth in the caffeinated soft drink market [1]. The popularity of energy drinks especially among young people and adolescents can be explained in part due to the assuming effect of ED on enhancing mental concentration and reducing the fatigue. Wesnes et al. investigate the effect of one of the ED brands (Red Bull) on the memory and conclude that it produces marked and highly significant improvements to the accuracy and speed of working and episodic memory [2].

Energy drinks refer to different types of beverages containing non-nutritive additives, such as caffeine, guarana, taurine, ginseng, high levels of sugar and small amounts of vitamins and minerals [3]. these additives found in popular energy drinks in small amount which cause no harm effects. However, caffeine and sugar are present in amounts known to cause a variety of adverse health [4].

Caffeine (1,3,7-trimethylxanthine) is extracted mainly from Coffea Arabica and Coffea robusta, and tea leaves (Camelia siniensis) is a popular central nervous system stimulant consumed widely in the modern societies regardless the age and economic status. It is consumed most frequently in beverages such as coffee (71%), soft drinks (16%), and tea (12%). The central stimulant effect of caffeine on central nervous system is basically related to three mechanisms: antagonism of adenosine receptors, inhibition of cAMP phosphodiesterase activity, and intracellular calcium mobilization [1].

Caffeine presents at different concentrations in different beverages, energy drinks contain substantially more caffeine than conventional cola beverages, with caffeine content ranging from 75-300 mg per serving [5. The United States Food and Drug Administration (FDA) recommends that energy drinks should contain no more than 65 mg of caffeine per 355 ml [6].

Earlier studies had highlighted the following health effects in relation to the consumption of energy drinks: arrhythmias, headaches, anxiety, insomnia, dehydration, gastrointestinal upset, nervousness, flushed face, diuresis, seizures, acute mania, strokes, withdrawal symptoms, tooth erosion, psychiatric events, accelerated heart rates, and even death [6-8]. In this study we investigate the consumption and awareness among secondary school students (grade 11 to 13) in Benghazi city.

METHODS

Four hundred and eighty (480) students from 4 secondary schools (based on4 different neighborhoods) in Benghazi city were enrolled in this study. The study was carried out during the 2017-2018 school year. Self-response questionnaire was distributed to the students during class time. The questionnaire includes two types of questions, first set of questions includes demographic questions (the gender and age), the participants were asked ED consumption and about their knowledge. The next set addressed the ED consumers only to determine pattern of use of energy drinks (such as amount, reasons and frequency of use) and to explore the knowledge of consumers about effects of ED and their mental and physical state after the consumption.

Statistical Analysis

Descriptive statistics, frequencies and correlation were calculated for all the responses using IBM SPSS program version 22. P-value was sat at $p<0.05$

RESULTS

A total of 480 students responded to the questionnaire. 324 were males (67%) and 156 were females (33%) most of them under eighteen years old (Fig 1). One hundred and sixty-five students (34.38%) were drinking energy drinks (Fig. 2). The male to female difference was statistically significant ($p<0.05$) where most of the users were male students (n=92, 55.76%) and the rest were females (n=73, 44.24%) (Fig. 3).

The results showed that most of participants know the effects of ED on the body (65.63%) (Fig 4). However, most of them (63.54%) do not know the contents of the ED (Fig 5).

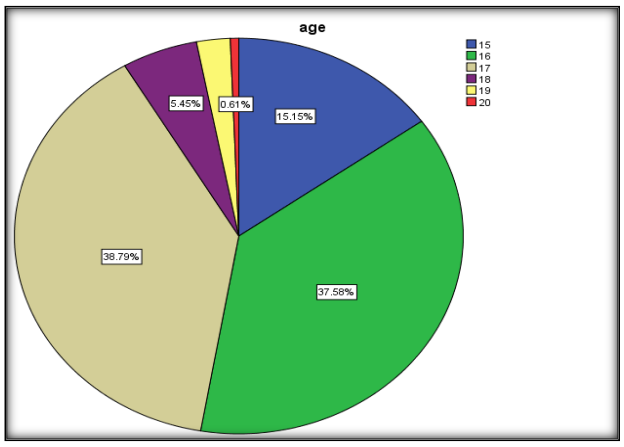

Figure 1 Age distribution of the participant students.

