Energy Drink Consumption in Adolescents

"Are energy drinks good for children? Raising Parent Awareness"

Tag Words: Energy Drinks; caffeine; stimulant; Red Bull

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Summary

Gorilla marketing and lack of regulation of energy drinks has resulted in an increase in consumption of energy drinks high in caffeine in adolescents. In fact, children below the age of 19 account for 60% of those purchasing energy drinks. On average, about 45% of patients each year admitted to an emergency room for caffeine overdose are adolescents. The hazardous effects associated with consumption of energy drinks in adolescents are discussed. These include alterations in neurological development, an increase in blood pressure and the possibility of addiction. To get the word out, answers to such questions as: are energy drinks good for children, what is a safe consumption of caffeine for adolescents; what effects do energy drinks have on children; are there healthier alternatives; and what can parents do to prevent their child from drinking energy drinks; were put on the web site Ask.com and a Parenthood website.

Video Link

Energy Drinks: The Effects on Adolescents:
http://www.youtube.com/user/DRJULIEFAGANSTUDENTS#p/u/11/1sYWna06u9Q

Part I: Energy Drinks Exposed

Introduction

(RV) Energy drinks have created a huge craze in the last past decade amongst consumers. More and more people daily are consuming energy drinks in order to function optimally throughout the day. As more people begin to work longer hours, study longer and take on more responsibilities, the need for energy drinks has become an immense necessity for most people in working America. In return this has led energy beverage companies into profiting over millions of dollars each year. Many companies portray their products provide an improvement in metabolism, intelligence and energy through the aid of television, radio, newspapers and billboards. Though most people may be skeptical of different marketing strategies, most people still continue to consume energy drinks ignoring any side effects that might be involved upon consumption. In the following paper, the agenda is to expose the energy drink industry and explain the harmful side effects that can be associated with energy drinks in particularly with a focus on how it affects adolescents.

History

Energy drinks have been in existence since the 1960's. Only in the last past decade has energy drinks really been used by many people. The first energy drink was made in Japan by a company called Taisho Pharmaceuticals. The drink was called Lipvitian-D and was sold in a brown medicine bottle. This particular energy drink was solely made for the purpose of just obtaining energy and was marketed in particular to the working class of Japan. Lipvitian-D contained essential vitamins which included B1, B2 as well as B6 and also contained niacin and taurine which are metabolic agents. The agents have been proven to boost energy and concentration.

Eventually, the energy drink market made it out of Japan and rapidly moved throughout China and rest of Asia and Europe. First introduced as a medicinal tonic for the fatigue had know become a social drink amongst late night parties and clubbers. In the next decade, the concept of energy drinks had made its way to Thailand and had become a popular drink amongst taxi drivers in that region. The drink was "Krating Daeng" and had an active ingredient called taurine. Tuarine is an amino acid that was founded inside bulls. Dietrich Mateschitz took taurine and added it with caffeine and sugar and named the first world renowned energy Red Bull. Arguably, Red Bull is the drink that had extreme popularity amongst Europeans right off the bat. In 1997, Red Bull was introduced in America and has been rising in success every single year.

http://www.mupsip.com/history-energy-drinks.html
http://www.edrinks.net/energy-drinks/drink-history.aspx

Top 5 Energy Drinks

(RM) According to Healthy Living, the major energy drinks consumed, beginning from most popular to least popular, are Amp Energy Drink, Monster Energy Drink, Red Bull Energy Drink, Rockstar Energy Drink, and XS Energy Drink. These energy drinks are common amenities of convenience stores, bars, magazines, and college campuses. With a 13.3% overall increase of sales in the year of 2010, energy drinks have been labeled one of the fastest growing industries in America (USA Today, 2011). The energy industry overall revenue is expected to exceed $9 billion by 2011 (NACS Online, 2007). Targeting adolescents, young adults, adults, and the elderly, almost everybody contribute to the statistic.

The interest in energy drinks stems from its ability to provide individuals with an instant artificial burst of energy. Sub names such as Elevate, Traction, Overdrive, Lightning and etcetera, serve as catchy titles that appeal to the consumer. Humans naturally obtain energy from the consumption of food (i.e. carbohydrates, fats, sugars, & etc). Majority of energy comes from the catabolism of glucose. Glucose is converted into pyruvate and adenosine triphosphate in a process titled glycolysis. The amount of adenosine triphosphate available for energy expenditure is amplified by further breakdown of pyruvate into more adenosine triphosphate. This process occurs in the mitochondrion of human cells, and it is referred to as aerobic respiration. However, energy drinks provide an expedited modulation of this process by use of various physically and mentally stimulating ingredients.

Amp Energy Drink

Amp Energy Drink is sold in a 16 ounce can, which the manufacturer list as 2 servings. It contains high fructose corn syrup, citric acid, carbonated water, sodium benzoate, sodium hexametaphosphate,maltodextrin, gum arabic, niacinamide, calcium pantothenate, calcium disodium, EDTA, brominated vegetable oil, riboflavin, yerba mate extract, panax ginsing root extract, caffeine, taurine, and guarana seed extract (Cole, 2007). Amp energy packs a powerful punch of 29g of sugar and 80mg caffeine per serving. This equates to 58g of sugar and 160mg caffeine per can.

