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دانش، نگرش‌ها و رفتارهای مربوط به مصرف نوشیدنی‌های گازدار در میان نوجوانان پسر مکتب شمس لندن، هرات، افغانستان

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***شناخت‌نامۀ نویسندۀ مسؤول:**
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چکیده

مقدمه: نوشیدنی‌های گازدار به طور گسترده‌ای در میان نوجوانان مصرف می‌شوند و به دلیل میزان بالای شکر و اسید موجود در آن‌ها، عامل مهمی در ایجاد مشکلات دهان و دندان از جمله پوسیدگی دندان، فرسایش مینای دندان و سایر عوارض دهانی هستند.

هدف: این مطالعه با هدف ارزیابی سطح آگاهی، میزان مصرف و عادات بهداشت دهان و دندان مرتبط با مصرف نوشیدنی‌های گازدار در میان دانش‌آموزان پسر مکتب شمس لندن در شهر هرات، افغانستان انجام شده است.

روش: یک مطالعه مقطعی با استفاده از پرسشنامه‌ای خودتکمیل انجام شد که بین ۱۲۰ دانش‌آموز پسر ۱۵ تا ۱۸ ساله مکتب شمس لندن توزیع گردید. پرسشنامه شامل اطلاعات جمعیت‌شناختی، فراوانی و ترجیحات مصرف نوشیدنی‌های گازدار، آگاهی از اثرات آن بر سلامت دهان و رفتارهای بهداشتی پس از مصرف بود. داده‌ها جمع‌آوری و با استفاده از آمار توصیفی در نرم‌افزار SPSS نسخه ۲۶ تحلیل شدند.

نتایج: بیشترین شرکت‌کنندگان (۵۸٫۳٪) ۱۵ ساله بودند. مصرف روزانه نوشیدنی‌های گازدار در ۲۵٪ گزارش شد که ۳۱٫۷٪ انرژی‌زا و ۵۱٫۷٪ آب‌میوه‌ای را ترجیح می‌دادند. مهم‌ترین دلایل مصرف، طعم (۳۷٫۵٪) و افزایش انرژی (۲۸٫۳٪) بود. نیمی از دانش‌آموزان از مضرات این نوشیدنی‌ها آگاه بودند، در حالی‌که ۱۷٫۵٪ هیچ آگاهی نداشتند. ۵۰ نفر هرگز بعد از مصرف مسواک نمی‌زدند و ۳۷ نفر اصولاً مسواک نمی‌کردند. در مقابل، فقط ۲۲ نفر همیشه پس از مصرف مسواک می‌زدند و ۳۶ نفر شست‌وشوی دهان با آب را انجام می‌دادند. در مجموع، ۱۷ نفر پوسیدگی دندان را ناشی از این نوشیدنی‌ها دانستند. درحالی‌که ۷۰٪ سلامت دهان را مهم می‌دانستند، ۶۴٫۲٪ تمایل داشتند دیگران را از خطرات آگاه کنند.

نتیجه‌گیری: این مطالعه الگوهای مصرف، آگاهی و عادات بهداشت دهان دانش‌آموزان مکتب شمس لندن هرات را روشن ساخت و بر ضرورت آموزش و مداخلات بهداشتی برای کاهش اثرات منفی نوشیدنی‌های گازدار تأکید دارد. ارتقای آگاهی، تقویت بهداشت دهان و ترویج نوشیدنی‌های سالم‌تر از گام‌های کلیدی در بهبود سلامت دهان نوجوانان است.

واژه‌گانِ کلیدی: نوشابه گازدار، دانش آموزان ، مکتب شمس لندن، هرات

ارجاع به این مقاله: ساعی ع، صافی ا، رحمانی ا. دانش، نگرش‌ها و رفتارهای مربوط به مصرف نوشیدنی‌های گازدار در میان نوجوانان پسر مکتب شمس لندن، هرات، افغانستان. [اینترنت]. ۲۲ سپتامبر ۲۰۲۵. [تاریخ برداشت]؛ ۲(۲): ٤۱- ٥٤: https://doi.org/10.58342/ghalibMj.V.2.I.2.4

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Knowledge, attitudes, and practices regarding soft drink consumption among male adolescents in Shams London high school, Herat, Afghanistan

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Abstract

Background: Soft drinks are widely consumed among adolescents and are a significant contributor to poor oral health due to their high sugar and acid content, leading to dental caries, erosion, and other oral complications.
Objective: This study aimed to assess the knowledge, consumption patterns, and oral hygiene practices related to soft drink use among male high school students in Herat City, Afghanistan.
Methods: A cross-sectional study was conducted using a self-administered questionnaire distributed to 120 male students aged 15–18 years at Shams London School. The questionnaire, covered sociodemographic, soft drink consumption frequency and preferences, awareness of oral health effects, and post-consumption hygiene behaviors. Data were collected and analyzed using descriptive statistics in SPSS version 26.
Results: The majority of participants (58.3%) were 15 years old. Daily soft drink consumption was reported by 25% of students, with 31.7% preferring energy drinks and 51.7% favoring fruit-flavored drinks. Taste (37.5%) and energy boost (28.3%) were the main reasons for consumption. While 50% of students were definitely aware of the harmful effects of soft drinks on oral health, 17.5% had no knowledge. Alarmingly, 50 students reported they never brush their teeth after drinking soft drinks, and 37 never brush at all. Only 22 always brushed afterward. Rinsing with water was more common, with 36 students always doing so. A total of 17 students reported experiencing cavities they attributed to soft drink consumption. Most students (70%) considered oral health important, and 64.2% expressed willingness to warn others about the risks.
Conclusion: In conclusion, this study provides valuable insights into soft drink consumption patterns, awareness, and oral hygiene practices among Shams London high school students in Herat City. The findings highlight the need for targeted educational and public health interventions to mitigate the adverse oral health effects of soft drinks in this vulnerable population. Addressing knowledge gaps, promoting effective oral hygiene, and encouraging healthier beverage choices are crucial steps towards improving adolescent oral health.

