



SODA POP- LATEST HEALTH THREAT TO HUMANS- A REVIEW

Shanti Manyala

(PG Scholar)

Sonali Chalakh

Professor & HOD, Dept. of Agad Tantra & Vyavhar Ayurved Mahatma Gandhi Ayurved College, Hospital & Research Centre.

ABSTRACT Soft drinks are enormously popular beverages. It is termed as soda pop, is a drink that typically contains carbonated water, a sweetener, a natural or artificial flavoring agent. In total 1.25 billion people in the country drink 5.9 billion liters of soft drinks in a year. The per capita consumption of soft drinks in India is around 5 to 6 bottles. It is a proven fact that today's youth mostly prefers soft drinks or soda cans to fresh fruit juices. In the same way, excess consumption of soft drinks poses a number of health hazards. Soft drink consumption has become a highly visible and controversial public health and public policy issue. Soft drinks are viewed by many as a major contributor to obesity and related health problems and have consequently been targeted as a means to help curtail the rising prevalence of obesity, particularly among adolescents. A single soda contains the equivalent of 10 teaspoons of sugar. This contributes to weight gain, obesity, insulin resistance and diabetes. Diet soda also increases the risk of metabolic syndrome, which causes belly fat, high blood sugar, raised cholesterol, and dental issues. Hence keeping in view the hazardous effects into account, this crucial topic of today's context is selected.

KEYWORDS : Insulin resistance, Metabolic Syndrome, Cholesterol, Artificial flavouring.

INTRODUCTION.

In today's context, human beings are constantly been exposed to enormous toxic xenobiotics, as a part of modernization and upgradation of lifestyle. The basic entities i.e. the food which we eat, the water which we drink and the air which we breathe, all have become a part of toxic xenobiotics.[4]

Following the lines of modernization and fast life style, soft drinks and fast foods typically form a significant part of daily life of specially, the young generation. Soft drinks are an inseparable part of daily diet of young children and adolescent age group. Now-a-days Nutritious foods such as fruits, vegetables, milk and milk products have been replaced by soft drinks and fast foods. Consumption of soft drinks plays a major role in a variety of diseases like obesity, diabetes, dental and bone disorders and others, more so among children and adolescents.[4]

Soft drinks are "carbonated drinks that are non-alcoholic". Carbonated soft drinks are also referred to as soda, soda pop, pop or tonic. It was in 1861 that the term "Pop" was coined. Thus soft drinks also called as "Pop", can trace their history back to the mineral water found in natural springs. There are large number of soft drinks available in the market. The soft drink industry is now growing at 30% annually[1]. Not only this, the alarming sign is that the per capita consumption of soft drink in India is around 5 to 6 bottles.[1]

India is a major manufacturer and importer of soft drink beverages. The soft drink industry in India remains in progressive phase. The penetration level has increased from metros to smaller towns and rural areas.[3] According to official reports, the volume of soft drinks consumed in India stood at a whopping 11,755 million litres in 2017.[3]

These numbers suggest that there was an increase of about 170 percent in the consumption of soft drinks in comparison in 2008. It is further expected that the sale of soft drinks may go up by an annual 19% till until 2018. Official reports estimate soft drink market to grow 3.5 times its present size by 2020, thus the consumption rate is increasing at a very faster pace.[1]

Soft drink consumption has become a highly visible and controversial public health and public policy issue. Most of us are unaware of the hazardous effects of soft drinks on human health.[4]. This article aims to study the hazardous effects of soft drinks on human health and also to generate awareness regarding the adverse effects of soft drink consumption. Also this article mentions the various strategies to reduce the soft drink consumption.

Factors associated with soft drink consumption.

There are many factors which affect soft drink consumption. There is lack of awareness about the hazardous effects of soft drink

consumption. Also there is deficiency of knowledge regarding the barriers to limit or reduce soft drink consumption among the sub-groups of population. These factors include socio-cultural factors, gender, psycho-social factors which includes personal factors, environmental factors, exposure to T. V. advertising and Peer pressure.[1]

It is observed that fewer girls than boys consume smaller amount of soft drinks than boys. The WHO Collaboration cross-national study of Health Behaviours among school aged children 2001-02, showed that girls generally consume less soft drink than boys. Some of the factors affecting soft drink consumption in boys appear to have no effects in girls. Female students believe that regular soft drinks tended to make them gain weight.[1]

There are many determinants for soft drink consumption under psycho-social factors. A focus group study with groups of children aged 8-9 yrs and 13-14 yrs showed that younger children prefer the taste of still, fruit flavoured drinks and adolescents prefer the taste of carbonated drinks. 'Thirst' is other factor, which plays a major role in soft drink consumption. Cost, availability and thirst are more important in older children aged 13-14 yrs. The 'SMILE study' also showed that moderate 'agreeableness' of adolescents is associated with less soft drink consumption, however those that were most 'agreeable' consumed a lot.[3] One of the studies examining the factors affecting soft drink consumption in adults showed that consumption of sugar-sweetened soft drinks was associated with less restrained and more external eating, i.e. sensitive to external stimuli such as taste.

