



The Consumption of Sugar-Sweetened Beverages (SSBs) Among a Group of Primary School Students in Western Jamaica: Eating to Ill-Health

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Abstract

This study investigates the high consumption of sugar-sweetened beverages (SSBs) among primary school students in Western Jamaica. The research aims to evaluate the prevalence of SSB consumption, assess students' awareness of the associated health impacts, and develop effective intervention strategies. Utilising a descriptive research design, data was collected through surveys and interviews with Grade 6 students and teachers from the school. Findings indicate that all the sampled respondents consumed SSBs (100%). They all consumed bag juice and fruit-flavoured juice drinks, followed by 15 (93.8%) consuming sweetened milk drinks. Most (68.8%) consumed SSBs two to three times per day, 56.3% consumed SSBs six to seven times per week, purchased the items from the school's tuck shops (81.3%), vendors close to the school (68.8%), 62.5% believed drinking excess SSBs can result in diabetes. The results revealed that students consumed the same quantity of SSBs each week following the intervention (i.e., most students consumed SSB six or seven times a week (56.3%). Despite awareness of the adverse health effects, high SSB consumption persists. An intervention involving a water challenge was implemented, where SSB sales were suspended, and students were encouraged to drink water. However, the results showed minimal change in SSB consumption patterns, highlighting challenges such as the availability of SSBs from external vendors and limited healthy alternatives. The study underscores the need for comprehensive strategies, including broader availability of healthy beverages and more robust collaboration among stakeholders, to effectively reduce SSB consumption and promote healthier habits among students.

Keywords: Grade 6 students, Sugar-Sweetened beverages, primary school.

Introduction

Background of Study/Overview of the study

Globally, there is an SSB epidemic. Daily, children consume a considerably high amount of SSBs. As a result, healthcare providers are worried because children are showing signs of

developing lifestyle diseases such as obesity, diabetes and other non-communicable diseases, which are enhanced by children's inactivity. These diseases cause complications such as heart issues, high blood pressure, tingling and numbing of the hands and feet, kidney damage and vision problems. In Jamaica, the reality is the same. According to reports from 2013, 1.2% of Jamaicans in the 15-24 age group had diabetes (Anderson & Reid, 2013). Dr Julia Rowe Porter, an epidemiologist in Jamaica, recently presented data indicating that teenagers between the ages of 13 and 15 consume large quantities of sugar-sweetened drinks, a significant risk factor for becoming overweight or obese (Dunkley-Willis, 2022). Children with diabetes will increase in the next few years due to their continued high intake of one or more sugar-sweetened drinks per day, which is supported by physical inactivity and frequent fast food consumption three or more days a week.

Understanding and addressing SSBs' existence in schools across the country is crucial, given their prevalence and possible health effects on children. With an emphasis on identifying the primary SSB providers and potential substitutes, this study seeks to add to the body of research already researching the prevalence of SSB intake among youngsters. As well as explore students' knowledge of the possible risks associated with continuing to use SSBs. It aims to provide insight into the prevalence of SSBs among school-age children using a descriptive methodology that includes quantitative surveys and analysis. The results are anticipated to guide the creation of evidence-based interventions and suggestions for policymakers and educators seeking to lessen potential harmful consequences.

Problem Statement

The pervasive consumption of sugar-sweetened beverages (SSBs) among children poses a significant global health challenge. Many of these beverages are laden with empty calories without nutritional benefits, raising the risk of various chronic conditions such as metabolic syndrome, type 2 diabetes, and hypertension (Li et al., 2023; Malik et al., 2010; Schulze et al., 2004). This issue is particularly acute in Jamaica, where data from the Global School-based Student Health Survey (2017) underscore the concerning trend that three out of 10 children are either overweight or obese, and this number is rising. This issue marks a dramatic escalation in childhood obesity rates by nearly 64% over the past seven years, an alarming trajectory corroborated by the findings of the Heart Foundation of Jamaica (2018). A significant contributor to this problem is children's high consumption of SSBs.

Disturbing data from the National Center for Health Statistics indicates that children and adolescents derive approximately 16% of their total caloric intake from added sugars, with half of those sugars (approximately 40 grams per day) coming from what they drink (Rauba et al., 2017). These numbers are alarming as the American Heart Association recommends that children and teens consume no more than 25 grams of added sugars daily. A recent survey found that most Jamaicans (87%) agree that sugary drinks are a significant contributor to obesity, and 78% are concerned about their impact on child health. More than half of parents (54%) said their children consume most of their sugary drinks at school, and more than three-quarters agree that unhealthy foods and drinks should not be sold in schools (The Heart Foundation of Jamaica, 2018). This issue signals broad support for interventions to curb SSB consumption within

educational settings. Given that children spend a significant portion of their time in school, it is imperative to recognise that it is a critical setting to create healthy environments and instil lifelong health habits, which include reducing the consumption levels of SSBs.

Significance of Study

The study on sugar-sweetened beverages (SSBs) in primary schools is significant for several reasons. It addresses critical public health concerns by targeting the high consumption of SSBs linked to childhood obesity and chronic diseases such as type 2 diabetes and heart disease. By promoting healthier beverage choices, the study fosters a healthier school environment and enhances health literacy among students, teachers, and parents. Additionally, the findings can inform school policies and public health initiatives, advocating for reduced SSB availability and increased access to healthier alternatives. The study also provides valuable baseline data for future research and highlights practical implementation challenges, aiding the design of more effective interventions. The study promotes a collaborative approach to health education and promotion by engaging various stakeholders. It encourages sustainable health practices within the school community, potentially leading to long-term positive changes in students' dietary habits and overall well-being.

Purpose of the Study

The purpose of the research will be to examine the prevalence of SSB consumption among a group of primary school students. This issue involves gathering data on the frequency, quantity, and types SSBs consumed. It is crucial to understand the high consumption of SSBs among students because of its contribution to the prevalence of obesity, dental issues, type 2 diabetes, and other health problems associated with excessive intake of sugary beverages. The findings of this research can guide the development of effective educational interventions aimed at promoting the drinking of healthier beverages and advocating for healthier dietary habits and lifestyle choices both at the individual and community levels.

Justification or Rationale for the Study

The consumption of sugar-sweetened beverages among children is becoming an increasingly challenging public health concern globally because of its association with type 2 diabetes among children (Malik et al., 2020). In Jamaica, the dietary patterns among children have shifted over the years, whereby there is an increase in the consumption of foods with added caloric sugar (Singh et al., 2008). The links between SSBs and non-communicable diseases (NCDs) have been established, with the manifestations being in conditions such as obesity, diabetes and dental caries in childhood. Children who are obese are more likely to be obese than adults (Singh et al., 2008). However, there needs to be more comprehensive data regarding the prevalence of SSB consumption among pre-teens and their awareness levels regarding the associated health impacts. Therefore, the study aims to fill this gap by providing data that inform strategies and interventions to promote students' health and encourage and advance their academic growth.

According to recent research, in Jamaica, the prevalence of obesity among adults increased from 6.9% in 1975 to 24.7% in 2016, nearly a fourfold increase. For childhood obesity, the situation is

even worse. Its prevalence increased from 1% in 1975 to 13% in 2016, thirteen times greater, with an average annual increase of 6.3% (Parge & Gomes, 2022). Prominent experts in public health have signalled the consumption of sugar-sweetened beverages (SSBs) as "the single largest driver of the obesity epidemic", calling for extensive taxation and regulation of such products. A 2007 comprehensive analysis further supports the idea that consuming sugar-sweetened drinks was linked to increased body weight and calorie intake that exceeded the amounts provided by the beverages (Vartanian et al., 2007).

Having recognised the crisis facing the nation's children, the data collected through this project can potentially be used to increase children's awareness of how SSBs affect the body, even at a young age, through targeted health promotion strategies and educational campaigns aimed at encouraging children to reduce SSB intake and promoting healthier beverage choices.