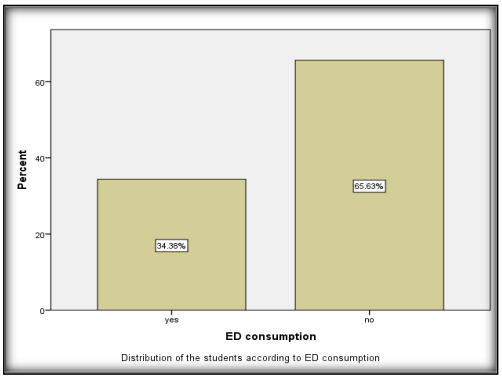

Figure 2. Distribution of the students according to consumption

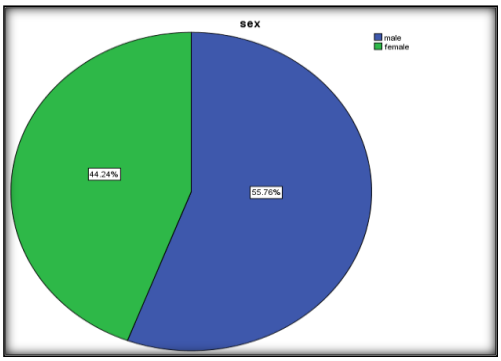

Figure 3. Distribution of the students according to gender.

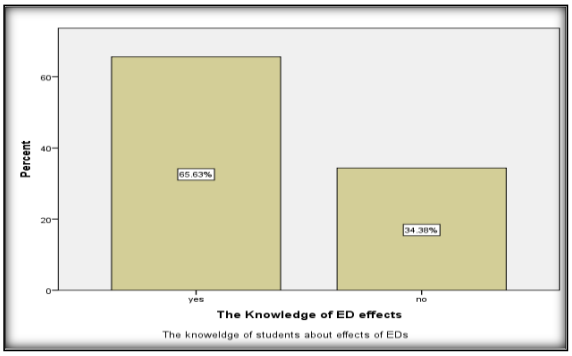

Figure 4: the knowledge of students about ED effects

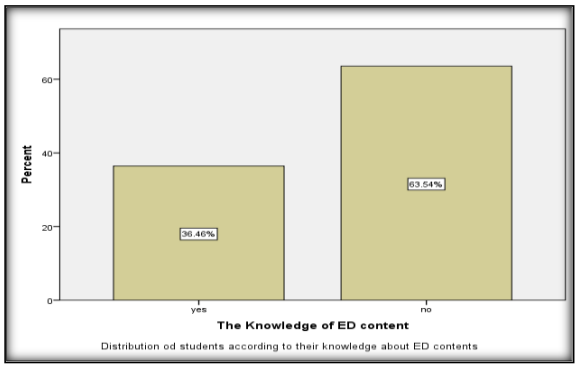

Figure 5: Knowledge of students about ED contents.

Pattern of consumption

Regarding the frequency of ED consumption, the results showed that 17.56% consume ED on daily basis, 29.70% consume ED once per week, and 32.12% consume ED once per month (Fig. 6). Regarding time of consumption most of the student's state that they will have the ED at any time of the day (Fig. 7). Approximately 5.45% of the student's state that they will have the ED before activities. Most of the students (68.48%) state that they have the ED outside their homes (mainly at coffee shops) while 30.91% of them drink the ED at their homes (Fig. 8).

Regarding reason of ED consumption and selection; majority of the students (63.03%) were use energy drinks just for enjoyment, while some were use the ED to energize their selves before physical and mental activities (16.97% and 6.06% respectively) (Fig.9). About 77.58% of the students select the type of ED according to taste or the brand name (Fig. 10).

Regarding the effect of ED on their mental and physical state, 55.15% state that ED does not affect their state. About 41.21% state that they feel better after ED consumption (Fig. 11). The result also shows that most of the students think that the bad effect of the ED on their health depends on the amount consumed. In our study most of the participants think the ED have no effect on their mental neither physical state (Fig. 12).