Keywords: Soft drinks, School students, Shams London School, Herat

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Introduction

Soft drinks are widely consumed non-alcoholic beverages worldwide, especially among children, adolescents, and young adults. They are popular due to their sweet taste, attractive packaging, easy accessibility, and strong marketing appeal [1]. These beverages typically consist of water, added sugars such as sucrose or high-fructose corn syrup, flavorings, colorings, preservatives, and often carbonating agents. Among the most common types are carbonated soft drinks, also known as soda, and include popular brands such as Coca-Cola, Pepsi, Sprite, and Fanta. These beverages are characterized by their fizzy nature from dissolved carbon dioxide and their high sugar content. Another category is energy drinks, which are formulated to enhance mental and physical performance and often contain large amounts of caffeine, sugar, and other stimulants such as taurine or guarana. These include Red Bull and Monster. While technically a subset of soft drinks, energy drinks pose more health concerns due to their active pharmaceutical ingredients. The term "beverage" refers to all beverages intended for human consumption, including water, tea, milk, fruit juice, soda, and energy drinks. Fruit juices and fruit-flavored drinks are also frequently consumed in this category. While 100% fruit juice contains natural sugars and some vitamins, many fruit-flavored drinks on the market are not made from real fruit; instead, they contain added sugar, artificial flavors, and minimal nutritional value, making them similar to sodas in terms of their health effects [2,3].

One of the biggest concerns about soft drinks is their high sugar content. For example, a 330 ml can of soda contains 10 teaspoons (approximately 40 g) of added sugar, providing a significant number of calories without providing essential nutrients like vitamins, minerals, or fiber. As a result, these drinks are often described as sources of nutritionally poor or "empty calories" [2-7]. In addition to contributing to obesity and metabolic disorders, sodas significantly impact oral health. The two main mechanisms of tooth damage are tooth decay (cavities) and dental erosion. Tooth decay occurs when the sugars in these drinks are metabolized by oral bacteria, producing acids that destroy tooth enamel. On the other hand, tooth erosion is directly caused by the acidic nature of soda, including carbonic acid from carbonation and added acids such as phosphoric or citric acid, which gradually erode the enamel surface [3,5,7]. In addition to structural damage, sodas can also cause cosmetic issues such as tooth staining due to their dark pigments and acidic environment.

The risk of oral damage is further exacerbated by consumption habits. Sipping soda for extended periods rather than drinking it quickly exacerbates the harmful effects by prolonging the exposure of teeth to sugar and acid. Drinking soda before bed is particularly harmful because saliva production naturally decreases during sleep, reducing the mouth's ability to neutralize acids and repair initial enamel damage through remineralization [4]. Soft drinks may also indirectly contribute to periodontal problems, such as gingivitis, delayed healing, and weakening of periodontal tissues such as the alveolar bone and gums. Conditions such as caffeine in energy drinks and dry mouth (xerostomia), which can be exacerbated by poor eating habits, further negatively impact oral health by reducing the protective effects of saliva [3,6]. Combined, these factors highlight the significant role that soft drink consumption plays in poor oral health, particularly among the young population who are the primary consumers of these beverages.

Despite the well-documented global evidence on the adverse effects of soft drinks on oral health, there is a notable lack of local data from Herat, Afghanistan, regarding adolescents' knowledge, attitudes, and practices related to soft drink consumption and its impact on dental health. National and regional studies on dietary behaviors and oral health among Afghan youth are limited, and no published research specifically addresses soft drink consumption patterns and associated oral health outcomes in this population. This gap in local evidence hinders the development of targeted public health interventions and oral health education programs in schools and communities.

This study aimed to assess the knowledge, attitudes, and practices regarding soft drink consumption and their association with self-reported oral health outcomes among male high school students in Herat city, Afghanistan.

Method and Materials

Study Design and Setting

This cross-sectional study was conducted to assess the knowledge, attitudes, and consumption patterns of soft drinks among high school students at Shams London school in Herat Province. A self-administered questionnaire was used to collect data from students (All students aged this range) aged 15–18 years in Shams London school.

Questionnaire Development and Validity

The questionnaire was designed to assess soft drink consumption patterns among adolescent students. It consisted of four sections: (1) sociodemographic information (age, gender, grade level), (2) soft drink consumption behaviors (types, frequency, quantity, timing, and duration of intake), (3) knowledge and awareness regarding the effects of soft drinks on oral health (e.g., cavities, erosion, gum disease), and (4) self-reported oral hygiene practices (toothbrushing frequency, use of fluoride, dental visits). To ensure content validity, the initial draft was reviewed by three Lecturers of Stomatology Faculty of Herat University, who assessed the relevance, clarity, and structure of each item. Ambiguous or redundant questions were revised or removed. Unnecessary or irrelevant items identified during validation (e.g., unrelated dietary habits) were removed to improve focus and reduce respondent burden. The final version contained clear and targeted questions. However, the reliability of the questionnaire, including internal consistency and test-retest reliability, was not formally evaluated.

