



PROBLEMATIC OF THE CONSUMPTION OF ENERGY DRINKS BY STUDENTS OF THE UNIVERSITY OF LUBUMBASHI

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RESUME

La consommation de boissons énergisantes a significativement augmenté dans les temps récents. Les étudiants sont parmi les consommateurs les plus connus afin de moins dormir dans le cadre d'activités académiques, sportives ou d'activités quotidiennes. Toutefois, la caféine ainsi que les nombreuses substances que contiennent ces boissons peuvent entraîner des conséquences néfastes.

L'objectif de cette recherche est de contribuer à l'amélioration de la santé des étudiants de l'Université de Lubumbashi par une réduction de la consommation incontrôlée des boissons énergisantes. Nous avons ainsi effectué une étude descriptive transversale par le biais de questionnaires auto-administrés chez 800 étudiants internes comme externes de différentes facultés et écoles de l'université de Lubumbashi dont 62,4% étaient de sexe masculin et 37,6% féminin.

Nos résultats indiquent que la proportion des étudiants consommateurs des boissons énergisantes était de 97%, dont 59,5% des consommateurs réguliers et 40,5% des consommateurs occasionnels. En calculant l'IMC, 3,4% des étudiants ont une surcharge pondérale et 0,5% sont obèses. Parmi les boissons énergisantes les plus consommées, Kung Fu a une proportion de 37,6% suivi de Volcano (22,3%) et de XXL (16%). La majorité des étudiants enquêtés déclaraient qu'ils buvaient les boissons énergisantes plusieurs fois par jour soit une proportion de 52,2% suivi de 42% qui en consommaient une fois par jour

Mots clés : *problématique, boissons énergisantes, université, Lubumbashi*

ABSTRACT

Consumption of energy drinks has significantly increased in recent times. Students are among the best-known consumers for less sleep in school, sports or daily activities. However caffeine and many substances these drinks contain can have harmful consequences.

The objective of this research is to contribute to improving the health of students at the University of Lubumbashi by reducing the uncontrolled consumption of energy drinks. We performed a cross-sectional descriptive study through self-administered questionnaires to 800 internal and external students from different faculties and schools of the University of Lubumbashi from which 62, 4% were male and 37, 6% female.

The results indicate that the proportion of students consuming energy drinks was 97%, of which 59,5% were regular consumers and 40,5% were casual consumers. Calculating BMI, 3,4% of students were overweight and 0,5% were obese. Among the most consumed energy drinks, Kungfu has a proportion of 37,6% followed by Volcano (22,3%) and XXL (16%). The majority of students surveyed (52,2%) reported that they drank energy drinks several times a day, followed by 42% who drank once a day

Key words: *problematic, energy drinks, university, Lubumbashi*

1. INTRODUCTION

The global market for energy drinks is constantly growing. Indeed, since 1960, when the first energy drink appeared on the market in Europe and Asia, many types of drinks have been designed, so that there are now more than 500 specialties through the world, occupying a considerable share of the beverage market with phenomenal growth in popularity over the past decades.

These are presented as intended to support physical and mental activity during intense exercise and have the ability to enhance energy and alertness levels; they can be alcoholic or non-alcoholic and contain mainly water, glucose, taurine, glucuronolactone, caffeine, some vitamins (B2, B3, B5, B6 and B12), and other substances such as ginseng, inositol, carnitine at various concentrations, depending on the type of product. These constituents play various roles.

Glucose is an essential fuel for all cells in the body, especially for the brain

Taurine is a neurotransmitter. It is necessary for brain development and stimulates the action of serotonin. It helps the body to fight against insomnia, cerebral hyperactivity and irritability. It is a natural calming agent that reduces vulnerability to stress and convulsions

D-glucuronolactone is a glucose derivative and has neuro-behavioral effects

Caffeine has the beneficial effects of being a stimulant of the central nervous system and the cardiovascular system. It improves intellectual performance as well as mood, decreases the feeling of fatigue and tends to improve memory, concentration and sports performance. [1] The consumption of energy drinks has significantly increased in recent times. In addition to athletes, teens and students are among the best-known consumers [2], [3] [4] [5].

