

ŻUROWSKA, Klaudia, DĘBIK, Marika, SZYDŁOWSKI, Łukasz, SAJDAK, Piotr, KRUŻEL, Aleksandra, KŁOS, Kamil, STODOLAK, Marcel, ZIAJOR, Seweryn, BEDNARSKI, Artur and TOMASIK, Justyna. Research on the level of awareness and consumption of energy drinks among students aged 18-25. Journal of Education, Health and Sport. 2024;73:51778. eISSN 2391-8306. <https://dx.doi.org/10.12775/JEHS.2024.73.51788>
<https://apcz.umk.pl/JEHS/article/view/51788>

The journal has had 40 points in Minister of Science and Higher Education of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of 05.01.2024 No. 32318. Has a Journal's Unique Identifier: 201159. Scientific disciplines assigned: Physical culture sciences (Field of medical and health sciences); Health Sciences (Field of medical and health sciences).

Punkty Ministerialne 40 punktów. Załącznik do komunikatu Ministra Nauki i Szkolnictwa Wyższego z dnia 05.01.2024 Lp. 32318. Posiada Unikatowy Identyfikator Czasopisma: 201159. Przypisane dyscypliny naukowe: Nauki o kulturze fizycznej (Dziedzina nauk medycznych i nauk o zdrowiu); Nauki o zdrowiu (Dziedzina nauk medycznych i nauk o zdrowiu).© The Authors 2024;

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

Received: 27.05.2024. Revised: 27.05.2024. Accepted: 07.06.2024. Published: 10.06.2024.

Research on the level of awareness and consumption of energy drinks among students aged 18-25

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Abstract

Introduction and purpose: The article focuses on the analysis of young people's awareness of the consumption of energy drinks, especially those containing caffeine. The aim of the study is to understand the level of knowledge about the awareness and consumption of energy drinks among students aged 18-25. This study was conducted using surveys and involving 202 participants.

Material and Methods: The study was conducted using online anonymous surveys, involving 202 participants. The participants were students aged 18-25 both women and men. The results were analyzed according to the age and gender. Moreover, based on the available literature examining aspects related to the consumption of energy drinks.

Results: The study shows that the vast majority of respondents (94.06%) are aware of the impact of energy substances on the body. The charts also illustrate that caffeine, as the main ingredient in energy drinks, is well

understood in terms of cardiovascular effects. Moreover, the student community is aware of the link between excessive sugar consumption and the risk of cancer development.

Discussion: The study shows that young people are aware of the negative impact of energy drinks on health. Nevertheless, not all areas of knowledge are clear to them. The continuous increase in the level of education can undoubtedly contribute to the introduction of healthy eating habits among students. Most respondents declare to drink energy drinks again, it should draw our special attention.

Conclusions: It is worth noting the need for further education, especially in the field of metabolic syndrome. It also highlights the role of research and education in shaping public health awareness. Finally, the article suggests that further research and targeted educational programs are critical to improving public health, especially in the context of energy drink consumption.

Keywords: energy drinks, caffeine, metabolic syndrome, cancer, awareness

Introduction:

Energy drinks (ED) are carbonated drinks containing stimulants. Most often they contain taurine, L-carnitine, caffeine, guarana, glucuronolactone, ginseng and various B vitamins, herbal extracts and sugar, as well as other sweeteners [1,2]. Many authors note that the caffeine content in ED is usually higher than that in a cup of coffee [3].

In recent years, energy drinks have become popular among young people [4]. Seeing the great interest in this type of products, companies are introducing a wider range of them to the market. For marketing purposes, they employ famous people who can influence teenager's choices. The first energy drink appeared in the United States in 1949 and in Europe in 1987 [5]. According to the Nielsen research agency, their sales increased by 11.4% in the year to May 2018. In the food category, sales of cheese, ice cream and whiskey are only growing faster. Moreover, energy drinks are slowly replacing coffee and tea as "energy boosters", with sales growing by 5.5% and 1.6%, respectively. The British agency Euromonitor International estimates that the Polish market for energy drinks is approximately PLN 1.17 billion [4].

The actual marketing of the described drinks began in Austria in 1987 and in the United States in 1997, when Red Bull was introduced [6, 7]. Nowadays, EDs are becoming a popular consumer good all over the world. In Poland ED drinks were introduced in the 1990s and their market share continues to grow[8] Their popularity (especially among young people) and the content of caffeine, taurine, sweeteners and patented herbal extracts (of unknown effect) have made them the subject of interest of numerous researchers [9].

The growing popularity of energy drinks among young people raises important questions about their impact on health and society as a whole [10]. Due to the dynamic market development and intensive marketing campaign aimed primarily at the younger age group, there is an urgent need to understand how these drinks affect lifestyle and consumption habits, especially in the context of the 18-25 age group.