Ethical Considerations

Due to limitations in access to formal research oversight at the time of data collection, ethical approval for this study was not obtained from an institutional review board (IRB). However, all ethical guidelines were followed to protect the rights of participants. Informed consent was obtained from school administrators before participation in the study. Students were informed about the purpose of the study, its voluntary nature, confidentiality, and the right to withdraw at any time.

Participant Selection

Female students did not participate in data collection due to current conditions, traditional and cultural restrictions, lack of permission from the school principal, and the absence of girls of this age in school.

Data Collection

The questionnaire was distributed during school hours in a classroom setting by trained person. Assistance was provided to clarify instructions, but no leading cues were given. Completed forms were collected immediately after completion to ensure high response rates and data integrity. 120 questionnaire papers were distributed among the students under the principles of the school and 120 of them from different classes and ages between 15 to 18 attended the process of the research and answered the questions on their own.

Data Analysis

Data were coded and entered into SPSS version 26 for analysis. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize sociodemographic characteristics, consumption patterns, and knowledge levels.

Results

The students who answered the questionnaire 69 of them were 15 years old, 18 of them were 16 years old, 15 of them were 17 years old and 18 of them were 18 years old (Fig. 1).

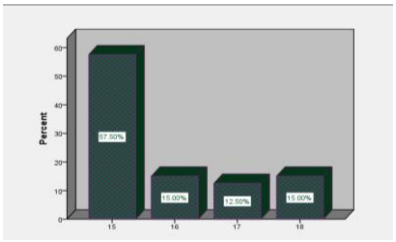

Figure 1. Age of participants

Out of 120 students, 13 considered soft drinks to be beverages, 45 viewed them as energy drinks, 11 identified them as juice, and 51 believed that soft drinks encompass beverages, energy drinks, and juice (Fig. 2).

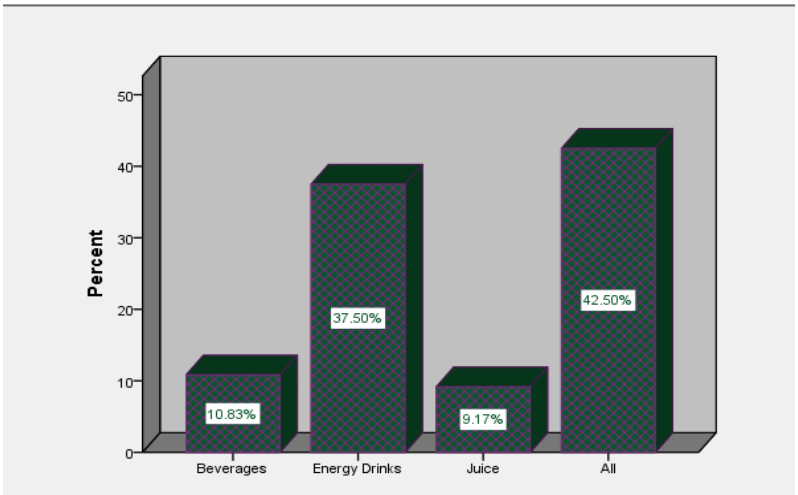

Figure 2. Information about soft drinks.

Among 120 students, 30 consume soft drinks daily, 35 drink them two or three times a week, 12 have them once a week, and 43 consume them occasionally (Fig. 3).

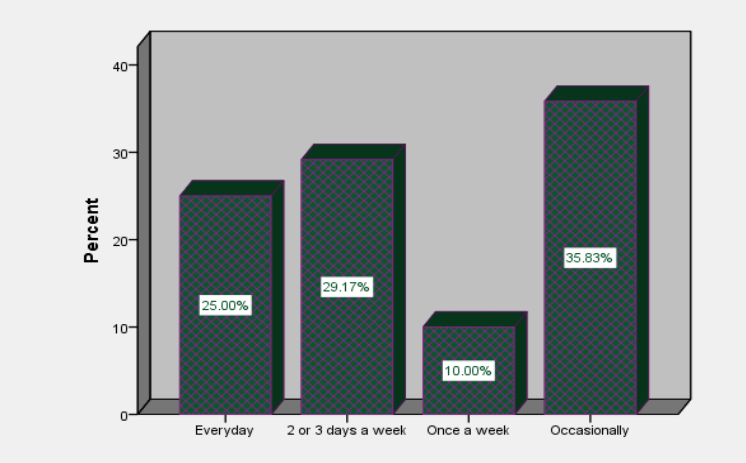

Figure 3. Frequency of drinking of soft drink

The data describes the frequency with which students consume soft drinks instead of water. Out of 120 students, 6 always choose soft drinks over water, 9 often do so, 50 sometimes opt for soft drinks instead of water, and 55 never replace water with soft drinks (Fig. 4).

The data outlines students' preferences for different types of soft drinks. Among 120 students, 13 prefer beverages, 38 favor energy drinks, 62 choose juice, and 7 have no preference for any type of soft drink (Fig. 5).

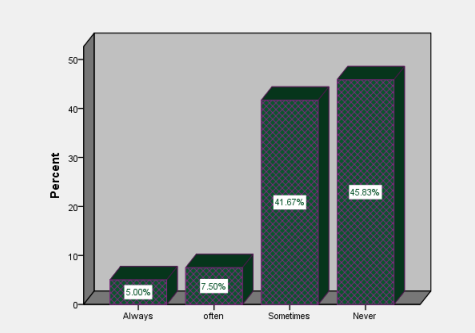

Figure 4. Consuming soft drinks instead of water.

