

Sugar-sweetened beverage consumption of children and young people attending dental settings: A Mixed Methods Study

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Abstract

Background

Sugar-sweetened beverage (SSB) consumption among children and young people (CYP) is high and increasing, with notable inequalities in consumption and associated health outcomes. Frequent intake is associated with dental caries and erosion, type 2 diabetes, and obesity. Despite this, few studies have investigated SSB consumption specifically within dental settings. This mixed methods study aimed to quantify SSB consumption levels in CYP attending dental settings, gain deeper insights into the reasons why young people consume SSBs and determine the acceptability of advice on reducing SSB consumption from dental professionals.

Methods

This mixed-methods study recruited participants (n = 339) from dental settings in South Yorkshire and the East Midlands. Quantitative survey data from CYP (n = 312) were analysed using descriptive statistics. Qualitative data were gathered through 27 semi-structured interviews with CYP (n = 19) and caregivers (n = 8). Framework analysis was used to analyse the semi-structured interviews as a pragmatic approach and suitable for a mixed-methods study, with the Theoretical Domains Framework providing the theoretical foundation to analyse the determinants of SSB consumption

Results

Consumption was high: 84.3% of CYP consumed SSBs at least weekly, and 30.8% consumed them daily. Carbonated, fruit-based, and sports drinks were most consumed. While 90.1% of CYP recognised the link between SSBs and poor oral health, and 77.6% recognised the link to general health outcomes, consumption was primarily driven by taste, perceived energy needs, peers, and social media. Young people and their caregivers were receptive to in-person advice from dental professionals about SSBs, with a conversation being the preferred method to receive guidance.

Conclusions

Intake of SSBs is high despite awareness of the dental and general health consequences of consumption among most CYP. Future interventions must acknowledge the social and environmental determinants influencing behaviour rather than focusing solely on education. Dental professionals are well positioned to support CYP in making healthier choices, highlighting the need for co-designed, evidence-based interventions tailored to dental settings to reduce oral health inequalities.

Background

There are growing concerns about children and young people's (CYP) consumption of sugar-sweetened beverages (SSBs).(1) SSBs are defined as beverages in which sugars are added during processing and include carbonated and non-carbonated soft drinks, sports and energy drinks and flavoured coffees and teas.(2) Frequent consumption of SSBs is associated with increased risk of dental caries and tooth surface loss.(3) Additionally, it presents broader systemic health risks, including increased body mass index (BMI), obesity, type 2 diabetes, and adverse mental health outcomes.(4, 5)

Obesity and dental caries in particular pose significant public health challenges in the UK. Over one quarter of CYP aged 2 to 15 in England were overweight or living with obesity in 2022.(6) Significant inequalities are present. Obesity rates in CYP living in the most deprived third of the population are approximately double those living in the least deprived or middle thirds of the population. Similar inequalities exist for oral health outcomes. A national oral health survey of children in Year 6 (aged 10 to 11 years) in 2023 in England found that almost 1 in 5 (16%) children had experience of dental caries.(7) Children living in the most deprived areas were twice as likely to have experience of dental caries compared with those living in the least deprived areas.

Global consumption of SSBs by young people aged 3 to 19 years increased by 23% from 1990 to 2018. (8) In 2018, substantial variation in weekly intake was observed by global region ranging from 1.3 serving per week in South Asia to 9.1 in Latin America and the Caribbean. Countries with the highest consumption in CYP were Mexico, Uganda, Pakistan, South Africa and the United States, with consumption lowest in Bangladesh and India. The largest increase in intake was found in Sub-Saharan Africa. SSB consumption levels in CYP were higher in urban areas compared with rural areas. Interestingly, between 1990 and 2005 a positive correlation was observed between higher sociodemographic index and higher SSB consumption, however, this correlation was no longer present in 2018.

SSB consumption was also assessed by the Health Behaviour in School-aged Children (HBSC) study, a World Health Organization collaborative, which used school-based surveys among 11-, 13- and 15-year-olds to compare health behaviours across 51 countries and regions in Europe, Central Asia and North America.(1) The study found 15% of adolescents reported consuming sugary drinks daily, with consumption generally higher in boys than girls. Fourteen percent of 15-year-old boys and 11% of 15-year-old girls in England reported consuming sugary drinks daily, with higher daily consumption found in Scotland (28% for boys and 18% girls) and Wales (16% for boys and girls). Elsewhere internationally daily SSB consumption remained relatively stable.

