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Research Article

Consumption Pattern of Soft Drink among the Medical Students Studying in Sudan International University (2018)

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Abstract: 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. Descriptive cross-sectional institutional study conducted to assess consumption pattern of soft drink and their effect on the health of students studying in Sudan International University at Al-Azhary area in Khartoum state during the period from 20/2/2018 to 12/3/2019, 318 of students were participated in this study selected by systematic random sampling; data was collected by self-administrated questionnaire The results revealed that 95.6% of the students consumed soft drinks .32.7% preferred to drink Pepsi from the other types of soft drinks, 34.9% consumed soft drinks after meal, 22.4% consumed <500ml/day, (38.8%) of the students did not read the ingredient labeled in soft drink, (73%) of students preferred the regular soft drinks rather than diet ones and 44.7% of the students selected their favorite soft drink according to their taste. Common health effects of soft drinks among the students were dental Health problems and Obesity (17.6%), Significant relationship was found between the amount of soft drink and health problems that found among the students P= (0.034). The study concluded that students were not fully aware by the health hazards and harmful effect of soft drinks and need nutrition and health education to change their behavior towards soft drinks.
Keywords: Soft drink, Pepsi, Health problems ,Taste.

INTRODUCTION:

Soft drinks are beverages that contain carbon dioxide, sweeteners, natural or synthetic flavors, colors, acidification agents, chemical preservatives and emulsifiers in addition to other various agents (Ashurs, 2005).

According to Heshmat (2011), the per capita soft drink consumption has increased almost 500% over the past 50 years. The consumption of soft drinks is associated with obesity and related diseases (Malik *et al*., 2006) such as, type 2 diabetes (Romaguera *et al*., 2013) and dental caries (Vartanian *et al*., 2007). Gibson, 2008). Many soft drinks contain ingredients that are themselves sources of concern, caffeine is linked to anxiety and sleep disruption when consumed in excess (Hickman, 2007). Study concluded that 3 consumption of soft drinks was associated with a 23% higher risk of developing kidney stones (Ferraro *et al*., 2013). One can of Soda contains 10 teaspoons of sugar. This is 100 percent of the recommended daily intake, & within 20 minutes of drinking that soda, the blood sugar spikes, and the liver responds to the resulting insulin burst by turning massive amounts of sugar into fat, then Within 40 minutes the blood pressure rises because the body having absorbed all the caffeine, and then the liver dumps even more sugar into the bloodstream (Mercola, 2010).

PROBLEM STATEMENT:

The Global consumption of soft drinks and beverages has increased alarmingly over the past two decades.. The youth and university students are by far the most targeted group for soft drinks vendors, due to the fact that those students are usually having their meals outside and there is an increased in needs for refreshments after a long day spent on campus and in public transport. This rise in soft drink consumption is an underlying risk factor for many diseases (Virtanen *et al.,* 2007). These soft drinks have many serious health effects; the most common is dental caries, bone diseases, obesity, heart diseases and even neurological defects (Duyff, 2006). Sudan, like the other developing country, have a large market for soft drinks both locally manufactured and imported (Mosab, 2019).

Justification of the study:

Sudan has high percentage of youth in respect to the whole Sudanese population, the youth are the most common consumers of the soft drinks, so they susceptible to many harmful effects due to the high consumption of soft drinks, this drew the researcher's attention to investigate about the consumption pattern of soft drink among the students who studying in Sudan International University.

Objective of the study:

To assess the consumption pattern of soft drink among medical students studying in Sudan International University.

MATERIAL AND METHODS

Study area and Design

Descriptive cross-sectional study was conducted among the medical students studying in Sudan International University during the period from 20/2/2018 to 12/3/2019.

Subjects

.**Sample Size**

The sample size was determined by using the following formula:

$$n = \frac{N}{1 + N \times e^2}$$

Where:

n: Sample size

N: Study population

e: Marginal error equal to of 0.05

$$n = \frac{3160}{1 + 3160 \times 0.05^2} = 355 \text{ students.}$$

Sample Selection

A systematic random sampling method was used to select the students from the faculty of medicine from each level of the faculty.

Student who participate in the present study were between the age group of 19 -25 year, accordingly 37 out of 355 students were excluded for not meeting criteria of the age group .Sample size was (318) Students.

Data was collected by using close ended questionnaire contain students' demographic data, consumption patterns of soft drink and health problems among the students.

Statistical Analysis

Data was analysed by using software program SPSS for statistical analysis (version16).

Ethical Consideration:

Permission was granted from the administration of Sudan International University, and preformed consent was taken from the students to participate in the present study.

RESULTS:

Table 1: Soft drink consumption pattern

Number of students who drink soft drink	No	%
Yes	304	95.6
No	14	4.4
Total	**318**	**100**
Prefer type		
Regular	222	73
Diet	82	27
Total	**304**	**100**
Number of students who consumed soft drinks	No	%
Pepsi	104	32.7
Coca-Cola	80	25.1
7Up	52	16.4
Sprite	36	11.3
Fanta	18	5.7
Miranda	14	4.4
Never	14	4.4
Total	**318**	**100**
Time of Consumption	N	%
Early morning	16	5.3
Before Meal	8	2.6
During Meal	52	17.2
After Meal	106	34.9
Watching T.V	46	15.1

Using computer	8	2.6
Reading	26	8.5
During Exercise	8	2.6
While Commuting	18	5.9
Before Bed	16	5.3
Total	**304**	**100**
Consumption of soft drink by /week	N	%
<500ml	68	22.4
1L	46	15.1
1.5L	70	23
2L	52	17.2
2.5L	46	15.1
3L	18	5.9
≥5L	4	1.3
Total	**304**	**100**