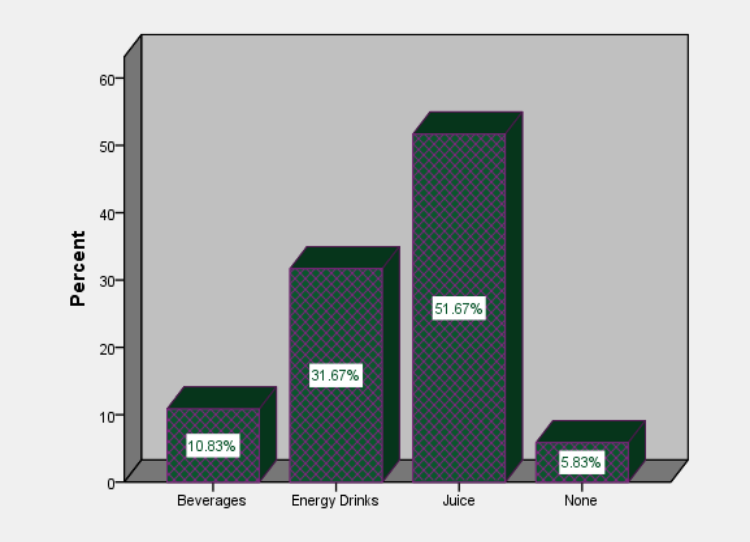

Figure 5. Preference of soft drinks' types.

The data indicates the preferred times for consuming soft drinks among students. Out of 120 students, 42 consume soft drinks during school hours, 21 do so after school, 54 reserve soft drink consumption for special occasions, and 3 never consume soft drinks (Fig. 6).

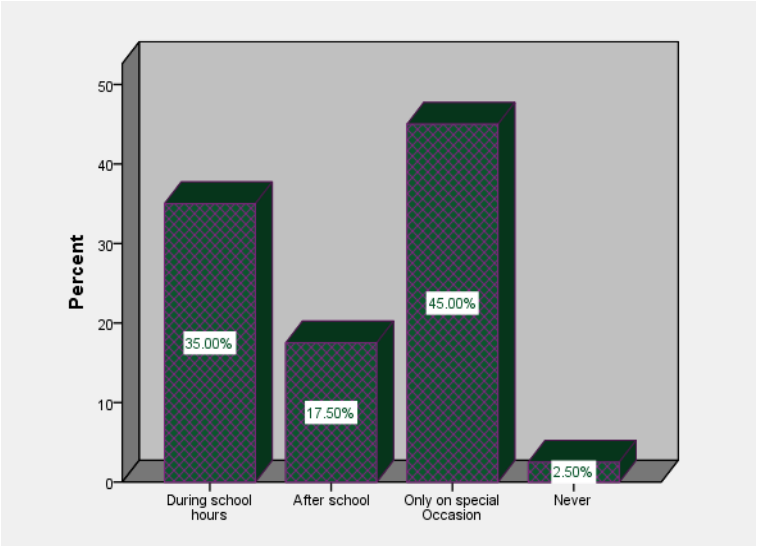

Figure 6. Time of consuming soft drinks.

The data presents the primary reasons students consume soft drinks. Among 120 students, 45 cite taste as their main reason, 34 consume them for an energy boost, 33 drink them just for fun, and 8 do not drink soft drinks at all (Fig. 7).

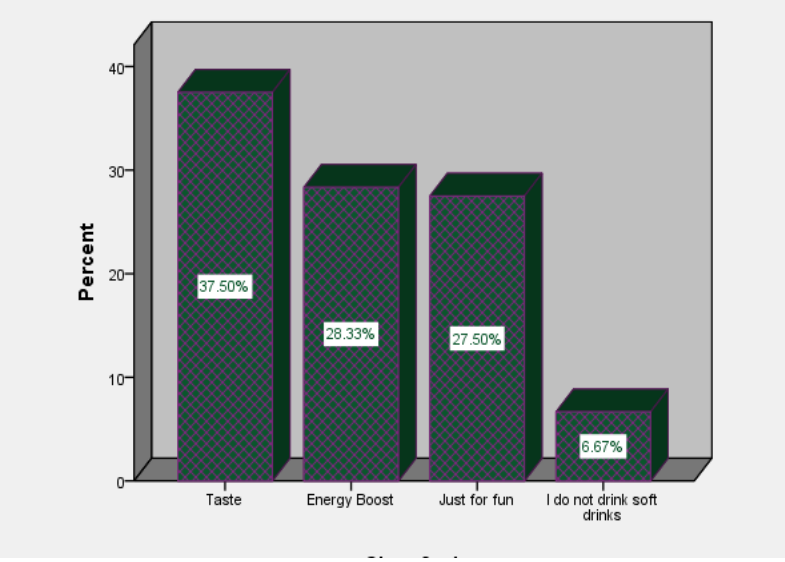

Figure 7. The main reason of consuming soft drinks.

