

Prevalence and Perceived benefits of energy drink Consumption in medical students

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Author's Contribution

¹ Conception of study

^{1,2,3} Experimentation/Study conduction

^{1,3} Analysis/Interpretation/Discussion

^{1,2} Manuscript Writing

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Abstract

Introduction: To assess the energy drink consumption patterns and perceived risks and benefits among medical students. The present study was carried out on 332 medical students from Foundation University Medical College. All the students enrolled in foundation university medical college were invited to participate. 332 students, who gave their consent were enrolled in the study. Data was collected by distributing a preformed structured questionnaire among medical students present in their classes. Data was entered and analyzed on SPSS version 17.

Results: Out of 332 students 307 (92.5%) said that they were familiar with energy drinks whereas 212 (63.9%) admitted to consuming energy drinks. sting and the red bull came out to be the most popular brands. 78 (36.7%) students said mental awareness to be the main motivator for energy drink consumption. The majority (94.3%) of the study population were aware of the untoward effects of energy drinks experienced. The most common of them was insomnia, students (49.05%) experienced it. 91 (42.92%) of the students said that their parents don't object to their taking of these drinks.

Conclusion: Although the consumption of energy drinks was common among medical students, the knowledge of ingredients and health risks of energy drinks among them was unsatisfactory.

Keywords: Energy drink, Medical students, Caffeine, Frequency of consumption.

Introduction

Energy drinks are beverages with fortified nutritional supplements.¹ Their consumption is gaining continuous popularity with the introduction of "Red Bull" Austria in 1987 and America in 1997.^{2,3} Since then the market has been flooded with numerous brands. Some of the common Energy drinks ingredients are Herbal extracts, Caffeine, Amphetamine and Sugar derivatives. Combination of energy boosters and nervous stimulants give the consumer a jostle/jounce of energy³ cause improvements across psychomotor functions, enhanced mood, improved memory, and Increased alertness and reduce fatigue.⁴⁻⁵

Energy drinks, when taken frequently have numerous harmful health outcomes and detrimental physical consequences^{6,7}. Common toxic effects reported with higher doses of these caffeinated drinks were GI upset, hallucination, seizures & cardiac ischemia due to sympathetic over stimulation.⁶ Energy drink consumption decreases insulin sensitivity⁸ and raises mean arterial blood pressure.⁹ High consumption of caffeine-containing energy drinks is found to be associated with chronic daily headaches¹⁰, neural, gastrointestinal, renal and cardiovascular dysfunctions.¹¹ It suggests that there is some association between the cognition-regulatory effects of caffeine and glucose when used in unison.¹² Some energy drinks also contain Amphetamine which causes elevation of mood & euphoria.⁵ High doses of Amphetamine can lead to delusions & simulate schizophrenia-like conditions.⁵ No authentic data is available about other ingredients.

The prevalence of energy drink usage was found to be 51% among college students in North Carolina, USA. Respondents reported to feast on energy drink more than once in a month.¹³ Whereas 41% of the participants at the University of Dammam reported taking energy drinks.¹⁴ In a study conducted in a private medical college in Karachi frequency of energy drink consumption was 52%.¹⁵ Energy drinks are targeted to young adult consumers by aggressive marketing through advisement. Moreover, the drink labels do not contain any warning labels.¹⁵

The energy drink market is growing consumption is increasing every year. Also, a small number of publications have documented the adverse effects associated with the use of energy drinks. Further very few studies have documented participants' knowledge about potential psychological and physiological

adverse effects of these drinks. The purpose of this study was to examine the frequency of use, and knowledge of the side effects of these beverages among medical students.

Materials and Methods

The present study was carried out at Foundation University Medical College. The study population consisted of 332 medical students from Foundation University Medical College. Data were collected by administering a preformed structured questionnaire. Data was entered and analyzed on SPSS version 17. The total number of students enrolled in foundation university medical college at the time of the study were 500, All the undergraduate MBBS students were invited. 332 students, who gave their Informed consent, were enrolled in the study. Participants were ensured that their identities would be kept confidential. Data was collected using a self-administered standard questionnaire. This structured questionnaire was designed by the researchers after a literature search, multiple questions were formulated to assess consumption pattern, knowledge and perceived benefits and untoward effects of Energy drinks. Questionnaire were pre-tested on a group of students to identify any gaps and some of the questions were rephrased.

