

# Energy Drink Consumption and Eating Habits among Students of a Public Sector University in Islamabad, Pakistan



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## Abstract

**Background:** Energy drinks are widely consumed globally, with various brands strategically targeting the younger generation through marketing and advertising. Despite potential impacts on general health and dietary patterns, the youth often succumb to the allure of promised benefits, such as enhanced metabolism. This study aims to investigate the relationship between Energy Drink (ED) consumption, dietary habits among Air University (AU) students, and the motivations behind consuming energy drinks.

**Methods:** A cross-sectional study was conducted across different departments of Air University, involving 103 students aged 19-25 years (52 males, 51 females). Data was collected through a structured questionnaire and analyzed using SPSS version 23. Inferential statistics employed the chi-square test to determine the association between ED consumption and AU students' dietary habits.

**Results:** Among the 103 students, 31% (n=32) reported energy drink consumption, with 62.5% (n=19) not restricting consumption to special occasions. Non-ED consumers demonstrated greater awareness of energy drink side effects and exhibited better decision-making regarding the intake of various healthy food substances on a daily basis compared to ED consumers.

**Conclusion:** The study revealed a substantial proportion (31%) of ED consumers among AU students, indicating a lack of awareness regarding side effects and unhealthy dietary habits among this group.

**Keywords:** Energy drinks, non-energy drink consumers, Air University (AU), dietary habits.

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## Introduction

The world is changing at a fast pace, but our choices regarding food are still based on taste and affordability (1). Energy Drinks (ED) consumption has drastically increased over the past few years due to the physical and mental stimulation provided by these drinks as claimed by the manufacturing companies (2). A research carried out in Pakistan in 2019 showed the prevalence of ED among youths to be 42.89% (3). A survey carried out in United States regarding the frequency of ED consumption showed that these drinks were mostly consumed for reasons i.e. to boost metabolism, increase concentration while studying, driving, simply at parties or after a hangover (14). Similarly, research carried out in the US among teenagers who consumed these ED for 7 days had a high intake of fried and sugary foods as compared to those who did not consume ED (16). Likewise, the research conducted at Italian University manifested that out of 1007 students, 15.8% were habitual consumers, whereas 84.2% were occasional consumers. They consumed these drinks for similar reasons as seen in the US

students. It was found that habitual consumers not only had an unhealthy diet but also had disrupted sleeping patterns (8). In the Gulf Cooperation States, a meta analysis study done showed that 46.9% of adult population consumed ED with an average age of consumption of ED is 16 years and also more males as compared to females were seen to consume ED (15). In Palestine, ED consumption was linked to less intake of milk, high-sugar diet and obesity among teenagers where 20% (54 out of 268) boys and 42% (158 out of 377) girls were reported to be overweight/obese (17). A study carried out in South Korea showed the detrimental effect of ED consumption on sleep, mood and stress levels along with more junk food consumption in Korean youths. (18)

Four medical colleges of Karachi, Pakistan showed that 42.89% (350) students were ED consumers while 59.50% (516) were non-ED consumers. Most were seen to consume ED for energy-boost, enhanced concentration, studying, partying or driving. About (47.8%) does not consume ED and were aware of its side effects or thought it had no special effect 51.3%. (3)

Most of the previous studies were correlating ED consumption with the side effects seen on the human body like insomnia, depression, headache, raised blood pressure, dehydration and withdrawal symptoms (10, 11). In Pakistan, over the past few years, there has been a noticeable increase in malnutrition rates, with a growing number of people suffering from inadequate intake of essential nutrients. (19). Healthy eating patterns and food choices developed early in life are better than changing them much later in life (9)

The aim of our study was to increase awareness and improve dietary habits and prevent ED consumption among the university students by determining the frequency of ED consumption, identify the reason behind ED consumption, to assess dietary pattern and finally to see any association between ED consumption and dietary pattern among the the Air University (AU) students between the age group of 19-25 years old.

**Methodology**

A cross-sectional study was conducted at AU located in Islamabad, Pakistan consisting of about a total of 5000 students. Non probability convenience sampling was done targeting bachelor students who were out for a break after attending their lectures, waiting for their next lectures or had free time for the day. A structured questionnaire was administered to assess the dietary pattern using a food frequency questionnaire which captured their weekly intake of various food groups based on the food pyramid. Students were asked about wheather they consumed ED and the brand of ED consumed which included Red Bull, Roar, Sting, and Espresso, reasons for consuming ED and frequency of consumption. The questionnaire was pretested at Bahria University to ensure its validity in a similar setting. Students were selected from various departments of AU including Computer science, Mechanical and Electrical Engineering, Bachelor of Business Administration, Bachelors of Maths, Bachelors of Physics, Humanities, Bachelor of Medicine and Bachelor of Surgery. The study duration was from March to September 2019. Data was analyzed by using the SPSS 23 software.