There is evidence of a social gradient in SSB consumption in the UK. The National Diet and Nutrition Survey 2019 to 2023 found in CYP aged 11 to 18 years SSB consumption was highest in those living in the most deprived areas; this was also found in children aged 4 to 10 years.(9) Morgan and colleagues found that while consumption of SSBs had decreased in Welsh adolescents from 1998 to 2017, inequalities in consumption had widened between CYP living in the most and least deprived areas.(10)

In response to growing concerns of obesity and high prevalence of dental caries in CYP the UK government announced a soft drinks industry levy (SDIL) in March 2016 with implementation from April 2018 and expansion in January 2028.(11) An interrupted time series analysis identified a relative reduction in hospital admissions for tooth extractions due to dental caries in children aged 0 to 9 years following the announcement of the SDIL. However, no change was observed in the older age group (10 to 18 years), suggesting a need for targeted interventions in this older age group.(12)

Indeed, while many national oral health interventions focus on the oral health improvement of younger children (under 11 years), adolescence is a critical stage in which health practices and beliefs are developed.(13). Adolescence is defined as the period of transition from childhood to adulthood; it is a significant period of biological, psychological, emotional, social and developmental changes.(14) Despite its significance, adolescence remains an overlooked period of the life course in health policy and research.

There are several key influences on SSB consumption in CYP; environmental determinants such as accessibility and availability of SSBs, positive parental attitudes towards SSBs and modelling of significant others such as parents and peers.(15) Furthermore, qualitative evidence mapping of Dutch teenagers' lived experiences of SSB consumption identified four key influences: social norms, balancing future health consequences against immediate enjoyment, high affordability and availability, and intense marketing.(16)

The relationship between SSBs and dental caries is well established.(3) However, there is limited research exploring SSB consumption among CYP attending dental care settings. Initial qualitative research undertaken prior to this study found a range of key stakeholders including CYP, their caregivers and dental professionals were supportive of dental professionals providing advice on reduction of SSBs. (17) Given the support for advice on SSBs delivered by dental professionals and complex influences on SSB consumption, this mixed-methods study aimed to investigate and quantify SSB consumption of CYP attending dental settings and gain deeper insights into CYPs consumption practices.

Methods

A mixed-methods approach was used to gain breadth and depth of knowledge concerning SSB consumption in CYP. This study forms part of a wider project evaluating CYPs' SSB intake. While initial qualitative findings concerning the role of dental professionals in discussing SSBs have been reported previously (17), the present manuscript presents the primary mixed-methods study, integrating qualitative interviews with a cross-sectional survey. Qualitative methods provided insight into why CYP consume SSBs and a deeper understanding of the roles these drinks have in their lives. The cross-sectional survey provided quantitative data of SSB consumption practices in CYP. Ethical approval for the mixed-methods study was obtained from Fulham Ethics Review Committee (24/LO/0797).

The target population for this study was CYP aged 11-to-16 years, with their parents and carers also recruited for the qualitative component. The age range 11-to-16 years was chosen as the majority will be

in full-time secondary school education and this time period is recognised as a time where young people gain increased independence and autonomy. Informed consent was sought and obtained for all participants; parental consent and child assent were obtained for participants aged 11 to 15, while direct consent was obtained for young people aged 16 years. Caregivers interviewed provided consent to participate.

Participants were recruited from eight primary dental care practices in South Yorkshire and the East Midlands and two clinics (Paediatrics and Orthodontics) at the Charles Clifford Dental Services (Sheffield).

Qualitative Phase: Semi-structured interviews

Qualitative data were collected through semi-structured interviews with CYP aged 11-to-16 and parents/carers. Sampling was purposive to capture a wide range of perspectives; maximum variation was achieved by ensuring CYP and their parents/carers were selected from a range of socio-economic backgrounds, ages and genders. Participants from orthodontic settings were recruited at different points along the treatment pathway (pre-, mid-, and post-treatment). Data collection continued until theoretical saturation (data adequacy) was achieved.

