



How to cite this article:

Naranjo-Lima S, Gallego-Sánchez JA. Upward trend in the consumption of energy drinks among Cuban medical students. MedEst. [Internet]. 2026 [cited access date]; 6:e560. Available in: <https://revmedest.sld.cu/index.php/medest/article/view/560>

Palabras Clave: Bebidas energéticas; Estudiantes de medicina; Salud pública.

Keywords: Energy drinks; Medical students; Public health.

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Received: 08/07/2026

Accepted: 08/08/2026

Published: 09/08/2026

Editor(s) in charge:

Dr. Yonathan Estrada Rodríguez.

Translator:

Lic. Meliza Maura Vázquez Núñez.

Layout designer:

Rey Adrián Fragueta González.

Upward trend in the consumption of energy drinks among Cuban medical students

Tendencia ascendente en el consumo de bebidas energéticas entre los estudiantes de medicina cubanos

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Dear Director:

Caffeine is a purine alkaloid consumed worldwide through sources such as coffee, tea products, cocoa, and energy drinks (EDs). EDs, in addition to a high caffeine and sugar content, often incorporate other stimulants such as taurine, guarana, ginseng, or vitamins. ^(1,2)

Generally, most EDs claim to contain between 70 and 80 mg of caffeine, while the caffeine content of other ingredients like guarana, which can be as high as 40-80 mg per gram, may not be declared on labels due to variations in composition between producers and a lack of rigorous labeling. The average caffeine content of a 250 ml can of ED is similar to the amount of caffeine in 60 ml of espresso. ^(2,3)

It is worth noting that in 2006 alone, approximately 500 new BE brands were launched worldwide, leading to a 240 % increase in sales in subsequent years. They are currently sold in more than 165 countries. ⁽³⁾

Medical students are known to require prolonged periods of alertness and intense concentration to manage their courses and exams, which may lead them to increase their caffeine consumption.

However, sustained mental effort under high caffeine intake, motivated by the desire to improve academic performance, can lead to counterproductive results associated with increased stress, including anxiety disorders.

A 2024 cohort study by Phung et al. ⁽⁴⁾ administered a cross-sectional survey to first-, second-, and third-year medical students at a single medical school in California. The study found that the participants reported moderate caffeine consumption, with one exceeding the recommended daily limit of 400 mg for adults. They also report that caffeine intake increased according to year of study, with 111,4 mg/day in first-year students; 106,1 mg/day in second-year students; and 138,4 mg/day in third-year students.

This upward trend in consumption as medical training progresses has been observed in other studies, where residents surpassed students with an average daily consumption of 200 mg compared to 152 mg, while no significant difference was found between surgical and medical residents. ⁽⁵⁾

The main motivation for this consumption is clear: "to improve academic performance," as stated by 60,9 % of participants in a study conducted in South Korea. The same study reported that 98 % of the students surveyed experienced caffeine-related symptoms, such as palpitations (47,4 %) and anxiety (27,1 %), and almost 20 % exceeded the maximum recommended daily intake of 400 mg. ⁽⁶⁾

However, the consumption of brewed beverages (BE) poses a greater health risk than coffee, due to its complex formulation that mixes various stimulants such as taurine, guarana, and ginseng, whose combined effect is more frequently capable of causing adverse cardiovascular and psychological events.

Evidence suggests that energy drinks can induce serious ventricular arrhythmias, even in healthy young people, and cases of QTc interval prolongation, a marker of risk for sudden death, have been documented. ⁽⁷⁾ In fact, a comparative review by Ghamlouch et al. ⁽⁸⁾ has pointed out disturbing similarities in the pathophysiological mechanisms between chronic energy drink consumption and cocaine abuse, which share sympathetic hyperactivation and endothelial dysfunction that can lead to structural cardiac damage.

Furthermore, these drinks often contain high amounts of added sugars, causing blood glucose spikes and metabolic overload that increases the risk of type 2 diabetes. The problem is exacerbated by the action of caffeine, which can reduce insulin sensitivity, contributing to insulin resistance in the long term—a risk reinforced by the tendency of these drinks to promote weight gain and obesity. ⁽⁹⁾

Although international studies document high consumption of these beverages among health sciences students, with figures reaching 67

% in similar university populations, ⁽¹⁰⁾ in the Cuban context, available data are limited. To date, no studies have been conducted to determine the prevalence, patterns, and determinants of soft drink consumption among medical students in Cuba.

The significant increase in the supply and marketing of soft drinks in the Cuban market makes it imperative to study their consumption patterns among medical students, a population subjected to a high academic workload and stress.

It should be noted that, without its own data, any prevention campaign is forced to extrapolate findings from international populations with very different realities, where consumption patterns, available products, prices, and cultural contexts are distinct.

Furthermore, the medical degree program is notoriously intensive, with long days of theoretical and practical sessions, hospital rotations, and on-call shifts from the early stages. This creates a cycle of sleep deprivation and chronic stress that, in the absence of healthy alternatives, can be channeled into high caffeine consumption, or, failing that, alcohol.

Addressing the problem requires prevention strategies that are not simply a copy of those from other countries. The urgency lies in the fact that every day without data is a day in which consumption becomes a habit, consequently causing greater harm to the health of future doctors. Inaction, therefore, is not neutral; it is waiting for the problem to resolve itself, when international evidence demonstrates that, without early intervention, consumption intensifies as the degree progresses and persists throughout professional life.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

FUNDING SOURCES

The authors declare no funding for the preparation of this article.

USE OF ARTIFICIAL INTELLIGENCE

The authors declare that no artificial intelligence was used in the writing of this manuscript.