The first part of the questionnaire consists of demographic information including age, gender, academic year and the second part assess whether respondents are familiar with energy drinks, can they name their popular brand do they consume these drinks, what is their brand of choice, do they know about the constituents in these drinks. What are the perceived benefits, and side effects of this drink? What are the most common side effect and most important motivators for these drinks? Data was entered and analyzed in SPSS version 17.0. Categorical variables like gender, marital status, and level of education were measured in the units of percentages and frequencies, and continuous variable including age was reported in Mean \pm SD

Energy drink is any beverage that contains high levels of a stimulant ingredient, usually caffeine, amphetamine as well as sugar. They often contain supplements, such as vitamins, plant extracts (e.g. ginseng and guarana) and carnitine, some also have guarana. It is promoted as a product capable of enhancing mental alertness and physical performance.

The caffeine content in most energy drinks ranges from about 80 mg (roughly the same as a mug of instant coffee) to about 150 mg per serving. Energy drinks that contain over 150 mg of caffeine per litre must be clearly labelled as having ‘high caffeine content’.

Results

Our study population consisted of 332 medical students from Foundation University Medical College. The mean age was 21± 1.4, of the 70% were female and 30% were male. 308 (92.5%) said that they were familiar with energy drinks. 212 (68%) admitted to consuming energy drinks and 96 (32%) said they never tried energy drinks. 99 students (46.7%) preferred Red Bull, 95 students (44.8%) preferred Sting as their choice of brand, and 18 students (0.1%) said Blitz is their choice of drink. 60% of respondents believed caffeine to be the main constituent 27% knew they are high in sugar 36 12% of students put amphetamines down as their answer. Out of the 212 students that consume them, 161(75.9%)said that they consume these drinks occasionally and 51 students (24.1%) said they consume these drinks regularly. Of these regular energy drink users, 45 were smokers 31 said that they preferred a combination of energy drinks with smoking. A Total of 150 (70.7%) said their families were aware 91(48.4%) students said that their families approved of them consuming these drinks. 209 students (98.5%) said they would not recommend these drinks to others. 200 students (94.3%) said they were familiar that energy drinks having side effects. 111 (52.4%) knew that improved these drinks improve concentration, 25 (11.8%) said the improvement in memory and 78 (36.7%) experienced increased mental .104 (49.05%) reported insomnia 38 (17.9%) said irritability whereas 28 (13.2%) said palpitations are major side effects. The taste was the main motivator for 90 (42.4%) mental awareness for 70 (33%) and peer pressure for 22 (10%) of respondents.

Knowledge about the constituents

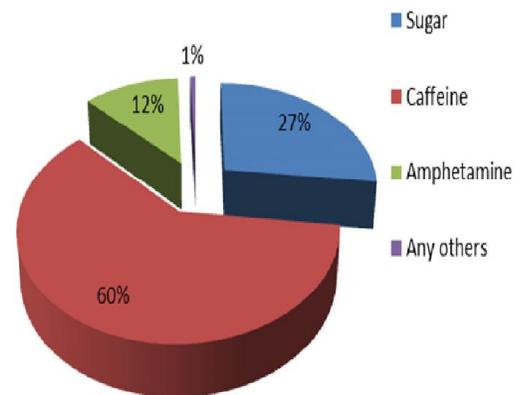


Figure 1: Knowledge about energy drink constituents in 332 medical students

Table 1: Practices & factors associated with energy drink consumption

Variables		Number	Percentage
Frequency of consumption	Occasional	161	75.9
	Regular	51	24.1
Regular Cigarette smokers	Yes	45	14.19
	No	272	85.8
Family awareness	Yes	150	70.7
	No	62	29.3
Parental approval	Yes	91	41.7
	No	127	58.3
Awareness of side effects	Yes	200	65.4
	No	106	34.6

Table 2: Attitude & perceived benefits of energy drinks

Variables		Number	Percentage
Improvements in mental functions	Concentration	111	52.4
	Memory(recall)	23	11.8
	None of the above	78	35.8
Perceived benefits	Physical alertness	29	13.8
	Mental alertness	78	36.7
	Both	77	36.3
	Any other	28	13.2
Experienced adverse effects	Insomnia	104	51.5
	Irritability	39	18.9
	Palpitations	28	14.2
	Any other	31	15.4
Recommend to others	Yes	98	31.92
	No	209	68.07

Discussion

The study was conducted to assess the frequency and level of awareness regarding constituents, motivator and untoward effects of energy drink consumption in medical students. 63.9% of medical students in our study population admitted to consuming energy drinks. Prevalence of energy drink was found to be 52% in medical students in a survey conducted in Karachi¹⁴ and 92% among university students in UAE². Prevalence rates in these studies are alarmingly high. Medical students are expected to be more knowledgeable about nutrition and health. It could be examination stress and activity demanding performance that incites the consumption of energy drinks among these students.

