

Awareness and use of Energy Drinks among 3rd year Medical Students of Sheikh Zayed Medical College, Rahim Yar Khan

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Abstract

Background: Energy drink is a beverage having a stimulant drug like caffeine, marketed as mental and physical stimulator.

Objective: To determine the awareness about energy drinks, their ingredients and side effects and pattern of use of energy drinks among medical students.

Methodology: In this cross sectional study, a questionnaire was distributed among all of the 147 students, present at the time of data collection of 3rd year MBBS class at Sheikh Zayed Medical College, Rahim Yar Khan, who have studied pharmacology thoroughly, in 2018. The questions assessed the knowledge about energy drinks, pattern of consumption and side effects. The impact of pharmacology knowledge about ingredients and its effect on pattern of energy drink consumption were also studied. Data was analyzed in SPSS version 17.

Results: Overall 147 students participated in this study. Out of these, 58% students consumed energy drinks. Most (80%) students were aware that energy drinks are not good for health. Most of students (75%) were aware of the presence of caffeine. After having studied about caffeine in subject of pharmacology, consumption of energy drinks was decreased in 36.36% students and increased in 23% while in 40% it did not affect its consumption.

Conclusion: This study concluded that majority of the medical students were consuming energy drinks and most of them were aware of the hazards of its use. Majority of the students were not aware about the exact amount of caffeine in energy drinks and pharmacology knowledge had either not reduced or did not affected its use.

Keywords: Energy drinks, Composition, Hazards, Medical Students, Awareness

Introduction

Energy drinks are caffeinated beverages, which were introduced in Europe and Asia in 1960s but with arrival of brand Red bull in Australia in 1987, they became very popular. Now numerous brands have been introduced in market and it has become a popular drink among young generation.¹ Prevalence of energy drink consumption is gradually increasing. According to a research it is 30-50% in adolescents and young adults.²

Energy drinks, which are high in caffeine content, increase stamina and alertness that is source of attraction in young people. The maximum amount of caffeine in energy drinks is found to be 350mg/l, Inositol 200mg/l, glucoronolactone 2400mg/l and taurine 400mg/l.³ Other ingredients of energy drinks include Vitamin B, many herbs, guarana, yerba mate and carbonated water.⁴ About 80% populations in world consume caffeine in different forms. Caffeine belongs to methyl

xanthenes group of drugs and it stimulates central nervous system. Energy drinks contain caffeine 80mg/can usually. Study of medicine is very tough; to remain alert and increase the study hours medical students need some mental stimulants. Due to extensive publicity and easy availability of energy drinks their consumption has become a public issue in last decade.⁵

Energy drinks usually contain high amount of caffeine and there is emerging trend to use energy drinks along with alcohol in young adults. In male young undergraduates, living away from home, there is increasing trend to consume energy drinks and risky substances.⁶ Energy drink consumption leads to multisystem adverse effects due to caffeine depending upon consumption. They can cause cardiovascular effects (palpitation, tachycardia, hypertension, arrhythmias), neurological effects (headache, insomnia, nervousness, irritability, anxiety) and gastrointestinal effects (nausea,

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vomiting, heartburn, esophagitis, gastro esophageal reflux, abdominal pain, diarrhea).^{7,8,9,10} Consumption of energy drinks along with alcohol can lead to severe dehydration that further restricts metabolism of alcohol and precipitate alcohol toxicity. It also increases adrenaline release.¹¹ Use of energy drinks is progressively increasing in last two decades. These are freely available in market at all places like general stores without proper knowledge of consumers about its effects and side effects.¹² Advertising and marketing of energy drinks is increasing without any regulations. It has attracted attention of many marketing agencies in investment of these products and many new brands have been introduced. In recent years global consumption of energy drinks has doubled between 2006-2012. It has reached to annual Canadian sale of over 110 million dollars in 2014, 20 million US dollar and 765 million PLN in Poland in 2013.^{7,8} The objectives of our study were; to determine the awareness about energy drinks, their ingredients and side effects, pattern of use of energy drinks among 3rd year MBBS medical students of a city of southern Punjab of Pakistan. Additionally, the impact of knowledge of pharmacology about awareness of ingredients and pattern of consumption among these students was also assessed.