General Research Objective

To evaluate the SSB consumption level of a group of primary school students in Western Jamaica and to assess the extent of their awareness of the effects of SSBs on their health.

Specific Research Objectives

1. To evaluate the SSB consumption level of Grade six students at a selected primary school in the Western Region.
2. To assess the current level of awareness among Grade six students in the Western Region regarding the impacts associated with excessive consumption of sugar-sweetened beverages.

Research Questions

1. What is the prevalence of SSBs consumed among Grade six students in a selected primary school in the Western Region?
2. What is the current level of awareness among Grade six students in the Western Region regarding the impacts associated with excessive consumption of sugar-sweetened beverages?

Definition of Terms

Primary Education

In the Jamaican jurisdiction, primary education caters to children from grades one to six, with the standard age range being children aged six to 11 (Education et al., 2021-2022). It equips students with foundational knowledge across various subjects and vital skills to serve them throughout their lifetime (UNICEF, 2022).

Sugar-sweetened beverages(SSBs)

Sugar-sweetened beverages, also called calorically sweetened beverages, are liquids that are sweetened with various forms of added sugars, including but not limited to soda (regular, not sugar-free), fruit-flavoured juice drinks, sports drinks, energy drinks, sweetened waters, and coffee and tea beverages with added sugars (USDA, 2015).

Review of literature

The Prevalence of SSB Consumption

Sugar-sweetened beverages, also called calorically sweetened beverages, are liquids that are sweetened with various forms of added sugars, including but not limited to soda (regular, not sugar-free), fruit-flavoured juice drinks, sports drinks, energy drinks, sweetened waters, and coffee and tea beverages with added sugars (USDA, 2015). In the last decade, the consumption of SSBs has drastically increased among children. According to Keller and Bucher Della Torre (2015), SSB consumption has increased in parallel to obesity in children. Evidence shows that males consume more significant amounts of SSBs than their female counterparts (Rao et al., 2015). Currently, SSBs contribute between 10% to 15% of youth's caloric intake and are the primary source of added sugar in the diet of children and adolescents. Approximately 25% of US adolescents consume more than 750 ml of SSBs per day, representing more than 350 calories, and 93% of children consume an average of 710 ml of SSBs daily in China. According to Ooi et al. (2021), Australia has the lowest average daily consumption of 115.1 ml SSBs, and 69% of Jamaican students aged 13-17 reported drinking carbonated drinks one or more times per day (GSHS, 2017).

SSBs Link to Non-communicable Diseases

Excessive consumption of SSBs has no nutritional value and increases the risk of a range of chronic diseases, such as cardiometabolic diseases and high blood pressure (Ooi et al., 2021). Among children and adolescents, SSB consumption is a leading contributor to unhealthy weight gain, diabetes, and dental caries, among other health conditions. According to the National Center for Health Statistics, children and adolescents obtain approximately 16% of their total calories from added sugars, and half of those sugars (approximately 40 grams per day) come from what they drink (Rauba et al., 2017). These numbers are alarming as the American Heart Association recommends that children and teens consume no more than 25 grams of added sugars daily.

Social and Environmental Factors and SSB Consumption

In a study done at the primary school level in Sherbrooke, Canada, it was revealed that schools situated in areas with lower socioeconomic conditions or within densely populated environments are more likely to have a higher percentage of students who regularly consume SSBs (Lebel et al., 2016, p. 01).

Family and Home-related factors and children's SSB intake

A child's age, attitude and subjective norm, parenting practices, parental modelling and the availability of SSB at home and school were associated with the child's SSB consumption in litres per day (Van de Gaar et al., 2017). Consumption of SSBs tends to have a negative correlation with physical activity levels and a positive correlation with sedentary activities, such as watching television (Ranjit et al., 2010).

A recent survey found that most Jamaicans (87%) agree that sugary drinks are a significant contributor to obesity, and 78% are concerned about their impact on child health. More than half of parents (54%) said their children consume most of their sugary drinks at school, and more than three-quarters agree that unhealthy foods and drinks should not be sold in schools. As a place where children spend most of their days, we must ensure that schools are health-promoting environments and that children adopt healthy behaviours during the school day. The addition of Jamaica Moves in schools, the National School Nutrition Policy and Standards, and the restriction of certain sugary drinks in schools, which took effect in January 2019, can make a difference in stemming childhood obesity rates in Jamaica (The Heart Foundation of Jamaica, 2018).

The suburban Chicago Wellness Committee members initiated an educational approach to address SSB consumption by visually comparing the sugar content in popular SSBs with the American Heart Association's daily sugar intake recommendations for children. The innovative lesson plan, refined through collaboration with school staff, parents, and students, incorporated bags filled with sugar and candy pieces to represent the sugar content in SSBs. Efforts to foster a healthier school environment included the addition of new drinking fountains and water bottle filling stations, donated by a local hospital, to encourage water consumption over SSBs, aiming to cultivate a school and peer culture supportive of healthier drink choices (Rauba et al., 2017).

SSB consumption has also been associated with other adverse outcomes among children and adolescents, including poorer academic performances and sedentary lifestyles. Given the immediate and long-term adverse health outcomes associated with excessive SSB consumption, governments worldwide have prioritised initiatives to reduce SSB intake among children and adolescents in their health plans and policies. Recognising this, the World Health Organization (WHO) has released guidelines recommending that free sugar consumption be limited to under 10% of one's daily energy intake and ideally under 5, including sugar from SSB, whose intake should be firmly restricted (Dawes & Lindmeier, 2015).

SSBs Link to Academic Performance

Ren et al. (2022) explored the link between dietary habits (specifically, the intake of SSBs and high-calorie foods) and academic achievements among junior school students. Their research indicates a negative correlation between the consumption of SSBs and academic success, whereas a moderate intake of high-energy foods appears beneficial. Specifically, students who frequently consumed SSBs tended to have lower academic scores, while those with a moderate intake of high-calorie diets scored higher. Given the strong association between academic performance and long-term success, the study underscores the need for dietary health education to foster healthy lifestyles among school-aged children. Both families should focus on reducing SSB intake and encourage intelligent choices and moderation in high-calorie diets. The research calls for more in-depth studies, including longitudinal research and randomised controlled trials, to understand further the effects of SSBs and high-energy diets on the academic outcomes of young people.

In this comprehensive literature review, we meticulously analysed the detrimental impacts of SSBs on students' physical health and academic performance. The review underscores a growing public health concern, highlighting the direct and indirect ways through which the high consumption of SSBs affects children's well-being and their ability to perform academically. Through the synthesis of existing research, it is evident that SSBs contribute significantly to the incidence of non-communicable diseases, such as obesity, type 2 diabetes, and dental caries, which compromise not only the physical health of children but also their cognitive functions and, by extension, their academic achievements. The review also brings to light the socio-environmental factors influencing SSB consumption among children, including family and home dynamics, cultural norms, and the availability of these beverages within school environments and their vicinity. The action research proposed aims to delve deeper into these findings, with specific objectives geared towards understanding the prevalence and contributors of SSB consumption among primary school students in a selected Western Region of Jamaica. This research seeks to evaluate and address the gaps in awareness regarding the adverse effects of SSBs and to develop targeted interventions to promote healthier beverage choices and consumption among students.

Methods and Materials

Introduction

This chapter seeks to gather, assess and analyse data about the SSB consumption practices of Grade 6 students and their knowledge about the impact of excessive consumption on their health. The research started with researchers conducting a literature review on the SSB consumption rates and practices among school-aged children internationally and locally and identifying the factors that impacted excessive consumption. The issues identified guided the methodology and scientific data collection methods. Researchers utilised a questionnaire which researchers administered.

Study Setting

The school being studied is a Primary & Infant School in the rural area of St. James parish. The school has 2 of each class, making it 12. However, our action research will specifically target the grade six cohort, comprising two courses with a total enrolment of 59 students. Regarding the food environment, the school operates a tuck shop and a canteen from which students can purchase snacks and lunch. Vendors are located just beyond the perimeter fence, and students can purchase snack items before and after school hours, during break and lunchtime.