The main reasons for consumption of these drinks are an improvement of the sports and intellectual performances, to recover energy after an important physical exercise, to find additional energy, to improve endurance, to get tired less ([6], [7])

Consumers also use them as a substitute for soft drinks. [8] Most users believe that they are a good source of instant energy and are unaware of its high caffeine content leading to adverse health effects. ([9], [10])

Astorino TA, et al. in 2012 devoted three studies to the effects of Red Bull and Energy Drink on 36 volunteers. Compared with the control group, a significant improvement in intellectual performance, including reaction time versus choice, as well as concentration and memory was observed. [11]

The physiological effects related to the consumption of energy drinks are numerous. There is a variety from muscle problems to cardiovascular complications, breathing difficulties and neurological and psychiatric effects. The effects on pregnancy are also

numerous, increasing the risk of miscarriage, premature delivery and stunting ([12], [13], [14], [15], [16], [17], [18], [19]).

Several studies carried out in the USA and in Canada inform about the dangers and the misdeeds of the consumption of the energy drinks among which we can mention: anxiety, depressive symptoms, depersonalization, hallucinations. increased heart rate and blood pressure, decreased sleep quality, increased diuresis, headache, nausea, abdominal pain, anxiety, manic episodes in bipolar patients, risk of obesity and tooth decay , deaths [16] [20], [21]. [22]

In Lubumbashi, energy drinks are freely available in supermarkets, restaurants and food stores; their consumption is uncontrolled.

In addition to local brands including Energy Drink, XXL, Kung Fu, Dragon, many others are imported from Zambia, Tanzania, South Africa and Zimbabwe...

Due to the extent of consumption of energy drinks and its health risks in Lubumbashi, we were interested by a group of motivated consumers namely students from Lubumbashi University.

2. ENVIRONMENT, MATERIAL AND METHODS

2.1 ENVIRONMENT

The research was conducted from 10 to 30 May 2018 at the University of Lubumbashi located in the city of Lubumbashi, province of Upper Katanga on a sample of 800 students in the faculties and schools of the University of Lubumbashi (Unilu) as shown in the table I below:

Table I. Sample of study broken down by faculties and schools

N°	Faculty / Schools	Students Number	Number of students surveyed
01	Faculty of Arts and Humanities	2530	70
02	Faculty of Social, Political and Administrative Sciences	2390	67
03	Faculty of Law	5079	143
04	Faculty of Psychology and Educational Sciences	985	28
05	Faculty of Economics and Management	2054	57
06	Faculty of Sciences	2030	56
07	Polytechnic Faculty	1950	54

08	Faculty of Agricultural Sciences	1520	42
09	Faculty of Pharmaceutical Sciences	1130	32
10	Medical School	4154	117
11	Faculty of Veterinary Medicine	840	23
Sub total		24662	689
12	School of Public Health	1437	40
13	School of Tourism and Hospitality	813	23
14	School of Criminology	512	14
15	Higher School of Industrial Engineers	1230	34
Sub total		3992	111
Grand total		28654	800

2.2. MATERIALS

The main survey and data processing materials consist of:

- students;
- the survey questionnaire;
- SOEHNLE brand weigh scale scale with a maximum capacity of 130kg and a BUEHLER brand scale with a maximum capacity of 5kg;
- height chart;
- blood pressure monitor;
- graduated cylinder of 500mL
- Epi-info TM software version 7.2.0.1 and Excel 2010;

2.3. METHODS

- Socio-demographic surveys

On the basis of a questionnaire, respondents were asked about their age, sex, marital status and activities. Questions were also asked about the types and quantities of energy drinks consumed, the motivations, the moments of consumption.....

The volume of energy drinks was evaluated using a graduated cylinder.

- *Determination of anthropometric parameters and vital signs. [23]*

The weight

The weighing was carried out using a digital scale scales;

The person is standing, devoid of any load, arms around the body, head turned a little upwards. The weight in kilogram is read on a screen.

Size

The height was measured using a toe, the person being barefooted, leaning against the wall, the nape and the heel touching the wall. The reading was made flush with the head and the size expressed in meters.

Body Mass Index (BMI)

It was obtained by dividing the weight in kilograms by the square of the height in meters ($BMI = P / t^2$).

