WEEKLY EPIDEMIOLOGICAL REPORT
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The Harmful Effects of Soft Drinks

There is a growing concern in the medical and scientific communities about the harmful effects associated with carbonated soft drinks. Soft drinks have been around for over a hundred years, but many of their deleterious heath effects have not been studied or known. This article will discuss the numerous harmful effects and the problems that are associated with soft drinks.

Fifty years ago the average serving size for a soft drink was a six-ounce bottle. Today, soft drinks are sold in twenty ounce bottles and are consumed in much larger quantities courtesy of the large size of soda fountain drinks available at most stores and restaurants. This increase in consumption of soft drink is not a surprise because soft drink manufacturers have spent billions of dollars in advertising to attract more consumers and to increase consumption of their products. Scientific studies have shown how as few as one or two soft drinks a day can increase one's risk for numerous health problems. Some of these health problems are obesity, diabetes, tooth decay, osteoporosis, nutritional deficiencies, heart disease, and many neurological disorders.

It is generally understood that soft drinks, even though they contain a large number of calories, have little nutritional benefit and are known as "empty calories". Most of the calories in soft drinks are from refined sugars, and there are no other nutritionally beneficial components in soft drinks. According to the available data sugar-sweetened soft drinks contribute 7.1% of total energy intake and represent the largest single food source of calories in the US diet. Coincidentally or not, the rise of obesity and type 2 diabetes in the United States parallels the increase in sugar-sweetened soft drink consumption. Several studies have found an association between sugar-sweetened beverages and incidence of obesity in children. In one study, the odds ratio of becoming obese increased 1.6 times for each additional sugar-sweetened drink consumed every day. Increased diet soda consumption was negatively associated with childhood obesity.

One 12-oz can of sugar-sweetened soda contains 150 kcal and 40 to 50 g of sugar. If these calories are added to a typical diet with no offsetting reduction in other caloric sources, 1 can of soda per day could lead to a 15-lb (6.75-kg) weight gain in 1 year. A better mechanism for weight gain could not have developed than introducing a liquid carbohydrate with calories that are not fully compensated for by increasing satiety. Liquid calories are a relatively new addition to the human diet—perhaps the human satiety circuit has not yet adapted to register these calories for what they are.

A common problem that is associated with consumption of a large number of soft drinks is the increased acid levels throughout the body. All soft drinks are very acidic, but dark colas are much more acidic. Many doctors believe that there is a correlation between acids increasing and the risk of disease. This is manifested in an especially painful way when one gets gastronomic distress (GI). Gastronomic distress is characterized by increased stomach acid levels.

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Gastronomic distress causes the inflammation of the stomach and erosion of the stomach lining. This is characterized as a painful stomachache. These symptoms are caused by caffeine and acids found in soft dinks such as: acetic, fumaric, gluconic and phosphoric acids. The combination and strength of these acids are so strong that when a drain is clogged a plumber will often use a soft drink, or if a car battery is corroding one can use a soft drink to dissolve the corrosion.

The stomach maintains a very delicate acid-alkaline balance that can be set out of balance by the consumption of a large number of soft drinks, which create a constant acid state. Prolonged increased acid levels will cause erosion of the gastric lining, which is very painful and disrupts proper digestion. Also, the phosphorous that is found in the fizz and bubbles emitted from soft drinks fights with hydrochloric acid in the stomach and causes the stomach to be ineffective. When the stomach can't digest food, the person will have indigestion, gassiness, or bloating. The carbon dioxide that is emitted in the fizz is consumed when a person takes a soft drink. Carbon dioxide is a waste product that humans excrete and can be harmful when digested. Sodas also kill the Intestine's beneficial bacteria, causing constipation. Amides all these Scientific evidence still many people assume that drinking sodas with and after food is helpful for digestion. It is also the main drink served at banquets and special occasions, and this reflects badly on health.

A very serious effect of soft drinks on people's health is the correlation between soft drink consumption and the increased risk of bone fractures and osteoporosis. The large amounts of sugar, bubbles caused by carbon dioxide, and phosphoric acid that are found in soft drinks remove nutritious minerals from bones allowing the bones to become weak and increasing the risk for them to break. This is done by the phosphoric acid disrupting the calcium-phosphorous ratio, which dissolves calcium from the bones. Many people consume soft drinks instead of necessary beverages like milk, consequently their bodies are not receiving enough nutrients, especially calcium. This deficiency in calcium intake and increased consumption of soft drinks is a greater problem for women than for men.

Most carbonated beverages contain caffeine, which is considered to be a mild drug and can have harmful effects, especially on children. Caffeine is a drug that acts as a stimulant to the central nervous system. Large amounts of caffeine consumption can cause diseases and disorders such as insomnia, nervousness, anxiety, irritability, and deviations from the normal heart rate. Caffeine is an addictive substance, which causes consumers to need more caffeine. A major concern about caffeine is that it increases the excretion of calcium in urine, which increases the risk for osteoporosis in heavy caffeine consumers. Some preliminary studies show that caffeine increases the risk of birth defects.