Monster Energy Drink

Monster Energy Drink claims to excite the beast inside of individuals with its 16 ounce per two serving can. Monster consist of carbonated water, cyanocobalamin, maltodextrin, glucose, riboflavin, sucralose, pyridoxine hydrochloride, citric acid, sodium citrate, inositol, glucuronolactone, sodium chloride, benzoic acid, niacinamide, taurine, panax ginsing root extract, caffeine, L-caritine, and guarana seed extract (www. monster energy.com). Every can of Monster Energy Drink is a serving of 54g sugar and 5000mg "energy blend." The "energy blend" consists of L-carnitine, caffeine, glucose, guarana, inositol, glucuronaolactone, and maltodexrin.

Red Bull Energy Drink

Red Bull Energy Drink is served in multiple cans but the most common is the one serving 8.4ounce container. Red Bull Energy Drink contains carbonated water, pyridoxine hydrochloride, calcium, glucose, pantothenate, sodium citrate, niacinamide, caffeine, instol, vitamin B12, and taurine (Cole,2007). This drink contains 27g of sugar per can. However, the amount of caffeine content is not explicitly stated on the can.

Rockstar Energy Drink

The average Rockstar Energy Drink container is 16 ounces, which contains 2 servings. Rockstar Energy Drink ingredients are carbonated water, sucrose, cyanocobolamin, pyridoxine, riboflavin, benzoic acid, sorbic acid, glucose, citric acid, calcium pantothenate, milk thistle extract, taurine, caffeine, L-carnitine, inositol, gingko biloba leaf extract, gaurana seed extract, and panax ginsing root extract (www.rockstar69.com). One 16 ounce can of Rockstar Energy Drink contains 62g sugar and 2.7 grams "energy blend." The "energy blend" consists of 2000mg taurine, 300mg ginkgo biloba leaf extract, 160mg caffeine, 50mg guarana seed extract, 50mg inositol, 50mg L-

carnitine, 50mg panax ginseng extract, and 40mg milk thistle extract. Because of its high "energy blend" content, Rockstar Energy Drink has labeled its self the worlds most powerful energy drink.

XS Energy Drink

XS Energy Drink is one of the more recently developed energy drinks. It is served in an 8.4 ounce container, which claims to have zero carbohydrates and sugar. The ingredients include Cyanocobalamin, niacin, pantothenic acid, citric acid, cranberry juice concentrate carbonated water, pyridoxine hydrochloric acid, potassium sorbate, sucralose, acesulfame potassium, taurine, L-glutamine, adaptogen blend (eleutherococcus senticosus, panax ginseng, panax quinquefolium, schisandra, astragalus, and reishi), and caffeine (www.xsblast.com). Each serving has zero grams of sugar. Not surprisingly, XS Energy Drink does not list how much caffeine is in one serving.

http://www.josiahcole.com/category/energy-drink-review/
http://www.monsterenergy.com/us/en/products/monster-energy
http://www.nacsonline.com/NACS/News/Daily_News_Archives/December2007/Pages/nd1210074.aspx
http://www.rockstar69.com/product.php?pdt=1
www.usatoday.com/money/industries/food/2011-03-11-energy-drinks-health-concerns.htm
http://www.xsblast.com/drinks/cranberry-grape

Health Effects

(RV) Many health effects of energy drinks are still unknown due to the lack of research and regulations pertained to energy drinks. However, many scientific reports have shown that a large consumption of energy drinks can be toxic to children, adolescents and young adults. In recent years the American Association of Poison Control Centers has begun tracking and reporting toxicity of energy drinks. Germany, Australia and New Zealand have reported numerous amount of reports way before the United States related to health effects of energy drinks. These include liver damage, kidney failure, respiratory disorders, agitation, confusion, seizures, psychotic conditions, nausea, vomiting, abdominal pain, rhabdomyolysis, tachycardia, cardiac dysrhythmias, hypertension, myocardial infarction, heart failure, and death (Medscape).

Therapeutic Benefits:

According to most scientists energy drinks have no therapeutic benefit. It is also known that many of the ingredients in these beverages are understudied and not regulated. Caffeine is the chief stimulant in energy drinks used mostly to battle fatigue and increase awareness and energy. However, excessive levels can have the opposite effect in energy drinks.

Miscarriage and Fertility:

The Journal of Adolescent Health, concluded that students who reported a high caffeine intake were twice as likely to have trouble falling asleep and to be tired in the morning due to disturbed sleeping patterns. Another problem associated with high consumption of caffeine is fertility problems. The "American Journal of Obstetrics and Gynecology" published a study which concluded that a risk of a miscarriage increases when consuming more than 200 mg or more of caffeine daily. A different study done by the "British Medical Journal" concluded that risk of

stillbirth nearly doubles for women consuming more than eight cups of coffee per day compared to women who did not consume any coffee.

Psychotic and Behavioral Problems:

Besides the effect caffeine has on fatigue and fertility it has recently been reported that a significant amount of caffeine consumption by patients with psychotic behaviors can cause paranoia and delusions. "The American Journal of Psychiatry" showed a case study of a patient who have been diagnosed with schizophrenia and had been stable for many years by medication. After consuming heavy amounts of energy drinks, the patient was hospitalized for paranoia and delusion. The man in this case study was a healthy, 47 year old man who had developed this behavior due to a high consumption of caffeine. Finally, extremely high levels of caffeine may cause death. It was reported by the BBC News Nottingham that a young man died due to consuming two table spoons of powdered caffeine. Doctors recommend no more than 1/16 of a tablespoon of pure caffeine daily. "Dr. Nigel Chapman estimated that the man had taken more than 70 times the amount of caffeine usually found in energy drinks" (Livestrong).

