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Consumption Pattern of Carbonated Sodas among College Girls

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Abstract

The beverage market today hosts an abundance of sugar sweetened beverages, predominantly carbonated sodas. Sugar-sweetened beverages, particularly soda, provide little nutritional benefit and amplify weight gain and probably the risk of diabetes, fractures, and dental caries. The present study was undertaken with the objective of studying the consumption pattern of these drinks among college girls in Gurgaon city. Consumption pattern was obtained using an interview schedule and dietary analysis on a sample of 100 college girls, 50 each from two different colleges. The most common occasion of drinking carbonated soda was found to be hanging out with friends. A significant association ($p < 0.05$) was obtained between BMI of respondents and amount of carbonated drinks consumed at a time. Regular consumption of sugar sweetened beverages should not be encouraged and need to be replaced by other healthier options such as low fat milk, green tea etc, as it can cause weight changes and affect the BMI status of an individual which can ultimately increase the risk for various chronic diseases.

Keywords: Sugar-Sweetened Beverages, Carbonated Sodas, Diabetes, BMI, Chronic Diseases, Consumption Pattern, Weight Gain Dental Caries.

Introduction

Sugars are basically carbohydrates. Sugars are a ubiquitous component of our food supply and are consumed as a naturally occurring component of a lot of foods and as add-ons to foods during processing, preparation, or at the table (Murphy and Johnson, 2003). However, harmful health effects may occur when sugars are consumed in large amounts.

Fructose which was originally projected as the ideal sweetener for people with diabetes mellitus because of its inability to stimulate insulin secretion, fructose consumption has been indirectly implicated in the epidemics of obesity and type 2 diabetes mellitus (Rutledge and Adeli, 2007; Le and Tappy, 2006). Fructose is a monosaccharide naturally found in fruits and honey. Many consumers mistakenly consider that high-fructose corn syrup is pure fructose. High-fructose corn syrup is composed of either 42% or 55% fructose and is similar in composition to table sugar (Takasaki, 1966; Coulston and Johnson, 2002). High fructose corn syrup is the sweetener commonly used by the beverage industry. Soft drink consumption has been linked with higher energy intake, greater body weight, and poor nutrition (Vartanian and Schwartz, 2007) and excessive fructose consumption is known to play a role in the epidemics of insulin resistance, obesity, hypertension, dyslipidemia, and type 2 diabetes mellitus in humans (Dhingra et al, 2007)

Excess of sugary foods may lead to obesity and elevated blood lipids. For prevention of diet-related chronic diseases, sugars should be used sparingly (Dietary guidelines for Indians, NIN, 2012). NIN recommends about 20gm /d (4 teaspoons) or 100 calories of sugar intake for both men and women with sedentary lifestyle. **Sugar-sweetened beverages** (SSBs) are drinks sweetened with sugar, high-fructose corn syrup, or other caloric sweeteners, and include soft drinks, fruit drinks, iced tea, and energy and vitamin water drinks.

The consumption of sugar-sweetened beverages has been linked and shown to increase the risks for obesity, diabetes, and heart disease; therefore, a compelling case can be made for the need for reduced consumption of these beverages (Malik et al, 2006; Vartanian et al, 2007). A direct association exist between adulthood overweight and BMI and an increase in consumption of sugar-sweetened soft drinks in young women (Nissinen et al, 2009). Regular consumption of SSBs is associated with a

higher risk of Chronic heart disease in women, even after other unhealthy lifestyle or dietary factors are accounted for. (Fung et al, 2009).

Objective

In the present retail scenario, a young adult entering a shop has a wide variety of beverages (carbonated sodas) to choose from. However there is a scarcity of data on customer's perception about them and the factors which drive or influence customers to purchase them. As the consumption pattern of these beverages is expected to be high among college girls. Therefore, the present study was undertaken with the objective to ascertain the consumption pattern of these beverages in college going girls.

Methodology

The study focused on studying the consumption pattern of carbonated sodas among college sirls. It refers to trends in consumption of products by real/actual consumers and factors influencing the same. The study was conducted in months of January 2014 and February 2014.

Locale of Investigation

The study was conducted on college going girls.

Sampling Procedure

Purposive sampling technique was employed. Respondents who were keen, willing and could be persuaded to participate were included in the sample.

Sample Size

Sample consisted of 100 subjects (college-going girls), 50 each from both the colleges.