The data reflects students' awareness of the effects of soft drinks on oral health. Out of 120 students, 60 are definitely aware of the effects, 12 believe soft drinks are harmless, 27 think they might affect oral health, and 21 have no information on the matter. (Fig. 8)

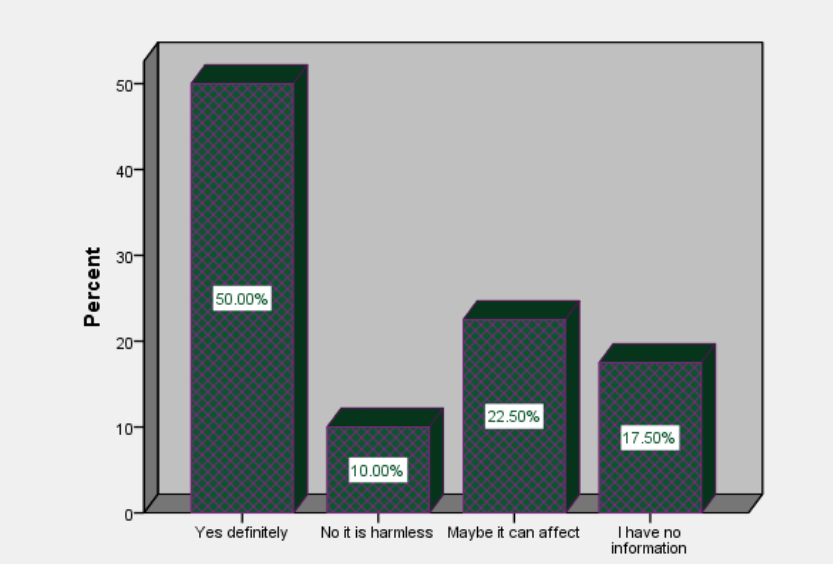

Figure 8. Awareness of soft drinks' effects on oral health.

The data identifies which part of the mouth students believe is most affected by soft drinks. Among 120 students, 61 think the teeth are most affected, 22 believe it's the tongue, 10 say the gums, and 27 do not know which part is most affected (Fig.9).

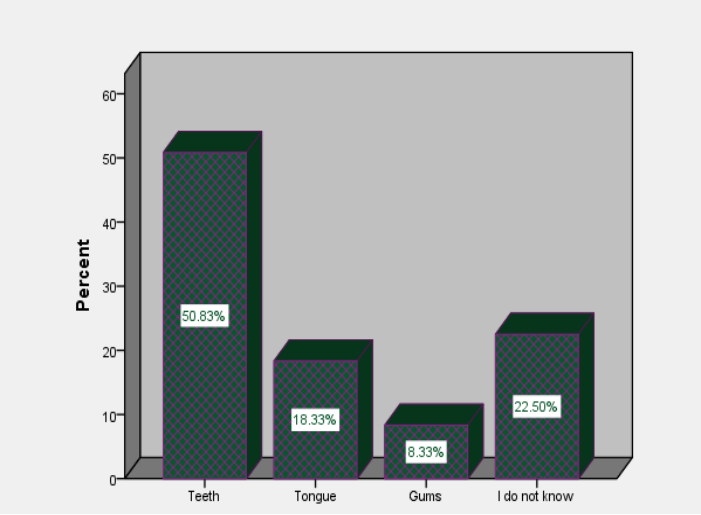

Figure 9. The most affected part of the mouth.

The data provides insights into students' knowledge about the potential of soft drinks to cause dental caries. Out of 120 students, 60 are sure that soft drinks can cause dental caries, 5 believe they are harmless, 46 think they might cause dental caries, and 9 do not know (Fig.10).

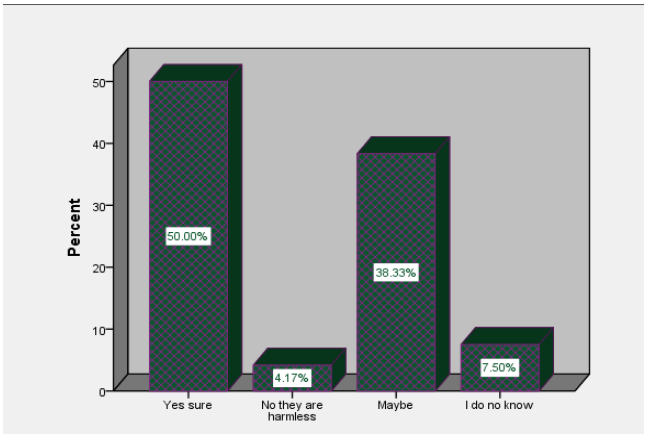

Figure 10. Information about soft drinks can cause dental caries.

The data highlights students' perceptions of the importance of oral health for overall health. Among 120 students, 84 consider oral health to be very important, 22 view it as somewhat important, 4 believe it is not important, and 10 have not thought about its importance yet (Fig. 11).

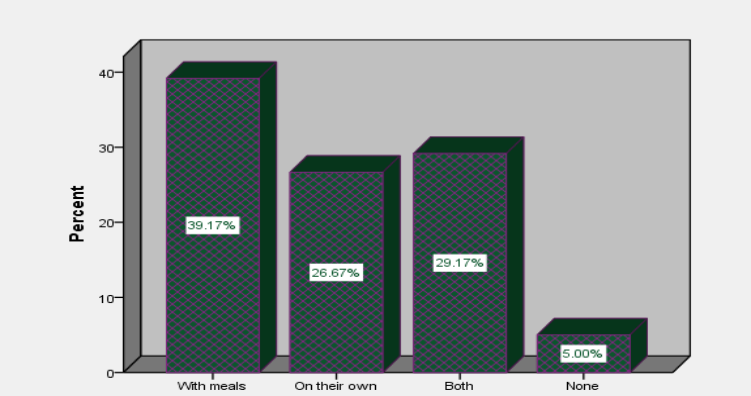

Figure 11. Importance of oral health for overall health

The data illustrates students' preferences for consuming soft drinks either with meals or on their own. Out of 120 students, 47 prefer drinking soft drinks with meals, 32 consume them on their own, 35 enjoy them both ways, and 6 do not drink soft drinks at all (Fig.12).