Population and Sample

The population of sixth-grade students is fifty-nine. The researchers randomly sampled the students. Of the sixth-grade population, 27.1 per cent were used for this study, meaning the sample was 16 students.

Research Approach

The study will employ a descriptive research design to answer the present research questions. The descriptive research design enables the researcher to study, describe, and address issues without regard to causality (Aggarwal & Ranganathan, 2019), which, in this case, is the high consumption of SSBs. The research will provide a snapshot of the frequency and characteristics of SSBs in a population of sixth graders and their level of awareness of the impact of excessive SSBs on their health. The research questionnaire consisted of 17-point questions. The questions helped provide contextual relevance specific to the research objectives.

The grade 6 class was strategically chosen for several reasons. At this developmental stage, students are beginning to assert independence in their food and beverage choices, making it a critical time to intervene and promote healthier habits. Additionally, as the senior students at the primary school, they have the potential to exert positive peer influence on the rest of the school population, amplifying the impact of interventions. Moreover, focusing on a single grade level enhances the feasibility of the research. Given limited resources and time constraints, concentrating efforts on a specific cohort allows for more targeted data collection and intervention implementation, maximising the effectiveness of the action research initiative.

Research Procedure

Before the study commences, informed consent will be sought from student participants' parents. As the study commences, a continuous flow of communication will be maintained. The schoolmen, updated and engaged throughout the research, will maintain a continuous communication flow. This will also foster a collaborative and supportive environment.

Data Collection

Surveys or questionnaires will be developed to investigate grade six students' SSB consumption habits and their understanding of the health implications associated with SSBs. Strict adherence to confidentiality and anonymity of responses will be maintained during the administration of the surveys. Correspondingly, interviews will be conducted with teachers, parents, and school administrators to gain deeper insights into the contextual factors that influence SSB consumption among students. These qualitative interviews will provide valuable perspectives and an enhanced understanding of the complex dynamics surrounding SSB consumption within the school community.

Intervention Development

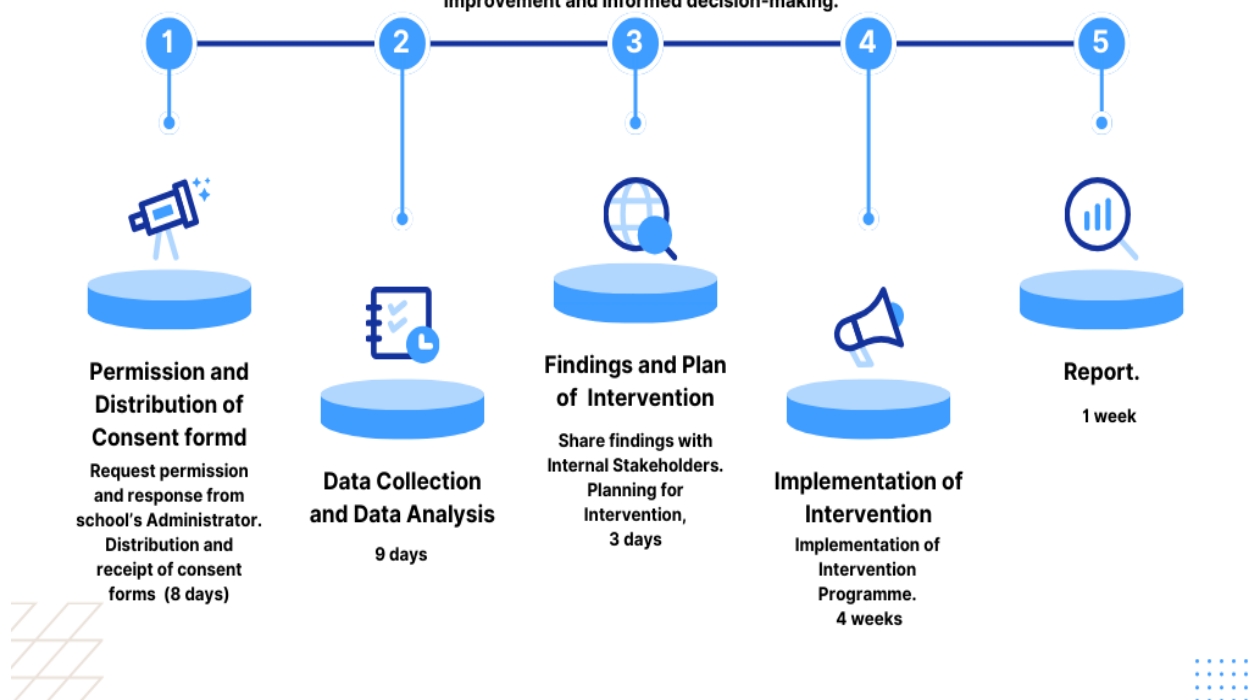
Data collected through surveys and interviews will be analysed to identify prevalent patterns of SSB consumption and the underlying factors contributing to high consumption levels among grade six students. Based on these findings, collaborative efforts will be undertaken with stakeholders to develop evidence-based intervention plans aimed at reducing SSB consumption and promoting healthier beverage choices among students. These intervention strategies will be implemented within the grade six cohort. Continuous monitoring of the implementation progress

will be conducted, allowing adjustments to be made as needed to optimise the effectiveness of the interventions and ultimately contribute to promoting healthier lifestyles among students.

Plan of Action

Plan of Action

The plan of action for this action research involves obtaining permission from the school administrator, distributing and collecting consent forms, and conducting data collection and analysis to inform stakeholders. Following this, an intervention program will be planned, implemented, and its effectiveness reported to ensure continuous improvement and informed decision-making.



Ethical Consideration

Since the study examines social phenomena such as children's attitudes, behaviours, and perceptions, care must be taken regarding how the data is acquired. This study will, therefore, consider the following ethical guidelines before, during and after the completion of the study. To maintain and attain confidentiality and privacy, the researcher did the following:

1. The research gained consent and permission from parents and students using a consent form.
2. The respondents were questioned about very few personal details, such as gender or health issues.
3. The research did not request personal information that can be used to identify an individual, such as name, church, address, phone number, and so on.
4. The respondents were made aware of their responsibilities and rights as potential participants and told that withdrawing from the activity at any point would not result in repercussions.

Findings and Interpretation

This section provides data analysis on the research questions. It comprehensively analyses the data collected and its subsequent findings into sugar-sweetened beverages (SSBs) consumption patterns among Grade six students in a selected primary school in Western Jamaica. Additionally, the section examines the leading suppliers of SSBs at the institution and the student's awareness of the health implications of excessive consumption. The section begins with the demographic characteristics of the respondents, followed by each research question based on pre-intervention and then results from the intervention.

Demographic Characteristics

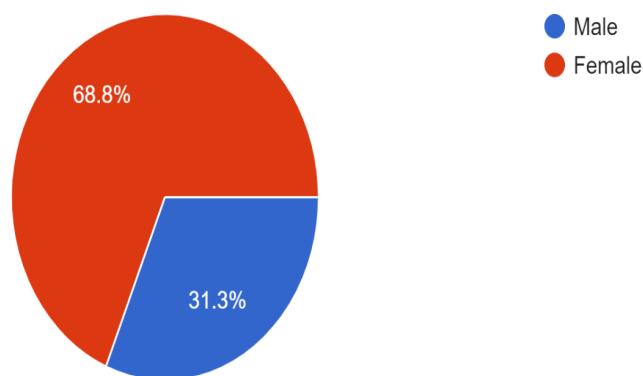


Figure 1: Gender of the respondents

Figure 1 shows the percentage of the sample respondents. Of the sample respondents (n=16), (n = 11) were females (68.8%).

Pre-Intervention results

Research Question 1: What is the prevalence of SSBs consumed among Grade six students in a selected primary school in the Western Region?

