

FIZZY DRINK CONSUMPTION - IN SEARCH OF ITS DETERMINANTS

Magdalena Platikanova¹, Rozalina Yordanova², Petya Hristova^{1*}

¹Department of Hygiene, Epidemiology, Microbiology, Parasitology, and Infectious Diseases,
Medical Faculty, Trakia University, Armeyska 11, 6000 Stara Zagora, Bulgaria

²Medical College, Trakia University, Armeyska 9, 6000 Stara Zagora, Bulgaria

*e-mail: petia_14_1995@abv.bg

Abstract

Consumption of soft drinks is more and more common these days. It is seen not only as an act of quenching thirst but also as an action with social significance and impact on the human organism. The most diverse, as well as the most criticized among soft drinks, are the so-called fizzy drinks. They are associated with several adverse health effects. The present study aims to investigate what are the main factors that determine the consumption of fizzy drinks in Bulgaria.

The present study was conducted through a survey among 533 people (322 women and 211 men) aged 18 to 65, residents of Stara Zagora, Bulgaria. They were divided into five age groups (up to 20 years, 21 - 30 years, 31 - 40 years, 41 - 50 years, 51 - 60 years, and over 60 years), by sex, as well as according to their education and professional employment. Data were processed with SPSS Statistics.

The results show that sex, age, and education influence are determinants of fizzy drink consumption. Men consume more fizzy drinks than women. Among men, 6.59% consume fizzy drinks daily, while the percentage is 4.9% among women. In terms of age - the largest share of people - 4.13%, aged between 41 and 50 consume carbonated drinks every day. Education also appears to be a determining factor. More highly educated people are less likely to consume carbonated beverages. Of the respondents with a higher education, 15.49% never consume fizzy drinks, while most of the respondents with a primary education consume carbonated beverages. No statistically significant relationship was found between professional employment and drinking carbonated beverages.

Researching the factors that influence the consumption of fizzy drinks can change people's choices for fizzy drink consumption.

Key words: *Fizzy drinks, Soft drinks, Determinants, Factors, Health.*

1. Introduction

Consumption of soft drinks is more and more common these days. Over time, the consumption of carbonated drinks is less and less considered only as an act of quenching thirst, but also as an action with social significance and impact on the human organism. Currently, this is becoming a highly visible and controversial public health issue, as soft drinks are considered to be a major factor in obesity and related health problems, and therefore their restriction can be used as a preventive factor [1, 2]. Also, drinking carbonated soft drinks can negatively affect overall nutrient intake. Drinking these beverages can reduce the intake of protein, starch, dietary fiber, and vitamin B-2, also known as riboflavin. The most diverse, as well as the most criticized among soft drinks, are the so-called fizzy drinks. They are associated with several adverse health effects. Consumption of such beverages remains a major risk factor for overweight and obesity [3, 4, and 5].

Sugar-sweetened beverages (SSBs) are the main source of added sugar in the Western diet. It is known that carbonated soft drinks such as Coca-Cola, Pepsi, Sprite, and Fanta are the main sources of sugar for all SSBs. Post-World War II, in low-income and middle-income countries (LMIC), there has been a significant shift from traditional to Western-style eating habits [6 - 8]. Soft drink sales have risen markedly in LMIC, while consumption has stagnated or even declined over the past decade in several Western countries, such as the US and Australia [9, 10].

Due to the increasing use of carbonated beverages and related problems, more in-depth studies are needed to discover the factors that influence the choice of their consumption.

The present study aims to investigate what are the main factors that determine the consumption of fizzy drinks in Bulgaria.

2. Materials and Methods

The present study was conducted through a survey among 533 people (322 women and 211 men) aged 18 to 65, residents of Stara Zagora, Bulgaria. They were divided into five age groups (up to 20 years, 21 - 30 years, 31 - 40 years, 41 - 50 years, 51 - 60 years, and over 60 years), by sex, as well as according to their education and professional employment. The data were coded and processed with SPSS Statistics.

3. Results and Discussion

In the present study, differences in the consumption of carbonated soft drinks in different age groups were investigated. Statistically significant significance was found and age was established as a determinant of soda consumption. The results show that the proportion of people aged between 41 and 50 who consume carbonated drinks every day is the highest, followed by people in the age group of 21-30, whose percentage is 3.19%, and those aged 31 to 40 years - 2.06% (Table 1). This shows a trend of more frequent

consumption of carbonated drinks among middle-aged people.

According to studies by Khanferyan *et al.*, [11], the results are consistent with ours. A study shows that 5 - 8% of the population of different age groups consume carbonated drinks at a fairly high frequency (almost daily). According to another study, the following relationship was observed: the older the study participants, the lower the frequency of consumption of these drinks, and the highest proportion was reported among younger participants up to 24 years of age (14%). In people aged 65 to 74 years and people aged 75 years, a lower rate of consumption of carbonated drinks was observed (about 5%), which corresponded to some extent with our results [12].

