RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICES (KAP) REGARDING CARBONATED DRINKS AMONG STUDENTS OF MEDICAL COLLEGE OF WESTERN MAHARASHTRA

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ABSTRACT

Background: The consumption of high sugar contained carbonated drinks is more prevalent among youngsters. The excess consumption of carbonated drink has been associated with many adverse health effects.

Aims & Objective: (1) To study Knowledge, Attitude and Practices (KAP) regarding consumption of carbonated drinks among medical students. (2) To suggest suitable recommendation for the health promotion.

Material and Methods: A cross sectional descriptive study was conducted to assess the knowledge, attitude and practice of students regarding carbonated drinks. The study participants were second year medical student of Medical College situated in a rural area of western Maharashtra. Self-structured pretested questionnaires were given to the 110 students for study purpose.

Results: Out of all students 52 (48%) were reported that they had started to drink carbonated drink at the age less than 10 years. Majority of students consider obesity (28.2%) as side effect associated with consumption of carbonated drink followed by bone decay (11%) and dental caries (9%).

Conclusion: The health education and primordial prevention would be the best way to adopt healthy life style and combat the problems associated with the consumption of carbonated drinks.

Key-Words: Carbonated Drink; Knowledge; Attitude; Practice; Students; Obesity; Bone Decay; Dental Caries

Introduction

Elton John, Victoria Beckham and even former president of United States Bill Clinton admit to being hooked on Diet Coke, and they are not alone.[1] Many academic studies have shown that there is nothing healthy about Carbonated soft drinks or soda.[2] The term soft drink refers to non-alcoholic water based flavoured drinks that are optionally sweetened, acidulated, carbonated and which may contain fruit juice or pulp, salts; and their flavour may be derived from vegetable extracts or other aromatic substances.[3] Soft drink specifies a lack of alcohol in contrast to the term “Hard drink”. The term “drink”, while nominally neutral, often a carries connotation of alcoholic content. Beverages like Cola, Pepsi, Soda, Thump Up, Diet Coke etc. are among the most common types of carbonated soft drink.

Globally carbonated drinks are the third most consumed beverage. In India, according to government estimates soft drink marketed were 6540 million bottles in March 2001. Delhi market has the highest per capita consumption in the country with 50 bottles per annum. 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, sleep disturbance, and many neurological disorders.[4]

The soft drink have been consumed since hundred years and but many of their deleterious health effects have not been studied or known. There is a growing concern about the harmful effects associated with carbonated soft drinks. Hence the present study has been undertaken to assess the knowledge attitude and practices (KAP) of students regarding health hazards of excess carbonated drinks consumption.

Materials and Methods

This descriptive type of cross sectional study was conducted at Rural Medical College of PIMS Loni. The study participants were third year medical students. A total of 110 students were included in

this study. A self-structured pre tested questionnaire was used for the collection of data. The pilot study was conducted in 20 students and changes were made in questionnaire accordingly. For the active involvement and cooperation of students the study aim and objectives were explained to them and consent was taken for the same. The study had been approved by the ethical and research committee of the institute. All the data collection forms were cross checked for completeness and all errors or discrepancies were corrected. At the end of the study health education was given for the same. All the data obtained was entered into Microsoft Excel and analyzed using the software StatistiXL version 1.8. Descriptive statistics, such as frequency distribution and percentages were employed for the analysis.

Results

Total 110 second year medical students had participated in present study. Majority of student were belonged to class I and II category according to modified B.G Prasad Classification of 2009. The most of the students were in the 19-20 years of age group. Table 1 shows the body mass index (BMI) of the participants. The mean weight of the participants was 60.64 kg and standard deviation (SD) 12.34. Out of total 110 students 74 (67.3%) were normal, 25(23%) were Overweight and 11 (10%) were under weight.

Table-1: Body Mass Index of the Students (n=110)

Group	No. of Students (%)
Underweight	11 (10)
Normal	74 (67.3)
Overweight	25 (23)
Pre Obese	18 (18)
Obese I	05 (4)
Obese II	01 (0.55)
Obese III	01 (0.55)
Total	110 (100)

Table 2 shows knowledge of students regarding carbonated drink. All the 110 (100%) students had ever heard about the carbonated drink but only of 6 (5.5%) of them were able to identified the all the contents of carbonated drink correctly. Out of all participant 80 (73%) had knowledge about ill effect of carbonated drink consumption and 31(28.2%) participant responded obesity as a main ill effect followed by bone decay 12 (11%) and dental caries by 10 (9.1%).

Table-2: Knowledge of the Students regarding the Carbonated Drinks (n=110)

Responses		No. (%)
Heard about Carbonated Drinks	Yes	110 (100)
	No	0
Knowledge of Ingredients of Carbonate Drink	Identified Correctly	6 (5.5)
	Failed to Identified	104 (94.5)
Knowledge of Caloric Value	Yes	37 (34)
	No	73 (66)
Knowledge of Ill Effects	Yes	80 (72.7)
	No	30 (27.3)
Associated Ill Effects	Obesity	31 (28.2)
	Bone Decay	12 (11)
	Dental Caries	10 (9.1)
	Belching	9 (8.1)
	Hyperacidity	8 (7.2)
	Diabetes Type II	3 (2.7)
	Sleep Disturbance	1 (0.9)
	Other	6 (5.5)
	Not Aware	30 (27.3)
Prolonged Consumption	Bad for Health	109 (99.1)
	Good for Health	1 (0.9)

Table-3: Attitude of the Students regarding the Carbonated Drinks (n=110)

