

ORIGINAL ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICES OF CONSUMPTION OF CARBONATED BEVERAGES: A CROSS SECTIONAL STUDY

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ABSTRACT

A soft drink or a carbonated drink is a non-alcoholic drink that commonly contains water, a sweetener, carbon dioxide, acidulants, colorings, preservatives, antioxidants, and/or foaming agents, and a flavoring agent. A total of 200 adult patients of low socioeconomic status, aged 18-35 years, were selected to participate in the study. A questionnaire with 26 closed ended questions was designed for the present study which consists of questions regarding knowledge, attitude and practice of consumption of sweetened carbonated beverages. One hundred and ninety nine (99.5%) of the subjects enjoyed drinking soft drinks. Out of 200 subjects only 8 (4%) responded that they will stop drinking soft drinks. The present study results showed that all the target population heard about soft drinks but very few of them were aware of the ill effects on general health and on teeth. So there is a need to spread awareness among people about the adverse effects of the carbonated beverages consumption and thus there is a need to plan health education programs.

Keywords: Attitude, consumption, knowledge, practice, soft drinks.

1. INTRODUCTION

A soft drink or a carbonated drink is a non-alcoholic drink that commonly contains water, a sweetener, carbon dioxide, acidulants, colorings, chemical preservatives, antioxidants, and/or foaming agents, corrosive and a flavoring agent¹. Most common types of carbonated beverages includes colas, sparkling water, iced tea, lemonade, squash, and fruit punch, while hot chocolate, hot tea, coffee, milk, tap water, and milkshakes do not fall into this classification². Some types of soft drink contains sugar substitutes³.

Soft drinks exist in different forms and various brands are marketed by different brewery industries across the country^{4,5} and are consumed on daily basis particularly during exercise and sport activities⁶. Due to their relatively affordable prices, these drinks are also abundantly used during leisure and relaxation outings and in celebrations such as wedding event, birthday parties, dinners, and other similar celebrations⁷. Scientific studies have shown that as few as one or two soft drinks a day can increase the

risk for numerous health problems. There is a growing concern in the medical and scientific communities about the harmful effects associated with carbonated soft drinks³. Many carbonated drinks are high in calories and have high amount of sugar which is associated with health problems such as obesity, diabetes, osteoporosis, tooth decay, etc. When one consumes carbonated beverages instead of milk, fresh juice and water, the nourishment of the body remains below the desired level⁸. Carbonated drinks are now considered as the third most consumed beverages globally^{9,10}. The per capita consumption of carbonated drinks in Pakistan is about 13 bottles (~3.2 lit.) per year followed by Bangladesh, India and Egypt where it is only 8, 4 and 3 bottles per year^{10,11}. The highest consumption rate is in USA where it is 350 bottles per annum¹¹. This consumption is likely to grow all over the world including Pakistan¹¹. Hence there will be more concern regarding the health issues. The object of the present study is to assess the knowledge, attitude and practices (KAP) of consumption of soft drinks in patients attending Baqai Dental Hospital regarding

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the health hazards associated with the consumption of carbonated beverages.

2. MATERIALS AND METHODS

The present study was conducted from August 1, 2016 to December 31, 2016 in the Department of Operative Dentistry, Baqai Dental College, Baqai Medical University, Karachi to assess the knowledge, attitude and practices of consumption of carbonated beverages. Ethical permission was granted by the Ethical Committee, Baqai Medical University. A total of 200 adult patients of low socioeconomic status, aged 18–35 years, were selected to participate in the study. The sample size was calculated by taking 85% of the prevalence rate and computed using the OpenEPI (Version 3.01) at 95% confidence interval and $\alpha = 5\%$. Patients aged less than 18, edentulous, and those not consuming sugar sweetened beverages were excluded from the study. A questionnaire with 26 closed ended questions including 6 related to

knowledge, 8 to attitude and 12 to practice of soft drink consumption amongst patients was prepared. The questionnaire was checked for validity. A single calibrated researcher marked the answers provided by the participants. Data was analyzed for descriptive analysis (frequency and percentages) by using IBM SPSS (Software version 22).

3. RESULTS

A total of 200 patients participated in the study. It was found that only 3% of the participants have previously heard about the bad effects of carbonated beverages consumption on teeth (Table 1). One hundred and ninety nine (99.5%) of the subjects enjoys drinking carbonated beverages (Table 2). Out of 200 participants, only 4% responded that they will stop drinking such drinks when they were informed about the drawbacks while about 32% declined to quit this habit (Table 2).

Table 1. Knowledge of consumption of carbonated beverages in participants

Variables	Yes	No	Don't Know
Have you heard about such drinks?	200 (100%)	0	0
Have you heard if it has bad effect on teeth?	6 (3%)	112 (56%)	82 (41%)
Are these drinks good for your health?	5 (2.5%)	5 (2.5%)	190 (95%)
Are these drinks bad for your health?	4 (2%)	4 (2%)	192 (96%)

Table 2. Attitude of participants towards consumption of carbonated beverages

Variables	Yes	No	Don't Know
Do you enjoy drinking such drinks?	199 (99.5%)	1 (0.5%)	0
Will you stop drinking these drinks if asked to?	8 (4%)	63 (31.5%)	129 (64.5%)
What drink will you choose?			
Fruit juices	189 (94.5%)	11 (5.5%)	0
Soft drinks	193 (96.5%)	7 (3.5%)	0
Milk	24 (12%)	176 (88%)	0