Interviews were conducted either face-to-face or virtually, dependent on participant preference, by SW and JL. SW had previously conducted qualitative interviews while JL conducted interviews for the first-time, both undertook training in advance of the study and were supported by a senior researcher with extensive qualitative interview experience (ZM). Interviews were guided by a topic guide and lasted 15 to 55 minutes. Demographic information was collected at the consent/assent stage for all participants including age, postcode, self-reported ethnicity and gender. CYP participants chose whether to be interviewed with, or separately from their parent/carer.

The semi-structured interviews were audio-recorded then transcribed verbatim by a transcription service (Dictate2Us). Framework analysis was used to analyse the qualitative data as a pragmatic approach and suitable for a mixed-methods study.⁽¹⁸⁾ The Theoretical Domains Framework (TDF) was selected as the underlying theoretical foundation to identify influences on SSB consumption and potentially inform implementation of a future intervention.⁽¹⁹⁾ Interview guides were developed for the interviews with young people and their parents, underpinned by the TDF (see supplementary material). The data collection and analysis of the qualitative interviews was performed iteratively to allow emerging topics in the analysis to inform further sampling and data collection. Analysis involved reading and familiarisation with the transcripts. Next, inductive and deductive coding (based on the 14 domains of the TDF) of the data was carried out by SW and a working framework was produced on Microsoft Excel.⁽¹⁹⁾ The framework was then discussed and refined further. A proportion of the transcripts (20%) were coded by a second researcher (JL) to ensure rigour and consistency of the analysis, any disagreements in coding were resolved by a third researcher (ZM).

Quantitative Phase: Cross sectional survey

The qualitative data informed the development of a survey questionnaire, which was developed and piloted with CYP through patient public involvement and engagement (PPIE) groups (see supplementary material). Quantitative survey data indicated frequency, amount, and reasons for consumption. Online and paper surveys were used dependent on dental setting preference.

Survey data was summarised using descriptive statistics; the survey also included free-text options, responses to these questions were analysed thematically with a narrative synthesis used to summarise key themes. For the quantitative survey a sample size of 300 was required based on previous literature on the topic.(20)

Results

Qualitative - Semi-structured interviews

Nineteen CYP and eight parents/carers participated in interviews. Data adequacy was achieved with this sample; no repeat interviews were undertaken. CYP participants were evenly split by gender (9 male, 10 female), age (11–13: n=9; 14–16: n=10), and area-level deprivation (IMD 1–5: n=10; IMD 6–10: n=9). Four key themes arose from the semi-structured interviews, which mapped to the TDF domains:

1. SSB consumption is high and multifactorial

(TDF Domains: Environmental Context and Resources, Social Influences, and Reinforcement/ Emotion)

The CYP interviewed reported frequently consuming a range of SSBs including sports and energy drinks, iced coffees and carbonated beverages. They cited taste, perceived energy needs, convenience, electrolytes during sports, novelty, peers and cost as key influences. Social influences such as social media influenced young people to try “certain ones” and “new drinks”. They also felt if a drink had “hype” around it and was something new they were more likely to consume. A range of environmental contexts and resources were discussed by young people who described purchasing SSBs from local supermarkets, corner shops, TikTok shop, the park and shopping centres.

“It depends if there's, like, a new one coming out, and it's got a lot of, like, hype around it. But usually if, like, if someone's drinking a Coke or something, I don't usually get influenced by them because I just like it anyway.” CYP aged 14

2. Knowledge of oral and general health impacts

(TDF Domains: Knowledge and Beliefs about Consequences)

Participants had good baseline knowledge of the impact of SSB consumption on oral health, consistently describing the effects using terms such as “rotting,” “dissolving,” or developing “holes”.

“So like if you drink fizzy drinks then like your teeth will dissolve and if you drink like sugary drinks then it makes like holes and stuff” CYP aged 12

CYP had broad awareness of general health risks, including short-term behavioural effects for example energy spikes and difficulty sleeping to longer-term conditions such as weight gain and obesity, diabetes, addiction, liver function issues, and cardiac risks linked to energy drinks.

"I know you can get like, if you have too much sugar and stuff, you can get diabetes and things like that."

