



## Consumo de bebidas energizantes en estudiantes universitarios en Latinoamérica

*Consumption of energy drinks among university students in Latin America*

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**Palabras claves:**

Bebidas energizantes, cafeína, estudiantes universitarios, Prevalencia

**Keywords:**

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**Resumen**

**Introducción.** Las bebidas energizantes tienen alta popularidad en la actualidad, especialmente en la población universitaria porque incrementan la resistencia física, aumentan el estado mental y evitan el sueño (1). **Objetivo.** Determinar la prevalencia de consumo de Bebidas Energizantes (BE) en los estudiantes universitarios a nivel de Latinoamérica mediante recopilación bibliográfica. **Metodología.** Se trabajó con una metodología cualitativa y exploratoria con un enfoque descriptivo a través de fuentes confiables que incluyen estudios desde el año 2013 hasta el año 2023 publicados en diferentes bases de datos de la Biblioteca Virtual de la Universidad Católica de Cuenca como: PubMed, Taylor & Francis, Scopus, Scielo y Google académico. **Resultados.** Se logró determinar la prevalencia del consumo de BE en los universitarios a nivel de Latinoamérica y tiene un promedio del 76%, siendo Ecuador el país con mayor prevalencia de consumo y el energizante más consumido consiste en bebidas con cafeína, que alcanzan el 47% de consumo. **Conclusión.** Las bebidas energizantes presentan efectos negativos en la salud de los estudiantes y población en general. **Área de estudio general:** Bioquímica y Farmacia. **Área de estudio específica:** Alimentos. **Tipo de estudio:** Artículo de revisión bibliográfica.

**Abstract**

**Introduction.** Energy drinks are currently extremely popular, especially among the university population because they increase physical endurance, increase mental state, and prevent sleep (1). **objective.** To determine the prevalence of consumption of Energy Drinks (BE) in university students in Latin America through a bibliographic compilation. **Methodology.** We worked with a qualitative and exploratory methodology with a descriptive approach through reliable sources that include studies from 2013 to 2023 published in different databases of the Virtual Library of the Catholic University of Cuenca such as: PubMed, Taylor & Francis, Scopus, SciELO and Google Scholar. **Results.** It was possible to determine the prevalence of BE consumption in university students in Latin America and it has an average of 76%, with

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Ecuador being the country with the highest prevalence of consumption and the most consumed energizer consists of caffeinated beverages, which reach 47% of consumption. **Conclusion.** Energy drinks have negative effects on the health of students and the general population. **General Study Area:** Biochemistry and Pharmacy. Specific area of study: Food. Type of study: Literature review article.

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## Introduction

Energy drinks first appeared in 1987; they are also known as stimulants because they include caffeine, guarana, herbal extracts, amino acids such as taurine and derivatives thereof such as carnitine and B vitamins. Some are characterized by containing high levels of caffeine and help maintain activity in people (1).

Energy drinks (ED) are highly concentrated products with dietary additives such as caffeine, sugars and taurine, which help increase energy, attention and concentration time. However, they cause harmful effects such as sleep problems, nausea, vomiting, chest pain and tachycardia in young people (2).

The World Health Organization (WHO) suggests that, due to their composition and effects, those drinks with a moderate energy content of 45 kilocalories per hundred milliliters and whose main ingredient is carbonated water and sugar should be called “stimulant drinks”. Their main peculiarity is that they contain caffeine and vitamins and, in some cases, they also add taurine, inositol, minerals, guarana extract and other components such as electrolytes and vitamin B6 (1).

Generally, entering higher education represents a stage of change in the lives of university students and is where the new responsibilities that arise as students advance into their professional lives become evident. In the university context, stressful situations develop that students experience, even if only temporarily, due to the completion of tasks and these require time, sleeplessness and concentration to fulfill the academic role. This behavior raises concerns about the possible adverse health effects associated with excessive consumption of these beverages.

## Methodology

The methodology is qualitative and exploratory with a descriptive approach, the bibliographic compilation technique was used through reliable sources including studies from 2013 to 2023 in English and Spanish.

The type of research allowed determining the prevalence of the types of drinks consumed by university students in Latin America. The information was collected through databases of the Virtual Library of the Catholic University of Cuenca such as: PubMed, Taylor & Francis, Scopus, Scielo and Google Scholar. The search includes scientific articles through the categories: consumption of energy drinks and prevalence.

## Results

The use of energy drinks is associated with the presence of insomnia symptoms in university students, which translates into memory problems, drowsiness and difficulty concentrating due to constant mood swings (3). However, studies indicate that university students have found it necessary to extend periods of wakefulness and reduce rest and sleep times, in order to achieve benefits in the academic and social fields.