Another reason for high prevalence is easy availability at college café and their low-cost. Researches conducted worldwide showed 500 new brands have been introduced to the world market in 2006. The sales of drinks rose from \$3.5 billion in 2006 to \$4.7 billion in 2007¹⁶. Red Bull led the sports and energy drinks in Pakistan in 2012 with a 63% off-trade volume share and it is the first brand to offer energy drinks in Pakistan⁴.

The main motivation to take energy drinks in our study population were mental and physical alertness. In a study conducted in USA mental Alertness and improved performance were found to be the main factors for its use among students.⁶ Energy drink improves secondary memory and speed of attention, performance, subjective alertness⁷ and cognitive performance⁵. In a research carried out in the USA, energy drink found to improve "secondary memory" and "speed of attention"¹¹ improved reaction time, concentration and memory.¹¹ In a quasi-experimental study conducted on a young population between the age of 15-18. No positive effect of energy drink was found on attention, memory or learning ability.¹⁸

In this study familiarity of the study population with the side effects was good. The most common side effects reported were insomnia, palpitation, and irritability. Another study conducted on US Navy Seal. The study population revealed side effects including increased heart rate, trouble falling asleep, dehydration, nervousness, trouble staying asleep, headaches, nausea, and dizziness.¹⁸

It has been shown by various researches conducted worldwide that the amount of caffeine in energy drinks is high and mostly not regulated. Such drinks cause serious adverse effects, especially in children,

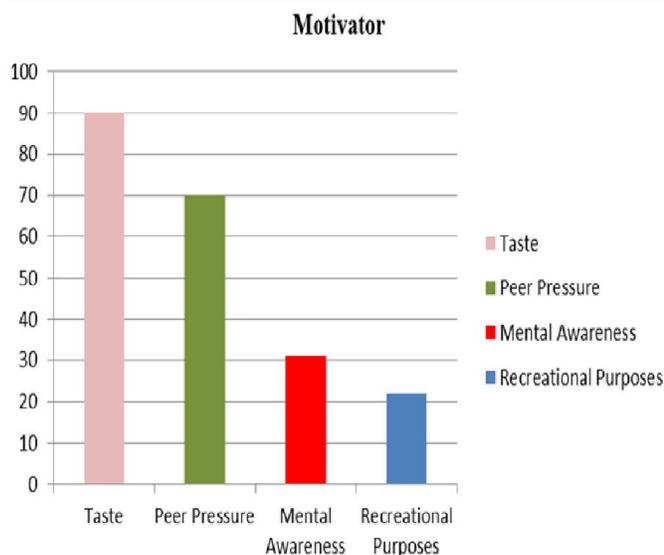


Figure 2: Main motivator of energy drink consumers in 212 medical students

adolescents, and young adults with mood and behavioral disorders, seizures, cardiac abnormalities, diabetes or those who take certain medications. Several countries, therefore have imposed restrictions on sales and advertising of energy drinks.⁵ Some of the reported toxic effects of caffeine drinks are increased blood pressure, increased heart rate, cardiac seizures associated with tachycardia and systolic hypertension & severe dehydration.⁹

In our survey, 91 students said that their families approved of their consuming these drinks. The Responsibility lies in Parents, educators, and health professionals to discourage the use of energy drinks. Those who consume energy drinks frequently are more prone for other addictive drugs involvement¹⁹ A study conducted on US parent found that 78% were of the view that energy drinks must not be marketed to children and adolescents, and 74% were of the opinion that they should not be sold to children or adolescents & 85% agreed that regulations must be made to report the presence of caffeine and warning labels for energy drinks.²⁰

Conclusion

Energy drink consumption was widespread among medical students. A common reason for energy drink consumption was a taste, peer pressure, improved mental performance and help in staying awake. Despite energy drink consumption was high but knowledge about constituents and adverse health effects were not satisfactory in medical students.

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