Methodology

This was a cross sectional study conducted among third year MBBS students, present at the time of data collection, of Sheikh Zayed Medical College, Rahim Yar khan in year 2018. Ethical approval was taken from Institutional Review Board prior to study. A self administered pretested questionnaire was distributed among 3rd year students, who have studied pharmacology thoroughly, at the end of session, during their practical timings during November 2018. There were 147 students, 79 females and 68 male between age 18-23 years. Students were informed about study purpose. Consent was taken prior to distribution of performa. Students were given 15 minutes to complete the performa. Identity of participants was kept confidential. The data was collected using a self administered questionnaire which asked students about their age, sex and sociodemographic characteristics.

Students were asked about their awareness of energy drinks and their knowledge about effects of energy drinks on study habits and academic performance. They were asked about associated adverse effects or any personal experience of adverse effects. They were also asked for awareness of ingredients of energy drinks. Students were questioned about frequency and quantity of consumption of energy drinks, to enhance their academic performance. As our study group was well educated medical students, having fresh knowledge of pharmacology, so, they were asked about the effect of their knowledge on pattern or frequency of consumption of energy drinks after knowing adverse effects of its main ingredient that is caffeine. Descriptive analysis was used to present the findings of this study. For analysis Statistical Package for Social Sciences (SPSS) version 17 was used. Data was presented as percentage for variables.

Results

A total of 147 students participated in this study aged 20 to 23 years. Both male (46%) and female (54%) students participated in this study. Out of these, 58.90% students consume energy drinks and 41% do not consume.

Table I: Awareness about energy drinks among medical students.

Awareness	Yes	No
Awareness of caffeinated energy drinks	75%	25%
Awareness of caffeine as active ingredient in energy drink	84%	16%
Awareness of amount of caffeine in energy drink	23%	77%
Are energy drinks bad for health?	19.56%	80.43%
Do energy drinks have side effects?	72.6%	27.73%

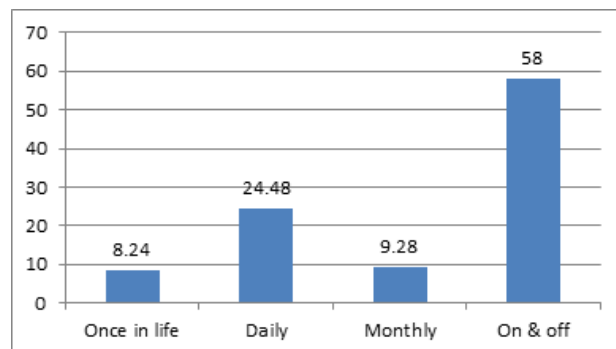
According to this study most 80.43% students were not aware of the fact that energy drinks are bad for health. Majority of students 72.6% knew that these drinks also have side effect. Most of the students 75% were aware of the presence of caffeine and 84% were aware of caffeine as active ingredient in energy drinks. (Table I) Majority (77%) students were not aware of the exact amount of caffeine in energy drinks while only 23% were aware of amount of caffeine. Most (65.47%) of the students experienced

acidity, due to energy drink consumption while 10.29% had palpitation and 6.61% felt irritability. Anxiety was experienced by 5.14%, only 1.47% had tremors. A good percentage that is 28.67% did not experience any adverse effects. Energy drinks also have addictive potential. Most 44.92% students experienced both physical and psychological addiction of energy drinks. Almost same 45% students experienced psychological dependence while only 10.14% students experienced physical dependence due to energy drink consumption.

According to opinion of 61.42% of students energy drinks increased academic performance while 38.57% think that it does not affect academic performance whereas, 36% students experienced increased self-confidence due to energy drink consumption and 64% did not.

Among 74.26% students have increase in study hours due to energy drink consumption and according to 18.38% energy drinks increase reading power also. While the effect to increase recalling power was 2.20% and effect to increase IQ level was 5.14% which was negligible.