Blood pressure

It was determined using a digital sphygmomanometer, the subject sitting and resting

3. RESULTS AND DISCUSSION

3.1. RESULTS

The convenience sample of 800 students includes 62.4% males and 37.6% females, 91% are single and 9% married. The average age was 20 ± 6 years of which 69.5% were between the ages of 20 and 30 years old and practiced sports from time to time.

3% of surveys never used energy drinks. Of the 97% who consume, 39.3% do it occasionally and 57.7% regularly preferentially at noon and in the evening and consume one to two cans of 250 or 500 ml. Among consumers 69% are male compared to 28% female.

The brands of beverage on the market are: **Red bull, Dragon, Energy malt, Kung fu, Thunder light, Energy drink, Volcano, XXL.**

65.1% of the respondents said that the period of the examinations was the one indicated for the consumption followed by the blockade period ie 25.5%

Kung fu was the most consumed energy drink with 37.6% followed by Volcano (22.3%) and 16% of XXL. 78.9% of students surveyed said that the consumption of energy drinks posed no health risk compared to 21.1% who recognized the dangerousness of energy drinks including the occurrence of sleep disorders (58.1%) and the high blood pressure as well as palpitations.

Table II. Distribution of students surveyed by weight

Weight in kg	Workforce	Percentages	Average & Standard Deviation
52-57	80	10,0	
58-65	428	53,5	
66-73	109	13,6	
73-80	81	10,1	
81-88	20	2,5	
88-95	82	10,3	
Total	800	100	55,2 ±5,1 kg

This table II shows that the average weight of the students surveyed was $55,2 \pm 5,1$ kilograms. The 58 to 65 kilograms range was the most represented at 53,5%.

Table III. Breakdown of students surveyed by size

Size in m	Workforce	Percentage	Average & Standard Deviation
1,48 - 1,53	6	0,8	
1,54 - 1,59	342	42,8	
1,60 - 1,65	95	11,9	
1,66 - 1,71	121	15,1	
1,72 - 1,87	189	23,6	
1,88 - 1,92	22	2,8	
1,93 - 1,98	25	3,1	
Total	800	100	1,52m±7,2 cm

In light of this table III, it appears that the average size of the students surveyed was $1,52 \text{ m} \pm 7,2 \text{ cm}$. The 1,54 to 1.59 meter range was the most represented with 42,8%.

Table IV. Breakdown of students surveyed by body mass index

BMI (kg / m2)	Workforce	Percentage
18,5-24,9	769	96,1
25-29,9	27	3,4
30-34,9	4	0,5
Total	800	100

This table shows that the majority of students surveyed had a body mass index between 18,5 to 24,9 or 96,1% followed by those with a BMI between 25 to 29,9 and only a minority of 0,5 % had as BMI 30 to 35 or 4 students.

Table V. Distribution of students surveyed by motivation for taking energy drinks

Appreciation	Workforce	Percentage
Support intellectual effort and academic endurance	343	44,3
Taste	102	13,1
Energetic intake	166	21,4
Mask drunkenness	53	6,8
Sexual performance	112	14,4
Total	776	100

This table states that the academic performance was the most appropriate assessment among the students surveyed, a proportion of 44,3% followed by energy intake (21,4%), sexual performance (14,4) and taste (13,1%).

Table VI. Distribution of students surveyed by the time of consumption of energy drinks

Time of Day	Workforce	Percentage
Morning	107	13,8
Midday	217	28
Evening	205	26,4
Night	136	17,5
Any time	111	14,3
Total	776	100

This table indicates that noon was the most appropriate time with a proportion of 28% according to the students surveyed followed by 26,4% for the evening, 17,5% at night, 14,3% at any time and only 13,8% who spoke in the morning.

Table VII. Distribution of students surveyed according to the consumption period of energy drinks

Period	Workforce	Percentages
During the blockade	198	25,5
During the holidays	73	9,4
During the exams	505	65,1
Total	776	100

This table states that 505 out of 776 students surveyed said that the exams was the most appropriate period for the consumption of energy drinks or 65,1% followed by the period of blockade.

