



## Side Effects and Widespread of Energy Drinks Consumption between Clinical Technology Students at Umm Al Qura University 2020

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**Abstract: Background:** energy drinks are available in every market without any warning phrases on bottles because its harmful to health. **Objective** of this study is to explore and identify the knowledge, attitudes, intake, and side effects of energy drinks on clinical technology students. **Methods and materials:** Total 116 population represent it from clinical technology different departments male students (Anaesthesia technology, emergency services, respiratory therapy), from all study years (2nd, 3rd, 4th) 2020. **Results:** The main reasons for consuming energy drinks mostly were Taste (56.6%) Staying awake (37.3%) Feeling good and boost in energy (34.9%). according to side or adverse effects, palpitations are the most common side effect in this study (40%), insomnia secondly (32.5%) , indolence (30%). **Conclusion:** solutions can be me made by making other drinks that have the same taste but less dangerous contents and less risk on health, which this idea is being considered among companies to make such product. Further studies are recommended to assess the educational level of students uptake energy drinks, about the dangerous side effects. And also putting warning phrases on bottles that it cause health side effects as a cigarette packet

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**Keywords:** energy drinks. Side effect. Widespread. Clinical technology

### 1. Introduction:

It is a type of drink containing usually caffeine, which is recognized by providing mental and physical stimulation (marked as "energy"). they are maybe or may not contain carbon or not and also contain sugar or not, there are many brands and varieties in this drink category. Following the death of a young male student in Ireland in November 1999<sup>4</sup>. Energy drinks started in 1997 when RedBull® was the first relea-sed, and followed by many other trade names, hence, more than 490 new energy drinks brands have been launched all over the world by 2006 where the financial rewards of the 5-7 billion dollar energy drink industries <sup>1</sup>. Energy drinks contain various combinations of b-vitamins, electrolytes, and other "energy boosters" including Amino Acids, taurine, Guarana, ginseng, carnitine, choline bitrate, glucuronolactone <sup>2</sup>. but guarana has similar stimulatory effects to caffeine<sup>4</sup>. Also, excessive contents of carbohydrates, guarana, taurine, ginseng and creatine participate in a significant role in the energy hike procedure.<sup>1</sup>. the rise in uptake of energy drinks may be anticipated to the fact that teenager and young adults are not getting adequate sleep on daily routine.<sup>3</sup>. also cases shows that increase use of energy drinks can result in sinus tachycardia and palpitations

and high blood pressure but after discontinuation of energy drinks heart rate and blood pressure have been a return to normal also headaches which means serious effects of energy drinks on health.

the majority of students in Kingdom Of Saudi Arabia are not aware of the adverse effects of energy drinks, they consume energy drinks for a variety of reasons some of them believe that it may improve attention and reaction times for a long period of time, some of the ingredients like caffeine and sucrose have negative side effects like palpitations and dehydration, in addition, it may disrupt the sleep pattern and cause insomnia<sup>5</sup>. sportspersons would rather to use energy drinks to develop their physical capabilities; so, they were rise consumption of energy drinks as compared to other students <sup>6</sup>. also the nervousness temper, tremors, muscle spasm, disturbed feeling, most important rise in palpitation, arrhythmias, gastro-intestinal disruption and strangely rise in depression are also the related side effects<sup>7</sup>. According to Global Energy Drinks Report, specific warnings were issued regarding the Kingdom of Saudi Arabia and declared as one of the top ten nations, where citizens consumed excessive energy drinks<sup>8</sup>. Energy drink's goal to convince performance strengthen effects with that result in more dehydration. <sup>7</sup>. In terms of cardiac risk,

described a case in which a 25-year-old with a pre-existing heart condition suffered intractable Ventricular Fibrillation after consuming an energy drink containing a high concentration of caffeine.<sup>10</sup>

The aim of this study was to estimate the prevalence of energy drink consumption among Umm Al-Qura University clinical technology department, which includes (Anaesthesia technology and Emergency Services and Respiratory Therapy). Students and describe the adverse effects present in the population. Also, the study inquire into causes encourages the consumption of energy drinks and suggests useful effects after uptake. Also the habits and normal routine life, which is affected by energy drinks.