If children drink caffeine based beverages their metabolism does not break it down as in adults, and so they will have problems in sleeping. Other than that better to avoid giving fizzy soft drinks to children because their stomachs are not fully separated from their esophagus and the carbon dioxide will cause regurgitation or vomiting.

Many soft drinks contain caramel coloring to allow them to have their dark appearance. The chemical polyethylene glycol is used to achieve this dark color. Glycol is used in antifreeze. Scientists are concerned that this caramel coloring may be a carcinogen.

Dental cavities are often associated with carbonated beverage. This association is important because the amount of sugars that are consumed is important in forming caries, which is when a cavity affects only the enamel, the outer protective layer of a tooth. Caries are caused by the bacteria *mutans streptocci*, which is a part of dental plaque. The bacteria attach to teeth and produce high amounts of acid from sugars and other types of acid. Studies showed that drinking 3 cans of soda increases tooth decay by 62%, while consuming one cane increases decay by 3% among children.

Carbonated beverages are very popular and are used often by people around the world. The important thing to remember is that over consumption of soft drinks should be avoided because of their numerous harmful effects such as : obesity, osteoporosis, nutritional deficiencies, and tooth decay. It is important to be aware of the harmful effects of such deleterious beverages.

Real challenge we are facing today in this regard is the huge liberal advertising campaign carried out by these multinational companies involved in the soft drink industry, especially in the developing countries. By various means they trap our young ones by various attractive advertisements and billboards. Wrong values, status symbol, fashion smartness and robust of youth are some of the misleading notions put across these advertisements.

Think twice before you drink fizzy drinks, the popular colas, or any other soft drinks because you gulp down carbon dioxide and refined sugars.

Sources:

1.Why I Don't Drink Soft Drinks. http://www.benaturallyfit.com/why_i_dont_drink_soft_drinks.htm

2. Soft Drinks ---America's Other Drinking Problem
http://www.kauhawaii.com/softdrinks.html

3. Dental Caries, UCLA School of Dentistry
http://www.dent.ucla.edu/ce/caries/index.html

4. That cool soda could be doing more harm than good for You. GULF NEWS, August 26,2007.

The Editor wishes to acknowledge Dr. Nihal Abeysinghe, Chief Epidemiologist of the Epidemiology Unit for the assistance provided in the preparation of this article.

Table 1: Vaccine-preventable Diseases & AFP

11th - 17th August 2007 (33rd Week)

Disease	No. of Cases by Province								Number of cases during current week in 2007	Number of cases during same week in 2006	Total number of cases to date in 2007	Total number of cases to date in 2006	Difference between the number of cases to date between 2007 & 2006
	W	C	S	NE	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 CB=1	00	00	00	00	00	00	00	01	01	59	81	-27.2%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	00	00	01 AP=1	00	00	01	00	50	25	+100%
Tetanus	00	00	00	00	00	00	00	00	00	00	23	32	-28.1%
Whooping Cough	01 CB=1	00	00	00	01 PU=1	00	00	00	02	00	30	62	-51.6%
Tuberculosis	49	127	04	36	25	04	00	16	261	112	6518	6434	+1.3%

Table 2: Diseases under Special Surveillance

11th - 17th August 2007 (33rd Week)

Disease	No. of Cases by Province								Number of cases during current week in 2007	Number of cases during same week in 2006	Total number of cases to date in 2007	Total number of cases to date in 2006	Difference between the number of cases to date between 2007 & 2006
	W	C	S	NE	NW	NC	U	Sab					
DF/DHF*	49	08	08	03	15	03	05	06	97	249	3348	6550	-48.9%
Encephalitis	01 GM=1	00	00	00	01 PU=1	00	00	01 RP=1	03	02	137	87	+57.5%
Human Rabies	01 GM	00	00	00	00	00	00	00	01	01	44	44	00.0%

Table 3: Newly Introduced Notifiable Diseases

11th - 17th August 2007 (33rd Week)

Disease	No. of Cases by Province								Number of cases during current week in 2007	Total number of cases to date in 2007
	W	C	S	NE	NW	NC	U	Sab		
Chickenpox	09	02	06	05	07	00	02	06	37	2226
Meningitis	04 GM=2 KL=2	01 KD=1	03 MT=2 HB=1	00	01 KR=1	00	02 BD=2	05 KG=1 RP=4	16	316
Mumps	10	02	04	56	04	03	02	02	83	1145

*DF / DHF refers to Dengue Fever / Dengue Haemorrhagic Fever.
NA= Not Available.

Sources:

Weekly Return of Communicable Diseases:
Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephalitis, Chickenpox, Meningitis, Mumps.