CYP aged 12

3. Navigating increased autonomy

(TDF Domains: Environmental Context and Resources, Social Influences)

Parents and carers acknowledged that while they attempted to control their child's SSB consumption, adolescence was accompanied by increasing demands for autonomy. Parents reported controlling which SSBs were purchased for the household but acknowledged a significant drop in influence once CYP gained financial independence or spent time away from home, for example travelling to and from school and social outings with peers. Some parents discussed a negotiation process between enforcing boundaries and avoiding social exclusion for their child.

"I think the thing is when they're like 16, they're kind of responsible for their own kind of decision making and so it's kind of up to them whether they follow through or not. I'm just here as a guidance to say this is what you should or shouldn't be doing and it's up to you whether you want to follow, because when they're at school I have no control of that or if they're at dancing and she goes to the shop and gets one, that's up to my child to decide" Parent of CYP aged 16

4. The acceptability of advice on SSBs and role of dental professionals

(TDF Domain: Professional Role and Identity)

Young people and parents viewed dental practices and dental professionals as appropriate and trusted settings and professionals to discuss SSB intake. Young people were receptive to discussions on both the oral and general health consequences of SSB consumption, with some parents acknowledging that young people may be more receptive to messaging from dental and health professionals.

"I don't know. I'd probably expect it more from a doctor to say that, but I also feel like they're also like to do with like your hygiene and stuff, and your health and stuff, I feel like it wouldn't be that strange." CYP aged 13

"Some teenagers, when it's being told by somebody else do take it on board more than if it was the parent. When the professional of that or that person tells you it, I think they do listen more." Parent of CYP aged 15

Overall, the interviews highlighted that CYP are consuming a wide range of SSBs with a variety of factors influencing consumption practices. Young people generally are aware that frequently consuming SSBs is associated with adverse general and oral health outcomes and are supportive of receiving this

messaging from dental professionals. Parents and caregivers acknowledge that increased autonomy associated with adolescence can make it difficult to support CYP to make healthy choices.

Cross sectional survey

A total of 312 CYP completed the survey. Demographic characteristics are summarised in Table 1.

Table 1: Cross-sectional survey self-reported participants' demographic characteristics (n=312)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	172	55.1%
	Male	133	42.6%
	Prefer not to say	7	2.2%
Ethnicity	White – British	276	87.8%
	Asian / Asian British	11	3.5%
	Mixed / Multiple Ethnic Groups	8	2.6%
	Black / Black British / Caribbean / African	7	2.2%
	White – Other	2	0.6%
	Other ethnic group	2	0.6%
	Prefer not to say	8	2.6%
Deprivation (IMD)	IMD 1–3 (Most deprived)	102	32.7%
	IMD 4–6	94	30.1%
	IMD 7–10 (Least deprived)	105	33.7%
	Appropriate post code note provided	11	3.5%

Daily or more frequent consumption was reported by nearly one third of participants (30.8%, n=96) and weekly or more frequent consumption was reported by 84.3% participants (n=263). Thirty-seven participants reported drinking sugary drinks less than once a month (11.9%) and twelve reported never drinking sugary drinks (3.8%). Participants living in IMD 1 to 3 and IMD 4 to 6 postcodes were more likely to report daily SSB consumption (once a day or more frequent) with 33.3% (n=34) and 38.3% (n=36) respectively, compared with 21.9% (n=23) of participants living in the least deprived deciles (IMD 7 to 10).

A wide range of sugary drinks were frequently consumed by the participants (Figure 1). Carbonated drinks such as Coke© and Fanta© were the most consumed drinks, followed by fruit-based drinks such

as Capri Sun® or Rubicon®. As participants could select multiple drinks, percentages are relative to the total number of survey participants (n=312). Almost one-quarter of participants reported drinking milkshakes (23.1%, n=72) and sports drinks (23.7%, n=74). Fifteen percent of participants reported consuming energy drinks (n=47), the majority of these were 11-to-15 years old (76.6%, n=36). Participants could also select multiple reasons for consumption. The vast majority reported taste as a key reason for consumption (87.2%, n=272), other reasons included energy (20.5%, n=64), peer influence “my friends drink them” (7.1%, n=22), the drink being “on trend” (3.8%, n=12) and family/parental influence (5.1%, n=16).