Recent years have seen not only an increase in the sales of energy drinks, but also their growing presence in the everyday lives of young people [11]. The influence of celebrities on consumer choices, especially in the context of products that may impact health and daily functioning, is becoming an important aspect to investigate. This phenomenon begins to go beyond a market issue and becomes a social and health problem. Researching the level of awareness and consumption of energy drinks among students aged 18-25 therefore becomes a key

Purpose:

The main purpose of this article is to assess the level of awareness and consumption of energy drinks among students aged 18-25 based on a survey conducted.

In the context of the dynamic development of the beverage market, there is a need to understand whether young consumers are aware of the active substances contained in drinks, as well as what their eating and health habits are. This study may provide important information about the impact of energy drinks on student's daily functioning and the potential health risks associated with excessive consumption. In this context, the study can provide data to identify possible educational needs and guide preventive measures, especially if energy drinks become a substitute for traditional drinks such as coffee or tea. It is also worth investigating whether there is awareness of the possible negative health effects associated with excessive consumption of these drinks in an age group that is often more susceptible to media and popular trends. Therefore, examining the consumption of energy drinks among students aged 18-25 may be a valuable source of information not only for researchers, but also for political and educational decision-makers who can take actions to educate and protect the health of the younger generation [12].

The reason for conducting the research described in this article on the level of awareness and consumption of energy drinks among students aged 18-25 was the increasing popularity of these drinks among students and the noticeable tendency to consume them frequently. In the face of this trend, the aim of the study was to understand how aware students are of the composition and potential health effects of energy drinks, and what factors determine their consumer choices in this product category. In addition badanie miało na celu sprawdzić whether there is a relationship between the level of awareness and the frequency of consuming these drinks.

Material and methods

The main research tool applied was the online anonymous survey. The survey was performed on 202 Polish students. The participants were students aged 18-25. The results were elaborated in regard to female and age (Figure 1).

The study, which involved 202 people, including 110 women and 92 men, aimed to obtain a representative picture of the consumption of energy drinks among students. An important aspect was to take into account gender differences and determine whether preferences for this type of drinks differ in particular age groups. As a result of the analysis of the obtained data, we wanted to find answers to questions regarding general consumption, consumer choices and awareness of energy drinks in the study group.

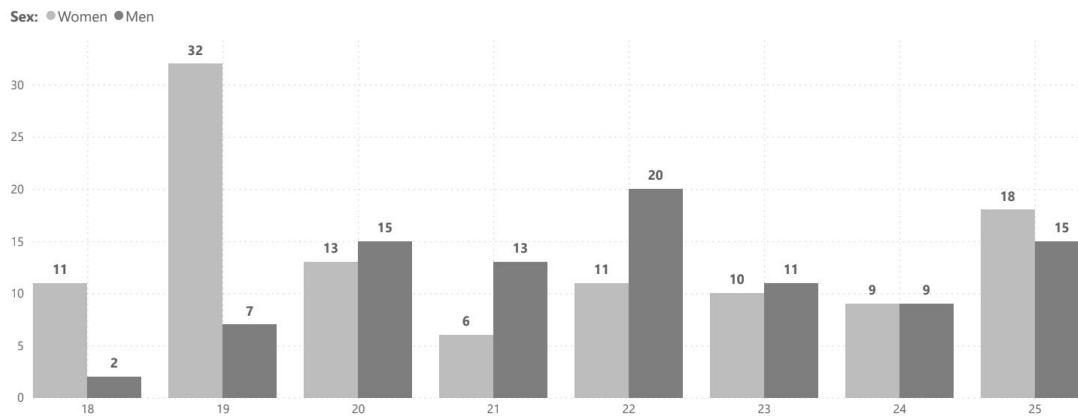


Figure 1. Gender of the respondents. Author's own work.

As shown in Figure 1., 202 people took part in the study, of which 92 people (45.54%) were men, and 110 people, i.e. 54.46% of the respondents, were women. For comparison, a similar study was conducted as part of an anonymous survey among students, which involved 1,263 people aged 18 to 28, representing five universities in Wrocław. Among the participants, students of the University of Life Sciences accounted for 29.8% (377 people), the University of Economics 26.8% (338 people), the Wrocław University of Science and Technology 17.9% (226 people), the University of Wrocław 15.0% (190 people), and Medical University 10.5% (132 people). Among the respondents, women represented 67.0% of the total number of participants, while men represented 33.0%. To collect data, an online questionnaire developed for the study was used, consisting of 22 closed and open questions [13].

Results

During the study, special attention was paid to the preferred capacity of drinks, and the results showed that the majority of respondents drink drinks with a capacity of 250 ml.

Increasing the consumption of energy drinks was most often defined by respondents as one serving (250 ml) or two (500 ml) of an energy drink [14]. Students mainly reached (21%) for an energy drink while studying during the exam session [15].

Moreover, analysis of the timing of consumption showed that energy drinks are usually consumed between 12p.m - 6p.m hours (Figure 2), which suggests that students often drink energy drinks to overcome fatigue during classes or other activities during the day. This information provided key context for understanding the eating habits of this age group and their relationship with energy drinks, which motivated the study. Data analysis allowed to better understand how young consumers perceive and use these products and assess the possible impact on their health and eating habits.