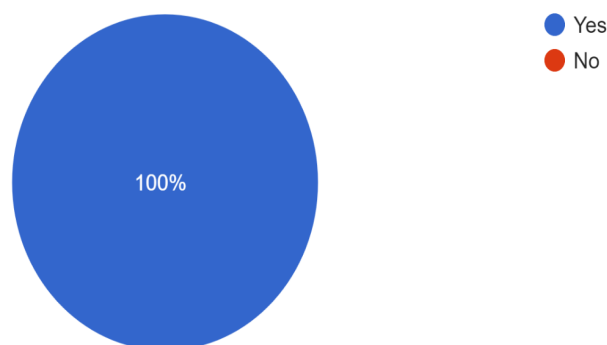


Figure 2: Prevalence of SSB consumption among respondents

Figure 2 shows the percentage of the sample respondents. Of the sample respondents (n=16), all consumed SSBs (100%)

Research Question: Do you consume any of the following? (Select all that apply)

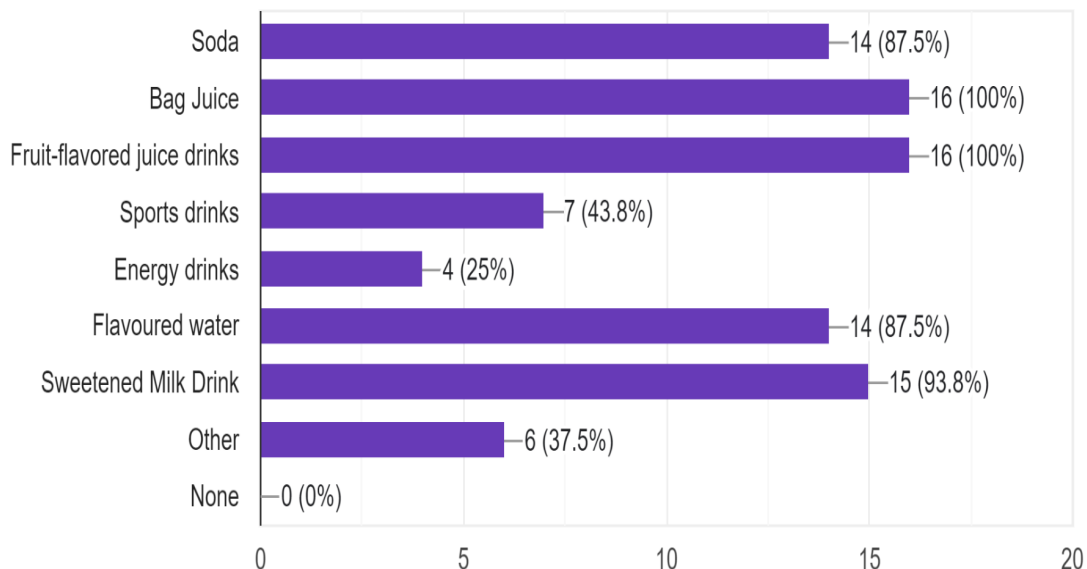


Figure 3: Respondents' reasons for consuming SSBs

Figure 3 shows the responses for the sample respondents. Of the sample respondents (n=16), all (100%) consumed bag juice and fruit-flavoured juice drinks, followed by 15 (93.8%) consuming sweetened milk drinks.

Research Question: How many times per week do you consume a sugary drink

(e.g., soda, fruit-flavoured juice, sports, and food drinks)?

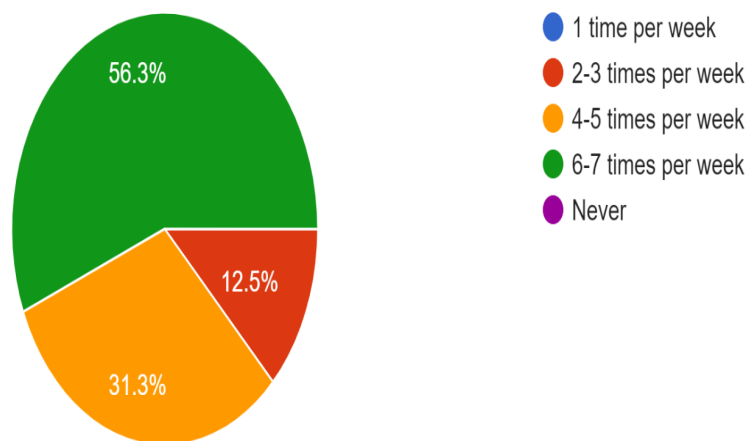


Figure 4: Frequency of consumption of SSBs per week

Figure 4 shows the percentage of the sample respondents. Of the sample respondents (n=16), most (56.3%) consumed SSBs six to seven times weekly.

Research Question: How many times per day do you consume sugary drinks (e.g., soda, fruit-flavoured juice drinks, sports drinks, sweetened milk drinks)?

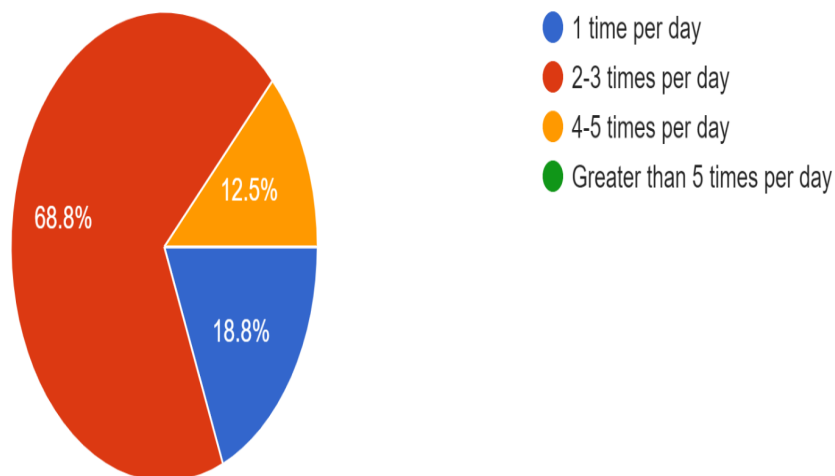


Figure 5: Daily frequency of SSB consumption

Figure 5 shows the daily frequency in percentage for the sample respondents. Of the respondents (n=16), most (68.8%) consumed SSBs two to three times per day.

Research Question: Where do you mainly get your sugary drinks from?

10. Where do you mainly get your sugary drinks from?

16 responses

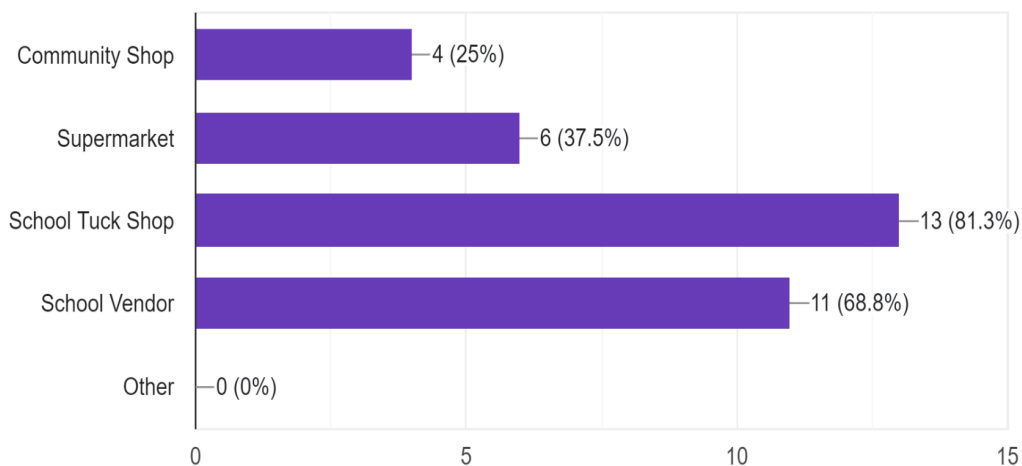


Figure 6: Illustrating Various Sources of SSBs

Figure 6 shows the primary sources of SSB consumption for the sample respondents. Of the sample respondents (n=16), school tuck shops (81.3%) and school vendors (68.8%) were the primary sources.