Special Surveillance:
Acute Flaccid Paralysis.

National Control Program for Tuberculosis and Chest Diseases:
Tuberculosis.

Details by districts are given in Table 5.

Provinces: W=Western, C=Central, S=Southern, NE=North & East, NC=North Central, NW=North Western, U=Uva, Sab=Sabaragamuwa.

DPDHS Divisions: CB=Colombo, GM=Gampaha, KL=Kalutara, KD=Kandy, ML=Matale, NE=Nuwara Eliya, GL=Galle, HB=Hambantota, MT=Matara, JF=Jaffna, KN=Killinochchi, MN=Mannar, VA=Vavuniya, MU=Mullaitivu, BT=Batticaloa, AM=Ampara, TR=Trincomalee, KM=Kalmunai, KR=Kurunegala, PU=Puttalam, AP=Anuradhapura, PO=Polonnaruwa, BD=Badulla, MO=Moneragala, RP=Ratnapura, KG=Kegalle.

Table 4: Laboratory Surveillance of Dengue Fever

11th - 17th August 2007 (33rd Week)

Samples	Number tested	Number positive *	Serotypes				
			D_1	D_2	D_3	D_4	Negative
Number for current week	06	01	00	00	00	00	01
Total number to date in 2007	382	38	01	18	11	00	07

Source: Genetech Molecular Diagnostics & School of Gene Technology, Colombo. * Not all positives are subjected to serotyping.

Table 5: Selected notifiable diseases reported by Medical Officers of Health
11th - 17th August 2007 (33rd Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	33	906	02	261	00	07	05	50	00	51	03	87	00	02	02	96	**100**
Gampaha	07	370	07	263	01	19	02	51	01	36	01	150	01	14	03	108	**86**
Kalutara	09	224	06	342	00	03	00	35	01	31	01	78	00	01	03	47	**100**
Kandy	04	287	06	202	00	03	01	46	00	07	01	55	03	52	27	1699	**82**
Matale	04	76	06	144	00	06	01	15	00	11	03	38	00	05	02	104	**83**
Nuwara Eliya	00	31	11	198	00	02	02	96	01	367	00	08	00	29	17	412	**86**
Galle	00	63	02	106	00	09	01	17	00	36	01	35	00	22	00	14	**81**
Hambantota	04	42	15	117	00	05	01	20	00	17	01	34	02	37	00	14	**100**
Matara	04	108	10	224	00	08	01	26	00	13	03	121	05	150	00	25	**81**
Jaffna	00	37	07	119	00	02	03	347	00	07	00	00	00	81	01	17	**88**
Kilinochchi	00	01	00	00	00	00	01	05	00	00	00	00	00	02	02	04	**25**
Mannar	00	07	00	15	00	00	04	62	00	00	00	01	00	00	01	08	**75**
Vavuniya	00	12	01	37	00	04	00	12	02	48	00	02	00	00	01	08	**100**
Mullaitivu	00	03	00	18	00	08	00	19	00	01	00	00	00	00	01	06	**60**
Batticaloa	02	69	01	431	00	08	02	16	00	10	00	00	00	22	57	786	**73**
Ampara	00	03	00	74	00	00	00	03	00	00	01	01	00	01	02	21	**86**
Trincomalee	01	53	06	184	00	03	00	21	00	23	01	08	02	13	01	95	**78**
Kurunegala	13	369	05	312	00	04	01	53	00	20	00	20	00	32	02	51	**89**
Puttalam	02	87	00	89	01	11	01	62	00	04	01	18	00	04	00	66	**100**
Anuradhapura	00	122	03	76	00	08	00	17	00	14	00	18	00	18	00	35	**47**
Polonnaruwa	03	48	04	64	00	02	00	09	00	04	00	19	00	00	01	22	**100**
Badulla	01	33	08	417	00	02	01	72	00	08	03	38	06	120	11	232	**87**
Monaragala	04	22	02	248	00	02	01	44	00	16	00	37	07	58	02	31	**100**
Ratnapura	05	219	01	411	01	13	01	51	00	17	04	43	01	21	02	71	**75**
Kegalle	01	156	00	194	00	07	00	37	00	04	03	77	02	24	05	138	**82**
Kalmunai	0	03	04	126	00	01	00	08	00	04	00	00	00	02	01	95	**77**
SRI LANKA	**97**	**3348**	**119**	**4672**	**03**	**137**	**29**	**1194**	**05**	**749**	**27**	**888**	**29**	**710**	**144**	**4205**	**82**

Source: Weekly Returns of Communicable Diseases (WRCD).
***Dengue Fever / DHF** refers to Dengue Fever / Dengue Haemorrhagic Fever.
****Timely** refers to returns received on or before 25 August 2007. Total number of reporting units =290. Number of reporting units data provided for the current week: 195
A = Cases reported during the current week. **B** = Cumulative cases for the year.

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