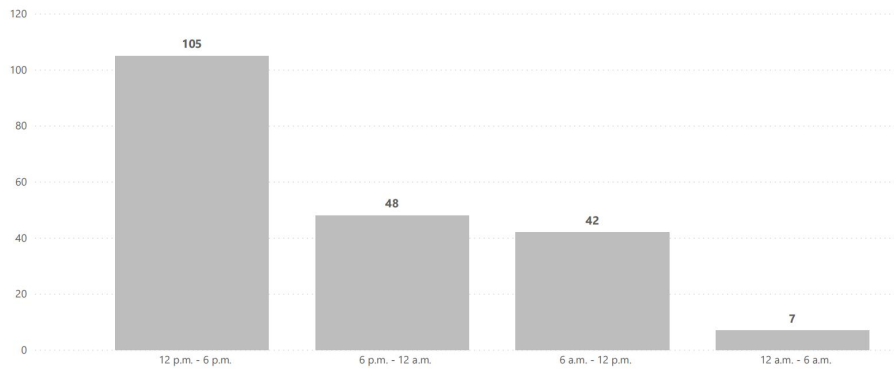


Figure 2. Times to consume energy drinks. Author's own work.

As shown in Figure 2, 105 people (51.98%) consume energy drinks between 12p.m. - 6p.m., the least, 7 people (3.47%) consume energy drinks between 12a.m - 6p.m.

Analyzing student's behavior and their awareness of consuming energy drinks in the context of the presented data, it can be noticed that the vast majority of students (51.98%, i.e. 105 people) prefer to consume energy drinks in the afternoon, between 12p.m. and 6a.m.. This distribution may be due to several reasons. First, these times often coincide with the period after classes or lectures, when students may feel a drop in energy and look for ways to increase it in order to continue studying or other activities. Second, the afternoon is a time when students may need an extra boost of energy before evening classes, group work, or exam preparation. However, the minimum number of students (3.47%, i.e. 7 people) consumes energy drinks at night, from 12a.m. to 6 a.m.. Consumption of energy drinks during these hours is much less popular, which may be related to the general awareness of the negative impact of caffeine and other stimulants on sleep quality and circadian rhythm[16]. Students who consume energy drinks at night may do so to extend their study time or to work on projects that require immediate completion, but this is much less common. Overall, college student's preference for the timing of energy drink consumption may reflect an attempt to balance the need to increase focus and energy with an awareness of the potential negative effects of disrupting the natural sleep-wake cycle.

In Poland, energy drinks contain on average 30 mg of caffeine per 100 ml [17] of drink, but additional amounts of caffeine can be found in other ED ingredients, including: in kola, nuts, guarana or yerba mate [12]. Regardless of the analyzed caffeine content, ED are usually consumed in larger quantities than coffee or other stimulant drinks. Moreover, the typical consumer of ED drugs is young people and even children. The caffeine and taurine content in ED supposedly helps with attention, improves overall mental performance and reduces the feeling of fatigue. That's why EDs are popular among people who perform heavy physical work or want to stay alert for long periods of time, such as drivers and students during their studies. EDs are also popular at parties, including Student Parties. They are often mixed with alcohol to enhance their effects. This effect may result in overdose, cognitive impairment and weakening of the symptoms of alcohol poisoning [13].

The ultimate goal is to raise public awareness and identify possible areas where educational or regulatory action may be needed to protect health and promote healthy eating habits among the younger generation.

The study shows that most people drink energy drinks occasionally (Figure 3).

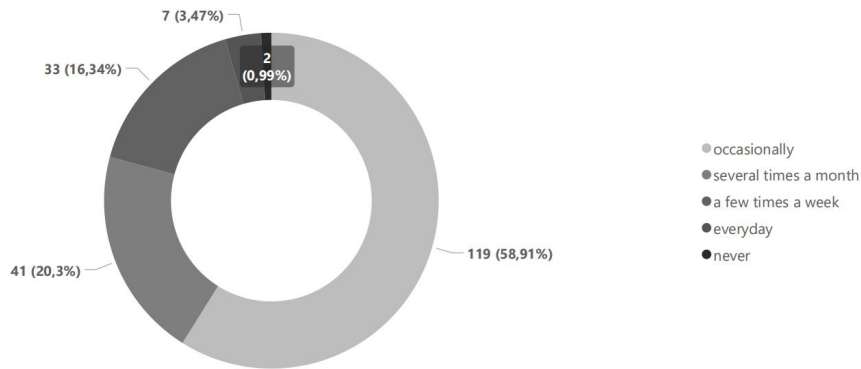


Figure 3. Frequency of energy drink consumption

As shown in Figure 3, one hundred and nineteen people (58.91%) of the respondents stated that energy drinks are consumed occasionally, several times a month these drinks are consumed by 41 people (20.3%) of the respondents, energy drinks are consumed several times a week by 33 people (16.34%) of the respondents, they are consumed every day by 7 people (3.47%) of the respondents, 2 people (0.99%) of respondents do not drink these drinks.