Tools and Techniques

1. **Interview**

   A standardized interview schedule was developed and pretested on a sample of ten subjects. It was modified accordingly before administration.

2. **Anthropometric Measurements**

   In this study anthropometric parameters including weight and height were measured using standardized equipments and techniques for the 100 subjects.

3. **Dietary Assessment**

   The questionnaire developed was used to elicit dietary data of the subjects. This data was gathered in three forms: Questionnaires (close ended), 24-hour diet recall and a food frequency questionnaire.

Statistical Treatment of Data

a. All the data collected both quantitative and qualitative was consolidated and systematically coded in Microsoft excel 2007.
b. All the statistical tests were performed at 5% level of significance, using SPSS version 16.
c. Chi square was used to establish a relation between :

1. Amount of beverages (fruit juices and soft drinks) consumed and BMI status of the respondents.
2. Living status of respondents and frequency of consumption of juices.
3. Pocket money received and frequency of consumption of juices.
4. Living status and frequency of consumption of soft drinks.

Results

The consumption pattern was studied on a sample of 100 college girls selected on the basis of their willingness to participate in the study. The objective was to determine the pattern in consumption of carbonated sodas and factors influencing their choice of selection.

Profile of Respondents

AGE

The mean age of the selected college girls was 20.67 years. The maximum age was 25 years (n=1) and minimum age was 18 years (n=5)

Anthropometric Profile

Height and weight of respondents (n=100) was taken in triplicates, from which BMI (Body Mass Index) was computed. The anthropometric profile of the respondents is shown in Table 1.

Table 1: Anthropometric Profile of the Respondents

Variable	Mean± SD	Minimum Value	Maximum Value
Height (m)	1.59±0.0439	1.52	1.72
Weight (Kg)	53.29±6.6215	40	80
BMI (Kg/m²)	21.10±2.4312	16.6	31.3

On the basis of current WHO BMI cut-off points for Asians (Lancet 2004), the respondents were categorized as underweight, normal, overweight and obese. 78 out of 100 respondents were found to be having normal BMI as per WHO cut-offs, while 11 were underweight and 8 were found to be overweight and 3 were obese.

Intake Pattern

The data revealed that 94 out of 100 respondents consumed carbonated beverages, while 6 avoided them.

Reason for Intake

Data from the figure:1 revealed that good taste (88%) was the major reason for intake of carbonated beverages among the respondents. This was followed by the reason of considering carbonated beverages as a good thirst quencher (86%).

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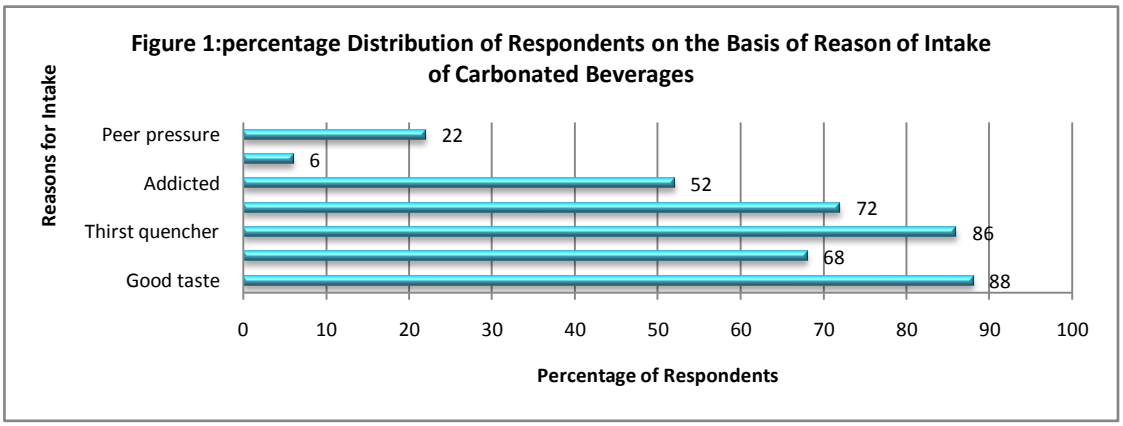
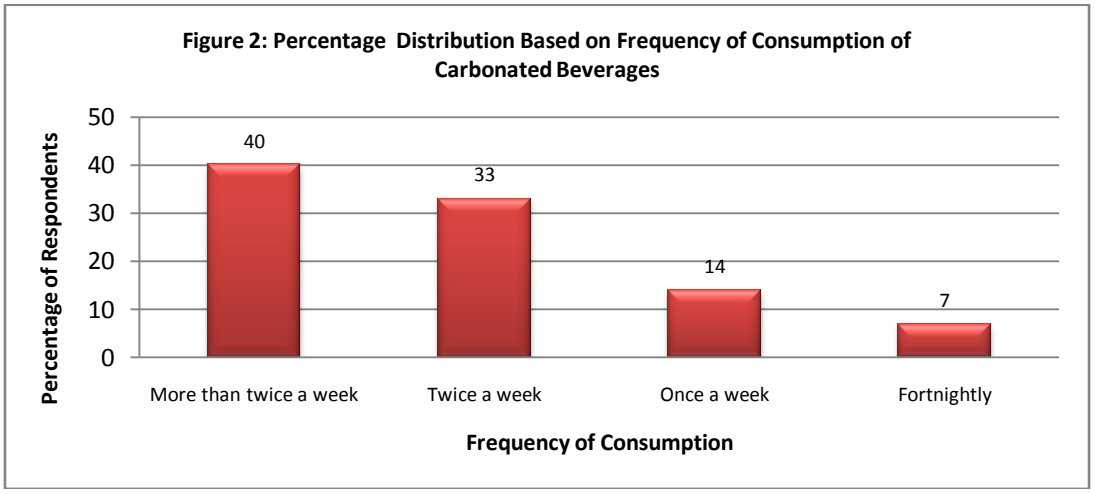