Research Question: How do you think drinking too many sugary drinks affects your health?

Perceptions of Health Impacts from Excessive Sugary Drink Consumption

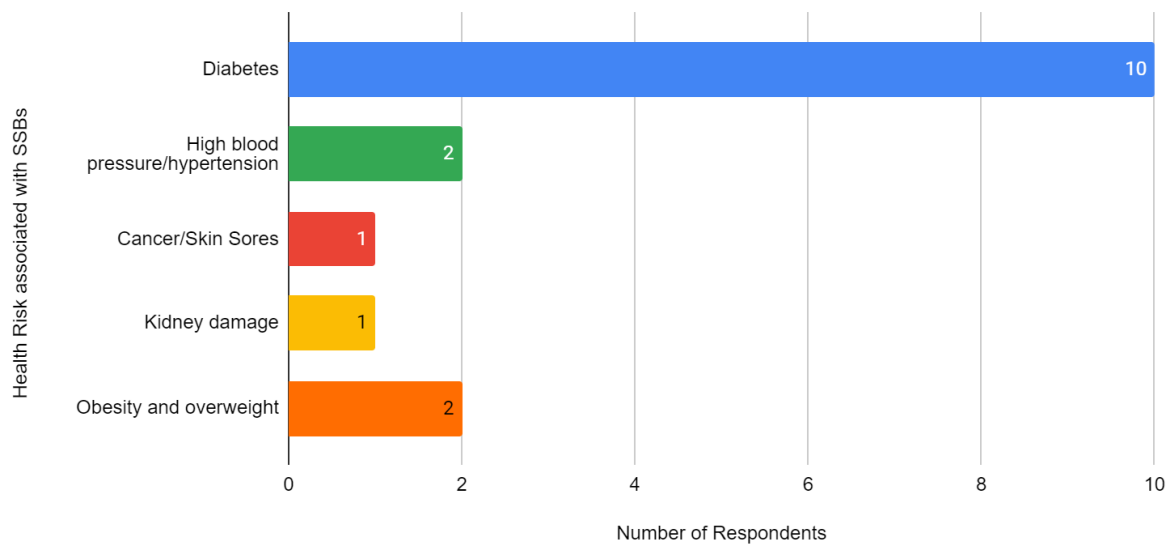


Figure 7: Impact of drinking excess SSBs

Figure 7 illustrates the responses of the sample respondents. Of the sample respondents (n=16), most (62.5 %) believed drinking excess SSBs can result in diabetes.

Research Question: What other drink options should be made available to students?

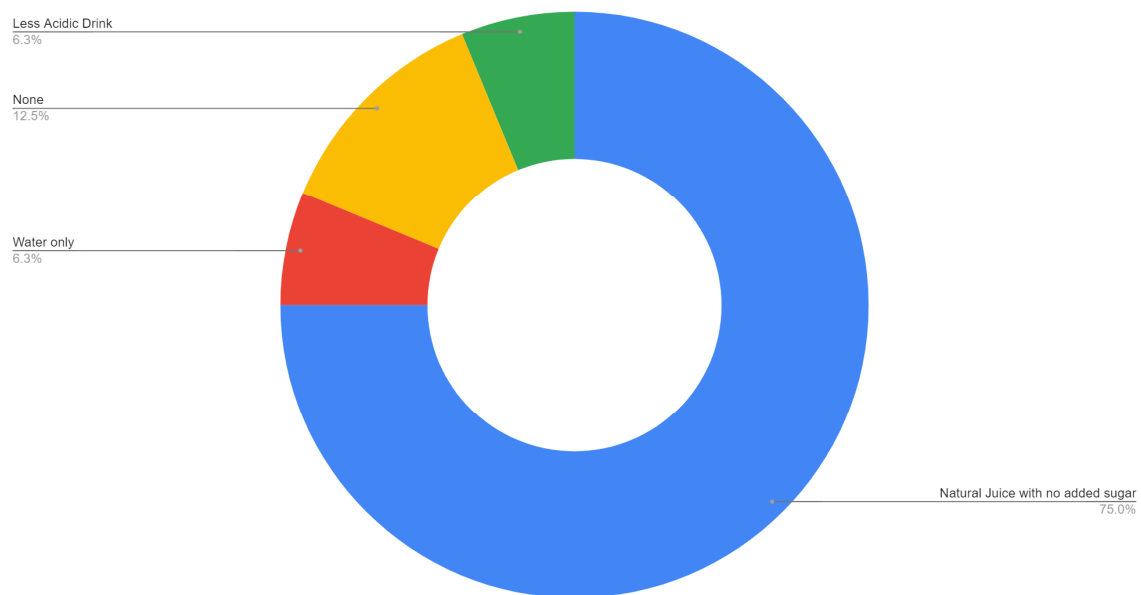


Figure 8: Other drink options that can be made available

Figure 8 illustrates the responses for the sample respondents. Of the sample respondents (n=16), most (75.0%) believed that natural fruit juice without sugar should be made available to students.

Intervention results

This chapter provides information on the intervention strategies employed to help curtail students' high consumption of SSBs. It highlighted the rationale for the selected intervention and

provided a detailed description of how the intervention was implemented. A description of the data collected during the intervention was provided, and the results were analysed. The intervention was evaluated to determine if the intended outcome was achieved.

Description of the Intervention

A collaborative decision was taken to suspend the sale of sugary drinks at the tuckshop during the break period for two days via the implementation of a water challenge among the classes for the same duration. Students would be encouraged to purchase bottled water from the tuckshop during the break periods on both days. They were to take the empty bottles to their classrooms, where they would be stored for counting at the end of the day. To facilitate this, bags would be provided in each classroom to store these bottles.

At the end of each day, class teachers counted the number of empty water bottles collected and documented the totals. The class with the most empty water bottles was declared the competition's winner. To maintain consistency, only bottled waters purchased from the tuckshop were included in the final count, as outlined in the competition regulations.

Researchers visited the school before the break period both days to observe the activities and monitor the students' purchasing behaviours.

The Rationale for the Intervention

Although the data indicated that students' preferred alternative to SSBs was fresh, natural fruit juice, it was determined that increasing water consumption was the most viable, economical, and sustainable measure given the school's socioeconomic context. The severe time constraints and limited financial resources further reinforced this decision. The competitive element of the water challenge was designed to increase students' interest and participation. Children typically respond positively to competition and are more likely to engage in health-promoting activities when they are fun and engaging.

This intervention was chosen for its potential to directly impact students' beverage choices, promote healthier habits, and provide valuable data on effective strategies for reducing SSB consumption in primary schools. By combining restricted access to SSBs, engaging students in a fun competition, and collaborating with school staff and vendors, the intervention aims to foster a healthier school environment and improve student health.

Implementation of the Intervention

- The principal convened a meeting with the teachers to inform them about the Water Challenge and the steps for implementation and discussed their role.
- A flyer was developed by the researchers and shared with the principal and teachers to promote the event.
- The principal advertised the Water Challenge to students and the wider school community during general devotion at the start of the school week.
- Class teachers reminded students about the Water Challenge on the days of the intervention.

- For two (2) days during the 15-minute break period, the school's tuck shop sold only bottled water.
- Empty water bottles were stored in garbage bags provided in each class.
- Researchers collected data on the class attendance for each day to compare against the number of water bottles collected by each class to determine the water uptake.
- Researchers conducted a physical count of the empty water bottles stored in bags and compared them with the brand sold by the tuck shop at the end of the intervention. Brands that the school did not sell were discarded.
- Researchers observed the daily process and documented it using the observation tool developed.
- Post-assessment using the questionnaire was done for the research sample to determine any behaviour change.