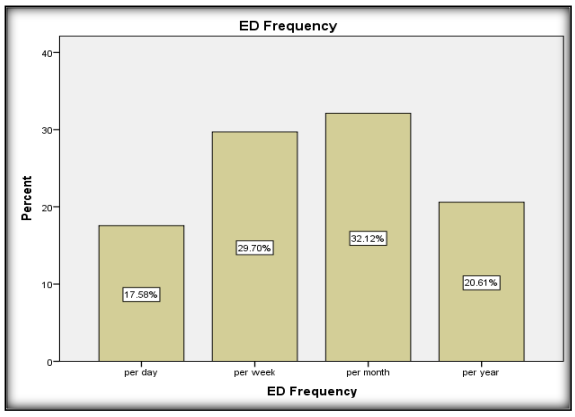

Figure 6: Distribution of students regarding frequency of ED consumption.

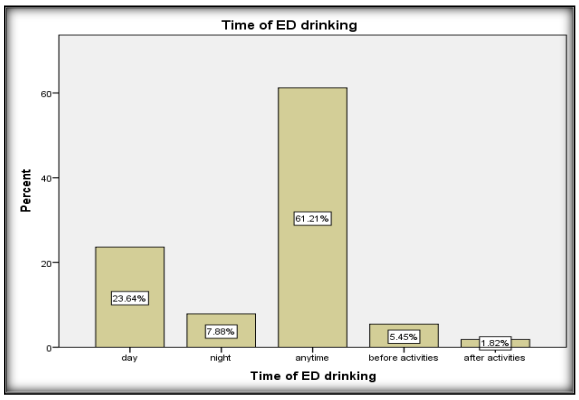

Figure 7: Distribution of ED consumers regarding time of consumption.

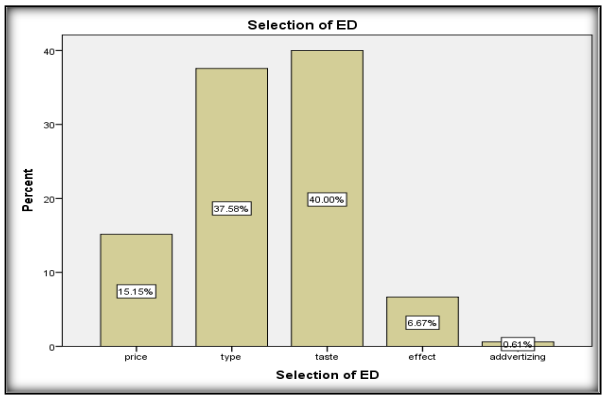

Figure 10: Distribution of ED consumers regarding reasons of selection

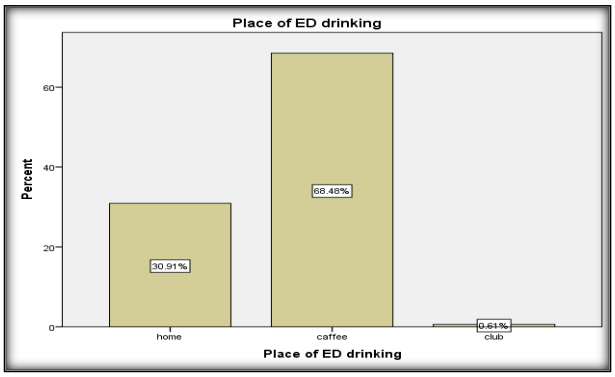

Figure 8: Distribution of ED consumers regarding places of consuming

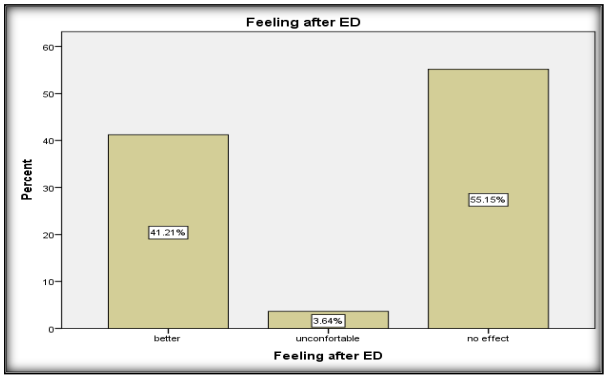

Figure 11: Distribution of ED consumers regarding feeling after consumption.