Data was presented in the form of tables and graphs. Frequency and proportions were calculated for categorical while summary statistics for continuous variables. Chi square test was used to determine the association between ED consumption and dietary habits of the AU students.

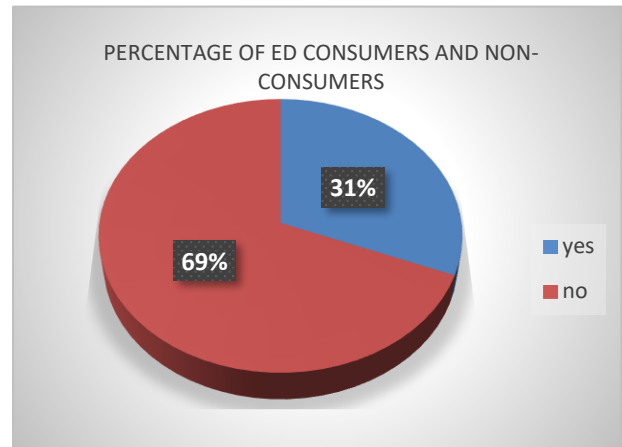
**Results**

Questionnaires were distributed to 150 students, resulting in 103 completed questionnaires forms from different departments of AU. The sample included 52 males and 51 females, majority of whom were seen to be from MBBS. (Table 1).

**Table 1: Students selected from different departments**

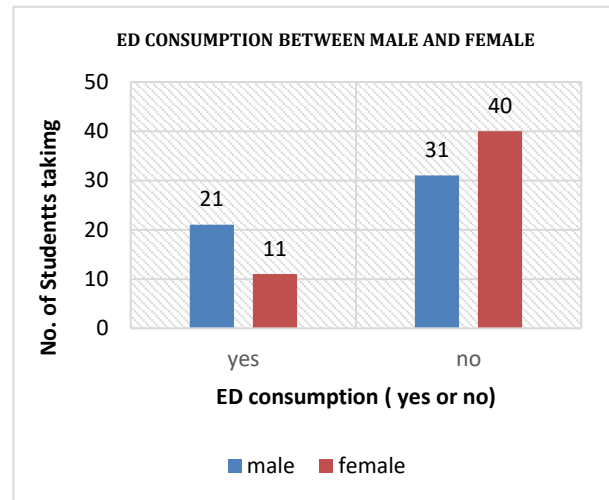
Department	Male (n)	Female (n)	Total
BS Physics	1	3	4
Computer Engineering	3	1	4
Humanities	2	3	5
Electrical Engineering	3	4	7
BS Math	5	4	9
Mechanical Engineering	7	6	13
BBA	12	6	18
MBBS	19	24	43
Total	52	51	103

Among the participants, 32 students (31%) reported consuming ED, while the majority students 71 (69%) did not consume ED. (Fig 1)



**Figure 1: Percentage of ED consumers and non-ED consumers.**

A total of 21(10%) males and 11 (5%) females consumed ED, indicating a male predisposition to ED consumption. (Fig 2)



**Figure 2: ED consumption in male and female students**

A total of 31% (n=32) students were identified who consumed ED. Out of the ED consumers, 62% (n=19) reported not needing any special occasion to consume them, while 21% (n=6) stated consuming them at parties. Additionally, 6% (n=2) consumers reported consuming ED before studying or engaging in physical activities such as sport. (Table 2)

**Table2: ED consuming factors**

Reason behind consumption of ED	Percentage (%)
Other reason	3.1
During sports	6.25
Before exams	6.25
At parties	21.9
No need for special occasion	62.5

Food groups that were taken into consideration from the food pyramid included carbohydrates: (roti, naan, bread, pasta), vegetables/fruits, proteins (eggs, chicken, mutton, beef), dairy (butter, milk, cheese, yoghurt) and sweets (chocolates, halwa kheer) etc. The intake was asked on

weekly basis in the food questionnaire that was compiled from various questionnaires grouped together. The intake of all types of food groups were relatively higher among non-ED consumers as compared to ED consumers (Fig 3)