Frequency of Consumption of Carbonated Beverages

As shown in Figure 2, 40% of respondents consumed carbonated soda more than twice a week, 33% consumed twice a week, while 7% consumed fortnightly. This shows that carbonated sodas are very popular among college going girls as a beverage. This data was also supported by the data obtained via qualitative food frequency questionnaire, according to which soft drinks mainly coke and Pepsi were consumed by about 35% respondents twice a week.



Relation between BMI and Amount Consumed at A Time

Respondents consuming carbonated sodas less than 500ml at a time had a BMI in the normal range as per WHO cut-offs. A single respondent who was consuming more than 500 ml of carbonated sodas had a higher BMI (24.67 $Kg/m^{2)}$). A regular consumption of large amount of carbonated sodas may have caused the rise in BMI status.

Table 2: Mean±SD Summary of BMI In Relation to Amount Consumed at a Time

Amount Consumed at a Time in ml	BMI (Mean±sd)
200-250	20.90±1.61
250-500	21.24±2.60
≥500	24.67±0
No consumption	18.65±1.31

Relation between BMI Category and Amount of Carbonated Sodas Consumed

As shown in table- 3, a significant association ($p<0.05$) was obtained between BMI of respondents and amount consumed by them at a time. This shows that as intake of carbonated sodas increases BMI also tend to increase.

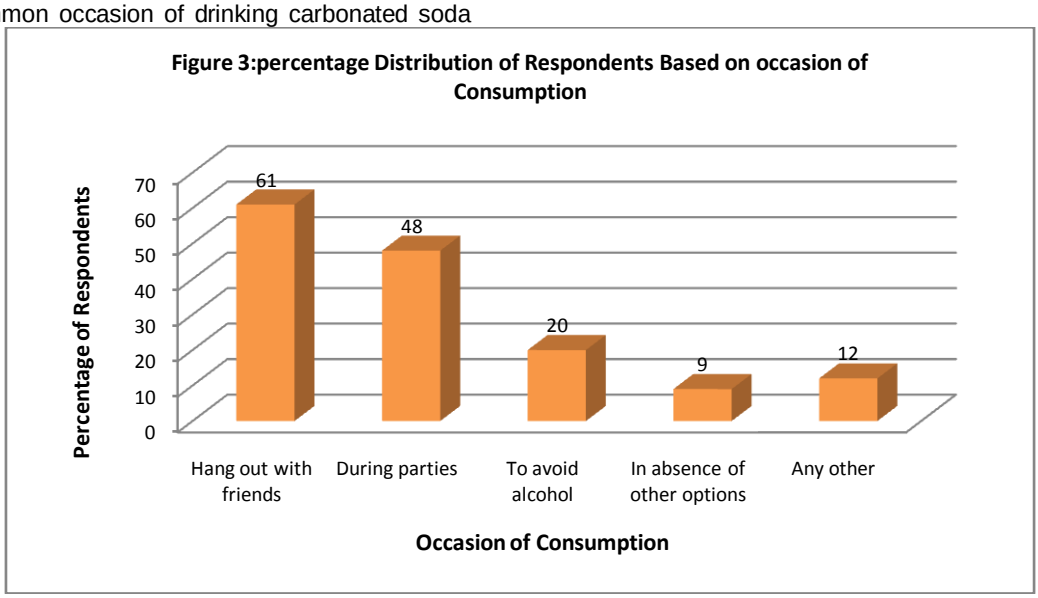
Table 3: Relation between BMI Category and Amount of Carbonated Sodas Consumed at a Time