When questioned on the impact of sugary drinks on their oral health most respondents were aware that high consumption of sugary drinks was ‘bad’ for their oral health (90.1%, n=281), compared with 77.6% (n=242) responding that high consumption was ‘bad’ for their general health. As part of the free text responses young people noted that sugary drinks can ‘rot’ and ‘decay’ their teeth and can harm their enamel. Free text responses described various general health consequences including diabetes (*‘lots of sugar leads to high glucose level constantly, and can lead to diabetes if uncontrolled’*), weight gain (*‘turns to fat’*) and cognitive and sleep issues (*‘it can energise you but if you have too much of it then I will stop you from sleeping well and will stop you from concentrating as well’*).

Participants reported frequent attendance at dental settings with 88.2% attending the dentist every six or three months (n=296) and 94.0% (n=305) attending at least annually. Most participants (59.9%) recalled that a dental professional had spoken about SSBs at a dental visit. Many remembered short, simple messaging such as *‘don’t drink them’*, *‘limit to once a week’*, or *‘it causes stains around braces’*. Young people were generally receptive to dental professionals offering guidance, with 79.8% (n=249) responding that advice from a dental professional on reducing their sugary drink intake would be very helpful or a bit helpful.

The survey also explored what young people would like to learn about sugary drinks, participants were able to select multiple options. The majority wanted to learn about the impact on oral health (46.8%, n=146), general health (43.3%, n=135) and ideas for alternative beverages (42.0%, n=131). The preferred format of an oral health intervention was also explored. Most participants favoured a conversation with a dental professional (59.3%, n=185), while fewer selected a physical leaflet (30.1%, n=94), a website (21.2%, n=66), or an app (17.0%, n=53). Free text responses highlighted a range of content and format ideas for a future oral health intervention such as *‘give examples of the effects and possibly pictures of how bad it could affect teeth’*, *‘tell them alternatives because it’s really yummy and hard to give up and tell us information where we understand the words because we might not know the fancy teeth words’* and *‘going to schools and talking about sugary drinks and how they affect your teeth and health’*.

Discussion

This study highlights high daily consumption of SSBs among adolescents. While quantitative survey data identified taste as the primary driver of consumption, qualitative interviews highlighted key

environmental and social factors, including peer influence, social media marketing, and the perception that SSBs offer necessary energy. A clear socioeconomic gradient was observed in the survey data; adolescents living in more deprived areas (IMD deciles 1–3 and 4–6) were more likely to consume SSBs daily compared to those in less deprived areas (IMD 7-10). While parents and caregivers expressed frustration over the challenges of limiting their child's dietary choices during adolescence, young people themselves demonstrated good awareness of oral health impacts and were broadly receptive to receiving dietary guidance from dental professionals.

Consumption levels in this study were substantially higher than other national health surveys of CYP. For example, the 2017 HBSC survey of Welsh adolescents found 18% of adolescents drank SSBs daily and 52% consumed weekly.(10) While the NDNS survey did not quantify the frequency, it did find that 11- to 18-year-olds were the highest consumers of SSBs, with daily consumption ranging from an average of 124ml per day to 606mls.(9) Daily consumption rates reported in this survey closely mirror those reported in the Adult Oral Health Survey.(21) Increased consumption levels highlight the evolving nature of SSB choice and consumption, potentially driven by availability, marketing and advertising and social media, and emphasises the need for updated national surveys to determine whether these findings reflect a broader national trend or if these findings are localised to this specific population.

Key policy levers recently introduced or proposed in the UK, including restrictions on advertising High in Fat, Sugar, and Salt (HFSS) products (22), bans on energy drink sales to under-16s (23), and age-based social media restrictions (24), represent encouraging upstream measures to reduce young people's exposure to unhealthy food and beverage marketing. While these population-level policies, alongside potential expansions of the Soft Drinks Industry Levy (SDIL)(11), help to reduce sugar consumption, our findings highlight a complex interplay of individual and social factors that continue to drive adolescent beverage choices. Consequently, targeted behaviour change interventions delivered by dental professionals provides an opportunity to complement national policy. Such chairside interventions can provide young people with the strategies needed to navigate commercial, peer, and environmental influences.

Participants demonstrated good knowledge of the impacts of high SSB consumption on oral and general health. It is promising that CYP deem advice from dental professionals on SSBs acceptable. However, the disconnect between CYPs' knowledge of the consequences of SSB consumption and high consumption rates suggests future interventions need to move beyond education and be developed with CYP themselves to ensure they are appropriate and informed by the needs of CYP. While further advice on the general and oral health consequences is likely to be beneficial, introducing other behaviour change techniques such as goal setting and personalisation of an intervention to CYP is essential.