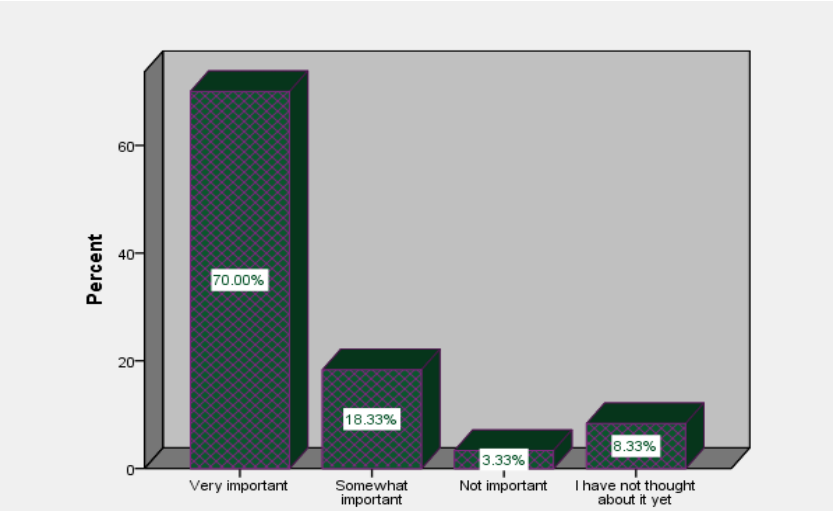

Figure 12. Drinking soft drinks with meals or on their own.

The data reveals that most students do not brush their teeth consistently after drinking soft drinks. Among 120 participants, 37 never brush, 35 sometimes brush, 26 rarely brush, and only 22 always brush. This highlights a concerning trend of poor oral hygiene habits among students (Fig. 13).

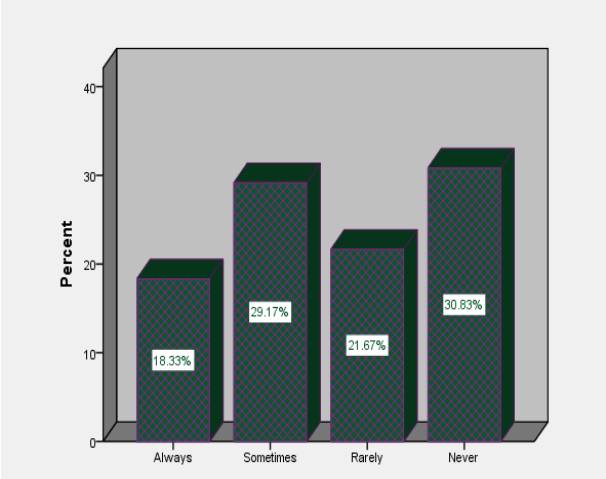

Figure 13. Brushing teeth after drinking a soft drink

The data shows students' practices regarding the time they wait to brush their teeth after drinking a soft drink. Out of 120 participants, the largest group, 50 students, reported that they do not brush at all after consuming a soft drink. Among those who do brush, 21 students brush immediately, 24 wait for 30 minutes, and 25 wait for one hour. This indicates that a significant number of students neglect brushing entirely after consuming soft drinks, while those who do brush vary in their timing (Fig.14).

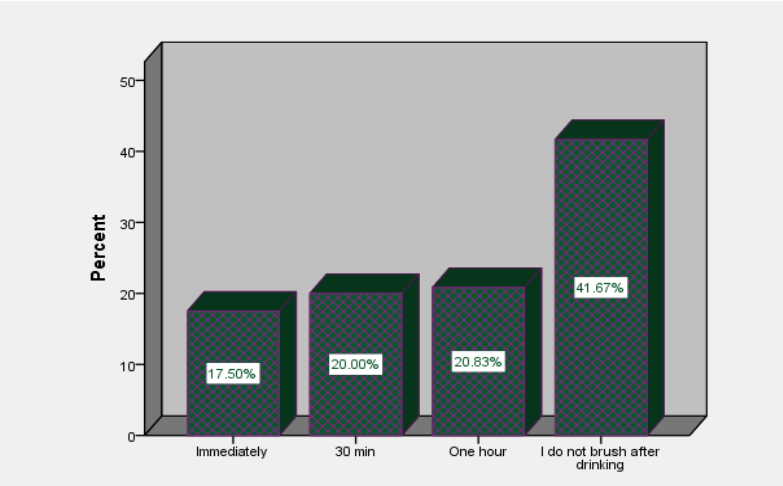

Figure 14. Time to wait to brush teeth after drinking a soft drink.

The data shows that many students rinse their mouths with water instead of brushing after drinking soft drinks. Of 120 participants, 36 always rinse, 40 sometimes rinse, 20 brush their teeth instead, and 24 neither rinse nor brush. This indicates rinsing is a common but inconsistent practice among students **(**Fig. 15).