Several studies carried out in the university community show that: in Mexico, out of 157 students between 18 and 45 years old, 77% consume energy drinks and the energy power is maintained one hour after having consumed it. They indicate that the reason why they do it is to increase energy and mood.(4).

Similarly, a study conducted by Usman et al. (2015), on young university students in Latin American countries, aimed to investigate the need of students to replenish energy and improve intellectual performance in exams and obtain. That energy drinks exceed 50% of consumption and indicates that the consumption of energy drinks increases mental capacity, improves concentration, increases the memory of content and completely relieves stress (5).

Following the same line, a research carried out in Colombia indicates that in that country the commercialization of energy drinks is regulated by composition laws and indicates the components of said consumption, in addition indicating that the effects are unfavorable due to the consumption of the type of drink (6).

One of the components of the most common energy drinks is Guarana, which contains caffeine as its main metabolite, whose main function is to stimulate the central nervous system (7). On the other hand, taurine is an amino acid from cysteine, which is used to produce energy, and is stored in the heart and liver, improving blood flow and positively influencing the brain (8). Finally, many drinks contain glucoronolactone, a natural metabolite that is formed from glucose in the liver and is found in smaller quantities in

foods such as wine as the main source. According to Peacock et al. (2013) (9) there is no regulation on the composition and consumption of BE, because it depends on the control of each country and the interaction values the actions for the abuse of intake.

Fulfilling the objective of this study to determine the prevalence in Latin American countries, research carried out in Argentina, Colombia, Peru and Ecuador is considered. In the first instance, in Argentina, the study by Martins et al. (2020) (10), determines the consumption of Psychostimulants (PS) in students of the Faculty of Medicine and presents the prevalence of the consumption of psychostimulants as cognitive enhancers, obtaining that 99% of them consumed some energizer, where coffee predominates in 93%, mate 91% and tea in 75%. The consumption of PS is a cognitive enhancer of common practice in Argentine university students (10).

In Colombia, the research by Manrique et al. (2015) (11) obtained the frequency of consumption of energy drinks in students of the health career at the Colombian University and evaluated the prevalence and characteristics of consumption of energy drinks in a sample of university students. The results in general indicate that the prevalence of consumption is twice a month per student in the last semester, and the main cause was to improve academic performance and overcome sleep. They conclude that the prevalence is evident and that it is necessary to carry out intervention strategies to reduce the risks derived from mixing energy drinks with alcohol (11).

In Peru, Marco et al. (2021) (12) research on the use of energy drinks and the insomnia symptoms it causes in Peruvian students, determines the association between the consumption of these drinks and insomnia symptoms in medical students, where a survey is applied to 290 people on the consumption of BE to see the presence of insomnia symptoms and apply Poisson regression to know the variant of sex, age, coffee consumption, anxiety and depression obtaining relevant information where those university students who consumed BE had 1.8 times more insomnia symptoms compared to those who did not consume (12).

In Ecuador, the research by Chicaiza et al. (2019) (13) determines the prevalence of psychostimulant consumption in students at the Central University of Ecuador, where they reveal the type of substances, frequencies and reasons for use. The results indicate that coffee consumption is 85%, caffeine-containing BEs in 47% and other addictive substances in 28%. Consumption per week is 41% and they consume 15 to 22 cups of coffee corresponding to 37%, in addition, they consume 7 bottles of BEs and 10% of university students use drugs. The reasons for consumption indicate that they are to improve performance in 20% and work overload in 18%. Concluding that 100% of university students consume some type of psychostimulants, the most used being coffee and in second place energy drinks (13).

In Ecuador, the prevalence of BE consumption among students in 2019 was 50% and among the main reasons for consumption are: improving academic performance due to an overload of academic tasks and among the side effects, psychological and gastrointestinal effects are accentuated. Therefore, 100% of the university population studied consumes some type of psychostimulant.

Under the investigated references, the present bibliographic research It arises in response to growing concern about the consumption of energy drinks among university students, a phenomenon that has been identified as a public health problem, which requires a thorough evaluation due to its potential impact on the health of students and society in general.

According to the World Health Organization (WHO) (14), it states that health is a complement to physical, mental and social well-being, which implies that health provides better working conditions, education and well-being for university students. Finally, in Ecuador and, specifically in the city of Cuenca, there are no studies that identify the prevalence of consumption of energy drinks among university students; it is essential to know the problem due to the effects that these energizers could cause.

The objective of this study was to determine the prevalence of energy drink consumption among university students in Latin America during the period 2013-2023; through a bibliographic review.