The study highlights encouraging findings that young people and their parents/ carers consider dental professionals as a trusted source of health information and would find discussions about SSBs acceptable. While the use of digital platforms such as social media, apps or websites appears appealing to target interventions to children and young people, most young people surveyed expressed a

preference for members of the dental team to talk to them about sugary drinks. This further strengthens the need to involve CYP in the design of future interventions.

Strengths and Limitations

The use of an exploratory mixed-methods design was a key strength of this study, it allowed for rich qualitative insights into the social and environmental determinants of adolescent SSB choices and quantified consumption practices. The use of the TDF provided a theoretical underpinning to understand behavioural determinants, such as social influences, beverage availability, and health beliefs.

The balanced socioeconomic sample represents a key strength, this study highlighted more frequent consumption of SSBs in those living in areas of deprivation compared with those living in less deprived areas, this is consistent with findings of other national surveys (NDNS and HBSC surveys).(8, 9) The findings from this study, coupled with findings from national health surveys highlights SSB consumption as a key source of inequality, consequently targeted interventions aimed at reducing SSB consumption in CYP living in areas of deprivation have the potential to reduce health inequalities. Finally, including multi-stakeholder perspectives across CYP and parents/ carers ensured that a range of views on the acceptability of dental professionals discussing SSB consumption were captured.

Despite these strengths, the limitations of this study must be acknowledged. First, participants for the cross-sectional survey were recruited via convenience sampling across primary and secondary dental clinics within two specific regions (South Yorkshire and the East Midlands). While the sample was socio-demographically diverse, findings may not be fully generalisable to all regions of the UK. Second, dietary data relied on self-reported survey responses and interview accounts, which are subject to recall bias and social desirability bias. Consequently, adolescent consumption patterns may be underestimated. Future research to quantify CYP SSB consumption nationally is required.

Conclusion

SSB consumption in adolescents is high. Given the established inequalities in SSB consumption and associated health outcomes including dental caries and obesity, supporting reduction in CYP is a key opportunity to reduce health inequalities and improve health outcomes for young people. Young people and their caregivers deem conversations delivered in dental settings as acceptable, however, given CYP demonstrate good baseline knowledge of oral health consequences of SSB consumption, conversations based on established behaviour change theory may be required to enable young people to identify barriers and facilitators to change their consumption practices and set their own goals and actions to support reduction.

Declarations

Ethics approval and consent to participate

Ethical approval was provided by the London Fulham Research Ethics Committee, NHS Health Research Authority (24/LO/0797), and the study was conducted in compliance with the ethical requirements outlined in the Declaration of Helsinki.

Informed consent was sought and obtained from all participants and caregivers. For participants aged 11 to 15 years, informed consent to participate was obtained from a parent or legal guardian, and informed assent was obtained from the child. For participants aged 16 years, informed consent was obtained directly from the young person. Caregivers who participated in interviews also provided informed consent to participate.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

None declared.

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Authors' contributions

Conceptualisation: SW and ZM, Methodology: All authors. Draft preparation: All authors. Writing - reviewing and editing: All authors. Funding acquisition: SW and ZM. All authors contributed to the interpretation of data and the final version of the manuscript, and all are guarantors.