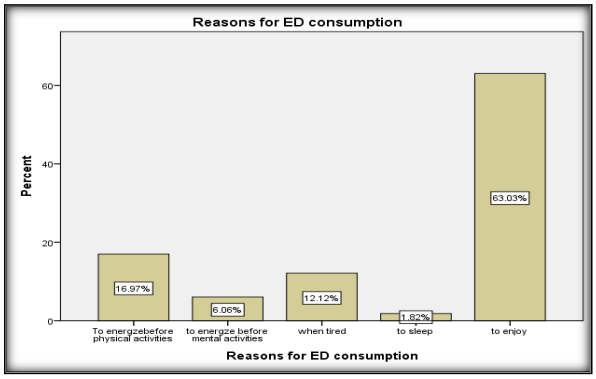

Figure 9: Distribution of ED consumers regarding reasons of consuming.

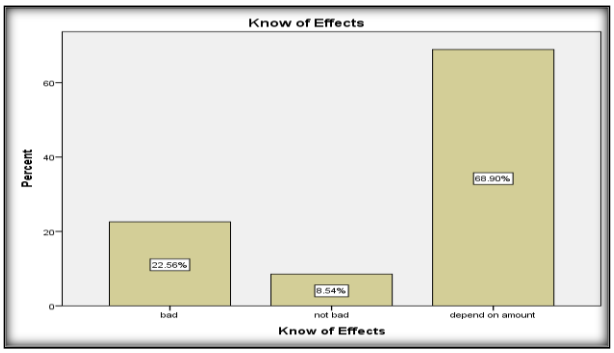

Figure 12: Distribution of ED consumers regarding ED effects and amount causes these effects.

DISSCUSION

Adolescents and young adults are the major consumers of the ED as they are the target of the ED manufacturer [9,10]. In 2011, the European Food Safety Authority (EFSA) commissioned a study to gather consumption data for energy drinks in 16 countries of the European Union. They reported that young people aged 10–18 years had the highest reported consumption prevalence (68%), compared with adults over 18 years (30%).

In the present study, the age of the participants was between 15 to 21 years with the majority of them (91%) being under 18 years. About 34.8% of the participants were ED consumers. It is comparable with the results of Alrasheedi et al. 2016 that was held among same age group on Jeddah (KSA) [11]. However, it is lower than the number recorded among same age group in a study conducted in Canada which was 53.2% [12].

Regarding gender differences in the current study, male students consume more energy drinks in compare to female. Same results were concluded by many researchers [12-14]. Approximately 65.63% of the students participate in our study were familiar with the positive and negative effects of ED. However, majority of them was unable to identify the main contents of ED. This result was in agreement with results of study held by Alrasheedi et al.,2016, and also in agreement with several previously reported results which came from university students in some middle eastern countries [15-16].

Regarding rate and time of ED consumption, majority of participants consume the ED once per month. Most of the participants have the ED at coffee shops (68.48%), choose ED brand according to their taste and just for fun (63.03%). That can explain the fact that Most of the participant (61.21%) consume the ED at any time with no relation between the time of ED consuming and physical or mental activity. Zucconi et al., 2017 state that the most important reason behind ED consumption among adolescents is the taste of the product (for around 40% of ED consumers [14]. However, the most common reasons cited for consuming energy drinks among Canadian adolescents (14-18 years old) were curiosity [17].

CONCLUSION

The current findings shows that about one third of the participant were ED consumers, though most of them were not regular consumers. The majority of them reported good knowledge of the good and bad effects of ED. However, most of them could not identify the major contents of ED, majority of them have ED with friends outside their homes. future research focused on the investigation of ED consumption patterns and awareness among older age groups will be needed to compare the differences among different age and educational groups.

Disclaimer

The article has not been previously presented or published, and is not part of a thesis project.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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