Data Collection, Analysis and Post-Intervention

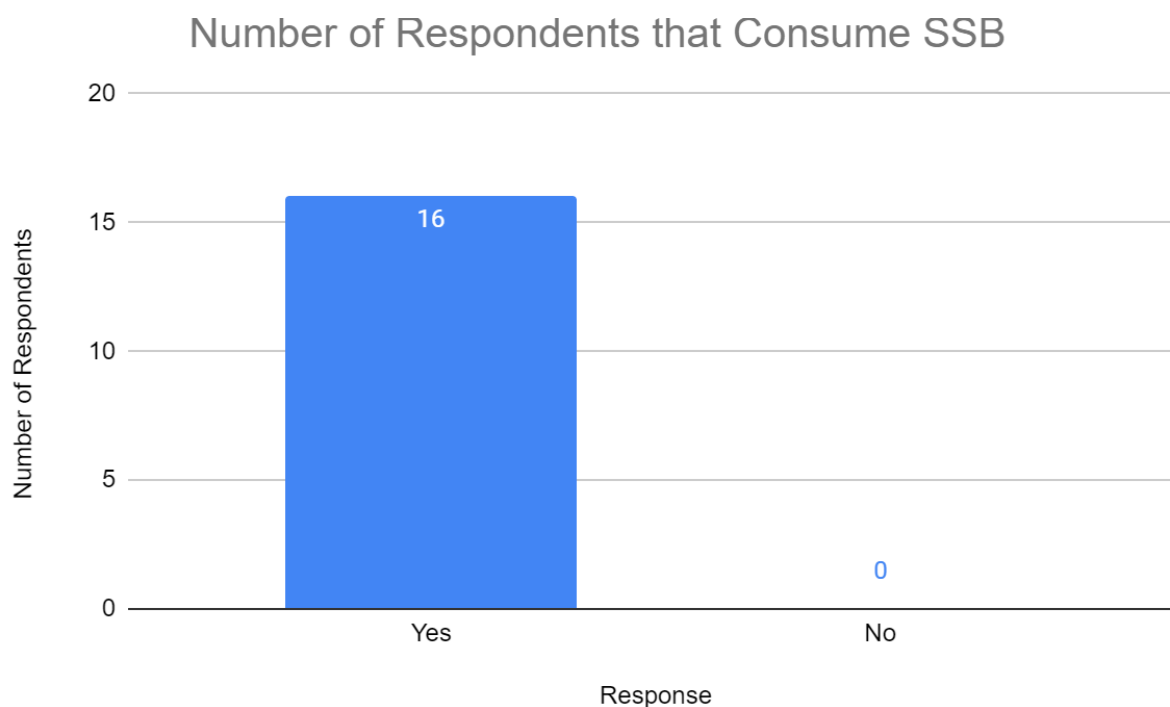


Figure 1: The prevalence of SSB consumption among respondents

No difference was observed in the consumption of SSBs before and after the intervention; the consumption remained relatively high even after the intervention.

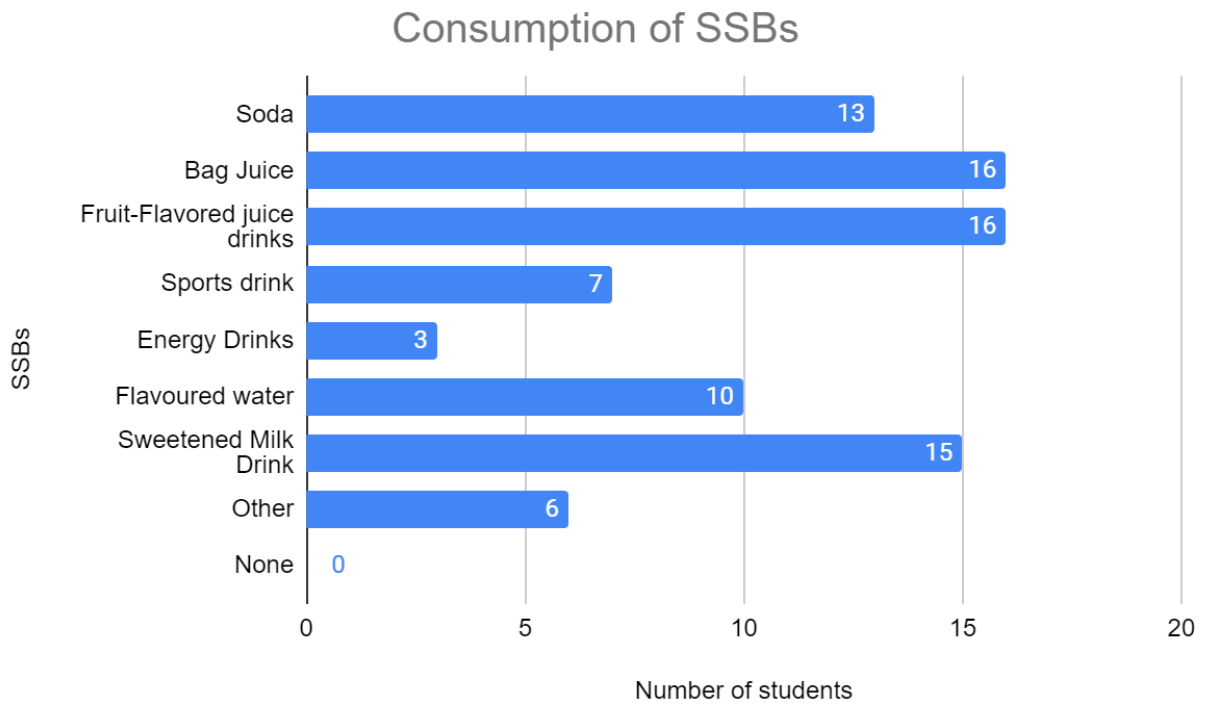


Figure 2: Respondents' reasons for consuming SSBs

There was no reduction in the type of SSBs that students consumed. Soda, bag juice, fruit-flavoured drinks, and flavoured water remained among the most consumed SSBs, with sports and energy on the lower level.

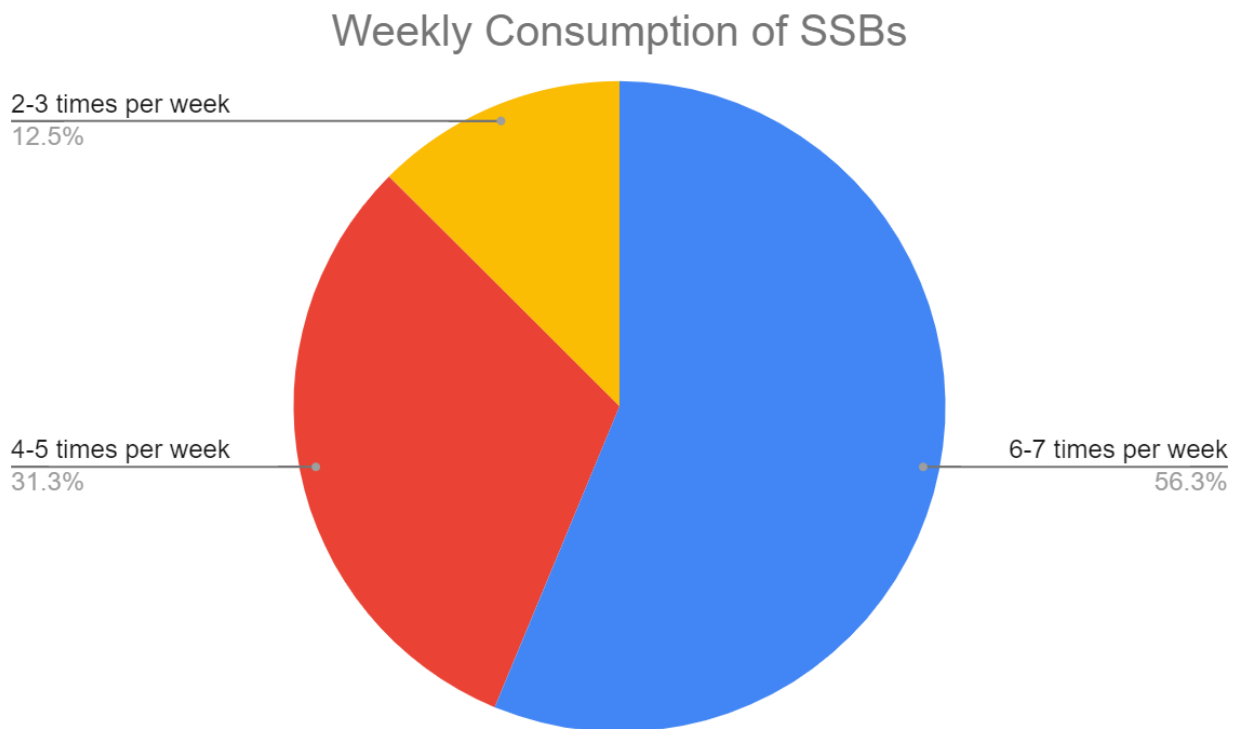


Figure 3: Frequency of consumption of SSBs per week

The frequency of SSB consumption across both days showed no significant change. Students consumed the same quantity of SSBs each week following the intervention. Most students continued to consume SSBs six or seven times a week (56.3%).