Responses		No. (%)
Like to Recommended for Prolong Used	Yes	6 (5.5)
	No	104 (94.5)
Tried to Quit/Stop Habit of Consumption	Yes	41 (37.3)
	No	69 (62.7)
What Would you Like to Prefer	Fruit Juice	63 (58)
	Maza/Slice	37 (34)
	Carbonated Drink	7 (6)
	Other	3 (2)

Table-4: Practice of the Students regarding the Carbonated Drinks (n=110)

Responses		No. (%)
Age Started to Drink (Years)	< 10	52 (48)
	11 – 15	40 (36)
	16 – 20	18 (16)
	> 21	0
Influencing Factor to Start	Taste	33 (30)
	Media Advertisement	21 (19)
	Easy access	20 (18)
	Appeal of drink	13 (12)
	Family influence	10 (9)
	Peer pressure (friends)	8 (7)
	Other	5 (5)
Consumed Carbonated Drink Frequently	Yes	55 (50)
	No	55 (50)
Average Amount Consumed at a Time	< 200 ml	53 (48)
	200 – 350 ml	32 (29)
	350 – 500 ml	22 (20)
	> 500 ml	3 (3)
Commonest carbonates drink consumed	Pepsi	29 (27)
	Sprite	27 (25)
	Coke	19 (18)
	Thumps up	13 (12)
	Mountain dew	11 (10)
	Other	4 (4)
	Not specific	4 (4)
Reason to Drink	Satisfy thirst	78 (70)
	Feel energise	22 (21)
	Other	10 (9)

Table 3 depicts attitudes of students regarding consumption of the carbonated drink. About 6 (5.5%) participants were in favour of recommending carbonated drinks for prolonged period. Around 69 (62.7%) participants responded that they never had tried to stop or quit habit of drinking carbonated drinks. However about 63 (58%) participants were in favour consuming fruit juice if given an option between carbonated drinks and fruit juice.

Table 4 shows practice of students regarding consumption of carbonated drinks. There were 52(48%) participant who had started to drink carbonated drinks at the age less than 10 years and 33 (30%) students were considered that taste was the main influencing factor for starting followed by media advertisement 21(19%) and easy access 20 (18%). Regarding practice of a frequent consumption 55 (50%) participants were those who consumed carbonated drink frequently and 57 (52%) had responded that they consumed more than 200 ml of carbonated drink at a time. Pepsi (27%) was the main brand of carbonated drinks which was consumed commonly followed by Sprite (25%) and Coke (18%). Majority of the students (70%) responded that their main reason of consumption of carbonated drink was to satisfy thirst and other is to feel energize (20%)

Discussion

Soft drinks are today's trend or much better we can call them 'fashion' especially among the youth. The ingredients of soft drink are water, sugar or high fructose corn syrup, carbon dioxide, caffeine, acid viz. phosphoric acid, citric acid, and malic acid, colouring agent like caramel or betakerotin, preservatives like natrium benzoate, and potassium sorbate, antioxidant like ascorbic acid and some emulsifying and stabilizing agent like pectin, alginate, carraghen.[5] It is a universally known fact that soft drinks, even though they contain a large number of calories, has little nutritional benefit and are known as "empty calories" and calories are the main risk factor for obesity. In this present study majority of students consider obesity as an important side effect of soft drink consumption even though majority of them were not aware of caloric value of soft drink. The high sugar concentration of soft drink is also associated with dental caries. 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 streptococci, 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.[4]

When the bottle of a soft drink opened bubbles and fizz are immediately emitted out. This is due to phosphoric acid and carbon dioxide (CO_2) content, which make these drinks highly acidic. The pH of soft drink ranges from 2.5-3.4 which generates a highly acidic environment in the stomach. This hyperacidity may cause gastronomic distress due to the erosion and inflammation of gastric mucosa. This is characterized as a painful stomach ache. 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. Also there is a very common practice of taking soft drinks when a person suffers from acidity or after having a heavy meal. However, this is wrong because actually it increases acidity further. In this study students have responded hyperacidity as one of the important ill-effects of the consumption of carbonated drinks. 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. Soft drinks remove Calcium from the body, causing an excess amount of Calcium that tend to be deposited in kidney, resulting in nephrolithiasis (kidney stones). In most of carbonated beverages, caffeine is deliberately added to make it addictive. Caffeine in carbonated drink is more readily absorbed than any other drink (like coffee, chocolate etc.). Caffeine can cause excitability, insomnia,

nervousness, stomach upset, tremors and extra heartbeats.

The centre for Science and Environment had found pesticide residue of organophophorus, organocholorine and synthetic pyrethroides in the soft drink.[6] In India the soft drinks Industry is virtually unregulated. Rule 65 of the Prevention of Food Adulteration Act 1954, regulates the presence of insecticides and pesticides in food but "food" is so defined in Rule 65 as to exclude "beverages". This Rule does not apply to soft drinks.[3] In the year 2003 The Minister of Health and Family Welfare has clarified in the Parliament the steps that the Government has taken, from the JPC Report of 2003 and what process the Govt. is going through. After the JPC's Report that standards should be fixed to these carbonated drinks, namely, Coke, Pepsi or other subsequent drinks.[6]

Conclusion

In present study the significant numbers of participants had fallen in to underweight and overweight category. This shows that they were not following healthy life style practices. The knowledge of participant regarding caloric value and ill effects of carbonated drink were also not satisfactory. The attitudes of the students are relatively better because most of them had tried to stop this habit and they are ready to consume a fruit juice as an alternative for carbonated drink if an option is available. Regarding practice most of them had started to drink carbonated drink at very early age of life and this is a main concern. Thus, it is recommended that health education and primordial prevention would be the best way to adopt healthy life style and to combat the problems associated with the consumption of carbonated drinks.

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