

Wróblewski Hubert, Chojeła Dariusz, Zimna Aleksandra, Zygmunt Ewelina, Maziarz Barbara. Consumption of energy drinks among high school students. *Journal of Education, Health and Sport*. 2020;10(7):236-241. eISSN 2391-8306. DOI <http://dx.doi.org/10.12775/JEHS.2020.10.07.027>
<https://apcz.umk.pl/czasopisma/index.php/JEHS/article/view/JEHS.2020.10.07.027>
<https://zenodo.org/record/3963027>

The journal has had 5 points in Ministry of Science and Higher Education parametric evaluation. § 8. 2) and § 12. 1. 2) 22.02.2019.

© The Authors 2020;

This article is published with open access at Licensee Open Journal Systems of Nicolaus Copernicus University in Torun, Poland provided the original author (s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non commercial license Share alike. (<http://creativecommons.org/licenses/by-nc-sa/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited.

The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 05.07.2020. Revised: 15.07.2020. Accepted: 27.07.2020.

Consumption of energy drinks among high school students

Hubert Wróblewski, Dariusz Chojeła, Aleksandra Zimna, Ewelina Zygmunt,
Barbara Maziarz

Student Scientific Circle at the Department of Epidemiology and Clinical Research Methodology, Medical University of Lublin

Abstract

Introduction and purpose of work: In recent years, drinking energy drinks has gained popularity among young people. High school students as a group of people entering adulthood, shape their habits and behaviors for the future. Therefore, their abuse of energy drinks at such a young age can lead to addiction and consequently, result in health problems. The aim of the work is to examine the drinking habit and awareness of high school students about energy drinks

Material and method: The results of the survey were obtained on the basis of an online survey.

Results: 812 respondents, aged 15-19, took part in the survey. 32.8% of high school students drink energy drinks occasionally, 16.4% of respondents reach for them several times a week, while 27.1% do not consume them. Only 30.2% of respondents correctly indicated the main ingredients of energy drinks. 87.9% of respondents say that you can get addicted to energy drinks. 40.5% of high school students reached for energy drinks for the first time at the age of 11-13, while 7.4% have not yet tried them. The vast majority of respondents (65.1%) choose energy drinks because of their taste. The promotion of energy drinks by celebrities encouraged only 7% of high school students to choose this type of drink.

Conclusions: High school students are not aware of the composition of energy drinks. The main reason for reaching for these types of drinks are their taste, and the effects resulting from the action of caffeine and taurine go down the line. Both advertising and current trends in drinking energy drinks do not prove to be decisive when reaching for this type of stimulant. Teenagers are aware of the possibility of becoming addicted to energy drinks.

Key words: energy drinks; habits; high school students

Introduction: In recent years, drinking energy drinks has gained popularity among young people [1]. Recognizing the great interest in this type of products, the companies are introducing a wider range of them to the market. For marketing purposes, they employ well-known people who can influence teen choices. The first energy drink appeared in the United States in 1949, and in Europe in 1987 [2]. According to the Nielsen research agency, their sales increased by 11.4% during the year to May 2018. In the food category, sales of cheese, ice cream and whiskey only grow faster. What's more, in the role of "adding energy", energy drinks slowly replace coffee and tea, whose sales increase by 5.5% and 1.6%, respectively. The British agency Euromonitor International estimates the Polish energy drinks market at 1.17 billion zlotych. High school students as a group of people entering adulthood shape their habits and behaviors for the future. Therefore, their abuse of energy drinks at such a young age can lead to addiction and, consequently, result in health problems. Recent scientific research suggests that people with features of addiction to one substance often become addicted to other psychoactive substances as well [3]. Excessive consumption of energy drinks contributes to cardiovascular disease, the development of diabetes, behavior and mood disorders [4].

Purpose: The aim of the work is to examine the drinking habit and awareness of high school students about energy drinks

Material and methods: The results of the survey were obtained on the basis of an online survey. In the survey took part 812 respondents, aged 15-19. 60% of the respondents were women. Most people are residents of big cities (61.8%).

Results: 32.8% of high school students drink energy drinks occasionally, 16.4% of respondents reach for them several times a week, 4.2% daily, while 27.1% do not consume them at all (Table 1).

