

# Consumption of Energy Drinks in Medical Students of Nowshera Medical College

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## ABSTRACT

**Background:** Young adults use energy drinks that have high caffeine levels. Higher consumption will increase health risk. Effects of different ingredients on health need to be investigated. Consumption of energy drinks has become popular in students but there has been little research regarding energy drink consumption patterns in college students in Pakistan.

**Aim:** To determine energy drink consumption patterns in college students, prevalence and frequency of energy drink use and the perception of students about benefits and hazards of energy drinks consumption.

**Methods:** A cross sectional study was conducted on total of 180 medical students of Nowshera from all years of medical course from Jan 2019 to Dec 2019. 180 medical students were selected through convenient sampling technique. After obtaining verbal consent the data were collected using a self-administered, closed ended questionnaire and analyzed by using SPSS version 20. **Results:** Frequency of energy drinks consumption was found to be 110(61.1%) in a sample of 180 medical students of MBBS. Sting was the most common brand consumed 73.33% consumed by them. The major reasons reported for its usage were to gain/replenish energy and boost stamina by 46(29.8%), and studying for examination by 25(16.2%). Advertisement 24(15.5%) was reported as the major source of information followed by friends 47(30.5%). Significant differences were found between usage of energy drinks with gender (<0.001), i.e., 79(71.8%) males and 31(28.2%) females.

**Conclusion:** Consumption of energy drinks, despite the variation in the reason for choosing such drinks, is quite common in college students. Consumption rate was high in male gender (63.9%). The main reasons for consumption were to gain/replenish and boost energy and to increase the concentration in studies. A greater percentage (54.6%) of the students were aware of the adverse effects of energy drinks consumption.

**Keywords:** Energy drinks, Health risk, Consumption, Energy, Socioeconomic status.

## INTRODUCTION

Energy drinks are a group of beverages that contain caffeine along with added ingredients like taurine, vitamins, herbs and simple sugars<sup>1</sup>. In any energy drink the most important and active ingredient is caffeine ranging from 80-150mg per 8oz serving<sup>2</sup>. Each ingredient has its own specific effect on body physiology e.g. Caffeine effects on executive control and working memory, and reduces simple and choice reaction time. It reduces feelings of fatigue and increases tension and vigor.

Taurine reverses the effects of caffeine on vigor and caffeine-withdrawal symptoms<sup>3</sup>. Glucose in combination with caffeine, enhances object working memory and in combination with taurine, enhances orienting attention.

A caffeine-aurine drink does not increase the overall performance of an individual however the use of caffeine drink likely increases the performance of particularly athletes<sup>4</sup>, generating a number of side effects including palpitations, hypertension, diuresis, central nervous system stimulation, nausea, vomiting, marked hypocalcemia, metabolic acidosis, convulsions and, in rare cases, even death. In adults, there is also an increased risk of arterial hypertension and Type 2 diabetes, as high consumption of caffeine reduces insulin sensitivity.

Energy drinks popularity is increasing because of targeted marketing for youth. The side effects of consuming energy drinks have also been ruled out in several studies, having major cardiovascular abnormalities, stress, anxiety, depressive effects. Sleep dissatisfaction, tiredness/fatigue, late bedtime, headaches, and stomachaches and irritation are related with Energy drinks<sup>17</sup>. About 68% of the European population, between 10-18 years of age consumes energy drinks<sup>6</sup>. Previously, the use of energy drinks was restricted to athletes only but now in order to improve their

work ability, concentration, memory and alertness a greater percentage of adolescents are consuming it<sup>8,9</sup>. Consumption of energy drinks in medical students is becoming more prevalent because students try to reduce sleep and boost energy particularly during examination<sup>7</sup>.

Some drink it for taste as a soft drink, and those who practice sports are more willing to drink energy drinks. Boys are found to consume at a greater percentage than girls<sup>11</sup>.

The objective of the study was to determine energy drink consumption patterns in college students, prevalence and frequency of energy drink use and the perception of students about benefits and hazards of energy drinks consumption.