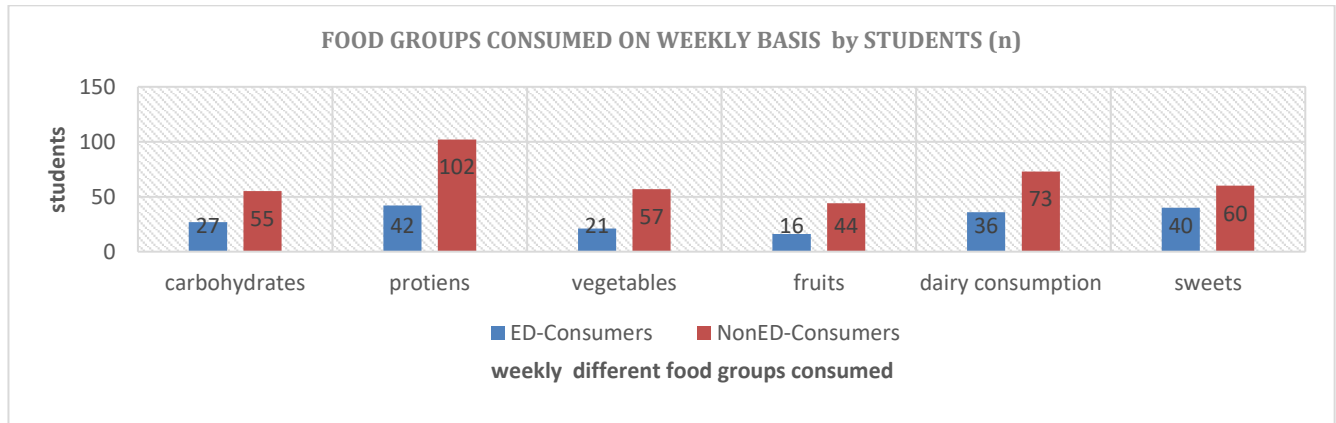


Figure 3: Food groups consumed on weekly basis by ED and Non-ED consumers

A cross tabulation showed the comparison between ED and non-ED consumers and their dietary pattern variables. A healthy diet consumed on a weekly basis was considered from the food pyramid which included carbohydrates, proteins, fruits, vegetables, and fats. Every individual was given a score of 1, taking any of the considered food groups on a weekly basis. Individuals who consumed food from every group of the food pyramid on weekly basis were added and a mean score was calculated which was 8. Individuals who got a score equal to or greater than 8 were considered have a healthy diet.

Figure 4 shows 59.3% (n=35) non-ED consumers are having a healthy diet in comparison to 40.7% (n=24) ED consumers with a healthy diet. In a similar pattern, 81.8% (n=36) non-ED consumers are seen to have an unhealthy diet as compared to 18.2% (n=8) ED consumers with an unhealthy diet.

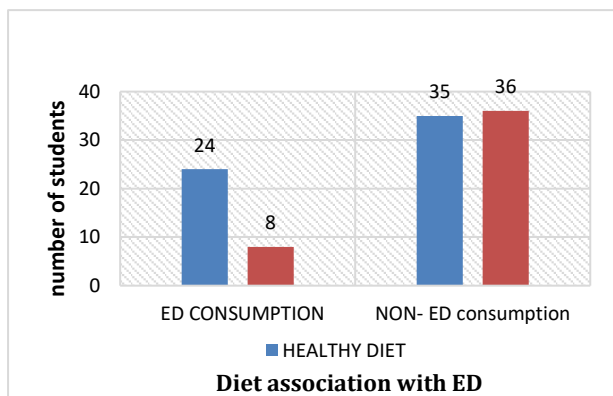


Figure 4: Healthy and unhealthy dietary association between ED and non-ED consumers

A chi-square test was done to determine the association between the dietary patterns of ED and non-ED consumers, which showed a significant difference as p-value was 0.018, indicating there is an association between dietary choices and ED consumption.

### Discussion

The research showed 31% (n= 32) prevalence of ED consumption among the data collected from 103 students within the AU which corresponds to high ED consumption also seen in various universities (14, 8, 15, 3). Among the ED consumers, 10%(n=21) are males compared to 5% (n=11) are females which corresponds to a high male predisposition to ED consumption. This aligns with the research carried out in Asia but contradicts to research conducted in the USA which showed 53% prevalence rate in females (16,8,15,3,14). This difference may be due to the fact that our research primarily included undergraduates while their research included both undergraduates and post-graduates (14). 62.5% ED consumers reported no special occasion required to consume ED in our study while previous studies indicated most students consumed ED because of the euphoric effect, out of curiosity, to increase concentration. (3,8,14,15,18). Frequency of ED consumption is reported to be one drink a week by most of the respondent’s in our study which is similar to the frequency rate also found in previous research (18, 14). Few studies have been reported to determine the impact of ED consumption on the dietary habits of individuals. A research which investigated the past 7 days food consumption of ED consumers reported more intake of chocolate, frozen desserts, sugared cereals, fried potatoes, fried chicken and chips, in contrast to our findings where less weekly intake of fruits, vegetables, dairy products, carbohydrates, proteins, snacks, fast food and fats consumed by ED as compared to non-ED (16). This difference in findings may have arisen due to the fact that previous research had taken into account only the immediate last week dietary habits in ED consumers.