BMI Category	200-250 ml	250-500 ml	≥500ml	No Consumption	Total
Normal	17 (21.79)	60 (76.92)	0 (0.00)	1 (1.28)	78 (100.00)
Obese	0 (0.00)	3 (100.00)	0 (0.00)	0 (0.00)	3 (100.00)
Over weight	0 (0.00)	7 (87.50)	1 (12.50)	0 (0.00)	8 (100.00)
Under weight	1 (9.09)	5 (45.45)	0 (0.00)	5 (45.45)	11 (100.00)
Total	18 (18.00)	75 (75.00)	1 (1.00)	6 (6.00)	100 (100.00)

Key: Frequency Pearson chi= 48.4170
Pr = 0.000
Row percentage in Parenthesis

Eating Out and Meal Pattern

The data revealed that 82% of respondents consumed carbonated sodas with meal, mostly with diner and evening snacks when eating outside.The most common occasion of drinking carbonated soda was found to be hang out with friends (61%), followed by consumption during parties (48%), while the least common occasion was in the absence of other options (9%).



Impact of Advertisements

Thirty six percent of respondents said that advertisements promoting carbonated sodas don't affect them at all, while 59% said they do feel like purchasing these beverages after watching an advertisement about them. This indicates that advertisements have a major influence over the food choices made by the consumers today specially the youth.

Dietary Intake

Comparison of Energy Intake

No significant association (p=0.97) was found between the energy intake of respondents who consume carbonated sodas and those who did not consume carbonated sodas.

Frequency of Consumption of Carbonated Sodas

The data obtained revealed that 35-40% respondents consumed carbonated drinks like Pepsi and Coca cola more than twice a week. Limca and Sprite were also consumed quite frequently as 25-30% said to consume these more than twice a week. Diet colas were not as popular among the group as only 4% respondents said to consume these once a week.

Consumption Pattern: Carbonated Sodas

1. The consumption pattern was studied on a sample of 100 college girls
2. Good taste (88%) was the major reason for intake of carbonated beverages among respondents, followed by their consideration as a good thirst quencher (86%).
3. Carbonated sodas emerged as a very popular choice among college girls since forty percent of respondents consumed carbonated soda more than twice a week, 33% consumed twice a week
4. Majority of respondents (75%) consumed about 250-500 ml of carbonated sodas at a time.
5. A significant association ($p<0.05$) was obtained between BMI of respondents and amount consumed by them at a time. This shows that as intake of carbonated sodas increases, the BMI also tends to increase
6. The most common occasion of drinking carbonated soda was found to be hanging out with friends (61%), followed by consumption during parties (forty eight percent).
7. Fifty nine percent respondents said they do feel like purchasing these beverages after watching an advertisement about them. This indicates that advertisements have a major influence over the food choices made by the consumers today specially the youth.

Conclusion and Suggestions

Awareness regarding the amount of excessive sugars present in these beverages which is unknowingly consumed is very important. Since sugar is addictive, the recommended allowance of 4 teaspoons of sugar/day is easily exceeded.

Television commercials lay a huge impact on the mindset to today's youth and also influences their choices; hence it is of utmost importance that consumer must be educated about the pros and cons of all the products. Nutritional education should be imparted in the curriculums to promote healthy food choices among youth. A regular consumption of sugar sweetened beverages should not be encouraged and should be replaced by other healthier options such as low fat milk, green tea etc, as it can cause weight changes and affect the BMI status of an individual which as can increase the risk for various chronic diseases such as diabetes and metabolic syndrome.

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