(Research) Article

Exploring the Impact of Knowledge on Sugar Sweetened Beverages Consumption and Its Health Implications Among Adults

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Abstract: Consumption of Sugar Sweetened Beverages (SSBs) is associated with an increased risk of various health issues, such as obesity, type 2 diabetes, and cardiovascular disease. One significant factor contributing to the frequency of SSB consumption is individual knowledge. Nutrition knowledge plays a crucial role in influencing eating behaviors and decisions. This study aimed to analyze the relationship between knowledge and the frequency of SSB consumption among adults. The study utilized a quantitative descriptive approach with a cross-sectional research design, involving 158 respondents aged 19-29 years from Kepulauan Riau. Data were collected through a Google form that assessed respondents' knowledge of SSBs and their frequency of consumption. The relationship between knowledge (independent variable) and SSB consumption frequency (dependent variable) was analyzed using Spearman's rank test. The results revealed no significant relationship between knowledge and the frequency of SSB consumption (p = 0.756). Among respondents with good knowledge of SSBs, 74 respondents (50.3%) reported rarely consuming SSBs, while 73 respondents (49.7%) with good knowledge also had frequent consumption habits. These findings suggest that while knowledge of the negative effects of SSBs was present, it did not necessarily translate into healthier consumption patterns. Despite these results, the study indicates that further research is needed to explore other factors that may influence SSB consumption. These factors could include psychological, environmental, or socio-economic influences that may play a more significant role in shaping consumption behavior. Understanding these factors is crucial for developing more effective interventions to reduce the health risks associated with excessive SSB consumption.

Keywords: Adults, Consumption Behavior, Health Risks, Knowledge, Sugar Sweetened Beverages.

1. Introduction

Sugar Sweetened beverages (SSBs) include are beverages with added sugar as a sweetener, such as soft drinks, energy drinks, sports drinks, and fruit juices. SSBs are beverages with added sugars that make up the largest proportion of a diet. These beverages include carbonated and non-carbonated soft drinks, fruit drinks, and sports drinks, which contain calories from added sugars and have low nutritional quality. Food additives with sweetening properties and allowed for use in food products fall into two categories: natural sweeteners and artificial sweeteners. Consuming SSBs can impact nutritional and health issues such as obesity, type 2 diabetes mellitus, and cardiovascular risk. One way to minimize the risk of health disease caused by consuming SSBs is to limit daily sugar intake. The Ministry of Health in Indonesia has recommended a daily sugar consumption limit of 50 grams or 4 tablespoons.

Based on data from the 2023 Indonesian Health Survey, it was found that the 20-24 age group consumed sugary drinks more than once a day (44.3%), 1-6 times a week (48.5%), and <3 times a month (7.2%). Meanwhile, the 25-29 age group consumed sweet drinks more than once a day (45.0%), 1-6 times a week (46.8%), and <3 times a month (8.2%). Research conducted by Fahria in 2022 on university students found that the average sugar consumption from sweetened beverages was 36.80 grams per day among male respondents, while the average was 30.85 grams per day among female respondents.

Individuals who consume one or more servings of SSBs daily have a genetic effect on their Body Mass Index (BMI) and are twice as likely to develop obesity as those who consume SSBs less than once a month .

Consuming large amounts of SSBs increases the risk of weight gain and the development of type 2 diabetes, heart disease, and other metabolic diseases. Consumption of SSBs is influenced by several factors, including individual factors (gender, food label reading behavior, knowledge of nutrition labels, self-efficacy, frequency of use of online food delivery services, and stress levels) and environmental factors (peer influence, social media influence, and availability of SSBs at home).

The 2023 Indonesian Health Survey reported the highest consumption of soft drinks and energy drinks (1-6 per week) among 15-29 years old, at 20.3% and 11.7%, respectively. One reason for the persistently high consumption of sugary drinks is a lack of awareness of the dangers and risks of consuming them, with a prevalence of 43.3%. Among adults, consumption of more than one serving of sugary drinks is influenced by low education, lack of physical activity, and unhealthy eating patterns. Furthermore, research by White et al (2018) found that SSBs are consumed more frequently by young adults with low education and those who are unemployed.

Nutritional knowledge is considered to a crucial role in individual eating behavior. Glanz et al. (2020) revealed that nutritional knowledge is a determinant of decision-making to consume healthier foods. This is supported by research by Hanifah et al. (2025), which reported that individual nutritional knowledge influences nutritional status through nutrient intake.

Province of Kepulauan Riau (Kepri) is among the regions with the highest percentage of carbonated drink consumption compared to the national average, at 14.3%, with a frequency of 1–6 times per week. Furthermore, energy drink consumption in the Riau Islands is also relatively high compared to the national average, at 9.1%, with a frequency of 1–6 times per week. These findings suggest the need for research to analyze the relationship between knowledge and SSBs consumption habits among adults in the Province of Kepulauan Riau.