The results of the current study are similar to the research results described in the article [9]. This study - with the participation of 131 students - analyzed the frequency of consumption of energy drinks, as well as knowledge about these drinks among medical and dental students of the Medical University of Lublin [9].

The results of this study indicate that even more compared to the results of the current study, as many as 81 students (61.83%) declared daily consumption, and the majority of respondents (78.48%) declared consumption of at least one energy drink from 250 to 749 ml [9]. Energy drinks (EDs), containing caffeine, taurine and other substances, are one of the most commonly used legal stimulants. However, as they may pose a risk to consumer's health, it is considered that their placing on the market should be legally controlled [9].

Energy drinks can cause symptoms such as headache, dilated pupils, insomnia, tremor, anxiety, hypertension, vomiting, and nervousness. The combination of alcohol and energy drinks increases the likelihood of dehydration, therefore, increases the risk of toxicity of the system.

In addition, caffeine promotes greater alcohol consumption, leading to serious consequences [18, 19].

According to the results of the study, respondents are aware that the consumption of energy substances affects circulatory function (Figure 4).

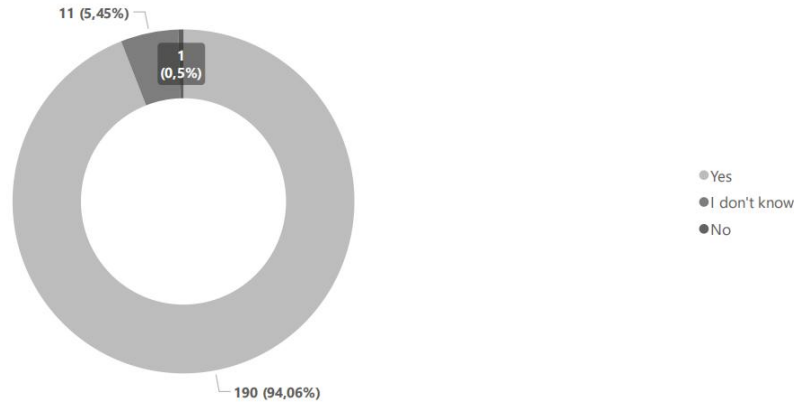


Figure 4. Consumption of energy substances and their impact on circulatory functions.

One hundred and ninety respondents (94.06%) of the respondents, as shown in Figure 4, are aware that the consumption of energy substances affects circulatory functions. Only 11 people (5.45%) of the respondents stated that they did not know anything about it, and 1 person indicated that energetic substances have no effect on circulation.

The results of the analysis indicate that the vast majority of respondents, as many as 94.06%, are aware of the impact of consuming energy substances on circulatory functions. Only a small number of respondents, 5.45%, declared no knowledge on this subject, while one person stated that energetic substances have no effect on circulation. These results highlight the widespread awareness among respondents of the impact of energy substances on circulatory health, which may be an important element in the context of making consumer decisions and shaping eating habits. At the same time, they indicate the need for further research or educational activities aimed at this small group of people who are not aware of the impact of energy substances on circulatory functions [20,21].

Consuming energy substances, associated with caffeine in energy drinks, may significantly affect the functioning of the circulatory system [20,21].

Caffeine, being the main ingredient of these drinks, has a stimulating effect, increasing heart rate and vasoconstriction. Acute consumption of energy drinks (EDs) contributes to an increase in diastolic blood pressure (DBP) and blood glucose [22]. High caffeine consumption can lead to an increase in blood pressure, which is potentially dangerous for the circulatory system. Nevertheless, many students, although aware of the potential dangers, decide to frequently consume energy drinks. Attracted by the promise of improved mental performance and a quick energy boost, college students often overlook the side effects on heart health. Studies show that excessive caffeine consumption can lead to heart arrhythmias, which pose a serious threat to the cardiovascular system [23]. Despite this knowledge, some students continue to drink energy drinks, ignoring the potential consequences for their heart health. Those who drink these drinks regularly are at risk of chronic circulatory problems. The consequences of too much caffeine on circulation also include an increased risk of blood clots and problems with vascular elasticity. It is important for students to understand that overstimulation of the heart by caffeine can have long-term effects on heart health. However, social pressure, social media

promotion and peer influence often obscure awareness of these risks. To protect cardiovascular health, it is necessary to take action educational activities so that students are aware of the consequences of excessive caffeine consumption. As a result, making informed decisions about the consumption of energy drinks becomes a key element of caring for the cardiovascular health of students. The results of the study confirmed that the surveyed students are aware that caffeine contained in energy drinks may be harmful (Figure 5).