## MATERIALS AND METHODS

This was a cross sectional study in which 180 Medical students were included after written informed consent. Study was performed from January 2019 to December 2019. This study was conducted in Nowshera. Volunteers, both Male and female from 1<sup>st</sup> to final year MBBS students were included. A close ended questionnaire was designed in the form of a printed Performa. Data was collected by probability technique. After collection of data, analysis was carried out using SPSS version 20. Chi-square test was applied for categorical variables. P-value of 0.05 or less was considered as statistically significant. Permission was obtained from Institutional Ethical Review Board.

## RESULTS

The study was conducted in 180 Medical students of MBBS from 1<sup>st</sup> to Final year. Mean age of students was 21.64±1.535 years. Out of 180, 115 (63.9%) of the participants were male and 65 (36.1%) of the participants were females.

Out of total 180 students, 110(61%) consume energy drinks where 70(38.9%) did not consume energy drinks on regular basis. More students, 154(85.6%) out of 180 students had consumed

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energy drinks sometime during their life and 26(14.4%) students never consumed energy drinks during their life.

When compared within gender, out of total 115 males, 79(71.8%) consumed energy drinks while 36(51.4%) males did not consume. Out of 65 total female students, 31(28.2%) consumed energy drinks and 34(52.3%) females do not consume energy drinks. Values with P value less than 0.05 were significant. The sample included both hostelites and day scholars. Hostile students were 155(86.1%) and day scholar students were 5(13.9%).

As depicted above hosteller students consumed more EDs as compared to day scholar i.e., 96(87.3%) hostellers and 59(84.3%) day scholars while 14(12.7%) hostellers and 11(15.7%) day scholars did not consumed EDs. P value 0.66 which means that it is statistically not significant.

Those who consumed energy drinks were first introduced to energy drinks by advertisement 24(15.5%), at store 40(25.9%), on recommendation of friends 47(30.5%), social sittings 39(25.3%) or else 4(2.5%).

Out of total 154 students who consumed energy drinks, 76 (49.3%) consumed EDs because of its taste, 29(18.5%) used it because of ingredients, 24 (16.2%) used it because of popularity and 13 (8.4 %) used it because of price.

Symptoms experienced after energy drinks consumption were insomnia in 59(38.3%), anxiety in 19(12.3%), elevated heart rate in 16(10.3%), headache in 10(6.4%) and other symptoms were noted in 50(32.4%) of the consumers.

106(68.6%) of consumers said to have attained the desire effects after energy drinks consumption while 48(31.6%) consumers did not attain the desired effect after energy drinks consumption. Out of total 106(68.6%) of the consumers of EDs who attained the desired effects, 20(12.9%) attained alertness, increased stamina in 8(5.1%), energy in 35(22.7%) while staying awake for studying in 38(24.6%).

84(54.6%) percent of the consumers already knew about the adverse effects of EDs consumption whereas 70(45.4%) of the consumers had no knowledge of adverse effects. Out of 54.6% of aware consumers of energy drinks, the commonest adverse effect were stomach problems 33(21.4%), sleep disturbance 14(9.9%), obesity 13(8.4%), anxiety 8(5.1%), decreased body immunity 9(5.8%) and tachycardia 7(4.5%).

**DISCUSSION**

A total of 110 (61.1%) of students in our study consumed energy drinks on regular basis whereas an additional 44 students consumed energy drinks at least once in a life time making it 154 (85%) out of total 180 participants, which is quite a significant number comparable to studies carried out at a private medical college in Karachi (52%).

The difference may be attributed towards increased awareness about energy drinks since 2012. Recommendations from friends and stress related conditions may also play a role in learning students towards the consumption of energy drinks resulting in a higher percentage in our study.

More males students (71.8%) consumed compared to females 31(28.2%) which can be related to other similar studies like in Poland where 1148 boys and 1481 girls were questioned. 75% of boys and 61% of the girls consumed energy drinks that was significant (p<0.01)<sup>11</sup>. This can be accredited to an increased desire of stamina, staying awake, increased participation in sports and physical activities in boys.