According to another study, soda consumption by age group was highest among respondents aged 18 to 24 years (43.4%). Consumption of sugary drinks varied by state, age, sex, race/ethnicity, education, marital status, employment status, weight, smoking status, and alcohol consumption. alcohol, leisure-time physical activity, and metropolitan status had a higher prevalence of at least 1 sugar-sweetened beverage consumption per day than women [13].

This type of data gave us the reason to deepen our study by also examining the relationship between sex as a factor and the consumption of carbonated drinks, to confirm or reject the existence of such a dependence.

Table 1. Distribution of fizzy drinks consumption frequency by age

| Count/percent | Age | Frequency of consumption | | | | | Row Totals |
|----------------------|-------------------|--------------------------|---------------|---------------|------------------|---------------|------------|
| | | No | Rarely on | Once a week | Every 2 - 3 days | Every day | |
| Count | Up to 20 | 2 | 1 | 5 | 3 | 2 | 13 |
| Row Percent | | 15.38% | 7.69% | 38.46% | 23.08% | 15.38% | |
| Total Percent | | 0.38% | 0.19% | 0.94% | 0.56% | 0.38% | 2.44% |
| Count | 21 - 30 | 25 | 48 | 23 | 24 | 17 | 137 |
| Row Percent | | 18.25% | 35.04% | 16.79% | 17.52% | 12.41% | |
| Total Percent | | 4.69% | 9.01% | 4.32% | 4.50% | 3.19% | 25.70% |
| Count | 31 - 40 | 44 | 40 | 15 | 17 | 11 | 127 |
| Row Percent | | 34.65% | 31.50% | 11.81% | 13.39% | 8.66% | |
| Total Percent | | 8.26% | 7.50% | 2.81% | 3.19% | 2.06% | 23.83% |
| Count | 41 - 50 | 46 | 42 | 25 | 15 | 22 | 150 |
| Row Percent | | 30.67% | 28.00% | 16.67% | 10.00% | 14.67% | |
| Total Percent | | 8.63% | 7.88% | 4.69% | 2.81% | 4.13% | 28.14% |
| Count | 51 - 60 | 35 | 22 | 10 | 7 | 7 | 81 |
| Row Percent | | 43.21% | 27.16% | 12.35% | 8.64% | 8.64% | |
| Total Percent | | 6.57% | 4.13% | 1.88% | 1.31% | 1.31% | 15.20% |
| Count | Over 60 | 9 | 9 | 1 | 2 | 4 | 25 |
| Row Percent | | 36.00% | 36.00% | 4.00% | 8.00% | 16.00% | |
| Total Percent | | 1.69% | 1.69% | 0.19% | 0.38% | 0.75% | 4.69% |
| Count | All Groups | 161 | 162 | 79 | 68 | 63 | 533 |
| Total Percent | | 30.21% | 30.39% | 14.82% | 12.76% | 11.82% | |

This would also warrant future, more in-depth research on the way to finding the most significant factors determining fizzy drink consumption.

In addition to age, gender also appears to be a determining factor in soda consumption. According to the results of the current study, men consumed more carbonated beverages than women. The result is illustrated with a box plot diagram (Figure 1).

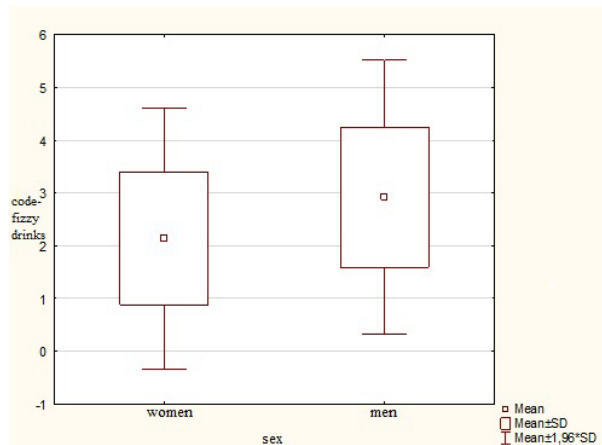


Figure 1. Fizzy drinks consumption - comparison between men and women

Among men, 6.59% consume carbonated drinks daily, and among women, this percentage is 4.9%. Among the sample of respondents who never consume carbonated drinks, 24.11% are women and only 6.21% are men (Table 2).

In the world literature, there is also convincing evidence of a higher percentage of men consuming such beverages compared to women. New data released today from the Australian Bureau of Statistics (ABS) 2017-2018 National Health Survey shows that men are twice as likely as women to consume a fizzy drink daily (12% of men versus 6% of women). They were also more likely to consume a diet drink daily (6% vs. 4%) [14]. Arab students have shown a high prevalence of DM consumption, especially among men. Although women had higher awareness and knowledge of SW,

different misunderstandings were noticeable in both men and women. We need to organize new policies, and health promotion campaigns to raise awareness among children and parents. Parents and health educators should motivate and encourage children to consume more water in the context of a healthy and balanced diet [15, 16]. A literature review of the proportion of people drinking fizzy drinks on most days of the week in Northern Ireland from 2010 to 2015, shows that people drinking sweetened fizzy drinks on most days of the week in Northern Ireland from 2010 to 2015 27 percent women and 31 percent - men [17]. These data completely overlap with the results of our study.