Abuse Energy Drinks:

Abusing energy drinks and or caffeinated products have been a serious problem around the world. The "Mayo Clinic Proceedings" show that abusing energy driven beverages can cause multiple problems for the cardiovascular system. These include heart rhythm disturbances, racing heart and the increased chance of a stroke. This is primarily because energy drinks have a high content of caffeine. It is also found that mixing energy drinks with alcoholic beverages increases the risk and causes heart irregularities and nausea or vomiting. It is believed that the stimulants in energy drinks cause your body to become stressed and in return release stored chemicals that affect the heart. There have also been studies indicating that people are more prone to drunk drive, binge drink and even sexually assault someone when mixing energy drinks with alcohols. The long term affects of mixing alcohol with energy drinks is unknown.

Dehydration:

Studies have also shown that caffeine and glucose content in energy drinks does increase the chances of dehydration. In particular it has been studied most thoroughly during exercise. It is thought that when working out with energy drink dehydration occurs more rapidly and can lead to muscle soreness, headaches, nausea and fatigue.

Neurological Health Problems:

Another finding suggests that energy drinks may also cause neurological health problems such as seizures. It is believed that certain drinks contain stimulants that are not regulated by the Food and Drug Administration (FDA) which can lead to future neurological problems. The Barrow Neurological, a research company, believe if large amounts of energy drinks which have been consumed over extended period of time this increase the risk of altered neurological scenarios. This study is not a hundred percent verified because energy drinks have not been in existence for too long to see the impact it may have on people.

Positive Health Effect:

The only positive effect that has been documented in most scientific papers is that energy drinks provide an increase in mental alertness. This is expected because of the amount of caffeine content that is present in each energy drink. It is known that caffeine is a stimulant that acts on the central nervous system (CNS) which in turn speeds up the messages to and from the brain. This is why caffeine allow the person to feel more awake and alert. There are many tests that show this proof. Researchers have found that energy drinks do have energizing effects. A study showed participants ranging from 18 to 55 years old who were given either a placebo or an energy supplement quickly could notice the difference. Participants that were on the energy drink supplement could feel the effect within 30 to 60 minutes and the boost could sustain for a minimum of 90 minutes. Stated previously caffeine was found to be the primary reason for this effect. According to this research team (Riesenhuber and colleagues) found that caffeine in energy drinks promotes diuresis and natriuresis. Diuresis is increase production of urine and natriuresis is the excretion of sodium in the urine. Also in their research they found that sharp caffeine consumption decreases insulin sensitivity and increase arterial blood pressure.

Overview:

After reviewing different researches it is clear to say that the ultimate harm in consuming energy drinks is the extra caffeine content that is added into energy drink products. Based on this consuming energy drinks daily is extremely harmful to the human body, however, energy drinks consumption is okay as long as it is consumed in moderation. The research also suggest children and teenagers (<16) to not consider touching caffeine related products due to the health problems that have been mentioned above. Also, senior citizens should avoid consuming these beverages because energy drinks can increase heart rate, which might be harmful to the elderly. Finally people that have any heart illnesses should avoid consuming energy drinks. There are many alternatives to caffeinated beverage which may be a better for the vast majority which are discussed later in the text.

http://www.medscape.com/viewarticle/737311
http://www.sciencedirect.com/science/article/pii/S037687160800285 8#sec4
http://pediatrics.aappublications.org/content/127/3/511.abstract
http://www.livestrong.com/article/295029-effects-of-extremely-high-caffeine-intake/#ixzz1anTBzLZS
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2206048/
http://health.ninemsn.com.au/family/familyhealth/689831/energy-drinks

Correct Consumption

(RV) According to many doctors the appropriate consumption of no more than 400 mg of caffeine daily is considered safe for most healthy adults. Most research suggests between 200 to 400 mg of caffeine is an okay amount to consume. It has been studied that for adolescents, an intakes of over 100 mg of caffeine per day has been linked with elevated blood pressure. Correct consumptions according to Health Canada are (cbc.ca):

- 45 mg for children aged 4 - 6
- 62.5 mg for children aged 7 - 9
- 85 mg for children aged 10 - 12

A usual serving of an energy drink contains 70 to 150 mg of caffeine per 8 ounces. 70 to 150 mg is equivalent to five ounces of coffee or two 12 ounce cans of soda. A large bottle contains more servings, therefore, there can more caffeine content present. This is what makes consuming energy drink dangerous. Small 8 oz cans are safe to drink looking from the caffeine content point of view for one individual person daily; however, bigger bottles contain too much caffeine and can be dangerous.

An unknown problem in determining what the correct consumption of energy drinks is, not knowing what effects do collectively all the chemicals in energy drinks have on the human body. It still has not been studied, what effects do caffeine and other major ingredients in energy drink posses when everything is added together. This effect must be studied by different researchers and ultimately a definite answer can be provided.

http://www.livestrong.com/article/526490-can-energy-drinks-damage-your-body/
http://www.medscape.com/viewarticle/737311
http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/food-aliment/caffeine-eng.php

Food and Drug Administration

The reason why energy drinks are not FDA approved is because energy drinks are categorized under nutritional supplements. According to the FDA a company can sell energy drinks as long as they do not contain 71 mg caffeine per fluid ounces. Therefore this suggests that energy drinks up to 75 to 400 mg caffeine per serving.