**Results**

- Scientific articles were consulted that defined the qualitative analysis of this study. The Latin American population was considered and the data are detailed in the following table.

**Table 1.** Bibliographic research on the object of study in Latin America

Countries	Author	Year	Percentage of energy drink consumption	Generating factors
Argentina	Martins et al. (10)	2020	Coffee with 93%; mate with 91%; tea 75%	Cognitive enhancers of routine practice among Argentine university students.



**Table 1.** Bibliographic research on the object of study in Latin America (continued)

Countries	Author	Year	Percentage of energy drink consumption	Generating factors
Colombia	Manrique et al. (11)	2015	67% consume at least one cup of coffee daily.	The main reason was to improve performance at the academy and overcome sleep.
Peru	Marco et al. (12)	2021	Coffee consumption with 81.31%	Depression, anxiety and insomnia compared to those who did not consume BE.
Ecuador	Chicaiza et al. (13)	2019	They define that coffee consumption is at 85%. Consumption of BE with caffeine 47% and other addictive substances 28%. They consume an average of 7 bottles of BE.	The reasons for consumption indicate that they are to improve performance by 20% and work overload by 18%.

The results in Table 1 indicate that the main consumers are university students and the energy drink with the greatest resonance is the one that contains caffeine. This corroborates with what Abreu et al. (15) indicates, which indicates that the consumption of energy drinks in university students immediately supplies energy and reduces fatigue at the time of consumption, reaching prevalence figures in consumption higher than 30% in each population, and also indicates that the availability of the drinks allows students to have the ease of consumption.

That said, caffeine is seen as a substance that exists in plants and is also produced synthetically, according to Abreu (2013) (15) points out that it acts for four to five hours in the body increasing high intake and consumption is associated with the mood with a large increase in energy.

- Prevalence of energizing drink consumption. The type of energizing drink, the generating factors, mitigating factors and control methods were considered in the context investigated.

**Table 2.** Prevalence of BE consumption

Countries	Prevalence and consumption percentage
Argentina	99%
Colombia	67%
Peru	39.45%

**Table 2.**Prevalence of BE consumption (continued)

Countries	Prevalence and consumption percentage
Ecuador	100%
<b>Average</b>	<b>76%</b>

Table 2 shows that prevalence levels are high in Argentina and Ecuador, unlike Peru, which indicates 39%. Similarly, it is identified that the type of energizers in the countries surveyed is the consumption of caffeinated beverages with approximately 80% in all countries, this implies that consumers can suffer health damage from energy drinks and the main cause is to improve academic performance by overcoming sleep.

In general, there is the limitation of few studies that associate the consumption of energy drinks and the prevalence in university students. However, the study carried out by Sánchez et al. (2015) (16) shows that in Latin America 65% of people consume energy drinks and of them 88% mix them with alcohol, also indicating that the main consumers are people between 14 and 25 years old.

Similarly, research indicates that BE consumption increases university students' time to complete exams and/or tests due to its great cognitive potential in academic performance (17). Among the main risks are depression, anxiety and insomnia compared to people who do not consume BE.

**Conclusions**

- By determining the prevalence of energy drink consumption among university students in Latin America, it is evident that energy drinks fulfill the functions for which they were created, such as: relieving fatigue, improving academic and physical performance, and acting as a cognitive enhancer in stressful situations.
- The use of BE is associated with the presence of insomnia symptoms in university students in Latin America and many studies agree that the consumption of this energy drink is seen as a necessity to extend periods of wakefulness and reduce rest times, achieving benefits in the academic field.
- It has been seen in the bibliographic research that an exact percentage of consumption of said drink is not detailed, this implies that there is no regulation in the composition and much depends on the control applied in each Latin American country.
- Since the prevalence levels in consumption indicate that the type of energizer is mostly caffeinated beverages and the main cause is to improve academic performance by overcoming sleep, it is important to create awareness of the potential growth of energy drink consumption among university students and



implement effective strategies to reduce abuse and ingestion of this type of beverage.

- Finally, long-term consumption of energy drinks produces noticeable physiological changes in university students, such as cardiovascular problems, tachycardia, gastrointestinal discomfort or nervousness. With a great toxic potential, such as anxiety, headaches and insomnia; this is why mixing energy drinks with alcohol is prohibited, as it puts the consumer at risk.

### **Conflict of interest**

The authors state that there is no conflict of interest in relation to the submitted article.

### **Authors' contribution statement**

The article must be accompanied by a note, which expresses the contribution of each author to the study carried out.

Joha Valentina Córdova Calle and Andrea Fernanda Macías Matamoros They designed the study, analyzed the data found and prepared the draft.

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