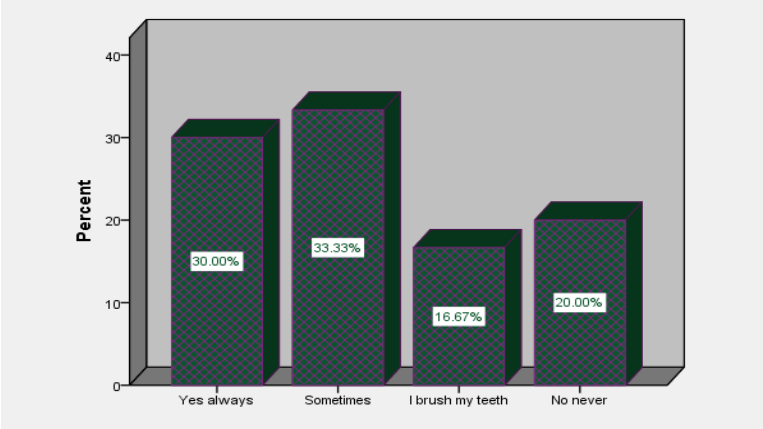

Figure 15. Rinse of mouth with water instead of brushing.

The data reveals students' experiences of tooth sensitivity after drinking soft drinks. Out of 120 participants, the majority, 65 students, reported they never experience sensitivity. Meanwhile, 30 students experience it sometimes, 18 students rarely feel sensitivity, and only 7 students reported experiencing it often (Fig. 16).

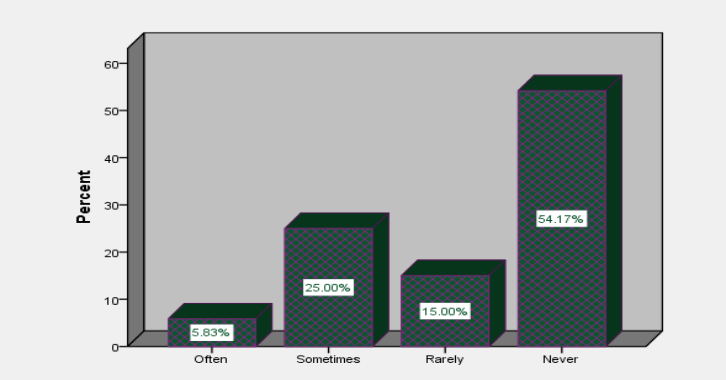

Figure 16. Experience of tooth sensitivity after drinking soft drinks.

The data shows students' preferences for alternatives to soft drinks. Among the 120 participants, the most common alternatives were natural fruit juice (46 students) and water (43 students). A smaller group, 26 students, prefer tea, while 5 students reported that they do not consume alternatives and only drink soft drinks (Fig. 17).

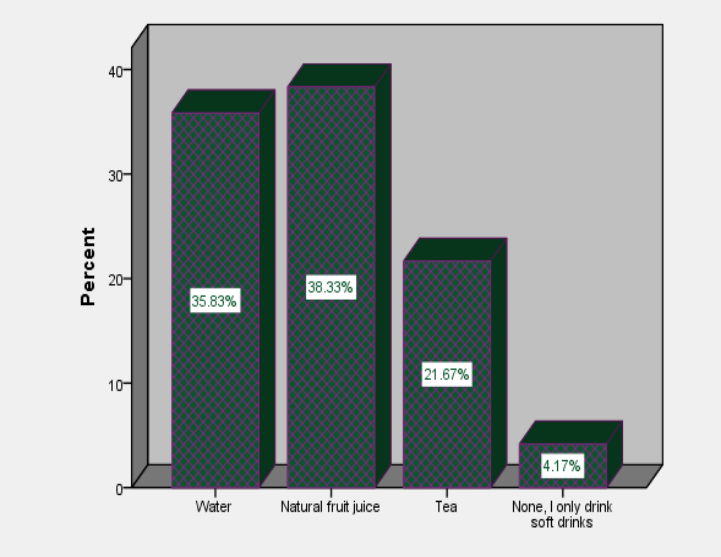

Figure 17. Alternatives instead of soft drinks.

The data reflects students' frequency of visiting a dentist. Among the 120 participants, 68 students visit the dentist only when there is a problem, 21 students visit every 6 months, and 15 students go once a year. Additionally, 16 students reported that they never visit a dentist (Fig. 18).

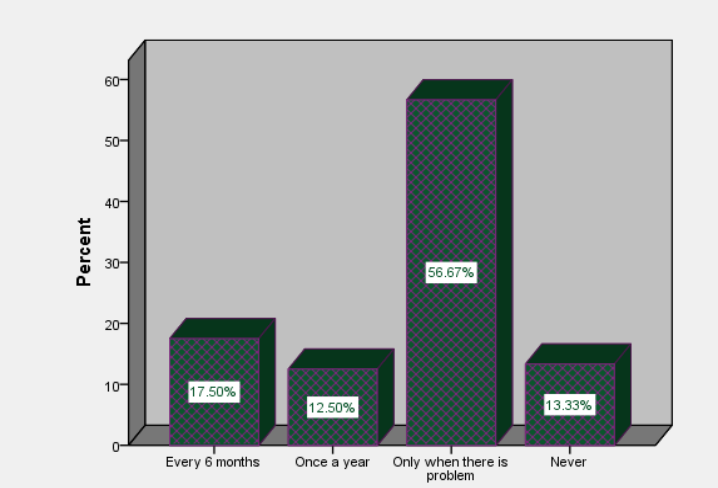

Figure 18. Frequency of visiting a dentist.

The data shows students' adherence to a dentist's advice regarding soft drink consumption. Among the 120 participants, 51 students follow the instructions definitely, while 46 students follow them maybe. Nine students find it unlikely they would follow the advice, and 14 students do not at all (Fig. 19).

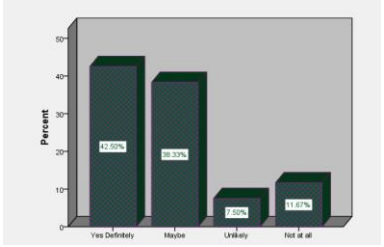

Figure 19. Following the instructions of a dentist about the consumption of soft drinks.