Only can the FDA interfere when they believe through evidence that energy drinks in particular have harmed people directly. Meaning that until a significant amount of people aren't diagnosed with having illnesses due to energy drink consumption then and only then will the FDA start to investigate and put restrictions on energy drinks.

http://www.medscape.com/viewarticle/737311
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2206048/

Main Source of Energy

(RM) Though energy drinks contain various ingredients, the main components are caffeine, sugar, gaurana, taurine, ginsing, ginkgo biloba, L-carnitine, yerba mate, and B Vitamins. These ingredients collectively act to increase concentration, stamina, energy, performance, weight loss, and memory. However, excessive consumption may lead to increased heart rate, muscle twitches, elevated blood pressure, and possibly death. Each ingredient plays an individual role, but the long term effect of the mixture is currently unknown.

Caffeine, or 1,3,7- trimethylxanthine, is a stimulant that works on the central nervous system and sympathetic nervous system. It is derived from coffee plants and tea bushes. It takes approximately 30 to 120 minutes for caffeine to reach peak levels in the blood. The blood then transport the caffeine to all tissues. Guarana berries and yerba mate also provide a source of caffeine. The additional caffeine provided from these sources are not included in the supplement facts listed on energy beverages, which caffeine serve as the primary substance. It is also found in coffee and carbonated beverages. In comparison, there is more caffeine in an 8 ounce serving of coffee than there is in one serving of an energy drink (researchwikis, 2008). However, most

energy drinks are served in 16 ounce cans that contain two serving, which has more caffeine than a serving of coffee. On average, the healthy consumption rate is approximately 300 mg per day for adults and under 100mg for children (Consumer Reports, 2007). Healthy consumption of caffeine has been shown to enhance endurance, exercise performance, metabolic rate, rate of fat metabolism, and mental function, which are all common marketing points of energy drinks (www.nutritionalreviews.org). In contrast, excessive intake of caffeine is known to lead to condition known as caffeinism or caffeine intoxication. This disorder is characterized by nervousness, dieresis, insomnia, excitement, elevated blood pressure, heart palpitations, muscle twitching and gastrointestinal disturbance (Medical Dictionary, 2003).

Sugar is another major ingredient found in many energy drinks. The human body uses sugar to produce energy. It is suggested that sugar intake be increased during the day to sustain daily activity, and decreased during the night when less physically active. The amount of sugar in one can of an energy drink range from zero, in the more organic drinks, to approximately70g. Excessive sugar consumption contributes to diabetes and increases insulin levels in the body (www.energyfiend.com). Insulin reduces glucose levels in the body by converting it to glycogen, which is stored in the liver. This reaction often leads to the "crash" experience after consuming energy drinks. Other related effects of consumption of excessive sugar include hyperactivity, anxiety, difficulty concentrating, and crankiness (Skae, 2008).

Derived from Paullinia cupana plant of South America, guarana is a source of caffeine and antioxidants. It was historically used to increase energy and alertness (www.energyfiend.com). In addition, the antioxidant aid in riding the body of free radicals which increases immunity. Consumption of one gram of guarana provides approximately 40 mg of caffeine (Smyser, 2011). Manufacturers do not list the extra caffeine content from guarana. In contrast to caffeine derived from coffee beans, guarana caffeine yields more sustained stimulation by means of slow release of caffeine into the body (Remedium, 2005). Guarana function as an appetite suppressant, blood detoxifier, and reduces fatigue. Though rare, some of the severe side effects of guarana are seizures and irregular heartbeat (www.drugs.com). The safety and purity of guarana has not been confirmed by the US Food and Drug Administration.

Most energy drinks contain taurine, which is an amino acid naturally produced in the human body, meat, and fish. Taurine is known to regulate energy level, muscle contraction and heartbeat (www.energyfiend.com). A healthy body normal produces enough taurine. Average people normally consume 40 to 400 mg of natural taurine daily, but an energy drink provides approximately 753 mg per eight ounces of synthetic taurine (Smyser, 2011). Studies have proposed that taurine localized in the thalamus provides sedative effect in the brain, which also contribute to the "crash" following the artificial energy shock (Group, 2009). However, research has not confirmed if taurine is detrimental when consumed in excess of daily values.

Ginseng is a herb that increase memory and relieve stress by activating the hypothalamic and pituitary glands to produce adrenal corticotropic hormone (www.energyfiend.com). Though ginseng is widely used in medicine, research has not been able to confirm its exact effects. Observations have proposed that it may cause diarrhea and headaches.

Ginkgo biloba is a herb of the ginkgo tree. In addition to acting as an anti-depressant, it has been proposed that ginkgo biloba assist in concentration and memory retention (www.energyfiend.com). The two primary components are flavonoid, a plant antioxidant, and

terpenoids. Flavonoids are believed to protect the retina, blood vessels, heart muscle, and nerves (Jonk, 2010). By dilating blood vessels and altering the nature of platelets, terpenoids improve blood flow (Jonk, 2010). Though, ginkgo biloba has many positive effects, most energy drinks are not concentrated enough to provide the benefit. Some of the side effects include blood thinning, heart palpitations and restlessness (www.energyfiend.com).

