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Research Article

The Influence of Health Education on Students' Knowledge Levels About theDangers of Consuming Sweet-Tasting Colored Drinks in Grades I, II, & III at SD Inpres 1 Nambaru, Parigi Moutong Regency

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Abstract: Sweetened beverages are drinks that contain high amounts of calories and sugar but provide little to no significant nutritional value. Limited public awareness, including among elementary school students, regarding the health risks associated with consuming sweet and artificially colored drinks may contribute to increased consumption habits. This behavior can raise the risk of various health problems, including obesity, type 2 diabetes mellitus, and kidney failure. This study aimed to determine the effect of health education on students' knowledge regarding the dangers of consuming sweetened and colored beverages. This research employed a pre-experimental design using a one-group pretest-posttest approach. The study involved 90 respondents selected through the Total Sampling technique. Data were collected using a questionnaire and analyzed through univariate and bivariate methods using the Wilcoxon test. The results showed that before receiving health education, most respondents had a moderate to low level of knowledge. After the intervention, students' knowledge improved significantly, with the majority achieving a good level of knowledge. Statistical analysis revealed a p-value of 0.000 (<0.05), indicating a significant effect of health education on students' knowledge. Therefore, health education was found to be effective in increasing students' understanding of the dangers of consuming sweetened and colored beverages.

Keywords: Elementary School Students; Health Education; Health Promotion; Knowledge; Sweet Drinks.

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1. Introduction

As the modern era advances, instant food and beverage products are increasingly available, designed to make things easier for consumers. One example is packaged sweetened beverages. Most packaged beverages today contain high levels of sugar to provide the sweet taste that many people enjoy. Furthermore, many sweetened beverages are given bright colors to attract attention, especially among children. The use of artificial sweeteners and colors in these products can certainly pose health risks (Ashila Defa Rahmani et al., 2025) . Meanwhile, sweetened beverages, also known as sweetened beverages, generally contain high calories and a significant amount of sugar, but do not provide significant nutritional benefits for the body. The added sugars commonly found in these types of beverages can come from various sources, such as sucrose (regular granulated sugar), brown sugar, honey, and high-fructose corn syrup, all of which contribute to a strong sweet taste but lack essential nutrients (Ashila Defa Rahmani et al., 2025) .

Sugary drinks are considered to be one of the causes of weight problems, diabetes mellitus, heart disease, hyperuricemia, and kidney failure (Astu & Nurwahyuni, 2021) . The high sugar content in these drinks can increase the risk of obesity, type 2 diabetes, and tooth decay in children. Uncontrolled consumption of sugary drinks is the main cause of the

increasing number of obese children in Indonesia (Hidayati, 2024) . Based on data from the World Health Organization (WHO), deaths from non-communicable diseases (NCDs) and also caused by food insecurity are expected to continue to increase worldwide, the largest increase will occur in developing countries, more than two-thirds of the global population will die from non-communicable diseases such as cancer and diabetes (Wahyuni & Indriastuti, 2024) . Non-communicable diseases (NCDs) cause the deaths of 41 million people annually or equivalent to 74% of all deaths globally. Diabetes accounts for 2 million deaths (Ayu et al., 2023) . Data from 2018 by Basic Health Research (Riskesdas) shows the habit of consuming sweet drinks in Indonesia among the population aged ≥3 years, namely consumption ≥1 time per day as much as 61.27%, consumption 1-6 times per week as much as 30.22%, consumption ≤3 times per month as much as 8.51%. The habit of consuming sweet drinks in Central Sulawesi province among the population aged ≥3 years is consumption ≥1 time per day as much as 58.67%, consumption 1-6 times per week as much as 31.43%, consumption ≤3 times per month as much as 9.90%. The habit of consuming sweet drinks in Parigi Moutong district/city among the population aged ≥3 years is consumption ≥1 time per day as much as 55.00%, consumption 1-6 times per week as much as 32.22%, consumption ≤3 times per month as much as 12.77%. The data shows that in the population aged ≥3 years, the habit of consuming sweet drinks has a higher proportion.