Energy drinks are available under different brand names, the most consumed energy drink brand in our study was found to be Sting which (73.3%) of the total participants preferred. This result is different to a study performed in Agha Khan University (AKU) in 2013 where Red Bull was the most consumed brand (43.4%)<sup>13</sup>. This may be due to the fact that Sting is a newer and cheaper than Red Bull, however Red Bull being more effective.

Among the desired effects being generated, the commonest in our study was (Insomnia) staying awake (21.4%) which is

comparable to a study performed at the University of Dammam where too the commonest desired effect generated by the consumption of ED's was the ability to stay awake longer (14.65%), (22.66%) both in males and females respectively (p<0.05)<sup>16</sup>. This is because students opt to perform well in annual examinations for which they tend to stay awake at nights to study and they believe that energy drinks are able to execute the job.

Another aspect that our study reveals is of the awareness regarding adverse effects after consumption of ED's, (54.6%) of the participants were aware while (45.4%) were not aware of the adverse effects which is slightly lower than the results observed in a study carried out in King Faisal University-Al Ahssa, Saudi Arabia where (75.2%) of the total consumers were aware while (24.8%) were not aware of the adverse effects<sup>24</sup>.

Among the side effects the commonest that was found in our study was stomach problems (24.1%) which are contradictory to a web based survey carried out in Canada where tachycardia (24.7%) was found to be the commonest side effect experienced<sup>25</sup>. This may be due to cheap quality of energy drink consumed in our college causing stomach problems.

**CONCLUSION**

Majority of the medical students, specially, male students consume energy drinks. Sting brand was the most preferred drink. Excessive use is associated with higher side effects. Society and students should be educated about the potential danger and health risks of energy drink consumption.

Table 1: Present consumption of energy drinks in males and females students

Gender	Energy drinks consumption		Total
	yes	No	
Male	79(68.7%)	36(31.3%)	115(100.0%)
Female	31(47.7%)	34(52.3%)	65(100.0%)
Total	110 (61.1%)	70(38.9%)	180(100.0%)

Table 2: Present consumption of energy drinks in day scholars and hostellers

Residency of student	Energy drinks consumption		Total
	Yes	no	
Hostilities	96(87.3%)	59 (84.3%)	155(86.1%)
Day Scholar	14(12.7%)	11(15.7%)	25(13.9%)
Total	110	70	180

Table 3: Reason for using energy drinks

Reasons	Frequency	Percent
Sports	16	10.3
Mixing with alcohol	4	2.6
Staying awake	33	21.4
Mental enhancer	30	19.4
Studying	25	16.2
Energy boost and Stamina	46	29.8
Total	154	85.6

**REFERENCES**

1. Imran SS, Khan KW, Maqsood I, Mehmood M, Tallae T. Perception And Practice Of Energy Drinks Consumption By Medical Students Of Wah Medical College. PAFMJ. 2018; 68 (5): 1323-26.
2. Alsunni AA. Energy drink consumption: beneficial and adverse health effects. Int J Health Sci 2015; 9(4): 468-74.
3. Giles GE, Mahoney CR, Brunye TT, Gardony AL, Taylor HA, Kanarek RB. Differential cognitive effects of energy drink ingredients: caffeine, taurine, and glucose. Pharmacol Biochem Behav. 2012 Oct; 102(4): 569-77.
4. Gwacham N, Wagner DR. Acute effects of a caffeine-aurine energy drink on repeated sprint performance of American college football players. Int J Sport Nutr Exerc Metab. 2012 Apr; 22(2):109-16. Epub 2012 Feb 15.