Now-a-days, Television serves as a mode of marketing of all food items. Children are constantly being exposed to this medium. In Today's scenario, all the famous cine actor and actresses have been a centre for advertisements. Children consider these cine stars as their role models. Thus they are also provoked to imitate their favourite actor and actresses and ultimately start up with consumption of soft drinks. In the similar way, Peer pressure also acts as a catalyst for consumption of soft drinks.

Table no. 1 : Common Soft Drinks and their Contents.

Sr.no.	Common soft drinks	Contents of each soft drink.
1.	Mazza	Water, mango pulp, (19.5%), sugar, acidity regulator(330), antioxidant(300), preservative (202), permitted synthetic food colour(110), added mango flavours, (natural nature identical and artificial flavouring substances), contains fruit.
2.	Coca-cola	Water, high fructose corn syrup, phosphoric acid, natural flavours, caffeine.

3.	Thumps-up	Carbonated water, sugar, acidity regulator(338), caffeine, permitted natural colour(150d).
4.	Fanta	Carbonated water, sucrose, citric acid, flavouring , preservative(sodium benzoate), colourings, permitted food additives.
5.	Pepsi	Carbonated water, high fructose corn syrup, caramel color, sugar, phosphoric acid.
6.	Sprite	Fat-0gm, sodium-40mg, carbohydrate-24mg, sugar-24mg.

Systemic Effects :

1. Cardiovascular Diseases.[4]

In the present scenario, cardiovascular diseases are the 1st major cause of mortality in India. It amounts to about 24.8% deaths annually in the country. Soft drinks play a major account in this. Caffeine is one the major constituent in the majority of marketed soft drinks in India. Caffeine is a mild addictive stimulant drug. Levels of caffeine in soft drinks ranges from 40-50 mg per 375ml can, which is a much high amount to produce profound effect on the human body. Negative effects of caffeine include disturbed sleep patterns and anxiety. Ideally, a healthy individual requires about 8 to 10 hrs of sound night sleep.

During night time , our body secretes certain enzymes which play a major role in the lipid lowering mechanisms. Lipids play a crucial role in maintaining 'Healthy Heart' of an individual. Not only this , on the other hand the disturbed sleep causes the body to produce C- Reactive protein , which acts a triggering factor for coronary artery disease.

2. Obesity and other related disorders-[7]

Obesity is an emerging pandemic of the new millennium . This has profound public health consequences , as 70 percent of overweight children become overweight adults. Soft drinks are loaded with calories from refined sugar. High sugar contents present in the soft drinks contribute obesity and its related consequences.

On the other hand, soft drinks also contain artificial flavours, which contain MSG and other chemicals. MSG has flavor enhancing properties as well as appetite stimulant. It also contains obesogenic properties. MSG induces a shift in the carbohydrate metabolism towards lipogenesis leading to hyperlipidemia and hyperglycemia , which ultimately contribute to obesity. Obesity leads to other complications like increase in the cholesterol level, blocking the arteries , the increased risk of coronary diseases.

3. Diabetes Mellitus- [1]

Today D.M. has become a global health issue. Diabetes Mellitus is the outcome of defects in insulin production, its functioning or both. Soft drinks are rich in free sugar contents which impairs the smooth control of insulin over the blood sugar contents .Thus the developed insulin resistance contributes to D. M.

4. Tooth Decay.[4-5]

In today's context , people belonging to all age groups are prone to dental erosion and dental carries, due to increased consumption of soft drinks . Soft drinks are known to cause dental enamel erosion. Soft drink induced demineralization of dental enamel has increased sharply over the last decades. Demineralization of dental enamel is the major cause of tooth decay in the younger age group. In the process of demineralization , calcium and phosphorus are mobilized from the enamel , which eventually leads to collapse of the surface structure and loss of outermost layers of the enamel. Soft drinks have been suggested to cause damage to the teeth through acidogenicity and carcinogenicity.

Firstly the low PH and high titratable acidity of some drinks may lead to the erosion of enamel surface. Secondly, the sugars in drinks are metabolized by plaque micro- organisms to generate organic acids that add to the process of demineralization leading to dental carries.

5. Effect on G.I.T. [1]

Gastrointestinal problems have become a major concern issues in the health scenario. Changing lifestyle and dietary modifications have contributed a major part to it. Most soft drinks are at high acidic level ph (2.4 to 4.0). Thus after consuming soft drinks, the ph level of intra-oesophagus changes. This erodes the inner lining of oesophagus and

causes inflammation . it contributes to GERD, which has become a common health issue among majority of individuals.

