

# Energy Drinks Knowledge and Consumption Practices: A Cross Sectional Analysis Across Age Groups and Academic Streams

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## ABSTRACT

**Background:** Energy drinks constitute a distinct class of non- alcoholic functional beverages formulated to enhance mental alertness, cognitive processing and physical stamina.

**Objective:** The present study was conducted to determine the association between demographic variables (Age and academic stream of study) and the level of knowledge and consumption practices among college students.

**Methodology:** A descriptive, cross sectional research design was adopted. A total sample of 100 participants, both male and female students between the age group of 18 -25 years were selected through simple random sampling technique. The data was collected through offline self-administered questionnaires. The data obtained was compiled into excel sheet and subjected to statistical analysis using chi-square test.

**Results:** It was observed that out of 100 participants, a majority demonstrated a “Good” level of knowledge (76%, n= 76) regarding energy drinks, while 24%(n=24) falls into “moderate” and “poor” knowledge category. A chi-square test reveals that no statistically significant association between student's stream of study and their knowledge level ( $p = 0.527$ ), because p value is more than the standard significance threshold ( $p > 0.05$ ). over half of participants (54%) reported occasional intake, while 22% (n = 22) were engaged in frequent consumption. The remaining 24% (n = 24) reported never consuming these beverages. A chi-square test showed a statistically significant association between age and consumption practices ( $p = 0.02$ ), it indicates consumption patterns varied across age groups.

**Conclusion:** Students showed high levels of knowledge about energy drinks across all academic streams. But age plays an important role in how often they consumed them. Therefore, highlighting the need for age-targeted public health interventions.

**Keywords:** Energy drinks, College students, knowledge, Practices, Age demographics, Academic stream.

## INTRODUCTION

The Food and Drug Administration (FDA) defines energy drinks (EDs) as “a class of products in liquid form that typically contains caffeine, with or without other added ingredients.” They typically contain large amounts of caffeine, added sugars, other additives, and legal stimulants such as Guarana, Taurine,

and L-carnitine. These legal stimulants can increase alertness, attention, and energy, as well as increasing blood pressure, heart rate, and breathing. (2) Most energy drinks contain 80-150 mg of caffeine per serving similar to a cup of coffee. Caffeine is a stimulant and in high amounts causes increased attention span, enhanced memory, and better Mood. Studies have even shown a negative association between cognitive decline and caffeine intake. These beneficial effects are often highlighted through overenthusiastic marketing by energy drink Companies. (1). When higher doses of caffeine are combined with these other substances currently blended in EBs, the subsequent effect cannot always be predicted; adverse effects have been reported, including cardiac arrest. (4). Energy Drinks are often sold in convenience stores, supermarkets, and other retail outlets. They are also available in a variety of flavours, sizes, and packaging. Some of the major companies in the Energy Drink market include Red Bull, Monster, Rockstar, NOS, and Bang. Other companies include Celsius, Reign, Gatorade, and Xyience. (6). Researchers have shown that the major consumer group of energy drink industry are people between the ages of 18 and 34. The expansion of e-commerce has shifted energy drink marketing to sell directly to consumers. In 2025, many beverage businesses develop online marketplaces and their own websites to sell drinks. (3).

## **METHODOLOGY**

### **Selection of subjects**

A total sample of 100 participants was selected through simple random sampling technique. The samples were drawn from both male and female students between the age group of 18 – 25 years from old city of Hyderabad, Telangana state in India. A descriptive cross- sectional study design was adopted to assess the knowledge and consumption practices regarding energy drinks. Both male and female students with different academic backgrounds were included in the study. A well-structured self-administered questionnaire was made and distributed through offline mode. The questionnaire includes the participant's sociodemographic profile, knowledge and practices on energy drinks. The type of questions included were closed ended questions. Scoring was given to assess the knowledge, and practices of the participants and 1 point were given for every correct answer and no point were given to wrong answers or left blank.

## **STATISTICAL ANALYSIS**

The data collected through questionnaires was compiled in the form of tables and were interpreted and analysed using MS excel to calculating percentages, frequency. For statistical Analysis chi-square test was used to determine if there is a significant relationship or association between two categorical variables.

## **RESULTS AND DISCUSSION**

**Socio-demographic profile** were depicted in the table 1, which shows that majority of the sample participants composed of young adults and the largest age group represented in the study is 22 years (n = 19, 19%), followed by 21 years (n = 17, 17%). The least age group of respondents were 24 and 25 years (n = 7, 7%). Out of 100 participants being female making up 62% of the total. Males constitute a minority, with 38 participants, representing 38% of the total. More than half of the participants were pursuing postgraduate studies (n = 51, 51%), followed by Undergraduate studies (n = 47, 47%) and other. Majority of the participants are from science stream accounting for nearly 46% of total sample size. Arts is the second most common field with 24% of participants. The Medical and Engineering fields are equally represented with same 15% of participants each.