The school years are a time for the formation of human resources that will influence the quality of human life later in life. Children are highly sensitive to stimuli, making it easier to guide and teach healthy lifestyles at this age. (Lara, 2022) . School-age children are those between the ages of 6 and 12. Children are a young age group with the potential to be actively involved in future development. Children are still undergoing rapid and active growth and development. (Angraini & Damayanti, 2021)

Health education plays a crucial role in improving students' knowledge and skills in recognizing the dangers of excessive consumption of sweetened and colored drinks. Health education is an educational activity carried out by disseminating messages and instilling beliefs so that students are not only aware, knowledgeable, and understand but also willing and able to carry out recommendations related to health. The role of health education is also expected to be an intervention that can change community behavior to reduce excessive consumption of sweetened drinks, thereby improving children's health. (Rahmawati, 2022)

Previous research conducted by Ashila Defa Rahmani and colleagues (2025) revealed that interactive socialization activities about the risks of sweet and colored drinks at SDIP Insan Robbani succeeded in improving students' understanding of sugar and synthetic coloring content that are harmful to health. Students became more sensitive to sugar and artificial coloring levels, as well as their long-term impacts such as obesity, diabetes, and tooth decay. On the other hand, research by Elsa Yuniarti and her team (2025) at SD 05 Air Tawar Barat found that students still consumed a lot of sweetened drinks as snacks at school. These findings indicate that health education at an early age is very important to foster awareness and a deep level of knowledge to protect the younger generation and prevent long-term health impacts.

Based on the results of interviews with the principal conducted by researchers on October 31, 2025, it was found that there were still many students of SD Inpres 1 Nambaru who often consumed sweet and colored drinks due to the lack of student knowledge about the dangers of consuming sweet and colored drinks. Based on the results of interviews with 10 students, it was found that 4 students already knew the dangers of consuming sweet and colored drinks, while 6 students did not know the dangers of consuming sweet and colored drinks. So the author felt interested in conducting research on "The Effect of Health Education on the Level of Student Knowledge About the Dangers of Consuming Sweet-Tasted Colored Drinks in Grades I, II, III at SD Inpres 1 Nambaru, Parigi Moutong Regency".

2. Literature Review

Sweet Flavored Colored Drinks

Sweet colored drinks are drinks that contain many calories that can cause weight gain, besides being high in sugar, sweet drinks do not contain enough nutrients that are beneficial for the body. *Sugar-Sweetened Beverage Consumption* (SSBs) are liquids added with various forms of sugar such as brown sugar, corn sweetener, corn syrup, dextrose, glucose, honey, lactose, malt syrup, and sucrose. (Dr. Eka Febriyanti et al., 2023) . The recommended daily amount of sugar for the body is less than 5 tablespoons (50 grams) per day. (Furqonia, 2023)

Types of Sweet and Colored Drinks

According to (Veronica, 2020), types of sweet and colored drinks include fruit drinks, energy drinks, electrolyte replacement drinks, and coffee and tea drinks with added sugar. Therefore, it can be concluded that sweet drinks are divided into two types: packaged sweet drinks and non-packaged sweet drinks.

Packaged Sweet Drinks, Packaged sweetened beverages are processed beverages in powder or liquid form that do not contain alcohol but contain other additives, both natural and synthetic, and are packaged in ready-to-consume packaging. There are several types of sweetened beverages, including carbonated drinks, tea and coffee with added sugar, flavored milk , fruit-flavored drinks with added sugar, and energy drinks.

Non-Packaged Sweet Drinks, Non-packaged sweetened beverages are a type of contemporary beverage that has become increasingly popular in Indonesian society in recent years. Examples include boba, cheese tea, coffee with brown sugar, Thai tea, and regal drinks. Consumption of non-packaged sweetened beverages has been a major contributor to increased added sugar intake and is correlated with an increased incidence of non-communicable diseases.

The Impact of Consuming Sweet and Colored Drinks

According to (Rini Jusriani et al., 2025) the impact of consuming sweet and colored drinks is:

Obesity

Modern sweetened beverages can provide significant calories. However, the majority of those who enjoy sweetened beverages don't compensate by consuming fewer calories. Obesity can result from this bad habit, as it can lead to weight gain. Obesity is one of the main consequences of excessive sugar consumption. Added sugar, particularly in the form of fructose, often found in sweetened beverages and processed foods, can increase fat accumulation in the body, particularly in the abdominal area. Excess fat around the internal organs contributes to the development of metabolic syndrome, a condition that includes abdominal obesity, hypertension, high triglyceride levels, and insulin resistance.