## 2. Methods and material:

It is cross-sectional study design. 116 population represent it from clinical technique different departments male students (Anaesthesia technique, emergency services, respiratory therapy ), from all study years ( 2nd, 3rd, 4th ) 2020, the questionnaires translated in Arabic with consent forms were made electronically from Google Form and distribute through Whats app from 8th to 16th February 2020, the questionnaire can be found on appendix below.

The questionnaire contains twenty-one questions that were divided into two categories:

- The first category is characteristics that consist of three questions: specialty, academic year, age to measure if the characteristics affect in side effects and widespread of energy drinks.

- Second category composed of eighteen questions that concentrate on widespread and side effects of energy drinks in different views and grades. 4th question is do you drink or not, 5th question in any education level they begin to drink it ( elementary, intermediate, high or secondary ), 6th question was the main reason of consuming it, 7th question that have they increase of energy drinks after joining university or not, 8th question is it easy to reach it in your university or not 9th question is have you drink it usually before studying or not, 10th question is if you answer 8th question on yes have you felt better after drink, 11th question is about consumption and it is how many bottles did you consume it (daily, weekly, monthly ), 12th question about costs is it cheap or expensive? 13th question is did the advertisements influence you to drink more, 14th question is did energy drinks are harmful on your health, 15th question do that energy drinks ls like soft drinks 16th question did energy drinks contain caffeine or not, 17th question is do energy drinks contain vitamins or not, 18th question is do you know about the other contents of energy drinks, 19th question is how many hours do you sleep and its in multiple choices, the last question

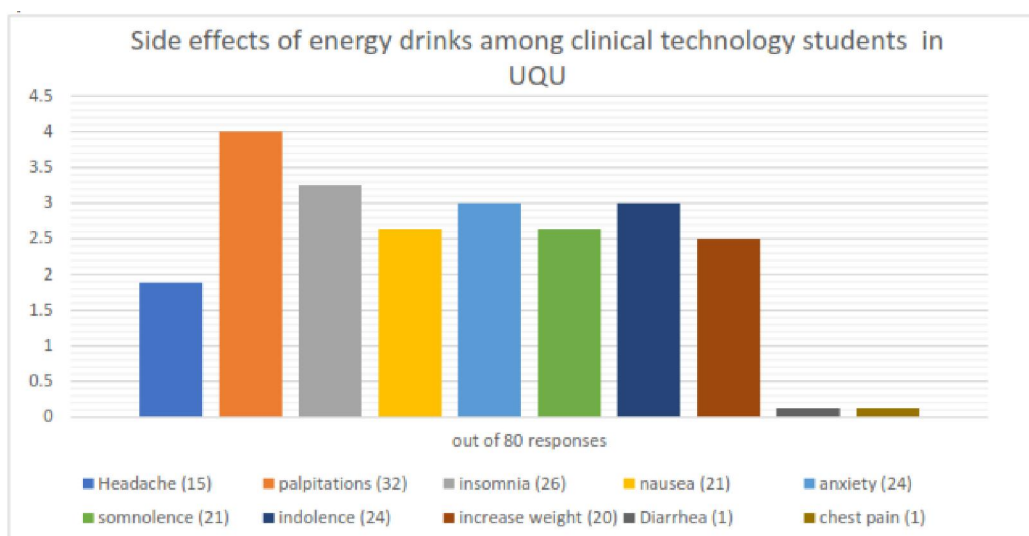
do you feel any of these symptoms you can choose more than one.