5. Breda JJ *et al.* Energy Drink Consumption in Europe: A review of the risks, adverse health effects, and policy options to respond. *Front public health* 2014; 2:134.
  6. Visram S, Cheetham M, Riby DM, Crossley SJ, Lake AA. Consumption of energy drinks by children and young people: A rapid review examining evidence of physical effects and consumer attitudes. *BMJ Open* 2016; 6(10): e010380.
  7. Aslam HM, Mughal A, Edhi MM, Saleem S, Rao MH, Aftab A *et al.* Assessment of pattern for consumption and awareness regarding energy drinks in medical students. *Arch Public Health* 2013; 71(1): 31.
  8. Musaiger A, Zagzoog N. Knowledge, attitudes and practices toward energy drinks in adolescents in Saudi Arabia. *Glob J Health Sci* 2013; 6(2): 42-6.
  9. Aljaloud SO. Use of energy drinks among college students in Saudi Arabia. *Am J Sports Med* 2016; 4(3): 49-54.
  10. Costa BM, Hayley A, Miller P. Young adolescents' perceptions, patterns, and contexts of energy drink use. A focus group study. *Appetite* 2014 Sep;80:183-9.
  11. Nowak D, Jasionowski A. Analysis of the consumption of caffeinated energy drinks among polish adolescents. *Int J Environ Res Public Health*. 2015 Jul 10;12(7):7910-21.
  12. Hidiroglu S, Tanriover O, Unaldi S, Sulun S, Karavus M. A survey of energy-drink consumption among medical students. *J Pak Med Assoc*. 2013 Jul;63(7):842-5.
  13. Usman A, Bhombal ST, Jawaid A, Zaki S. Energy drinks consumption practices among medical students of a Private sector University of Karachi, Pakistan. *J Pak Med Assoc*. 2015 Sep;65(9):1005-7.
  14. Alsunni AA. Energy drink consumption: beneficial and adverse health effects. *Int J Health Sci (Qassim)*. 2015 Oct; 9(4): 468–474.
  15. Bigard AX. [Risks of energy drinks in youths]. *Arch Pediatr*. 2010 Nov;17(11):1625-31. doi: 10.1016/j.arcped.2010.08.001.
  16. Alsunni AA, Badar A. Energy drinks consumption pattern, perceived benefits and associated adverse effects amongst students of University of Dammam, Saudi Arabia. *J Ayub Med Coll Abbottabad*. 2011 Jul-Sep;23(3):3-9.
  17. Al-Shaar L *et al.* Health effects and public health concerns of energy drink consumption in the United States: A Mini-Review. *Front Public Health*. 2017; 5: 225.
  18. Larson N, Laska MN, Story M, Neumark-Sztainer D. Sports and energy drink consumption are linked to health-risk behaviours among young adults. *Public Health Nutr*. 2015 Oct;18(15):2794-803.
  19. Reid JL, Hammond D, McCrory C, Dubin JA, Leatherdale ST. Use of caffeinated energy drinks among secondary school students in Ontario: Prevalence and correlates of using energy drinks and mixing with alcohol. *Can J Public Health*. 2015 Mar 12;106(3):e101-8.
  20. Casuccio A *et al.* Knowledge, attitudes, and practices on energy drink consumption and side effects in a Cohort of Medical Students. *J Addict Dis*. 2015;34(4):274-83.
  21. Cabezas-Bou E *et al.* A Survey of Energy Drink Consumption Patterns Among College Students at a Mostly Hispanic University. *J Caffeine Res*. 2016 Dec 1;6(4):154-162.
  22. Friis K, Lyng JI, Lasgaard M, Larsen FB. Energy drink consumption and the relation to socio-demographic factors and health behaviour among young adults in Denmark. A population-based study. *Eur J Public Health*. 2014 Oct; 24(5): 840-844.
  23. Pettit ML, DeBarr KA. Perceived stress, energy drink consumption, and academic performance among college students. *J Am Coll Health*. 2011;59(5):335-41.
  24. Ali SI *et al.* Awareness toward Energy Drinks among Medical Students in King Faisal University. *IJHS*. 2016 Mar; 3(2):295-299.
  25. Hammond D, Reid JL, Zukowski S. Adverse effects of caffeinated energy drinks among youth and young adults in Canada: a Web-based survey. *CMAJ Open*. 2018 Jan-Mar; 6(1): 19-25.
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