Table VIII. Blood pressure of students surveyed

Systolic blood pressure	Diastolic blood pressure	Workforce	Percentage
Lower than 120	Lower than 80	21	2,6
120-129	80-84	669	83,6
130-139	85-89	71	8,9
140-159	90-99	34	4,3
160-179	100-109	5	0,6
Total		800	100

This table reveals that 83,6% of the students surveyed had a systolic blood pressure of between 120 to 129 mm of mercury and diastolic blood pressure of 80 to 84 millimeters of mercury.

3.2. DISCUSSION

The results of our research show that energy drinks are widely consumed at the University of Lubumbashi. 97% of students surveyed said they had already drunk an energy drink at least once. These results are similar to those of Chefirat B. and al. in a prospective study conducted with students at university level in the city of Oran in Algeria. The latter shows that 78,12% of students consume these drinks for their energizing effect. [2]

The immediate effects and ignorance of the potential dangerousness of energy drinks for health play an important role in the consumption of our respondents.

Among the consumers, 69% were men against 28% of the women. Similar results were found in a study by Usman A et al, [19] among academics in Umm-Al Qura, whose results showed a high prevalence of consumption among male students (61,5%). This male predominance can be explained by the fact that, generally speaking, women have reservations about novelties and moreover the advertising messages concerning these drinks revolve around masculinity, sport and virility as our work emphasizes. 21,1% of respondents acknowledged that the consumption of energy drinks poses a health hazard. Of these, 58,1% mentioned sleep disorders as the major risk followed by hypertension. These results have the same trend as those found by Chefirat et al, of which 29% of student surveys thought that energy drinks are dangerous to health and can be the root cause of heart problems. [2]

Table IV indicates that the majority of students surveyed had a normal body mass index of between 18,5 and 25 kg / m². This can be explained by the following facts: energy drinks certainly contain water, glucose, taurine, glucoronolactone, caffeine, some vitamins (B2, B3, B5, B6 and B12). They are not overloaded with potentially high-energy nutrients such as

lipids and ethyl alcohol. In addition, they are not consumed in excessive amounts that can significantly affect diets and rations

Tables VI and VII show that the period of the examinations is that favorable for the consumption of energy drinks with 65,1% of the consumer respondents followed by the blockade period (25,5%).

The favorite times are midday (28%) in the evening (26,5%) and at night (17,5%) to gain endurance and stay awake, as reported by Malinauskas et al. (24). Little A and All in a study on the risk of energy drink abuse also report that students approaching exams consume energy drinks to review courses as late and as late as possible, thus delaying sleep. Chefirat et al. Found that students took more energy drinks in the morning (36,40%), in the evening (22.62%). ([2], [3])

Table VIII shows the blood pressure of the respondents. It was found that 8,9% had normal, high blood pressure, 4,3% had mild hypertension and 0.6 had moderate hypertension. These results are in line with those found by Steinke, L et al (2009) in a study conducted at the National Institute of Public Health of Quebec on energy drinks. The latter reports an increase in heart rate and systolic blood pressure in healthy subjects. [21]

The caffeine in these drinks could be the main cause.

Regarding Table V, which gives the respondents' reasons for appreciating energy drinks, the results indicate that endurance and academic performance are the main causes of energy drinks (65,7% of consumers surveyed). These results are consistent with those of Astorino TA, et al., (2012) who conducted studies of the effects of Red Bull and Energy Drink on 36 volunteers compared to the control group, found a significant improvement in intellectual performance, including the reaction time compared to the choice, as well as an improvement in concentration and memory in the experimental group.

In addition, Rotstein J, et al., In their research concluded that the main reasons for using energy drinks are: to have more energy; improve intellectual and sexual performance; Improve sports performance; Stay awake when you are out of sleep. [11]

CONCLUSION

The consumption of energy drinks is an emerging issue. Potential health issues are raised by the caffeine and sugar content of these beverages. As we have seen from the survey carried out, the consumption of energy drinks mainly concerns men. This survey provides a portrait of consumption that is widespread. Students take energy drinks because of improvements in academic and energy performance. However, they ignore the risks and dangerousness of the uncontrolled take-up of energy drinks.

However, it is important to consider information campaigns and awareness of young people and their entourage about the health risks of these drinks. Specific legislative measures in the Democratic Republic of Congo could make consumers more vigilant. Better supervision of the placing on the market of these drinks would not be untimely

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