6. Effect on Bones- [3]

Phosphoric acid is one of the major content of all soft drinks. It ranges from 0.17 to 20.43 ppb in majority of soft drinks. Phosphoric acid is violently poisonous. It de- oxidizes the blood. At the same time, it removes calcium ion from bones causing hypocalcemia , which results in osteoporosis.

Phosphorus and calcium are used in the body to create calcium-phosphate, which is the main constituent of bone. Due to combination of too much phosphorus with too little calcium , in the body can lead to early degeneration of bone mass , ultimately leading to osteoporosis.

7. Premature ageing. [3-4]

Soft drinks are acidic in pH. The acidic pH of soft drinks affects the action of ' Glutathione' a antioxidant enzyme present in the body. On the other hand, soft drinks lack in vitamins and minerals , which are very essential to maintain the texture of the skin. Thus the skin becomes more prone to wrinkles and ageing.

Strategies to reduce soft drink consumption.[3-4]

The frequency and quantity of consumption of soft drinks should also be minimized in the household and work regimen. Like if on daily basis or weekly basis, soft drinks are been consumed by the family members, efforts should be made to reduce it to weekly basis for daily consumers and once in fifteen days for weekly consumers.

Use of natural health drinks like buttermilk or lemon- water should be promoted on daily basis. These drinks not only satisfy the thirst but are also nutritious and cost effective also. Certain behavioural goals should be a part of reduction strategy of soft drinks.

Behavioural goals-
4Rs.

- Reduce uptake of soft drink consumption by individual.
- Reduce frequency and quantity of soft drink consumption.
- Replace soft drink with natural health drinks.
- Replace soft drinks with water.

Also general public should be made aware , regarding the hazardous effects of soft drinks on human health. Social media can play a crucial role in creating such awareness. Short plays on T. V. can be beneficial for the normal layman to know regarding its adverse effects .

Availability plays a major role in increasing the rate of consumption of soft drinks . soft drinks should be banned in colleges , so that there is no easy accessibility to the youngsters. Instead cans of buttermilk or lemon water should be made available at the college canteens.

Some researchers consider that the relatively low cost of soft drinks is a major factor affecting its consumption. Taxation plays a major role in price hike up. 90% of the Indian population belongs to middle- class or low- middle class group. General public can buy these drinks , only if it suits their budget. This price hike – up can also serve as one of the effective strategy in reducing soft drink consumption.

DISCUSSION-

Softdrinks are carbonated drinks containing sugar, caffeine and flavouring agents.

Coping up with the changing lifestyles and dietary modifications, soft drinks have become a part of daily regimen . Regular consumption of these drinks have many adverse effects on human health. While consuming, people only consider the factors such as taste, availability and cost effectivity, but very less concern is being paid on the health aspect.

Focus should be paid on the behavioural goals and the 4R's . More emphasis should be laid on replacing soft drinks with natural healthy drinks like fresh juices, buttermilk. People should be made aware about the health benefits of this natural drinks and the same time also about the hazardous effects of soft drinks.

There is very less public awareness regarding the hazardous effects of these drinks. Through this review , public can be made aware regarding the ill- effects of soft drinks , also we can have a general idea regarding

the factors associated with the soft drinks consumption and the strategies to reduce the soft drink consumption.

Conclusion-

Soft drink consumption is one of a portfolio behaviours that should be targeted in the prevention of major health hazards.

Research and evaluation of population approaches to decreasing soft drink consumption and its hazardous effects is needed.

The regular monitoring of dietary behaviours including soft drinks is necessary at state and national level.

Additional high quality innovation and applied research are needed to improve the current interventions to reduce soft drink consumption.

REFERENCES:

1. Soft drinks , weight status and health: A review NSW centre for public health and nutrition(pg. no. 5-31).
2. Adams L. and Gennes M (2007), "Healthy or unhealthy slogans: that's the question ". J Health common 12(2) 173-185.
3. Toxic level of soft drinks and sports drink on health status- Review article ,Sangita Das & Sunita Singh Rajput" pg. no. 591-570, "International journal of advances in pharmacy, biology and chemistry."
4. Soft drinks and obesity : The evidence CMR e Journal official journal of the international chair on cardiometabolic risk ,oct.2009(vol.2, issue 2, pg-10-14)
5. Ogden C, Carroll M and Flegal K " High body mass index for age among US children and adolescents, 2003-2006" , Journal of the American Medical Association , 299(20): 2410-2405, may 2008.
6. Vartanian L, Schwartz M and Brownell K "Effects of soft drink consumption on nutrition and health: A systematic review and meta- analysis ".American journal of public health, 97(4): 667-675.
7. Sugary drinks in the pathogenesis of obesity and cardiovascular diseases- International journal on obesity (2008).528-534.
8. European journal of pharmaceutical and medical research , Vivek Sharma and Rahul Deshmukh(pg. no. 381-386).