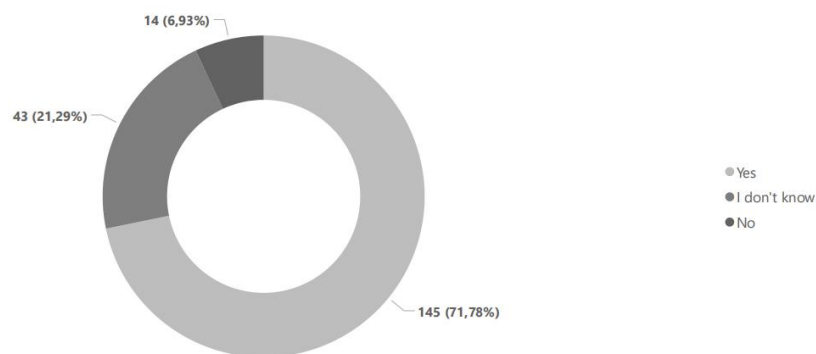


Figure 5. Caffeine is one of the ingredients of energy drinks and it can cause poisoning. Author's own work.

As the results of the study show, in Figure 5, one hundred and forty-five surveyed students (71, 78%) are aware that caffeine is one of the ingredients of energy drinks and that poisoning with this substance is possible. 43 people (21.29%) of the respondents do not know about it, and 14 people (6.93%) of the respondents do not think so.

For comparison, in the other study [14], among the survey respondents (number = 120), the majority (57%) were able to correctly name at least three components contained in energy drinks. Meanwhile, only 17% of respondents, 27% of whom were Collegium Medicum students, accurately determined the caffeine content in one serving of an energy drink (250 ml). Only 2% of respondents had knowledge about the body's daily requirement for caffeine. Public health students (37%) were the most knowledgeable about energy drink ingredients, followed by medical students (34%) and emergency medical students (30%). There were no statistically significant differences in the level of knowledge about the composition of energy drinks depending on the field of study [14].

In the context of cardiac health, respondents realize that excessive amounts of caffeine can negatively affect heart rate and blood pressure. Furthermore, the survey results revealed that despite this awareness, many students still consume energy drinks regularly, indicating a gap between knowledge and consumer behavior. This phenomenon suggests that although students are aware of the potential dangers of caffeine, there are other

factors, such as social pressure and marketing influence, that influence their consumption decisions. Therefore, education about the health aspects of caffeine consumption should be aimed at increasing awareness not only of the risks themselves, but also to encourage students to make more informed choices related to their cardiac health.

Consumption of caffeine-rich energy drinks has become common among students aged 18-25. In Poland, where the average caffeine content is 30 mg per 100 ml of a drink [17], students often decide to drink these drinks. However, high frequency of drinking [24] caffeinated beverages may pose potential health risks. Students often don't realize that energy drinks are the main source of caffeine in their diet. Despite this lack of awareness, young consumers often choose these drinks, attracted by the promise of improved concentration and reduced fatigue [25]. For many students, caffeine in energy drinks becomes a kind of "fuel" that helps them function in the intense pace of academic life. Many admit that they consume these drinks to increase energy and improve mental performance. They often choose to consume energy drinks, even though they are aware that they sometimes exceed the recommended amount of caffeine.

With regard to the motivation to consume energy drinks, in the study [13] it turned out that only sessions and social meetings were situations in which statistically significant differences in behaviors were observed. Students admitting to drinking such drinks during events and social gatherings indicated that they choose them mainly because of their attractiveness in combination with alcohol, which was confirmed by almost half of the respondents (47.6%). On the other hand, for students reaching for energy drinks during the session, the following turned out to be crucial: the need to increase energy (78.2%), reduce the feeling of drowsiness (68.8%), as well as improve concentration (29.1%) and the ability to remember (7.1%). During this period, taste was also an important aspect, associated with almost 40% of respondents (37.4%) [13].

Excessive caffeine consumption can cause negative health consequences such as psychomotor agitation, insomnia, headache, gastrointestinal complaints or heart rhythm disturbances [26, 23]. Still, college students are willing to risk these side effects to achieve the desired benefits of caffeine. In many cases, the lack of full awareness of the composition and potential side effects of energy drinks causes students to resort to them irresponsibly. The reasons for consuming caffeinated beverages among college students vary, but are often related to time pressure, academic demands, and lifestyle. Social media and influential consumers often highlight the benefits of caffeine, which further encourages students to consume energy drinks.

Additionally, combining energy drinks with alcohol is an increasingly common practice, especially among young people. More than 25% of college students in the United States drink this type of drink [27]. The interest in this type of combination may result from reducing the negative effects of alcohol consumption. One study found that combining alcohol with an energy drink reduced feelings of headache, weakness, and muscle coordination. However, impaired motor coordination and delayed visual reactions remain unchanged [28]. Consuming large amounts of caffeine makes you feel horny. Consuming this substance with alcohol may mask the symptoms of alcohol poisoning and may also tolerate typical symptoms of alcohol poisoning such as drowsiness [29,30].