Table 2: Students attitude towards soft drinks

Factors contribute to selection of soft drink	N	%
Taste	136	44.7
Shape of the bottle	34	11.2
Commercial Ads	36	11.8
Friends and family	72	23.7
Family income	6	2
No factors	20	6.6
Total	**304**	**100**
Reading Soft drink labeling	N	%
Always	68	22.4
Sometimes	118	38.8
Never	118	38.8
Total	**304**	**100**

Table 3: Health Problems

Type of disease	N	%
Dental Health problems	56	17.6
Obesity	56	17.6
Diabetes mellitus	6	1.9
Bone Weakness	46	14.5
Sleeping Disorders	30	9.4
High Blood Pressure	14	4.4
Loss of Appetite	32	10.1
No health problem	78	24.5
Total	**318**	**100**

Table 4: Relationship between amount of soft drink consumption and Students' Health Problems

Amount	Dental Problems	Obesity	Diabetes	Bone Weakness	Sleep Disorders	High Blood Pressure	Loss of Appetite
<500 ml	2 (25%)	5 (25%)	0 (0%)	6 (50%)	2 (25%)	0 (0%)	2 (0%)
1 L	2 (4%)	8 (17%)	2 (4%)	8 (17%)	4 (8.8%)	0 (0%)	6 (13%)
1.5 L	0 (0%)	2 (11%)	0 (0%)	4 (22%)	4 (22%)	2 (11%)	0 (0%)
2 L	6 (11%)	8 (15%)	0 (0%)	6 (11.5)	2 (3.8%)	4 (7.7%)	6 (11%)
2.5 L	12 (26%)	6 (13%)	2 (4%)	4 (8.7%)	8 (17%)	4 (8.7%)	6 (13%)
3 L	10 (14%)	12 (17%)	0 (0%)	14 (20%)	2 (2.9%)	2 (2.9%)	6 (8.6%)
≥5L	24 (35%)	15 (26%)	2 (2%)	4 (5.9%)	8 (11.8%)	2 (2.9%)	6 (8.8%)
Total	**56**	**56**	**6**	**46**	**30**	**14**	**32**

(P=0.034)

DISCUSSION:

The study was conducted to assess the consumption pattern of soft drink among the students studying in Sudan International University. The results showed that, (89.6%) of the students in the present study were within the age group of 19-25 years old and

(10.4%) were within the age's group of 26-30 years old. Regarding students preference of soft drinks 32.7% of them preferred to drink Pepsi and (25.1%) preferred drinking Cola, according to experimental studies caffeine is present in cola-type soft drinks, both regular and diet, It is a mildly addictive stimulant drug which can cause disturbed sleep patterns, bedwetting and anxiety in children and young adults(Hashem, *et al.*, 2015). Obesity and Dental Health problems (cavities and toothaches) were the most health problems among the students with percentage of (17.6%). Number of systematic reviews and meta-analyses has shown strong relationship between overweight, obesity and soft drink (Hector, 2008). Frequent exposure to soft drinks may increases the chance of tooth decay. Excessive intake of soft drinks could cause complex dental consequences including dental erosion and caries (Ran, *et al.,* 2009).

The results revealed that the students preferred to drink soft drinks either during (17.2%) or after having their meal (34.9%). Others preferred to drink soft drinks when they watching TV(15.1%),or using the computers (2.6%). Students may believe that drinking soft drinks after meal may help in digestion of food and let them feel comfortable particularly after over eating, but sometimes Sudan hot weather may force the students to drink more soft drinks during time of studying to help them bear the hot study rooms.

Although (38.8%) of the students did not read the ingredients list however, (22.4%) of them had always read the ingredients. It seems that some of the students' knowledge about the contents of the soft drinks was not sufficient to motivate them to stop drinking soft drink, which reflects their ignorance of the harmful effects of soft drinks contents, and sometimes these written ingredients, motivates students to drink more and more soft drink.

Regarding chosen of favorite soft drink, (44.7%) of students chose their favorite soft drink by depending on their taste of the drink. However, a considerable percentage of them (23.7%) acted like their friends and family. This reflects the fact that students were not motivating by the price of the drink, volume of the drink and the advertisements, mostly motivated by the beverages taste.

The result demonstrated that (73%) of the students preferred the regular soft drinks than the diet carbonate beverages ones which can cause many health problems, this confirmed with study stated that, Sugar sweetened beverages, typically containing sucrose, high-fructose corn syrup, or fruit juice concentrates, which may lead to weight gain through the high added sugar content (Malik *et al.*, 2006). Today, it is also hypothesized that artificially sweetened beverage consumption may be related to weight gain, diabetes, and cardiovascular (*Hu*, 2008). The amount of soft drink consumed by the student was varies , 23% of the students consumed 1.5liters while 1.3% consumed equal or more than 5 liters /week, to the best of our knowledge drinking of soft drink the whole day be a part of the students food habits ,may lead to serious health problems, Significant relationship was detected between the amount consumed of soft drinks/week &health problems (p=0.034) ,which is similar to previous study conducted by (Crichton, *et al.,* 2015), who stated that, soft drinks had an adverse relationship with many health effects such as cardio-metabolic health. In general, It appears that the settings and contexts in which students socialize, such as at restaurants, university cafeterias shopping centers, act as strong social 'triggers' for the purchase and consumption of caloric soft drinks. In particular, it appears that within social settings in which soft drink are usually consumed, such as at cafeterias, students are consuming large volumes of soft drinks.

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