Type 2 Diabetes Mellitus

When you consume excessive amounts of sugar, your body will experience increased blood glucose levels. In the short term, this causes a spike in insulin, the hormone responsible for regulating blood sugar levels. However, if you consistently consume high amounts of sugary drinks, your body can develop insulin resistance. Insulin resistance is a major factor in the development of type 2 diabetes mellitus. When the body's cells no longer respond properly to insulin, glucose cannot be absorbed efficiently and remains in the bloodstream, resulting in chronically elevated blood sugar levels and various metabolic complications.

Cardiovascular Disease

Excessive sugar consumption also contributes to increased blood pressure and the risk of cardiovascular disease. Some of the mechanisms underlying this relationship include increased insulin levels, which stimulate the sympathetic nervous system, causing blood vessel constriction and increased blood pressure.

Tooth Decay

Tooth decay is another risk associated with sugary drinks, as many people are probably already aware. This is because the residual sugar from sugary drinks can be consumed by oral bacteria. The acids that damage tooth enamel are produced by the microorganisms that consume sugar. As a result, teeth become brittle and thin, increasing the risk of cavities.

3. Methods

This study uses a *pre-experimental method* with *a single-group pre-post test design* and is quantitative in nature. In this type of study, the relationships used for specific subgroups are explained. The groups below were monitored twice, once before the intervention and once after the intervention.Sinulingga et al. 2025). Information: R : Subject, O1 : Measurement of knowledge level before treatment, X1 : Treatment by providing health education, O2 : Measurement of knowledge level after treatment.

Table 1. Research Design.

Subject		Pre-test		Treatment		Post test
R	⟶	O1	⟶	X1	⟶	O2

Population and Sample

Population

The population consists of subjects (such as customers or individuals) who meet certain requirements (Hildawati et al., 2024) . The population in this study was 90 children in grades I, II, & III at SD Inpres 1 Nambaru using the following standards:

Inclusion Criteria

Children who are willing to become respondents. Children who can be interacted with. Children in grades 1, 2 & 3 who attend SD Inpres 1 Nambaru.

Exclusion Criteria

Children who are sick. Children who were not present at the time of the study.

Sample

According to (Pratiwi, 2022), a sample is a portion taken from the entire research object and is considered representative of the entire population using certain techniques so that the sample can represent the population. The sample for this study were students in grades 1, 2, and 3 of SD Inpres 1 Nambaru. The sampling technique in this study used *total sampling*. *Total sampling* involves selecting all units in the population as sample units. Therefore, when *total sampling* is used, researchers no longer need to use sampling techniques or determine a minimum sample size. However, *total sampling* is not always possible (Roflin & Liberty, 2021) .

Sampling techniques

Sampling technique is the process of obtaining sample data from a representative or representative population in such a way that sufficient information can be obtained to estimate the population (Pratiwi, 2022). The sampling technique uses *total sampling,* where every available sample that meets the selection criteria is included in the study until the required number is reached.

Location and Time of Research

Research Location. This research was conducted at SD Inpres 1 Nambaru. Research Time, the research was conducted on January 30-31, 2026

4. CONCLUSIONS

Based on the results of research and data analysis regarding the Influence of Health Education on the Level of Students' Knowledge About the Dangers of Consuming Sweet-Tasting Colored Drinks in Grades I, II, & III at SD Inpres 1 Nambaru, the following conclusions can be drawn: The results obtained regarding the level of knowledge of students before being given health education about the dangers of consuming sweet-tasting colored drinks were that 25 (27.8%) students had insufficient knowledge, 55 (61.1%) students had sufficient knowledge, and 10 (11.1%) students had good knowledge. The results obtained were the level of students' knowledge after being given health education about the dangers of consuming sweet-tasting colored drinks. The highest percentage of respondents' knowledge was in the good category, namely 86 (95.6%) students, and the sufficient category, namely 4 (4.4%) students. There is a significant influence in the provision of health education. This is proven by the results of the bivariate test using the "Wilcoxon" test with a P-Value of 0.000 < 0.05, which indicates that H0 is rejected and H1 is accepted. It can be concluded that there is an influence between before (pretest) and after (posttest) the provision of health education.

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