In the conducted study, it was assessed student's awareness of whether regular consumption of energy drinks can increase body weight. The results indicate that 151 people (74.75%) of the respondents believe that such ED drinks can affect body weight, 41 people (23%) of the surveyed students do not know whether such an effect exists, and 10 people (4.95%) respondents reported that ED had no effect on weight gain.

The high awareness of the majority of respondents (74.75%) regarding the impact of energy drinks on body weight suggests that a significant number of students are aware of the potential consequences of consuming these drinks on body weight. This may be due to the availability of information or growing health awareness among this group [31]. We found uncertainty about the effects of energy drinks among 23% of respondents (41 people) who do not know whether consuming energy drinks increases body weight (Figure 6).

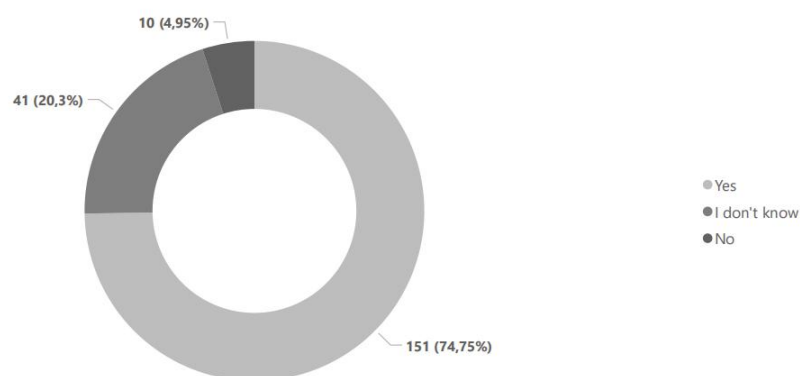


Figure 6. The effect of energy drinks on body weight. Author's own work.

As Figure 6 shows, the percentage of uncertainty indicates that there is a group of students who need additional information about the effect of energy drinks on body weight. This may be due to the lack of access to reliable sources of information or general disinformation on this topic. Low awareness of the group (4.95%) who believe that energy drinks have no effect on weight gain. This group may be more willing to follow energy drink marketing messages that may minimize or deny negative health effects. Lack of awareness in this group may lead to irresponsible consumption of these drinks. The results suggest that education about the health aspects of energy drink consumption, especially in the context of body weight, is important. This can help reduce uncertainty and provide students with the necessary knowledge to make informed decisions about their health. Additionally, the study results indicate varying awareness among students regarding the effects of energy drinks on body weight, highlighting the need for further education and information on this issue.

The aim of the study was to examine student's awareness of consuming energy drinks, including their level of knowledge about metabolic syndrome and the impact of these drinks on body weight. Both of these aspects are key to understanding the health habits of the young generation. The presented results provide valuable information about these two areas and allow the identification of potential educational areas. Student's awareness of what metabolic syndrome is (Figure 7).

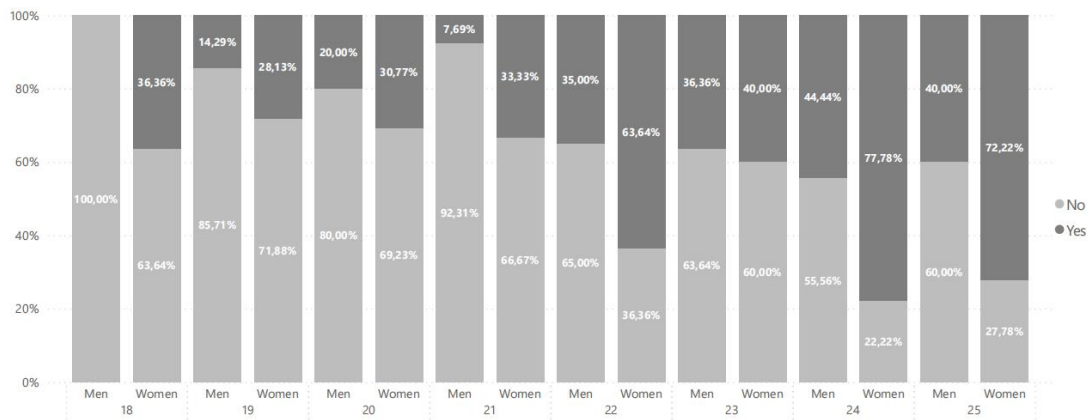


Figure 7. Awareness of what metabolic syndrome is. Author's own work.

As shown in Figure 7, 36.36% of women aged 18 years are aware of what metabolic syndrome is, and none of the surveyed men at this age report it. In addition, awareness of the concept of metabolic syndrome reports; 28.13% of women and 14.29% of men aged 19, 30.77% of women and 20.00% of men aged 20, 33.33% of women and 7.69% of men aged 21, 63.64% women and 35.00% of men aged 22, 40.0% of women and 36.36 men aged 23, 77.78% of women and 44.44% of men aged 24, 72.22% of women and 40.00% men aged 25.