Table 3. Practices of consumption of carbonated beverages

Variables	N (%)
Factor influencing to initiate drinking of carbonated drinks	
Advertisement	2 (1%)
Easy availability	1 (0.5%)
Color	1 (0.5%)
Family and friends	31 (15.5%)
Taste	197 (98.5%)
Quantity of drinking carbonated beverages daily	
100 ml	28 (14%)
200 ml	23 (11.5%)
500 ml	20 (10%)
>500 ml	10 (5%)
How often do you consume carbonated beverages	
Daily	35 (17.5%)
Alternate days	75 (37.5%)
Weekly	78 (39%)
Monthly	14 (7%)
Reason for consuming carbonated beverages	
At home with family and friends	186 (93%)
Outside with family and friends	195 (97.5%)
Feel thirsty	52 (26%)

Regarding the factors influencing to initiate drinking of carbonated beverages, taste was the most common reason given by the participants followed by friends and family, color, easy availability and advertisement (Table 3). Only 14% of the participants responded that they used to consume 100 ml of such type of drinks every day while 39% consumed it weekly. Around 98% of the participants responded that they consume such drinks only when out with friends and family (Table 3).

4. DISCUSSION

Carbonated or soft drinks consumption is gaining

its popularity in daily routines and meals of people living in Pakistan. Up till now there is no research published on knowledge attitude and practices of consumption of carbonated beverages in Pakistan. The present study reported that out of 200 participants all of them heard about carbonated beverages (Table 1). Previously, other studies have also reported similar type of awareness about soft drinks such as 91% by Kharde et al.¹⁰ and 100% each by Patel et al.¹² and Mohammed et al.¹³ The present study reported that only 2% of the subjects are aware of the adverse effects on general health (Table 1). On the contrary, some other studies have reported better

awareness among individuals regarding the adverse effects of such drinks such as those reported by Mohammad et al.¹³ (37.71%), Gupta et al.¹⁴ (54%), Patel et al.¹² (72%) and Kharde et al.¹⁰ (72.7%).

It has been found that only 3% of the participants had knowledge of bad effects of carbonated beverages on teeth (Table 1). This percentage is much lower than those previously reported by Kharde et al.¹⁰ (9.1%) and Mohammad et al.¹³ (26%). Knowledge regarding bad effects of such drinks on general health and teeth are important because of the presence of some harmful constituents such as phosphoric acid and carbon dioxide (CO₂), which creates a highly acidic environment. The pH of the carbonated beverages ranges from 2.5–3.4 which is considered to be highly acidic. The increase of acidity in the stomach may cause gastrointestinal distress due to the erosion and inflammation of gastric mucosa, characterized by painful stomach ache¹⁰. Prolonged consumption of carbonated beverages especially soft drinks causes demineralization of teeth due to the presence of high sugar contents. During this process calcium and phosphorus are removed from the enamel that leads to the loss of outermost layers of the enamel causing sensitivity and dental caries¹⁵. Despite providing all the information and making them aware of the drawbacks, only 4% of the patients agreed to stop drinking such drinks (Table 2). A better percentage of participants i.e. 14%¹³ and 37%¹⁰ had shown willingness to quit this habit of drinking carbonated beverages elsewhere. Regarding choice of consuming different types of drinks, results from the present study showed that approximately 97% of the patients consumed soft drink, about 95% consumed fruit juices and only 12% consumed milk (Table 2). Similarly, it has been reported by Gupta et al.¹⁴ that 73% of the students preferred carbonated drinks over fruit juices and other beverages.

The most common factor that initiates drinking such beverages is found to be the taste (~99%) while about 16% reported to be influenced by family and friends (Table 3). The effect of color, advertisement and easy availability on the use of such drinks is

found to be negligible (Table 3). In some other studies the results were not significantly different. Kharde et al.¹⁰ and Patel et al.¹² reported that around 30% and 45% of the participants, respectively, initiated drinking soft drinks because of its taste. Mohammad et al.¹³ and Patel et al.¹² reported that about 26% and 11% of the participants, respectively, were influenced by the media advertisement while 10% used to drink due to peer pressure of family and friends¹².

It has been observed that 14% of the participants used to consume 100 ml of such drinks followed by around 12% for 200 ml, 10% for 500 ml and only 5% for >500 ml daily (Table 3). On the contrary, Mohammad et al.¹³ reported that about 9% of the participants consumed <200 ml of soft drinks daily followed by 42% for 200–350 ml, 31% for 500 ml and 18% for >500 ml. Similarly, Rai et al.¹⁵ reported that about 63% of the population consumed around 100 ml of the soft drinks daily. The frequency for consumption of carbonated beverages was highest on weekly basis (39%) followed by alternate days (~38%), daily (~18%) and monthly (7%) (Table 3). On the contrary, Mohammad et al.¹³ reported highest consumption of soft drinks on daily basis (73%) followed by alternate days (~18%), weekly (~9%) and occasionally (~3%). Similarly, Gupta et al.¹⁴ and Rai et al.¹⁵ reported that 58% and 41% of the participants were drinking soft drinks twice daily and weekly, respectively. The present study has revealed that a high majority of the participants, ~98% and 93% enjoys drinking carbonated beverages when out with family and friends or at home, respectively (Table 3). Only 26% prefer drinking such drinks when thirsty (Table 3) which is nearly similar to the percentage reported by Patel et al.¹² (i.e. 35%).

5. CONCLUSION

The results of the present study show that all the target population is well-aware of carbonated drinks but very few of them are aware of their adverse effects on general health as well as on teeth. The study has been conducted with certain limitations that include small sample size and the data was

collected from only one dental hospital in Karachi. Moreover, majority of the participants of the study were confined to lower socioeconomic status so there was lack of awareness amongst them. There is a need to spread awareness among people about the adverse effects related to the consumption of such drinks and thus there is a need to plan health education programs.

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