L-carnitine is an amino acid normally produced in the liver and kidneys. L-carnitine acts as an antioxidant, and its primary function is to convert fat into energy (Jonk, 2011). Though some energy drinks contain this supplement, the body normally produces enough to support itself.

Historically used in tea, yerba mate is derived from the llex paraguariensis plant of South America (Smyser, 2011). Due to its high caffeine content, it is currently used in energy drinks. It's especially common in drinks that claim to be all natural. Majority of yerba mate functions and side effects are similar to pure caffeine.

Energy drinks are often too concentrated with B vitamins. B vitamins function is to convert food into energy (www.energyfiend.com). They are found in the form of vitamin B6, vitamin B12, cyanocobalamin, pyridoxine hydrochloride, riboflavin, and niacin, which can be found in the ingredients of most energy drinks.

In isolation and when consumed in moderation, these ingredients have been shown to not be detrimental. However, very little research has been done on the collective effect of the above ingredients. This is partly because energy drinks are considered a dietary supplement, which provides leniency from the Food and Drug Administration. After a critical analysis of the ingredients of energy drinks, it is clear that the ingredients used in energy drinks either include substances naturally produced in the body or ingredients that can be found in other common carbonated beverages. In other words, it's safe to say the danger of energy drinks isn't due to contaminations. Lack of research and improper consumption, which varies with age, weight, and tolerance, are the damaging factors of energy drinks.

http://www.consumerreports.org/health/healthy-living/diet-nutrition/healthy-foods/energy-drinks/energy-drinks-9-07/overview/0709_drink_ov.htm
http://www.drugs.com/sfx/guarana-side-effects.html
http://www.energyfiend.com/energy-drink-ingredients
http://health.learninginfo.org/guarana.htm
http://www.healthiertalk.com/dangers-taurine-commonly-found-energy-drinks-0996
http://www.livestrong.com/article/457843-what-does-every-energy-drink-have-in-its-ingredients/
http://medical-dictionary.thefreedictionary.com/caffeinism
http://www.naturalnews.com/022692.html
http://www.nutritionalreviews.org/caffeine
http://researchwikis.com/Energy_Drinks_Market
http://www.umm.edu/altmed/articles/carnitine-l-000291.htm

Healthier Alternatives

Proper consumption of energy drink can be a healthy alternative in its self. Many of the ingredients can be beneficial when consumed in moderation. For example, caffeine has been shown to enhance endurance, exercise performance, metabolic rate, rate of fat metabolism, and mental function. In addition, guarana is known to function as an appetite suppressant, blood detoxifier, and reduces fatigue. Other benefits of energy drink consumption include but are not limited to relieving stress, increase concentration, memory retention, improve blood flow, and

increased general food metabolism. However, the health risk associated with over consumption of energy drinks can be avoided by utilizing the healthy alternatives below.

Water is one of the best healthy alternatives. The human body consists of 75% water (http://www.colon-cleanse-with-detox-diet.com). More specifically, water account for 75% of muscles, 90% of brain, 22% of bone, and 83% of blood (www.mangosteen-natural-remedies.com). In other words, every cell in your body needs water to function properly. However, dehydration is a side effect of energy drink consumption. Signs of dehydration are fatigue, migraine, dry skin, and concentrated urine. Excessive dehydration can lead to kidney failure. Adequate water consumption prevents the above symptoms. The common rule for water consumption is referred to as the 8x8 rule. This encourages a minimum daily consumption value of eight 8oz glass of water. It also recommended to drink more water when involved in intensive exercise or movements to supplement body fluids lost by means of perspiration. Water has many functions in the body. It functions in the transport of nutrients and oxygen and increasing immunity. Water also moisturizes the air in the lungs, skin, regulate body temperature, and detoxify the body by means of digestion or perspiration. Most importantly, water has been shown to combat illnesses. For example, drinking water has been linked to reduced risk of cancer (www.mangosteen-natural-remedies.com).

Another healthy alternative is exercise. A survey of common use for energy drinks revealed that 65% consumers used energy drinks to increase energy (Seifert, 2011). In addition to regulating weight, regular exercise has been shown to increase energy. By exercising the body is stimulated to supply more oxygen and nutrients to your tissues, which strengthens the muscles and increase the efficiency of one's cardio vascular system (www.mayoclinic.com). Moreover, the increase in transportation of oxygen helps burn stored fat. Other benefits of exercising includes stress relief, increase immunity (i.e. regulate blood flow, reduce chances of stroke, etc.), and increases sex drive. It's recommended that the average person indulge in at least thirty minutes of physical activity daily. Most importantly, exercise can combat insomnia, which is a product of excessive caffeine consumption, by improving sleep.

Also, one's choice of food has an effect on his or her overall energy level. Proper eating can provide the body with the correct amount of nutrients, vitamins, and minerals. This helps in energizing the body. For example, unhealthy starches such as white bread, mashed potatoes, chips, white rice, and etcetera cause fatigue. Another common food that causes fatigue is turkey. Turkey contains L-tryptophan which is an amino acid that induces tiredness (Helmenstine). WebMD points out that the first step to healthier eating is to eat more fruits, vegetables, and whole grain. It also encourages cutting back on fat, especially saturated fats, salt, and sugar. Fats, in particular, slows down digestion and also require a large amount of energy to be broken down into useful matter (Helmenstine).