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References

1. Rakić JGHZ, Dzielska A, Felder-Puig R, Oja L, Bakalár P, et al. A focus on adolescent physical activity, eating behaviours, weight status and body image in Europe, central Asia and Canada. Health Behaviour in School-aged Children international report from the 2021/2022 survey. Volume 4. Copenhagen: WHO Regional Office for Europe; 2024.
2. Sousa A, Sych J, Rohrmann S, Faeh D. The Importance of Sweet Beverage Definitions When Targeting Health Policies—The Case of Switzerland. *Nutrients*. 2020;12(7):1976.
3. Valenzuela MJ, Waterhouse B, Aggarwal VR, Bloor K, Doran T. Effect of sugar-sweetened beverages on oral health: a systematic review and meta-analysis. *Eur J Pub Health*. 2020;31(1):122–9.
4. Keller A, Torre SBD. Sugar-Sweetened Beverages and Obesity among Children and Adolescents: A Review of Systematic Literature Reviews - PubMed. *Childhood obesity (Print)*. 2015;11(4).
5. Di Nucci A, Cardamone E, Rossi L, Silano M. How does sugar-sweetened beverage consumption relate to sleep and mental health in adolescents? A scoping review. *Front Nutr*. 2026;12.
6. NHSE. Health Survey for England. 2022 Part 2 2024 [Available from: <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2022-part-2/childrens-overweight-and-obesity>]
7. Office for Health Improvement and Disparities. Oral health survey of children in year 6, 2023 - detailed report 2024 [Available from: <https://www.gov.uk/government/statistics/oral-health-survey-of-children-in-year-6-2023-detailed-report>]
8. Lara-Castor L, Micha R, Cudhea F, Miller V, Shi P, Zhang J et al. Intake of sugar sweetened beverages among children and adolescents in 185 countries between 1990 and 2018: population based study. *BMJ*. 2024;386.
9. Office for Health Improvement and Disparities. National Diet and Nutrition Survey 2019 to 2023: report 2025 [Available from: <https://www.gov.uk/government/statistics/national-diet-and-nutrition-survey-2019-to-2023/national-diet-and-nutrition-survey-2019-to-2023-report>]
10. Morgan K, Lowthian E, Hawkins J, Hallingberg B, Alhumud M, Roberts C et al. Sugar-sweetened beverage consumption from 1998–2017: Findings from the health behaviour in school-aged children/school health research network in Wales. *PLoS ONE*. 2021;16(4).
11. HMRC. Consultation outcome Strengthening the Soft Drinks Industry Levy – Summary of responses 2025 [Available from: <https://www.gov.uk/government/consultations/strengthening-the-soft-drinks-industry-levy/outcome/strengthening-the-soft-drinks-industry-levy-summary-of-responses>]
12. Rogers NT, Conway DI, Mytton O, Roberts CH, Rutter H, Sherriff A, et al. Estimated impact of the UK soft drinks industry levy on childhood hospital admissions for carious tooth extractions: interrupted time series analysis. *BMJ Nutr Prev Health*. 2023;6(2):243–52.
13. Moore Heslin A, McNulty B. Adolescent nutrition and health: characteristics, risk factors and opportunities of an overlooked life stage. *Proceedings of the Nutrition Society*. 2023;82(2):142–56.

14. Parajuli J, Prangthip P. Adolescent Nutrition and Health: a Critical Period for Nutritional Intervention to Prevent Long Term Health Consequences. *Curr Nutr Rep*. 2025;14(1).
15. Schneider S, Schilling L, Osenbrügge N. Determinants of soft drink consumption among children and adolescents in developed countries—a systematic review. *Cent Eur J Public Health*. 2021;29(4):290–300.
16. Pepping R, Waterlander W, Groot B, Kistemaker S, Verhoeff AP, Seidell JC et al. 'Soft drinks are normal': understanding the lived experiences of Dutch teenagers with respect to sugar-sweetened beverages: a qualitative context-mapping study. *BMC Public Health*. 2025;25(1).
17. Watt S, Li J, Brierley C, Marshman Z. Oral healthcare professionals' role in reducing young people's sugar-sweetened beverage consumption: a qualitative study. *Br Dent J*. 2026.
18. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol*. 2013;13(1):117.
19. Atkins L, Francis J, Islam R, O'Connor D, Patey A, Ivers N et al. A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implement Sci*. 2017;12(1).
20. Broughton D, Fairchild RM, Morgan MZ. A survey of sports drinks consumption among adolescents. *Br Dent J*. 2016;220(12):639–43.
21. Office for Health Improvement and Disparities (OHID). Adult oral health survey 2023 2025 [.
22. Department of Health and Social Care. Press release Landmark junk food ad ban to protect kids' health 2026 [Available from: <https://www.gov.uk/government/news/landmark-junk-food-ad-ban-to-protect-kids-health>
23. Department of Health and Social Care. Consultation outcome. Banning the sale of high-caffeine energy drinks to children 2026 [Available from: <https://www.gov.uk/government/consultations/banning-the-sale-of-high-caffeine-energy-drinks-to-children/banning-the-sale-of-high-caffeine-energy-drinks-to-children>
24. Department for Science IT, Guidance. Fact sheet: New rules to protect children online 2026 [Available from: <https://www.gov.uk/government/publications/fact-sheet-new-rules-to-protect-children-online/fact-sheet-new-rules-to-protect-children-online>