The data shows students' willingness to alert others about the effects of soft drinks on oral health. Out of 120 participants, 77 students would definitely warn others, while 22 students would maybe alert others. Seven students find it unlikely they would warn others, and 14 students would not at all (Fig. 20).

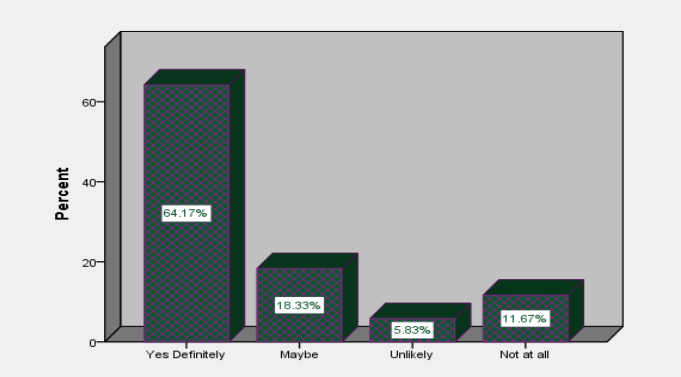

Figure 20. Alerting others about the effects of soft drinks on oral health.

Discussion

This study examined the knowledge, attitudes, and patterns of soft drink consumption among high school students at Shams London High School in Herat. The findings reveal important insights into adolescents' perceptions and behaviors regarding soft drink consumption and its impact on oral health. The results indicate a significant prevalence of soft drink consumption among the surveyed students, with varying levels of awareness of their harmful effects on oral health. This discussion places these findings in the context of the existing literature, highlights the strengths and weaknesses of the study, and suggests implications for public health interventions.

The study revealed that a significant proportion of students consume soft drinks daily or several times a week, preferring soft drinks such as fruit juice and energy drinks. A worrying finding is the frequent substitution of water for soft drinks, indicating a potential shift in beverage preferences among adolescents. These consumption patterns are in line with global trends regarding soft drinks, which are widely consumed by young people due to their taste, accessibility and marketing [8]. As observed in this study, the preference for energy drinks is particularly concerning due to their high concentration of caffeine and other stimulants, which can exacerbate oral health problems such as dry mouth and indirectly contribute to periodontal problems [9]. The reasons for consumption, such as taste and increased energy intake, are consistent with previous research on beverage preferences in adolescence [10]. While most students reported being aware of the effects of soft drinks on oral health, a significant proportion considered them to be harmless or lacking in knowledge. This discrepancy between general awareness and specific knowledge is significant. The finding of this study that soft drinks are perceived as the most damaged area of the mouth is encouraging and indicates an early understanding of dental caries and erosion. However, the uncertainty about the causal relationship between soft drinks and dental caries among a significant percentage of students highlights a knowledge gap that needs to be addressed through targeted educational interventions. Previous studies have similarly highlighted varying levels of awareness among adolescents about the health risks associated with sugary drinks [11].

This study found that oral hygiene practices among students, particularly regarding brushing habits after drinking soft drinks, are inadequate. A significant number of students reported never or rarely brushing their teeth after drinking soft drinks, and many of them preferred to rinse their mouths with water instead of brushing. This is a major concern because prolonged exposure to sugars and acids in soft drinks, combined with inadequate oral hygiene, significantly increases the risk of tooth decay and erosion [12]. The low level of tooth sensitivity reported by most students despite high soft drink consumption may be due to a lack of awareness of early symptoms or delayed recognition of

damage. This finding is in contrast to the established understanding that soft drinks can lead to dentin sensitivity over time [13].

Implications and Recommendations

These findings highlight the urgent need for comprehensive public health interventions aimed at promoting oral health among adolescents. Educational programs should not only raise awareness about the general effects of soft drinks, but should also provide specific information about the mechanisms of dental damage, the importance of immediate and effective oral hygiene measures after consumption, and healthier beverage alternatives. The role of school environments in influencing consumption habits is also clear, indicating the need for policies that limit access to soft drinks and encourage water consumption. In addition, dentists have an important role to play in educating young patients and their families about the risks and preventive measures. As noted in this study, students' willingness to reduce their consumption if their oral health improves offers a promising avenue for intervention.

Limitations

This study has several limitations. Its cross-sectional design limits the ability to establish a causal relationship between soft drink consumption and oral health outcomes. Reliance on self-report data may lead to recall bias and social desirability bias, which can affect the accuracy and reliability of the responses. While efforts were made to use standardized and pre-tested questionnaire items to enhance internal consistency, the subjective nature of self-reported dietary and oral health behaviors may still compromise data reliability. The study sample was limited to male high school students in Herat city, and the exclusion of female students due to cultural constraints affects the generalizability and population representativeness of the findings. Although ethical guidelines were followed during data collection, the lack of formal institutional review board (IRB) approval is a significant methodological limitation that may impact the study's credibility and reliability in the context of research ethics standards.

Conclusion

In conclusion, this study provides valuable insights into soft drink consumption patterns, awareness, and oral hygiene practices among Shams London high school students in Herat City. The findings highlight the need for targeted educational and public health interventions to mitigate the adverse oral health effects of soft drinks in this vulnerable population. Addressing knowledge gaps, promoting effective oral hygiene, and encouraging healthier beverage choices are crucial steps towards improving adolescent oral health.

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