Lastly, sleep is by far one of the best things to do for the body. Healthy sleep is required for optimal learning and memory retention. According to Stibich, healthy sleep is defined as more than 6-7 hours per night. Anything less, increases the risk of developing a disease (i.e. heart disease and etc.). Research at Harvard University proposed that sleep effects memory and learning in two ways. First, lack of sleep hinders one's ability to focus his or her attention which decreases learning efficiency. Secondly, acquisition of healthy sleep facilitates consolidation of memory and eases the task of learning new information. Consolidation is defined by "the

processes by which a memory becomes stable" (Ellenbogen, 2006). This process only occurs during sleep which makes sleep vital.

http://chemistry.about.com/od/holidaysseasons/a/tiredturkey.htm
http://www.colon-cleanse-with-detox-diet.com/benefits-of-drinking-water.html
http://longevity.about.com/od/lifelongenergy/tp/healthy_sleep.htm
http://www.mangosteen-natural-remedies.com/benefits-of-drinking-water.html
http://www.mayoclinic.com/health/exercise/HQ01676
http://www.webmd.com/food-recipes/tc/healthy-eating-overview
"The Role of Sleep in Declarative Memory Consolidation: Passive, Permissive, Active or None?" *Current Opinion in Neurobiology* 16.6 (2006): 716-22. Print.
"Healthy Effects of Energy Drinks on Children, Adolescents, and Young Adults." *Pediatrics Official Journal of the American Academy of Pediatrics*

Statistical Significance

(RV) A study conducted in New Zealand found that on average, children, teenagers, and young men are exceeding 3 mg/kg per day of caffeine after consuming a single energy drink or energy shot in addition to baseline dietary exposure. This finding suggests that population that is most in danger of the side effects discussed are most like young boys.

Another survey suggests that 30% to 50% of teenagers have consumed energy drink. The same source American Academy of Pediatrics also reported that out of the 5448 US caffeine overdose that had been reported in 2007, 46% occurred in those younger than 19 years of age. This statistic is alarming because it truly shows how detrimental these energy drinks can be on children to society.

According to the Journal of Adolescent Health obtained information from 602 college students regarding their consumption of energy drinks. The research shows students who consumed energy drinks were more likely to take risks. The risks that the journal claims are not wearing seatbelt, practicing risky sexual behavior and using drugs.

John Hopkins University conducted a survey, stating that 51 percent of college students had reported consuming at least energy drink in the last month. The survey also reported that a significant portion of these students experienced a caffeine crash and or heart palpitations as a result of consuming energy drinks.

http://www.medscape.com/viewarticle/737311
http://www.livestrong.com/article/537560-the-dangers-of-abusing-energy-drinks/
http://www.livestrong.com/article/375632-long-term-effects-of-energy-drinks/

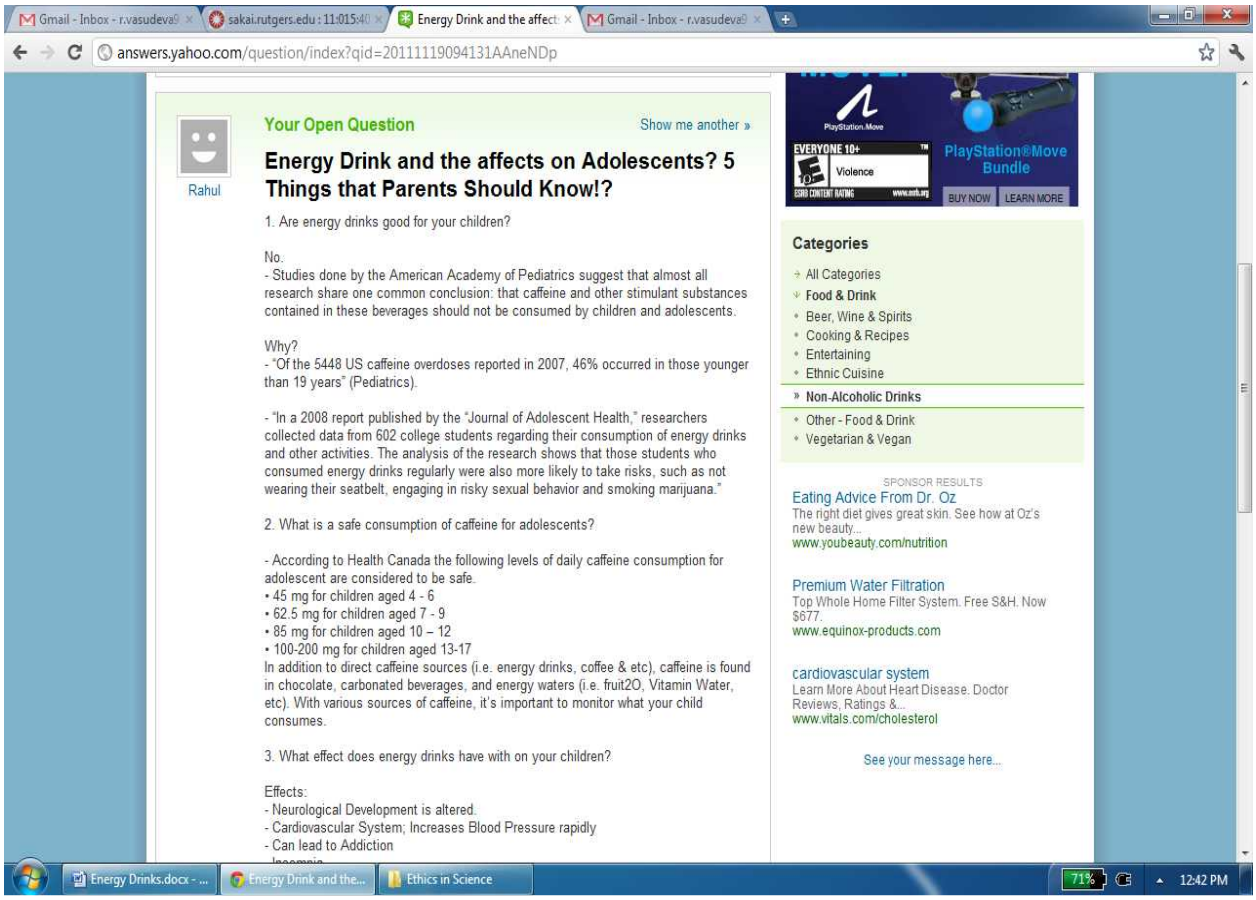
Alternative Websites to Find More Information (Julie M. Fagan Ph.D)