Figure I: Frequency of Intake of Energy Drinks among medical students.



Frequency of energy drink intake was 8.2%, once in life which may be for first experience or to take a taste, which was not harmful most of times. While 24.48% take it daily and 9.28% take it monthly and 58% that is a good percentage of students take it occasionally that is also less harmful. (Figure I) In students most common source of information about energy drinks was their friends and classmates 39.6% while internet 32% and television 22% contributed to information about these drinks. After having

knowledge about caffeine in pharmacology, consumption of energy drinks was decreased in 36.36% students and increased in 23.48% while in 40.45% it did not effect the consumption of energy drink pattern and its frequency.

Discussion

Popularity of energy drink consumption is continuously increasing day by day. It has attained more prominence among young adults. They use it to enhance alertness and boost up short term memory. It is easily available at most of college campuses and recreational shops. Its use is more prevalent in male young adults.⁴ In our study the main source of information about energy drinks was, friends 39.6% that is consistent with a previous study, then internet 32% and television 22%.¹³

Majority of medical students consume caffeine worldwide to improve their academic performance. Out of which tea is the most commonly consumed beverage 70%, may be due to its low cost, easy availability and better tolerability with no marked adverse effects.⁵ Energy drink consumption is found to be related to increased alertness and better academic performance. It may also be due to high amount of caffeine content which is the main stimulant.⁴ Caffeine increases Ach release from mesopontine cholinergic neurons which increases alertness and decreases fatigue. Caffeine intake also increases left frontal activation but moderate dose of caffeine impairs motor skills and it cannot substitute for memory enhancement or day time sleep.¹⁴ Students who used energy drinks to enhance their mental performance, their expectations were fulfilled, may be due to presence of caffeine but their physical performance was not enhanced according to their expectations. Students also did not enjoy the taste of energy drinks due to presence of carbohydrates and other substances which may also spoil its taste.²

College students use energy drinks for sleep deprivation during study and party time, to increase intellectual capacities and to obtain extra energy. College students and athletes use energy drinks to fulfill their cognitive and physical performance demands.¹⁰ In our study, the main source of information about energy drinks is friends and classmates 39.6% that is consistent with a previous study then internet 32% and television 22%.¹³

Increased energy drink intake can lead to decreased absorption of nutrients and fluids. Caffeine also acts as diuretic agent and it removes extra fluid from body that can lead to dehydration, fatigue and headache.¹⁵ Most of the students who used energy drinks have experienced gastric acidity 65.47%, palpitation 10.29%, irritability 6.61% and tremors 1.47% that is consistent with a previous study.⁴ Energy drink consumption was also associated with tachycardia, dyspnea, headache, fatigue and anxiety.²

The students of Sheikh Zayed Medical College, Rahim Yar Khan were well aware 84% about the presence of caffeine as active ingredient in energy drinks and 72% were aware of side effects of energy drinks, that was a good sign, it is consistent with a study in which medical students of Damam University had better knowledge about the ingredients of energy drinks as compared to the students of an ordinary science college.¹⁵

On the other hand it is also documented that there is an association between the occurrence of adverse effects with the increasing number of cans consumption and its combination with other caffeine sources.¹⁰ It was previously observed that knowledge about side effects did not had any effect on the consumption pattern of these beverages while in our study due to awareness about side effects 47% avoided the use of energy drinks.⁸

Conclusion

The present study showed that medical students were well aware of energy drinks and energy drink consumption was a regular practice to gain additional energy, for alertness, and to increase academic performance. But, the knowledge about caffeine and possible adverse effects of energy drinks was satisfactory.

Medical students should be educated in terms of energy drinks and related consequences as they will be involved in the education and awareness of young people among general population in future. Appropriate campaigns to motivate students for controlling energy drinks use are suggested.

Authors Contributions:

Authors Contribution: **ST:** Conception of work and revising. **KA:** Interpretation of data and drafting. **AMK:** Design of work and revising. **GR:**

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