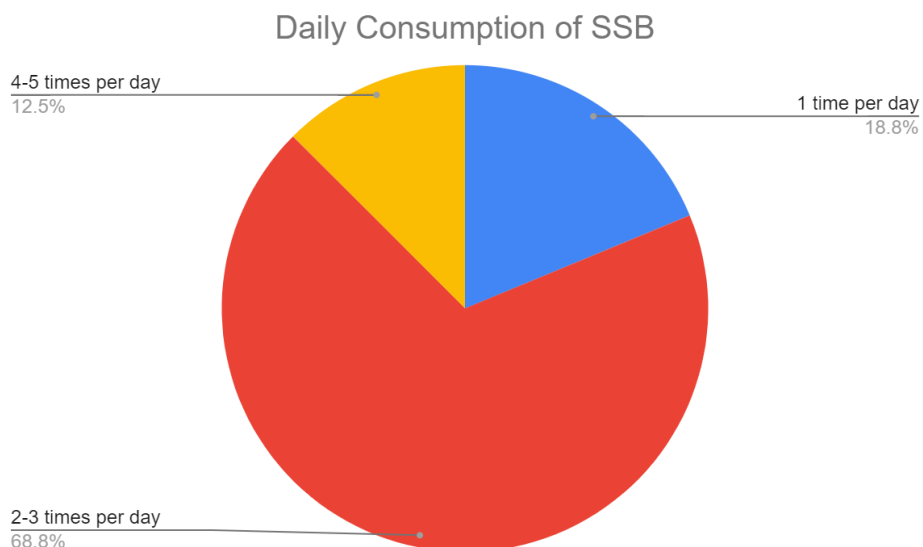


Figure 4: Daily frequency of SSB consumption

There was no discernible difference in the amount of SSBs consumed daily by the students before and after the intervention. Most pupils ate SSBs two to four times each day before the intervention, and this remained the same following the intervention.

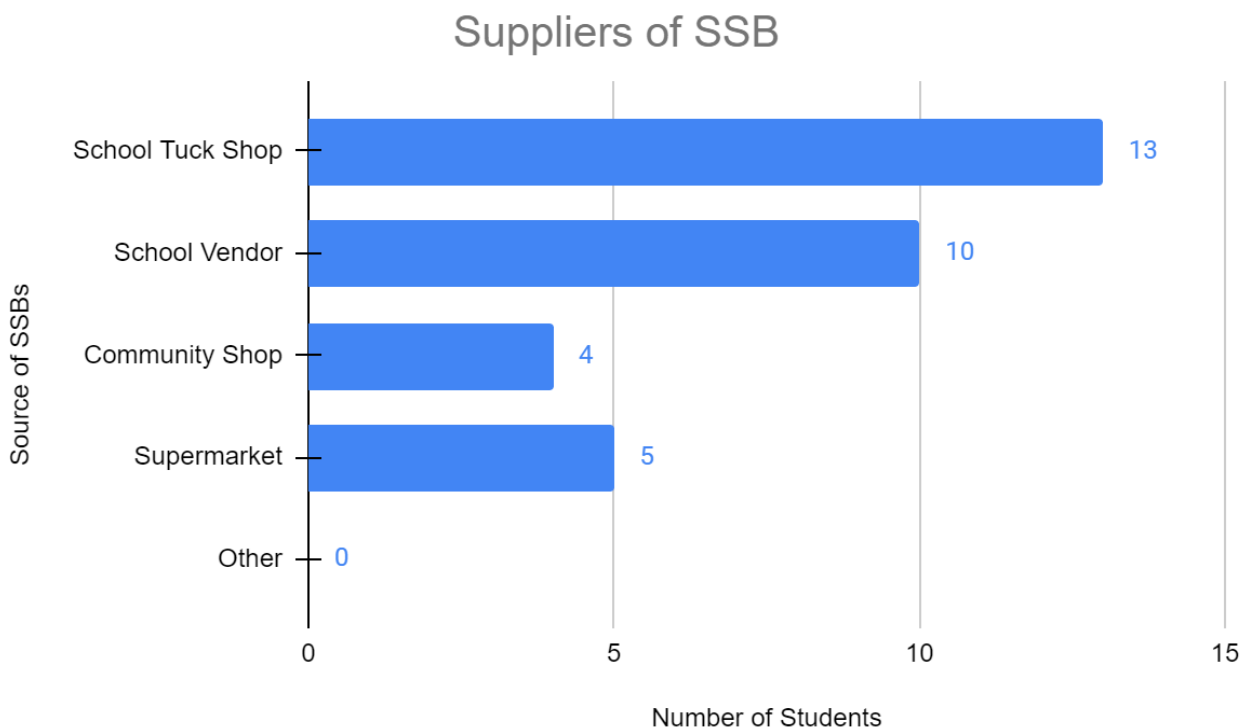


Figure 5: Suppliers of SSBs

The primary providers of SSBs for pupils are still the school tuck shop and the school vendor. The supermarkets and community shoppes were at the lower end.

Perception of Impacts of Excessive Consumption of SSB Drinks

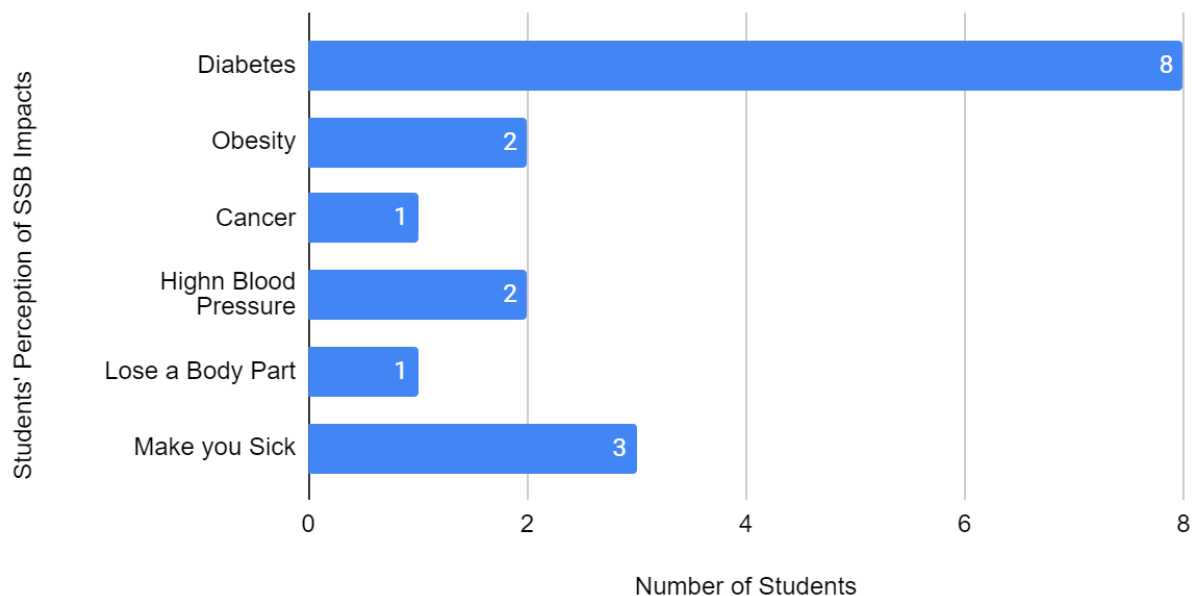


Figure 6: Impact of drinking excess SSBs

Students' awareness of the harmful consequences of sugar-sweetened beverages (SSBs) was present both before and after the intervention. The majority of students continue to concur that the primary health consequence of SSB use is diabetes.