## 3. Results:

We have collected 116 questionnaires electronically throughout clinical technology department, which includes: Anesthesia technology (n=55, 47.4%) and Emergency Services (n=37, 31.9%) and Respiratory Therapy (n=24, 20.7%), and we found that 68 (58.6%) of the students in these departments consume energy drinks while 48 (41.4%) do not. The respondents in the second year were about 39 (33.6%) and students in the third year were about 21 (18.1%) while the fourth year was about 56 (48.3%). the results have shown that the respondents that were 19-22 years old are the majority which consume energy drinks, n=94 (81.1%), while less than 19 years old were about 6 (5.2%), and above 22 years old were about only 8 (14%). We found out that most of the students in this department began to consume energy drinks since secondary school was about 31 (39.2%) and we think this may be due to being a teenager and the tendency to try wild and new things, going to the second most period they began to consume energy drinks which were since intermediate school, 24 (30.4%), and the remaining percentage distributed among elementary school, 10 (12.7%) and college period, 14 (17.7%). We asked for the reason for the consuming and 83 students have responded the answers were: 47 students (56.6%) said Taste was the main reason, 29 students (34.9%) went for Feeling good and boost in energy and we think this is mainly due to Taurine and other contents of the energy drinks, 11 respondents (13.3%) said that it is for Improving exercising and sport, 19 respondents (22.9%) said it is for Increasing concentrating, 25 students (30.1%) went for Influence of friends as a reason, 11 students (13.3%) responded that consuming was due to decreasing anxiety during exams period, 31 (37.3%) mentioned Staying awake for more hours as a reason for consuming, while the other remaining respondents mentioned other reasons. We asked if the consuming rate increased after joining college and 45 (53.6%) disagreed while 39 (46.4%) agreed, furthermore we found that 55 (62.5%) of the respondents agreed on that energy drinks are easy to reach inside the campus of the university, while 33 (37.5%) disagreed, 29 (33.7%) usually consume before studying, while 57 (66.3%) do not, and 25 (43.9%) felt an improvement in studying after consuming, while 32 (56.1%) did not. The consuming rate was 31 (36.9%) for 1-3 units monthly, and 16 (19%) for 1-3 weekly, and 14 (16.7%) 1-3 units daily, and 11 (13.1%) for 4-7 or more units monthly, and 6 (7.1%) for 4-7 or more units daily, and last 6 (7.1%) for 4-7 or more weekly. 55 (62.5%) think that the prices of energy drinks are high, while 26 (29.5%)

think it is fine and appropriate, but 7 (8%) think it is cheap. the advertisement increased the consuming rate for some students 33 (38.4%), but for others it had not 53 (61.6%). 65 (73.9%) of students think energy drinks are harmful to health, while 11 (12.5%) think it is not, and others 12 (13.6%) think it does not have any effect. Many students 55 (64%) think that energy drinks are originally soft drinks, while others 31 (36%) do not. Energy drinks contain caffeine, 62 (71.3%) students agreed to that, but 5 (5.7%) do not agree, and 20 (23%) students do not even know. some students responded 21 (23.9%) that energy drinks contain Vitamins, while some 17 (19.3%) said no, while the other 50 (56.8%) have no idea. And for the contents of energy drinks a percentage of 60 (67.4%) said that they do not know about the contents of energy drinks,

while others 29 (32.6%) said they do. As a general question we asked them about their sleeping hours, 38 (43.7%) students sleep about 6-8 hours, 27 (31%) students sleep more than 8 hours, while 22 (25.3%) sleep less than 6 hours. As a topic of our research we asked about the side effects of energy drinks, 15 respondents (18.8%) went for headache, 32 (40%) said they suffered from palpitations, 26 (32.5%) suffered from insomnia, 21 (26.3%) felt nauseous, 24 (30%) felt some kind of anxiety, 21 (26.3%) felt somnolence, 24 (30%) felt indolence, 20 (25%) noticed an increase in weight, while others mentioned side effects such as diarrhea and chest pain. Below is a briefing of the above questionnaire and Side Effects and statistics in a form of diagrams and tables for clarifying.



**Table 1: student's information**

Age	n	%
19-22 yo	94	81.1%
<19 yo	6	5.2%
>22 yo	8	14%
Academic year		
Second	39	33.6%
Third	21	18.1%
Fourth	56	48.3%
Specialty		
Anesthesia	55	47.4%
Emergency services	37	31.9%
Respiratory therapy	24	20.7%

**Table 2: Questions and responses**

Since when you began to consume energy Drinks?	n	%
Since secondary, school	31	39.2%
Since intermediate, school	24	30.4%
Since elementary school	10	12.7%
Since college	14	17.7%