- http://www.huffingtonpost.com/2011/11/23/energy-drink-hospitalizations_n_1110603.html?ref=food&ir=Food

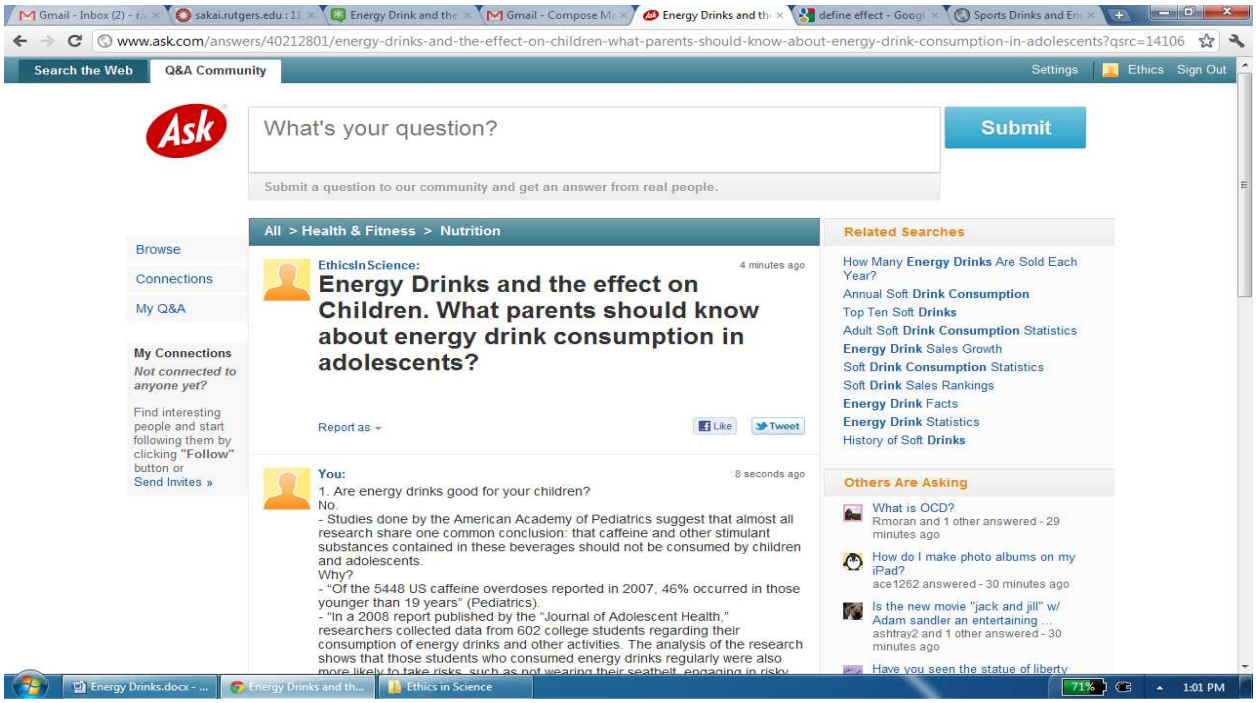
Part II: Informing Parents about Energy Drinks through Web

Summary

In the follow service project our goal is to educate parents the effects of energy drinks upon their children. In a recent study done by the American Academy of Pediatrics, a statistic shows that about 30% to 50% adolescents and young adults consume energy drink. According to the same resource of the 5448 US caffeine overdoses reported in 2007, 46% occurred in those younger than 19 years. This alarming statistic makes it imperative for us to educate parents the hazardous effects energy drinks have on their child. In our following service project we will be using three different websites that directly come in contact to parents and their concerns. The three sites are yahoo.com, ask.com and parenthood.com. In all three sites we will try to get permission to post articles which will directly educate parents.



http://answers.yahoo.com/question/index?qid=20111119094131AAneNDp



http://www.ask.com/answers/40212801/energy-drinks-and-the-effect-on-children-what-parents-should-know-about-energy-drink-consumption-in-adolescents?qsrc=14106

http://community.parenthood.com/_Energy-Drinks-and-the-Effect-it-has-on-Children/blog/161524/40337.html

Questions that were answered in Service Project & informed to parents:

1. Are energy drinks good for your children?

No.