Analyzing the results regarding the awareness of metabolic syndrome, this shows significant differences between women and men in different age groups. At the age of 18, only 36.16% of women report awareness of metabolic syndrome, while none of the men surveyed have this knowledge. This important finding suggests that there may be a lack of information among young men about this complex health issue.

Analyzing the results regarding the awareness of metabolic syndrome, chart no. 4 shows significant differences between women and men in different age groups. At the age of 18, only 36.16% of women report awareness of metabolic syndrome, while none of the men surveyed have this knowledge. This important finding suggests that there may be a lack of information among young men about this complex health issue.

Moving on to other age groups, the results still show some gender discrepancies. For example, at age 19, 28.13% of women report awareness of metabolic syndrome, compared to 14.29% of men. In the following years, some variation is observed, up to the age of 24, where the majority of women (72.22%) are aware of the metabolic syndrome, while in men this percentage is 44.44%.

Analyzing these results in the context of previous findings on energy drinks consumption allows us to identify potential areas for educational interventions. In particular, since there is low awareness of metabolic syndrome among young men, it is possible that targeted educational activities in this group may contribute to increasing health awareness. Further research and educational programs may be key in developing positive eating habits and healthy lifestyles among college students. In the study, it was also raised the issue of the surveyed student's awareness of whether excessive amounts of sugar can contribute to the development of cancer (Figure 8).

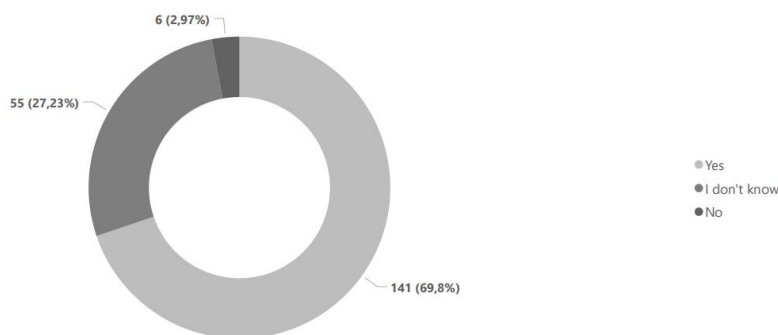


Figure 8. Awareness that consuming excessive amounts of sugar may cause cancer. Author's own work.

Discussion

By analyzing the results on awareness of the link between excessive sugar consumption and the development of cancer and the results on awareness of metabolic syndrome, some important links and educational areas can be identified. Both in relation to the awareness of metabolic syndrome and the relationship between excess sugar consumption and the development of cancer, a similar tendency can be observed - greater awareness among women compared to men.

For metabolic syndrome, women had a higher percentage of awareness in each age group. Similarly, when it comes to the relationship between the harmfulness of sugar and the cancer it causes, women are more aware than men's reactions. A surprisingly high percentage of respondents (69.8%) believe that eating too much sugar can contribute to the development of cancer. This is a result that suggests some health awareness among the research group regarding the negative impact of diet on health. It can be assumed that respondents who are aware of the negative impact of excess sugar on health may be more open to information about a general healthy lifestyle, including metabolic syndrome.

According to the conducted survey research the intention to consume energy drinks in the future is reported by 76.92% of people aged 18, 64.10% of people aged 19, 78.57% of people aged 20, 68.42% of people aged 21, 74.19% of people aged 22, 71.43% of people aged 23, 66.67% of people aged 24 and 57.58% of people aged 25.

Analyzing the results of surveys regarding the intention to consume energy drinks in the future depending on age, several important observations can be distinguished. Most declarations of the intention to consume energy drinks in the future come from people aged 18 (76.92%), which suggests that younger people are more willing to experiment with energy drinks, perhaps under the influence of social trends or the desire to discover new things. The age of 20 years also stands out with a high percentage (78.57%) in reporting the intention to consume energy drinks, because during this period there may be a greater need to improve performance and increase energy, which translates into the desire to reach for energy drinks. The lowest percentage of reports of intention to consume energy drinks in the future comes from people aged 25 (57.58%), which suggests that older respondents are less likely to continue consuming energy drinks, which may be due to greater health awareness or changes in consumer preferences.

The varying proportions of reports at ages 19, 21, 22, and 23 indicate some age-related irregularity. This may be the result of individual differences or the impact of changing needs and lifestyles as the respondent ages. Taken together, the results suggest that intention to consume energy drinks is highest among young people and then declines with age. This may be due to differences in lifestyle, health perception, or awareness of the impact of energy drink consumption on the body. It is important to continue research to understand these relationships and target educational activities at appropriate age groups.

In the context of research results that focused on the awareness of the impact of energy drinks, especially those containing caffeine, on the body, there is an interesting correlation with the expressed desire to consume these drinks. The surveyed students, although aware of the potential health effects, show constant interest in consuming energy drinks, which requires consideration from several perspectives.

Respondents with health awareness about energy drinks also report willingness to consume them. This suggests that for many of them there is a balance between the health benefits and the subjective pleasure of consuming these drinks.