**Does consuming rate increased after joining college?**

yes 39, 46.4% | no 45, 53.6%

**Is it easy to reach inside university campus?**

yes 55, 62.5% | no 33, 37.5%

**Do you usually consume before studying?**

Yes 29, 33.7% | no 57, 66.3%

**Have you felt an improvement in studying after consuming?**

Yes 25, 43.9% | no 32, 56.1%

**What is your consuming rate to energy drinks?**

1-3 units daily 14, 16.7%

1-3 units weekly 16, 19%

1-3 units monthly 31, 36.9%

4-7 or more units daily 6, 7.1%

4-7 or more units weekly 6, 7.1%

4-7 or more units monthly 11, 13.1%

**What do you think of the prices in your area?**

High 55, 62.5% Appropriate 26, 29.5% Cheap 7, 8%

**Does advertisement increased your consuming rate?**

Yes 33, 38.4% | no 53, 61.6%

**Do you think energy drinks are harmful on health?**

Yes 65, 73.9% | no 11, 12.5% | does not have any effect 12, 13.6%

**Do you think that energy drinks are soft drinks?**

Yes 55, 64% | no 31, 36%

**Do energy drinks contain Caffeine?**

Yes 62, 71.3% | no 5, 5.7% | do not know 20, 23%

**Do energy drinks contain Vitamins?**

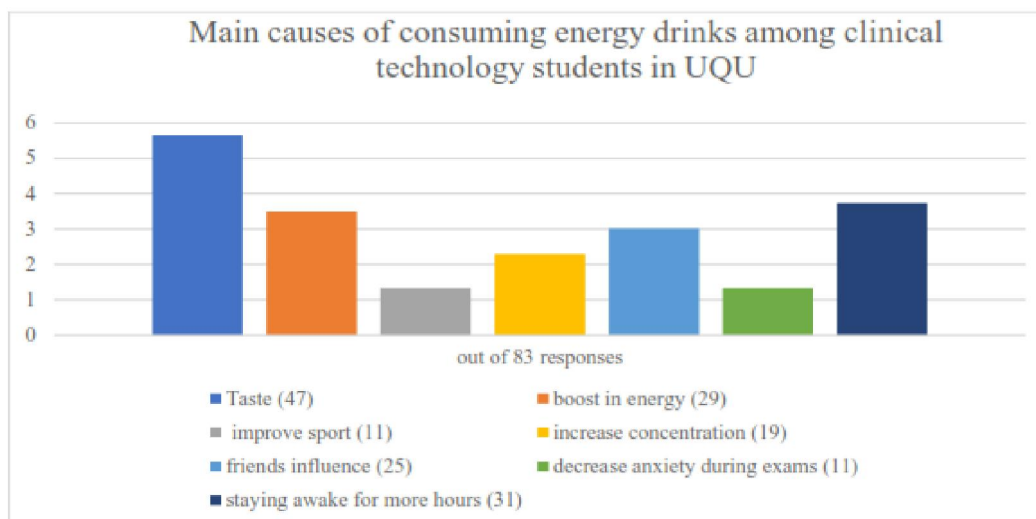
Yes 21, 23.9% | no 17, 19.3% | do not know 50, 56.8%

**Do you know about the other contents of energy drinks?**

Yes 29, 32.6% | no 60, 67.4%

**How many hours do you usually sleep?**

6-8 hours 38, 43.7% >8 hours 27, 31% <6 hours 22, 25.3%



**4. Discussion:**

The use of energy drinks has become widespread nowadays. So with a little effort and interesting from us in this subject we searched for energy drinks consumption in our clinical technology departments ( Anaesthesia technique, emergency, respiratory therapy )

And we distribute a questionnaire electronically Because it saves time, effort, money and Easy to access. The reason for the different percentages consumption of energy drinks between clinical technology departments due to Different numbers of students, different circumstances for each of them. considering firstly that why students under the age of 22 are more likely to use energy drinks (86.3%) than those who are over 22 years old (13.7%) because of a lack of knowledge.

And found out that most of the students in this department began to consume energy drinks since secondary school were about (39.2%) and we think this may be due to being a teenager and the tendency to try wild and new things.

We asked the students for the reason of consumption of energy drinks and the majority answered that Taste was the main reason (56.6%), we think this is mainly due to Taurine and other contents of the energy drinks, most modern companies started adding more artificial flavors, vitamins and sugar to cover up the bitter and acidic taste of Taurine.