Table 1. The frequency of drinking energy drinks by high school students

Every day	4.2%
2-5 times a week	16.4%
Once a week	12.8%
Once a month	7.9%
Occasionally	32.8%
Do not drink	26%

40.5% of high school students for the first time reached for energy drinks at the age of 11-13, 31.3% at the age of 14-16, only 7.4% have not yet tried them. Only 30.2% of respondents correctly indicated the main ingredients of energy drinks (Table 2).

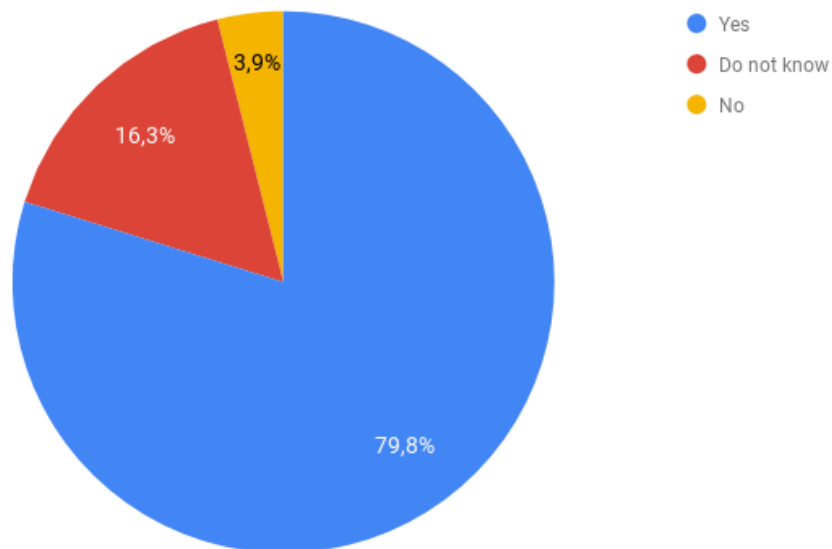
Table 2. Age when energy drinks began to be consumed

<8 years old	4.3%
8-10 years old	13.4%
11-13 years old	40.5%
14-16 years old	31.3%
17-19 years old	3.1%
Have not drunk yet	7.4%

Most high school students (56%) did not notice any disturbing symptoms after drinking energy drinks. Every 5 suffered from palpitations or trembling because of this, every 10 felt irritable, abdominal pain or had trouble sleeping.

The vast majority of respondents (65.1%) drink energy drinks because of their taste, half of them also say that they add energy and fight drowsiness. 54.7% of respondents reach for this type of drink when they feel like it, without a specific reason, while 53.2% when tired. As many as 79.8% of respondents declare that they are able to stop consuming energy drinks.

Advertising has little impact on the choice of teenagers - only 1.4% of them were encouraged by advertisements. The vast majority (86.6%) was an independent decision of the respondents, a small group suggested the encouraging opinion of friends. 87.9% of high school students are aware of the possibility of becoming addicted to this type of drinks, 79.8% declare the possibility of stopping drinking them. Unfortunately, 16.3% of students cannot imagine everyday functioning without them (Fig.1).



15% of respondents combine energy drinks with alcohol, while 7.6% with coffee. As many as 73.2% of young people do not recommend drinking this type of drink, with 72.2% do not intend to give them up in the future. Only 22.4% see the need to reduce their drinking.

Discussion: As you can see, energy drinks are extremely common among high school students. This is a disturbing phenomenon due to the presence of harmful ingredients and the amounts in which they occur. The main component of energy drinks is water, then sugars (from 9.64 to 16.4 g / 100 ml of the product) [5], taurine (about 0.4%), caffeine (on average 32mg / 100ml). Energy drinks contain bioactive substances such as caffeine, taurine and L-carnitine, which "improve the body's efficiency".