Preferred Alternative Drink Options

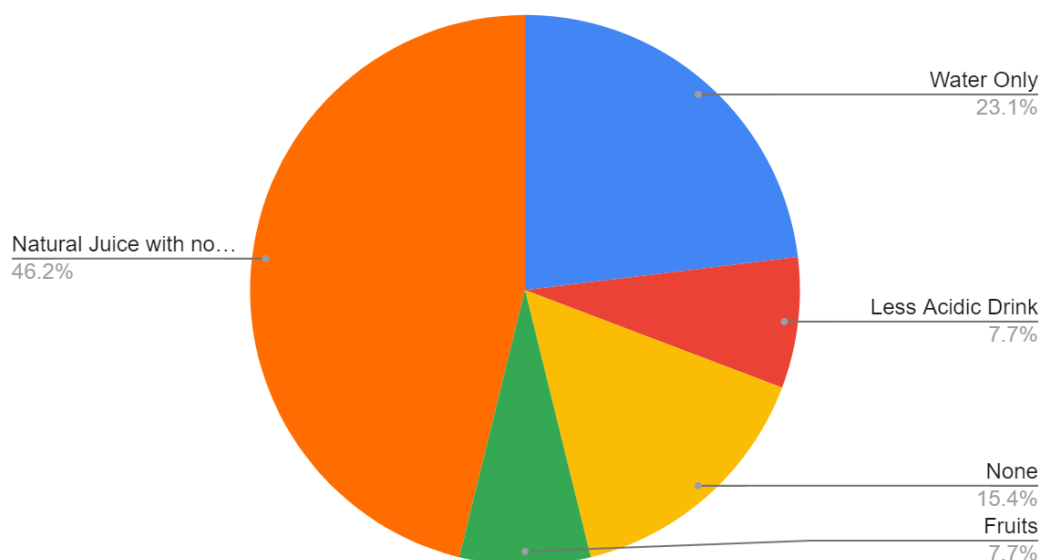


Figure 7: Preferred Alternatives to SSBs

There was no difference in the SSB alternative before and after the intervention. The majority of students said that students should have access to sugar-free natural fruit juice. Compared to before, there was a discernible rise in the perception of water as a healthier substitute for SSB consumption.

Analysis

Alternative Sources for Accessing Sugar-Sweetened Beverages

The tuckshop sold only bottled water throughout the break period. However, some students still accessed SSBs from the vendors outside the school gate. This strategic position made purchasing SSBs extremely accessible to students from the time they arrived at school to their departure. This alternative source decreased the total number of SSBs consumed and the water sold from the tuck shop.

Culture and Attitude Concerning Sugar-Sweetened Beverages

Not selling SSBs at the school tuck shop was a positive step towards promoting healthier choices. However, such an initiative was undermined when administrators sold students an alternative sugary food, ice cream, during the intervention. This action conflicted with the whole aim of the intervention and indicated an ingenuine commitment to fostering a healthy environment. There was also the possibility that mixed messages were being conveyed to the students, discouraging them from adopting healthier habits. Students' motivation to purchase water rather than SSBs is significantly influenced by the school climate and the overall environment that the institution fosters.

Limited Alternatives Concerning Sugar-Sweetened Beverages

There needed to be more healthy drinks for students. If students were not consuming sugar-sweetened beverages (SSBs), they were drinking water. This issue highlighted the lack of alternatives to SSBs and water and the need for additional resources to provide a wider variety of healthier beverage options. Most students are not inclined to drink only water, even though it is more nutritious. The limited alternative drove students towards SSB despite the health risks associated. Many students preferred blended fruit juice with no added sugar as a better alternative to SSBs. Therefore, providing students with healthier drink options ensures their well-being and promotes healthier dietary habits.

Home Influence Concerning Sugar-Sweetened Beverages

The home environment appeared to have a higher influence on reducing the consumption of SSBs than the school environment. A few students carried water and sweetened milk beverages from home, suggesting a balanced approach. In contrast, students are typically limited to choosing between SSBs and water at school, and SSBs are always the preferred choice.

Awareness of Contradictory Behaviour Concerning Sugar-Sweetened Beverages

While students are aware of the adverse health risks associated with excessive sugar-sweetened beverages (SSBs), their actions suggest no desire to deviate from the behaviour. When SSBs were not readily available for purchase, they sought alternatives to compensate for the absence of sugary drinks. This behaviour may be driven by the fact that many students prefer the taste of SSBs over tasteless water, thus indicating a strong preference for flavour over health considerations.

Conclusion

The action research study on sugar-sweetened beverages (SSBs) conducted at a primary school in Western Jamaica provided valuable insights into consumption patterns and the effectiveness of intervention strategies to reduce SSB intake. Despite several challenges, including time constraints, limited sample size, and access issues, the study highlighted essential trends and areas for future focus.

Our findings indicate that students do consume significant amounts of SSBs, with most consuming these beverages two to three times daily for five to six days per week. Despite this situation that demands action, the intervention selected to promote water consumption faced numerous obstacles. The observed behaviour of students bringing SSBs from home and purchasing sugary beverages from external vendors underscores the complexity of modifying dietary habits within the school environment. Additionally, the partial implementation of the intervention due to competing school activities and inadequate communication about the water competition affected the overall impact and assessment.

The study also revealed critical data gaps, such as the lack of need to forgive sales records and untracked beverage consumption outside school-provided options. These limitations suggest a need for more robust data collection methods and closer collaboration with school administrators and parents in future studies.

Moving forward, it is essential to address these limitations by allocating more time for thorough intervention implementation and post-assessment, ensuring better communication and engagement with all stakeholders, and expanding the sample size to improve the representativeness of the findings. Additionally, strategies to monitor and influence students' beverage choices outside the school setting should be considered. Students continued to access SSBs from vendors outside the school gate, and mixed messages from the school environment, such as the availability of other sugary treats like ice cream, undermined the efforts to promote healthier choices. Additionally, the school's limited availability of healthier beverage alternatives prompted some students to revert to SSBs. It also highlighted that administrative willpower to implement healthy eating policies and strategies, along with the support of key stakeholders such as teachers, parents, and students, is critical for promoting and sustaining healthy dietary habits among school children.

While the study faced significant challenges, it provided a foundational understanding of SSB consumption among primary school students and highlighted areas for improvement in future research and intervention efforts. Continued efforts to promote healthier beverage choices and reduce SSB consumption are vital for improving students' health and well-being.

This research would need to be repeated, a control set up where the approach is implemented over a more extended period, and access is given to the necessary data to assess the method's effectiveness after implementation. This study should be viewed as a preliminary effort since the researcher believes the results indicate the need for effective research.

Recommendation

Future research: The researchers recommend a national cross-sectional probability study to examine the prevalence of SSB consumption among students at the primary level in Jamaica. This would provide comprehensive knowledge of the scope of SSB consumption and insights into the need for diet changes among this age cohort.

Policy formulation: This study provides information that SSB consumption is high among students at the selected primary school in Western Jamaica. It is noted that the school canteen is the main perpetrator of promoting unhealthy eating. Hence, the researchers recommend that the school canteen be regulated to address the high SSB consumption among young schoolers.

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