The study showed that many student consumed energy drinks due to the energetic effects (34.9%) and increased concentration (22.9%) and for staying awake more hours (37.3%) we believe it is caused by stimulants such as caffeine and caffeine-like substances. A double-blind, placebo-controlled study (Carolyn F. Brice & Andrew P. Smith) in 2002 stated that caffeine increased alertness and improved performance on simple and choice reactive tasks.<sup>10</sup>

(30.1%) among respondents stated that the main reasons of consumption was due to the Influence of friends, we think this is because of how social acceptance is very important to the students as it may be the same reason for them to be pressured into other activities and as a comparison to other studies they found that most of the students do not have any precise motivator for using energy drink for the first time. The company of friends deemed to be a common reason for consuming energy drinks for the first time.<sup>11</sup> our study showed that (53.6%) of the students disagreed when asked if their consumption rate increased after joining college and the remaining (46.4%) agreed ( as we assume due to maturity and gaining more knowledge and awareness after joining the college as this result ).

The majority said that it is easy to reach for energy drinks inside the university campus, we think it is easy to reach it almost everywhere due to the existence of groceries in every area. students usually



do not consume before studying and we think it is because the somnolence and indolence energy drinks provoke, majority of students did not felt an improvement in studying after consuming due to some of the side effects as headache and anxiety they felt, the highest percentage for consuming rate was 1-3 units monthly which is a good percentage and this may mean that students have a good awareness of the effects energy drinks in other study we found that also same consumption as same as our study which is the frequency of 1-4 days per month.<sup>12</sup>

cause, most think that the price is high, normally due to contents in energy drinks as caffeine and taurine. and governmental strict to these companies by doubling its prices.

Also that advertisement does not have a big role in affecting students minds, which is good. The majority agreed that energy drinks are harmful to health, and we think so too, due to the big effect on the heart and the brain. Also due to high consumption of it causes hyperglycemia and obesity and with it causes diabetes mellitus because contain sugar.

And we asked them that if they are knew that it contain caffeine or not majority said that they knew which means the awareness and the knowledge is better, also we asked them that if energy drinks contain vitamins or not most of them said that they do not have an idea about it and we assume that the highest percentage of consumers is less than 22 years old which is teenage and its for trying new things and do wild things the same reason for if they knew the contents of energy drinks or not most of them said that they do not know while as same as our study the majority of participants do not have an information about ingredients.<sup>13</sup> then we ask them how many hours they sleep daily most of them answered that they sleep 6-8 hours which is normal for their age. and lastly was about our aim to do this what is side effects majority said that is palpitation while few said chest pain and its interesting and significant because most of studies agreed like this study by 429 participants 150 of them feel palpitation and 39 of them report chest pain<sup>14</sup>, also a case presentation of hypertension A review of a case of a boy who represents with palpitations and hypertension because of energy drinks consumption. He had been using a "Sting" energy drink usually while studying for long hours during his O level tests. His medical examination revealed Sinus tachycardia and hypertension. Remind of the and lab investigation was within typical boundaries. His pulse and blood pressure come back to usual grades after discontinuing Sting consumption<sup>15</sup>. also another interesting case report that a 25-year-old young with a pre-existing mitral valve which progresses to severe ventricular fibrillation after usage a normal energy guarana health drink containing a high concentration of caffeine<sup>16</sup>.

another case study saying that Thirty-minute SBP increased significantly in the A and C groups. B group show a reduction of the percentage of the 1-h SBP rise, and an increase of 1-h DBP and QTc shorten. Heart rate showed an interesting rise in the percent change in the A and C groups. Cortisol salivary levels increased in the B group<sup>17</sup>. and how dangerous is this which improving results of palpitations and heart problems.

while in second place was insomnia which confirms by this study insomnia as the most common adverse effects reported by the students consuming energy drinks<sup>18</sup>. consecutively indolence and nauseous, dizziness, increase weight which is logistic due to high concentration of sugar.

### Conclusion:

Energy drinks consumption is a common practice among clinical technology students and other students, and the main reason for consumption was the taste in the first place which means students have narrow information about the contents and are not aware of the serious side effects that can happen on the long term on health, solutions can be me made by making other drinks that have the same taste but less dangerous contents and less risk on health which this idea is being considered among companies to make such product and attract the same sample of consumers, We recommend the need to create public awareness about energy drinks. Further studies are recommended to asses and analyze the educational level of students usage energy drinks, about the serious side effects on health. And also putting warning phrases on bottles that it cause health side effects as a cigarette packet.

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