Education is another key socio-demographic factor relevant to soda consumption. The data show that more highly educated people are less likely to consume carbonated drinks. Of the respondents with higher education, 15.49%, followed by those with secondary education - 13.81% completely deny the consumption of carbonated drinks in their daily lives. Among people with higher education, the percentage distribution is average: 15.49% never consume carbonated drinks, 11.38% - rarely, 6.72% - once a week, 5.04% - once every 2-3 days, and only 2.80% - every day. These results indicate that better education and awareness of the harmful effects of carbonated drinks reduce their consumption (Table 3).

These data support the findings of American scientists, that as education increases, regular consumption of soft drinks decreases, which is seen in the process of robbing consumption among their school-age children [18]. Similar results from their studies were shared by Belgian scientists who investigated the relationship between education and the consumption of soft drinks among university students. They suggest that even the education of the respondents' fathers and mothers influences the choice. The higher the parents' education, the lower the consumption of soft drinks by students [19]. Another study from the USA also confirms these results by showing that less educated participants tended to drink more fizzy drinks [20].

Table 2. Distribution of fizzy drinks consumption frequency by sex

| Count/percent | Frequency of consumption | | | | | | Row Totals |
|----------------------|--------------------------|---------------|---------------|---------------|----------------|---------------|------------|
| | Sex | No | Rarely | Once a week | Every 2-3 days | Every day | |
| Count | Women | 128 | 102 | 36 | 30 | 26 | 322 |
| Row Percent | | 39.75% | 31.68% | 11.18% | 9.32% | 8.07% | |
| Total Percent | | 24.11% | 19.21% | 6.78% | 5.65% | 4.90% | 60.64% |
| Count | Men | 33 | 59 | 44 | 38 | 35 | 209 |
| Row Percent | | 15.79% | 28.23% | 21.05% | 18.18% | 16.75% | |
| Total Percent | | 6.21% | 11.11% | 8.29% | 7.16% | 6.59% | 39.36% |
| Count | All Groups | 161 | 161 | 80 | 68 | 61 | 531 |
| Total Percent | | 30.32% | 30.32% | 15.07% | 12.81% | 11.49% | |

Table 3. Distribution of fizzy drinks consumption frequency by education

| Count/percent | Frequency of consumption | | | | | | Row Totals |
|----------------------|--------------------------|---------------|---------------|---------------|----------------|---------------|------------|
| | Education | No | Rarely | Once a week | Every 2-3 days | Every day | |
| Count | Higher | 83 | 61 | 36 | 27 | 15 | 222 |
| Row Percent | | 37.39% | 27.48% | 16.22% | 12.16% | 6.76% | |
| Total Percent | | 15.49% | 11.38% | 6.72% | 5.04% | 2.80% | 41.42% |
| Count | Secondary | 74 | 83 | 38 | 36 | 42 | 273 |
| Row Percent | | 27.11% | 30.40% | 13.92% | 13.19% | 15.38% | |
| Total Percent | | 13.81% | 15.49% | 7.09% | 6.72% | 7.84% | 50.93% |
| Count | Primary | 0 | 1 | 0 | 2 | 1 | 4 |
| Row Percent | | 0.00% | 25.00% | 0.00% | 50.00% | 25.00% | |
| Total Percent | | 0.00% | 0.19% | 0.00% | 0.37% | 0.19% | 0.75% |
| Count | College | 6 | 16 | 6 | 3 | 5 | 36 |
| Row Percent | | 16.67% | 44.44% | 16.67% | 8.33% | 13.89% | |
| Total Percent | | 1.12% | 2.99% | 1.12% | 0.56% | 0.93% | 6.72% |
| Count | Without education | 0 | 1 | 0 | 0 | 0 | 1 |
| Row Percent | | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | |
| Total Percent | | 0.00% | 0.19% | 0.00% | 0.00% | 0.00% | 0.19% |
| Count | All groups | 163 | 162 | 80 | 68 | 63 | 536 |
| Total Percent | | 30.41% | 30.22% | 14.93% | 12.69% | 11.75% | |

Although it was observed, there is no statistically significant relationship was found between professional employment and drinking carbonated beverages.

4. Conclusions

Our conclusions are as follows:

- Sex, age, and education influence are determinants of fizzy drink consumption.
- The people in the age group 41 - 50 most often consume carbonated drinks.
- Men consume more fizzy drinks than women.
- More highly educated people are less likely to consume carbonated beverages.
- No statistically significant relationship was found between professional employment and drinking carbonated beverages.

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