**Knowledge regarding Energy drinks** of the participants were depicted in the table 2, which shows that the Majority of participants, nearly 93% are aware of high sugar content and 74% aware of caffeine content, in terms of product pricing, 64% of the respondents believes it is reasonable. Most participants also understand about physical risks. Nearly 90% of respondents know that drinking too much can rise blood pressure and effects heart rhythms. The data also reveals some knowledge gaps in participant. Likewise, 58% of respondents felt like they knew about ingredients, whereas 25% & 17% are grouped into either they didn't know or unaware of exact or each ingredient present in the drinks. Nearly 39% of participants mistakenly considered it as same as soft drinks. Majority of the participants (42%) does not prefer any of the brands of the energy drinks. From the listed brands, Red Bull (13%) was top most preferred brand, followed by sting and campa (12%) each. Monster and charged were also equally preferred by (6%) of participant each. The least preferred brand among participants is Hell (3%). The study findings also indicates that most of the consumers do not experience any adverse health effects but among those who do, sleep- related and digestive issues are the most common.

**Practices regarding Energy drinks** were depicted in the table 3, which shows that occasional users are dominated, while a quarter of them avoids it completely. this reflects that energy drinks have become a part of routine for many young adults. majority of 55.4% (n = 46) reported drinking energy drinks for taste and flavour. Other reasons were, 14.4% (n = 12) to stay awake during studies, to enhance athletic performance 10.8% (n = 9), and to manage stress or fatigue 9.6% (n = 8), to feel energetic and strong 8.4% (n = 7). Only 1.2% respondents consume them to focus. The study finding also indicates that 1 Can consumption is the most common practice among participants. Majority of the participants 53% scored in the safe category, showing majority follows low risk consumption habits. 45% of participants falls under moderate category, it means they have a chance to improve their daily life style habits. Nearly a small portion of 2% falls under High- risk category.

**Association between Academic streams and level of knowledge** were given in the table 4, which shows that there is no statistically significant association between academic stream of participants and knowledge level ( $p = 0.57$ ). The  $p$  value is more than 0.05 ( $p > 0.05$ ) it indicates knowledge level did not differ significantly across streams. Among 100 participants, 76% (n = 76) had 'good' knowledge and 24% (n = 24) had 'moderate/poor' knowledge. The finding suggests that most participants had good knowledge regardless of their streams. Medical students showed 100% good knowledge, but the differences across the academic streams were not statistically significant. Overall, these finding indicates that young adult population which is surveyed are highly aware of the ingredients, cost, facts and adverse effects about energy drink consumption.

**Association between Age and consumption practices** were given in the table 5, which represents a statistically significant association between age and consumption practices ( $p = 0.02$ ). the  $p$  value is less than 0.05 ( $p < 0.05$ ) it indicates consumption pattern varied across age groups. Among 100 participants, 54% (n = 54) reported occasional consumption and 22% (n = 22) reported frequent consumption. Nearly 24% (n = 24) never consumed. The finding indicates that energy drinks are very popular among younger students. The chi-square test showed a statistically significant association ( $p = 0.026$ ), with 18-21 year old reporting higher consumption than 22-25 years old. It also suggests that age influences consumption habits.

## CONCLUSION

It can conclude that most college students have good knowledge about energy drinks and their health eff-

ects, regardless of their academic stream. However, this knowledge does not always lead to safer drinking habits. Many students consume energy drinks for the taste and flavour, to cope with stress, or doing late night study sessions, with 47% falling in moderate to high-risk consumption. Age was a key factor, with students aged 18-21 years consuming more frequently than older students. These results highlight the gap between awareness and behaviour, suggesting that campus wellness initiatives should focus like stress management and healthy sleep, especially for younger students.

**Table (1) Socio-demographic profile of the study participants (N = 100)**

| S. No | Variables                 |               | Frequency (n) | Percentage (%) |
|-------|---------------------------|---------------|---------------|----------------|
| 1.    | <b>Age</b>                | 18            | 12            | 12             |
|       |                           | 19            | 11            | 11             |
|       |                           | 20            | 13            | 13             |
|       |                           | 21            | 17            | 17             |
|       |                           | 22            | 19            | 19             |
|       |                           | 23            | 14            | 14             |
|       |                           | 24            | 7             | 7              |
|       |                           | 25            | 7             | 7              |
| 2     | <b>Gender</b>             | Male          | 38            | 38             |
|       |                           | Female        | 62            | 62             |
| 3     | <b>Educational status</b> | Undergraduate | 47            | 47             |
|       |                           | Postgraduate  | 51            | 51             |
|       |                           | Other         | 2             | 2              |
| 4     | <b>Field of study</b>     | Arts          | 24            | 24             |
|       |                           | Medical       | 15            | 15             |
|       |                           | Engineering   | 15            | 15             |
|       |                           | Science       | 46            | 46             |