2. Proposed Method

This study used a quantitative approach with a cross-sectional observational design. Data collection was obtained by analyzing the relationship between the dependent and independent variables simultaneously. The independent variable in the study was nutritional knowledge related to SSBs, while the dependent variable was the total frequency of sweetened beverage consumption. The study was located in Kepulauan Riau region and was conducted over a one-week period, from June 12, 2024, to June 19, 2024, involving 158 samples, characterized by young adults (19-29 years old) residing in the Kepulauan Riau region. Data of knowledge and SSBs consumption were obtained through questionnaires which had validity and reliability tests. Knowledge was assessed using a scoring system, with a score of 1 for a correct answer and a score of 0 for an incorrect answer. The total knowledge score was calculated by summing the scores for correct answers compared to the overall score. Knowledge levels regarding sweetened beverages were categorized into two categories: good knowledge (≥60) and poor knowledge (<60).

Sweet drink consumption habits were collected based on the number of consumption frequency options filled in for each drink group >3x/day, 2x/day, 1x/day, 4-6x/week, 2-3x/week, and never. Amount of SSBs consumption was obtained by calculating the average frequency of each choice in one day. The category of the number of sweet drink consumption was divided into two, namely high (≥median) and low (<median). Univariate analysis was used to determine the characteristics of the subjects related to knowledge and the number of SSBs consumption. The Spearman rank test was used to analyze the relationship between variables, knowledge and sweet drink consumption habits.

3. Results and Discussion

The general characteristics of the respondents in this study were young adults aged 18–29, with 22 male respondents (14%) and 136 female respondents (86%). Univariate analysis provided information regarding the distribution of respondents based on their knowledge and habits of consuming sweetened beverages, as shown in Table 1.

Table 1. Distribution of Respondents Based on Knowledge and Habits of Consuming Sweet Drinks

Knowledge	Sugar Sweetened Beverages Consumption		
	Low	High	Total
	n (%)	n (%)	n (%)
Good	74 (50,3%)	73 (49,7%)	147 (100%
Poor	5 (45,5%)	6 (54,5%)	11 (100%

Based on Table 1, the majority of respondents (147 respondents) had a good level of knowledge. This is evidenced by the fact that the majority of respondents were familiar with the types of sweetened drinks, the limits of sweetened drink consumption, and the Food Additives frequently used in sweetened drinks. Age and education level can influence sweetened drink consumption. This is in line with research by Setyanurlia and Sumarmi (2024), which states that young adulthood, coupled with higher education, can influence the knowledge and information obtained [13, 14].

Meanwhile, sweetened drink consumption habits were obtained from the frequency of respondents' consumption of sweetened drinks. The number of respondents categorized as frequent and infrequent sweetened drink consumers was equal at 79 (50%). Table 1 shows that 74 respondents with good knowledge were infrequently consuming sweetened drinks. However, 73 respondents with good knowledge were infrequently consuming sweetened drinks.

Table 2. The Relationship Between Knowledge Level and Sugar Sweetened Beverages Consumption

Variable	Min	Max	SD	r	p-value
Knowledge	33	100	20,11	0,025	0,756
SSBs Consumption	0	45	6,00		

The analysis of Table 2 reveals no relationship between knowledge and sugary drink consumption habits, as indicated by a p-value of 0.756 > 0.05. This study found that knowledge is not the sole determinant of individuals' decision to consume sugary drinks. These findings are supported by Rahmawati and Nurwahyuni (2023), who reported that factors other than knowledge that can increase sugary drink consumption include economic status, access to information, ownership of electronic devices, and residential area [15].

In this study, some respondents were aware of the sugar consumption limits recommended by the Ministry of Health, but some still consumed high amounts of sugary drinks. This is consistent with research by Norliza et al. (2019), which found that although individuals were aware of the impacts of sugary drink consumption, their consumption frequency was still moderate to high ($\geq$2x/day) [16]. Research by Park et al. (2018) also found that providing health education regarding the impacts of sugary drink consumption was not associated with changes in individual behavior to reduce the frequency of sugary drink consumption [17]. Knowledge about good Sugar Sweetened Beverages (SSBs) is not necessarily followed by the habit of not consuming SSBs, it is still necessary to increase knowledge about SSBs in order to minimize the habit of consuming SSBs and the negative impacts that will arise [18].

4. Conclusions

The majority of respondents' knowledge about sweet drinks was in the good category (93%). The frequency of sweet drink consumption was highest in the frequent category, with 79 people. The results of the research analysis revealed no relationship between knowledge about sweet drinks and the frequency of sweet drink consumption, as indicated by a p-value >0.05 and a correlation coefficient of 0.025. This indicates that knowledge has a weak relationship with the amount of sweet drink consumption. It is recommended that further research examine the determinants of sweet drink consumption habits..

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