The study results suggest that drinking energy drinks brings them pleasure and well-being. This shows that emotional benefits play a key role in consumer decision-making, despite awareness of potential health risks. Therefore, it can be concluded that consuming energy drinks has a positive impact on their well-being and activity. This may be related to a feeling of extra energy that motivates you to take up activities such as studying or working. The introduction to the article emphasizes that energy drinks are a popular way to stimulate activity, which may be particularly important in the context of intellectual activity such as learning, and energy drinks stimulate them to work and study. This can be a key motivation, especially among students for whom intense mental activity is a frequent need. It is worth noting that despite being aware of the potential health effects, respondents show constant interest in consuming energy drinks. This suggests that other aspects, such as well-being or activation, play a key role in maintaining this habit. Consuming energy drinks can be perceived as a pleasant experience for this group of people. Consumer decisions in this case may be based more on subjective experiences than on raw health data. Due to the continuing interest in energy drinks, there is a need to adapt educational activities to the emotional and subjective aspects that influence consumer decisions. It is worth highlighting the various motivations for consuming energy drinks, including not only physical stimulation, but also emotional and mental aspects, which is an important area for further research.

In the context of the results regarding sugars, there is a need for targeted nutritional education, especially considering the impact of sugars on the development of cancer. This awareness may be an important element in promoting a healthy lifestyle, especially among the studied group of young people. Additionally, the study found some positive correlation between awareness of metabolic syndrome and perception of the link between sugar and cancer. Educational activities in the field of nutrition and a healthy lifestyle can significantly contribute to shaping more informed health decisions among the study group.

Conclusion

In general, many studies suggest that young people are more susceptible to the marketing of these products, which influences their consumer choices. It is worth noting that caffeine, although it can provide short-term stimulation, does not replace a healthy lifestyle and proper diet. The problem of excessive caffeine consumption among college students requires increased health awareness and education. Organizing information campaigns

about the effects of consuming large amounts of caffeine can help change students' attitudes. Appropriate education should cover not only health effects, but also information about alternative, less harmful energy sources. Changing student's energy drink consumption habits requires an integrated approach combining education, social campaigns and health policy. Taking action in these areas can help improve student's health and minimize the negative effects of consuming caffeinated beverages.

The following conclusions were drawn from the research:

1. The vast majority of respondents (94.06%) are aware that the consumption of energy substances, including caffeine, affects the functioning of the circulatory system. This confirms that the community is generally informed about the health effects of such products.
2. The analysis of the results shows some similarities in the awareness of the impact of energy substances on circulation in all age groups, which suggests that information on this topic is widely available and accepted at different stages of life.
3. The results regarding caffeine as the main energy ingredient confirm its key role in public awareness, especially in the context of its impact on the circulatory system.
4. Awareness of the link between excessive sugar consumption and the development of cancer, reported by 69.8% of respondents, highlights the need for education about healthy eating and the impact of diet on health.
5. The analysis of the awareness of metabolic syndrome among respondents indicates the need for education about the relationship between this syndrome and eating habits, especially in the context of younger age groups.
6. The small percentage of respondents who are unaware of the impact of energy substances on circulation and the link between sugars and cancer emphasizes the need for targeted educational activities, especially among this small group.

Author's contribution:

Conceptualization: K.Ž.; methodology: K.Ž., P.S.; software: K.K., M.S.; formal analysis: A.B., Ł.S., M.D., O.K., J.T., S.Z.; investigation: J.T, K.Ž., P.S., K.K., M.S., A.B., Ł.S., M.D., O.K., S.Z.; resources: J.T, K.Ž., P.S., K.K., M.S., A.B., Ł.S., M.D., O.K., S.Z.; data curation: J.T, K.Ž., P.S., K.K., M.S., A.B., M.D., Ł.S., O.K., S.Z.; writing - rough preparation: J.T, K.Ž., P.S., K.K., M.S., A.B., Ł.S., M.D., O.K., S.Z.; writing – review and editing: J.T, K.Ž., P.S., K.K., M.S., A.B., M.D., Ł.S., O.K., S.Z.; visualization: J.T., K.Ž., P.S.; supervision: Ł.S., O.K., S.Z., K.K.; project administration: P.S., M.S., A.B., Ł.S.

Funding statement: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the guidelines of the Helsinki Declaration.

Ethical review and approval for this study were waived due to the implementation of full anonymity during survey responses, ensuring that there is no possibility of linking any of the study participants to the provided answers.

Informed Consent Statement: Informed consent was obtained from all individuals participating in the study.

Data Availability Statement: https://docs.google.com/spreadsheets/d/1-LL3ZWaeEjXY9kmrP2jO_PeYeFx5Nx6/edit?usp=sharing&ouid=109497262345969295239&rtpof=true&sd=true

Conflicts of Interest: The authors declare no conflict of interest. All authors have read and agreed to the published version of the manuscript.

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