**Table (2) Knowledge regarding Energy drinks**

| S. No | Knowledge items                                 |            | Frequency (n) | Percentage (%) |
|-------|-------------------------------------------------|------------|---------------|----------------|
| 1     | Do you think the price of EDs are reasonable?   | Yes        | 64            | 64             |
|       |                                                 | No         | 36            | 36             |
| 2     | Do you think EDs contain caffeine?              | Yes        | 74            | 74             |
|       |                                                 | No         | 8             | 8              |
|       |                                                 | Don't know | 18            | 18             |
| 3     | Do you think EDs contain high amounts of sugar? | Yes        | 93            | 93             |
|       |                                                 | No         | 7             | 7              |
| 4     | Do you consider EDs same as soft drinks?        | Yes        | 39            | 39             |
|       |                                                 | No         | 61            | 61             |
| 5     | Do you aware of Ingredients present in EDs?     | Yes        | 58            | 58             |
|       |                                                 | No         | 17            | 17             |

|   |                                                                      |                                 |    |    |
|---|----------------------------------------------------------------------|---------------------------------|----|----|
|   |                                                                      | Don't know                      | 25 | 25 |
| 6 | Can excessive Consumption Affects the heart rhythm or Blood pressure | Yes                             | 90 | 90 |
|   |                                                                      | No                              | 10 | 10 |
| 7 | Type of energy drink prefer                                          | red bull                        | 13 | 13 |
|   |                                                                      | sting                           | 12 | 12 |
|   |                                                                      | monster                         | 6  | 6  |
|   |                                                                      | hell                            | 3  | 3  |
|   |                                                                      | campa                           | 12 | 12 |
|   |                                                                      | charged                         | 6  | 6  |
|   |                                                                      | none of the above               | 42 | 42 |
| 8 | Side effects of energy drink consumption                             | Heart palpitations              | 4  | 4  |
|   |                                                                      | Insomnia or difficulty sleeping | 8  | 8  |
|   |                                                                      | Headaches or dizziness          | 9  | 9  |
|   |                                                                      | tremors                         | 1  | 1  |
|   |                                                                      | Increased anxiety               | 5  | 5  |
|   |                                                                      | Nausea or stomach upset         | 10 | 10 |
|   |                                                                      | none of the above               | 62 | 62 |
|   |                                                                      |                                 |    |    |

**Table (3) Practices regarding Energy drinks**

| S. No | Practice items                    |                               | Frequency (n) | Percentage (%) |
|-------|-----------------------------------|-------------------------------|---------------|----------------|
| 1     | Frequency of use of energy drinks | daily                         | 4             | 4              |
|       |                                   | 2-3 times/W                   | 17            | 17             |
|       |                                   | Once a day                    | 24            | 24             |
|       |                                   | occasionally                  | 30            | 30             |
|       |                                   | never                         | 24            | 24             |
| 2     | Reason for consumption            | Stay awake for studying/exams | 12            | 14.4           |
|       |                                   | Improve athletic performance  | 9             | 10.8           |
|       |                                   | Taste/flavour                 | 46            | 55.4           |

|   |                |                                    |    |      |
|---|----------------|------------------------------------|----|------|
|   |                | Cope stress or fatigue             | 8  | 9.6  |
|   |                | Feel energetic & strong            | 7  | 8.4  |
|   |                | Help me focus & thud better grades | 1  | 1.2  |
| 3 | Number of Cans | 1 Can                              | 73 | 86.9 |
|   |                | 2 Cans                             | 9  | 10.7 |
|   |                | 3 or more                          | 2  | 2.3  |
| 4 | Practices      | Safe                               | 53 | 53   |
|   |                | moderate                           | 45 | 45   |
|   |                | High risk                          | 2  | 2    |

**Table (4) Association between Academic streams and level of knowledge**

|                    | KNOWLEDGE |               |             |
|--------------------|-----------|---------------|-------------|
| ACADEMIC STREAM    | Good      | Moderate/poor | Grand total |
| Arts               | 17        | 7             | 24          |
| Medical            | 15        | -             | 15          |
| Engineering        | 11        | 4             | 15          |
| Science            | 33        | 13            | 46          |
| <b>GRAND TOTAL</b> | <b>76</b> | <b>24</b>     | <b>100</b>  |

**Table (5) Association between Age and Consumption practices**

|                    | CONSUMPTION PRACTICES |                         |           |             |
|--------------------|-----------------------|-------------------------|-----------|-------------|
| AGE                | Daily/2-3times/w      | Once a day/occasionally | Never     | Grand total |
| 18-21              | 13                    | 33                      | 7         | 53          |
| 22-25              | 9                     | 21                      | 17        | 47          |
| <b>Grand total</b> | <b>22</b>             | <b>54</b>               | <b>24</b> | <b>100</b>  |

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