Our findings suggest that ED consumption decreases the appetite of individuals, but due to limitations, the exact causality of association between ED consumption and food habits cannot be made. Future longitudinal study on a large sample is needed to find out exact causality in order to take appropriate measures.

## Conclusion

An increased percentage of ED consumption was observed among the AU students who either didn't need any special occasion or reason to consume these drinks as compared to non-ED consumers who were more aware of its side effects. The university could organize awareness programs regarding ED and their effect on dietary habits and health in the long run.

## References

- Kim J, Yun S, Oh K. Beverage consumption among Korean adolescents: data from 2016 Korea Youth Risk Behavior Survey. *Nutrition research and practice*. 2019;13(1):70-5.
- Alsunni AA. Energy Drink Consumption: Beneficial and Adverse Health Effects. *International journal of health sciences*. 2015;9(4):468-74.
- Aslam HM, Mughal A, Edhi MM, Saleem S, Rao MH, Aftab A, et al. Assessment of pattern for consumption and awareness regarding energy drinks among medical students. *Archives of Public Health*. 2013;71(1):31.
- Larsen FB, Friis K, Lyng JI, Lasgaard M. Energy drink consumption and the relation to socio-demographic factors and health behaviour among young adults in Denmark. A population-based study. *European Journal of Public Health*. 2014;24(5):840-4.
- Mwape RK, Mulenga D. Consumption of Energy Drinks and Their Effects on Sleep Quality among Students at the Copperbelt University School of Medicine in Zambia %J Sleep Disorders. 2019;2019:7.
- Robby M, Sanad SJSRR. Survey of energy drink consumption and adverse health effects: a sample of university students in the United Arab Emirates. 2017;15(4):1-13.
- van der Horst K, Timperio A, Crawford D, Roberts R, Brug J, Oenema A. The School Food Environment: Associations with Adolescent Soft Drink and Snack Consumption. *American Journal of Preventive Medicine*. 2008;35(3):217-23.
- Vitiello V, Diolordi L, Pirrone M, Donini LM, Del Balzo V. Energy drink consumption in Italian university students: food habits and lifestyle. *La Clinica terapeutica*. 2016;167(6):175-81.
- The Healthy School Canteen Programme: A Promising Intervention to Make the School Food Environment Healthier %J Journal of Environmental and Public Health. 2012;2012:8.
- Reissig CJ, Strain EC, Griffiths RR. Caffeinated energy drinks—A growing problem. *Drug and Alcohol Dependence*. 2009;99(1):1-10.
- Seifert SM, Seifert SA, Schaechter JL, Bronstein AC, Benson BE, Hershorin ER, et al. An analysis of energy-drink toxicity in the National Poison Data System. *Clinical Toxicology*. 2013;51(7):566-74.
- Malinauskas BM, Aebly VG, Overton RF, Carpenter-Aebly T, Barber-Heidal KJNJ. A survey of energy drink consumption patterns among college students. 2007;6(1):35.
- Ibrahim NK, Iftikhar R. Energy drinks: Getting wings but at what health cost? *Pakistan journal of medical sciences*. 2014;30(6):1415-9.
- Malinauskas BM, Aebly VG, Overton RF, Carpenter-Aebly T, Barber-Heidal K. A survey of energy drink consumption patterns among college students. *Nutrition Journal*. 2007;6(1):35.
- Alhyas L, El Kashef A, AlGhaferi H. Energy drinks in the Gulf Cooperation Council states: A review. *JRSM open*. 2015;7(1):2054270415593717-.
- Williams RD, Jr., Odum M, Housman JM. Adolescent Energy Drink Use Related to Intake of Fried and High-sugar Foods. *American journal of health behavior*. 2017;41(4):454-60.
- Amer S, Kateeb E, Hassan A, Musa F. Dietary habits, energy drink consumption, obesity, and physical activity in marginalised Palestinian schools in the West Bank: a cross-sectional study. *The Lancet*. 2019;393:S13.
- Park S, Lee Y, Lee JHJNJ. Association between energy drink intake, sleep, stress, and suicidality in Korean adolescents: energy drink use in isolation or in combination with junk food consumption. 2016;15(1):87.
- Cesare MD, Bhatti Z, Soofi SB, Fortunato L, Ezzati M, Bhutta ZA. Geographical and socioeconomic inequalities in women and children's nutritional status in Pakistan in 2011: an analysis of data from a nationally representative survey. *The Lancet Global Health*. 2015;3(4):e229-e39.
- Poulos NS, Pasch KE. Energy drink consumption is associated with unhealthy dietary behaviours among college youth. *Perspectives in public health*. 2015;135(6):316-2.