- Studies done by the American Academy of Pediatrics suggest that almost all research share one common conclusion: that caffeine and other stimulant substances contained in these beverages should not be consumed by children and adolescents.

Why?

- "Of the 5448 US caffeine overdoses reported in 2007, 46% occurred in those younger than 19 years" (Pediatrics).

- According to the Journal of Adolescent Health obtained information from 602 college students about their use of energy drinks. The research shows students who used energy drinks were more likely to take risks. The risks that the journal claims are not wearing seatbelts, practicing risky sexual behavior and using illegal drugs.

(RM) 2. What is a safe consumption of caffeine for adolescents?

- According to Health Canada the following levels of daily caffeine consumption for adolescent are considered to be safe.

• 45 mg for children aged 4 - 6

• 62.5 mg for children aged 7 - 9

• 85 mg for children aged 10 – 12

• 100-200 mg for children aged 13-17

In addition to direct caffeine sources (i.e. energy drinks, coffee & etc), caffeine is found in chocolate, carbonated beverages, and energy waters (i.e. fruit2O, Vitamin Water, etc). With various sources of caffeine, it's important to monitor what your child consumes.

(RV) 3. What effect does energy drinks have with on your children?

Effects:

- Neurological Development is altered.

- Cardiovascular System; Increases Blood Pressure rapidly

- Can lead to Addiction

- Insomnia

- Also include liver damage, kidney failure, respiratory disorders, agitation, confusion, seizures, psychotic conditions, nausea, vomiting, abdominal pain, rhabdomyolysis, tachycardia, cardiac dysrhythmias, hypertension, myocardial infarction, heart failure, and death.

- Studies have also shown that female teenages who readily consume energy drink or caffeine related products may have fertility problems in the long run.

(RM) 4. Are there healthier alternatives?

Yes, there are many healthy alternatives. The primary alternative is sleeping. Study shows that people who sleep on average of 8hrs a night are less likely to consume energy drinks. Other healthy alternatives include daily exercise, eating healthy, and drinking water.

5. What can you do to prevent your child from drink energy drinks? Different Scenarios?

1)Verbally communicate your concern about health risk of energy drink consumption with your child. In doing so be sure to explicitly explain your expectations.

2)Monitor how you child spends his or her money.

3)Be your child's role model and adhere to the same expectation!

4)Most importantly, be consistent!

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Letter to the Editor

To: New York Times (nytimes.com)

From: Rahul Vasudeva

Re: What Parents Should Know About Energy Drinks?

Energy Drinks. Everywhere you go you can find them. These drinks literally have infested the market in the last two decades. In some stores you can even find a complete row of energy drinks. Particularly almost all teenagers have consumed these drinks.

In a recent study done by the American Academy of Pediatrics, a statistic shows that about 30% to 50% adolescents and young adults have consumed energy drink. Are these drinks safe for children? Studies done by the American Academy of Pediatrics suggest that almost all research share one common conclusion: that caffeine and other stimulant substances contained in these beverages should not be consumed by children and adolescents.

Parents and children should be aware and advised on how much caffeine is being ingested depending on the product and the serving size of these beverages. The total amount of caffeine contained in these cans or bottles can exceed 500 mg, which is equivalent to 14 cans of common caffeinated soft drinks, and is clearly can result in caffeine toxicity. The reason why parents should be concerned is because there have been many studies linked to caffeine consumption in children and its effects on the developing neurologic and cardiovascular systems. There have also been cases reported on children becoming addicted to these drinks. What is advised is that parents should teach their kids to avoid buying any of these products when they are at a supermarket or convenient store. This is especially important because their no legal age limit set by states to buy these energy drinks.

Letter to the Editor:

To: http://www.eastside-online.org/

From: Richard Moses

Re: Energy Drinks, Who's at Risk?

Energy drinks have been labeled one of the fastest growing industries in America. The energy drink industry overall revenue is expected to exceed $9 billion by the end of 2011. Advertisements target adolescents, young adults, adults, and the elderly. However, research by the American Academy of Pediatrics indicates that adolescents and young adults account for 30 to 50% of consumers. Furthermore, an alarming 46% of caffeine overdose occur in consumers under the age of 19 years old.

This disparity is mainly a factor of improper consumption of energy drinks. Though these numbers may vary with tolerance, the American Dietetic Association recommend adults consume no more that 300mg of caffeine daily and that children consume less than 100mg daily. The average 16 oz energy drink contains 160mg of caffeine which doesn't account for the caffeine from other ingredients (i.e. guarana and yerba mate). Though the 16 oz can is designed to provide two servings, most consume it in one sitting, which is detrimental to one's health. Caffeine has been shown to improve focus and performance but too much can negatively affect your health and mood.

Common signs that you may have consumed too much caffeine are heartburn, anxiety, insomnia, or concentrated dark yellow pee. In extreme cases overconsumption can be fatal. These symptoms can be avoided by incorporating a few good health practices such as drinking water, exercising, sleeping, and eating a balanced meal. However, if caffeine is what you desire then drink responsibly.