Caffeine is methylxanthine that causes mild stimulation as a result of blocking adenosine receptors on neurons in the CNS. Because adenosine inhibits the release of dopamine, caffeine indirectly potentiates dopamine neurotransmission, which is responsible for its stimulating effect and susceptibility to addiction. Caffeine fights fatigue, raises mood, increases alertness, concentration, causes a slight increase in heart rate and an increase in blood pressure [6]. However, it negatively affects the body's calcium reserves, which can be particularly unfavorable during the period of building bone mass [7]. Caffeine with an overdose of over 0.5 g causes severe psychomotor agitation, rapid heart rate and irregularity, very strong increases in diuresis, nausea, vomiting and weakness. The lethal dose of caffeine for an adult healthy person is about 10 grams [8]. Taurine is an amino acid that acts as a neurotransmitter in the CNS. Stimulates insulin release and production, acts lipolytic and anabolic, reduces fatigue. L-carnitine accelerates fat metabolism [9].

Mixing energy drinks with alcohol creates a deceptive feeling of sobriety, leading to an increase in alcohol consumption and the risk of dangerous behavior [10]. However, combining them with medications can have negative effects. For example, antibiotics can impair the breakdown of caffeine in the body, painkillers are more effective in their presence, and sedatives are less effective [11].

Due to the often regular and chronic consumption of energy drinks, they are an important risk factor for overweight and obesity in young people consuming them [12]. Along with carbohydrates, a quarter-liter portion of energy drink carries out 37 to 63% of the energy

standard, which can be supplied with added sugars for boys and 45 to 78% for girls [5]. The daily sugar requirement for children, adolescents and adults according to Polish standards is 130 grams [13]. Quarter-liter portions of the tested energy drinks can meet this standard in the range of 18 to 31% [5]. The high doses of glucose force the pancreas to secrete more insulin, which on the other hand can lead to insulin resistance [12].

Conclusions:

- 1) High school students are overwhelmingly unaware of the composition of energy drinks.
- 2) The main reason for reaching for these types of drinks are their taste, and the effects resulting from the action of caffeine and taurine go down the line.
- 3) Both advertising and current trends in drinking energy drinks have not proved to be decisive when reaching for this type of stimulants.
- 4) Teenagers are aware of the possibility of becoming addicted to energy drinks.
- 5) Young people start drinking energy drinks too early, which can result in addiction and health problems.
- 6) The introduction of educational campaigns in schools and the media on the harmfulness of energy drinks on young people should be considered.
- 7) Despite the awareness of the possibility of becoming addicted to energy drinks, the vast majority of high school students do not intend to give up.

References

1. Iyadurai S.J., Chung S.S.: New-onset seizures in adults: possible association with consumption of popular energy drinks. *Epilepsy Behav.* 2007 May;10(3):504-8.
2. Alsunni AA. Energy Drink Consumption: Beneficial and Adverse Health Effects. *International Journal of Health Sciences.* 468–474. 2015.
3. Temple JL. Caffeine use in children: What we know, what we have left to learn and why we should worry. *Neuroscience and Biobehavioral Reviews.* 33, 793–806. 2009.
4. Bigard AX. Risks of energy drinks in youths. *Archives de Pediatrie,* 17(11), 1625–1631. 2010.
5. Bilek M, Rybakowa M. Cukry dodane w napojach energetycznych a ryzyko nadwagi i otyłości u młodzieży. *Endokrynologia Pediatria.* 2015.
6. Brenner GM, Stevens CW. *Farmakologia.* Wydawnictwo Uniwersytetu Warszawskiego. 2010.
7. Wierzejska R, Jarosz M. *Napoje energetyzujące a zdrowie – postęp wiedzy.* Medycyna Wieku Rozwojowego. 2011.
8. Mutschler E. *Farmakologia i toksykologia.* Wrocław: MedPharm Polska. 2010.
9. Serafin A. *Napoje energetyczne – co kryją w sobie.* Medycyna Praktyczna. 2018.
10. Kopacz A, Wawrzyniak A, Hamułka J, Górnicka M. Badania uwarunkowań spożycia napojów energetyzujących przez studentów. *Rocz PZH* 2012, 63(4): 491-497.
11. Hoffmann M, Świdorski F. *Napoje energetyzujące i ich składniki funkcjonalne.* *Przem Spoż* 2008, 62(9): 8-13.
12. Cichocki M. *Napoje energetyzujące – współczesne zagrożenie dzieci i młodzieży.* *Przegl. Lek.,* 2012:69, 854- 860.
13. Traczyk I, Jarosz M: *Węglowodany. [w:] Normy żywienia dla populacji polskiej – nowelizacja.* Red. Jarosz M. 2017.