Figures

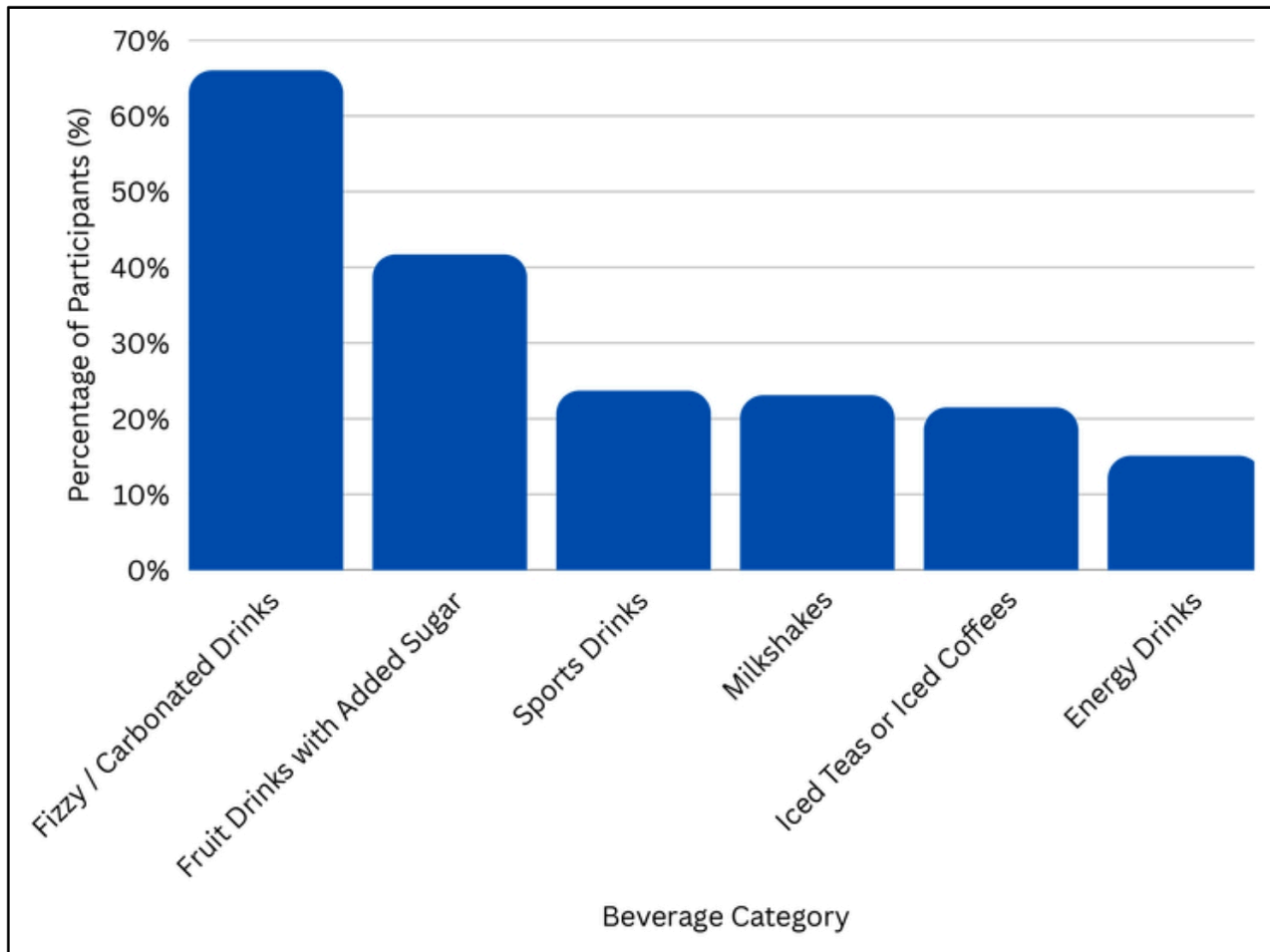


Figure 1

A bar chart of types of frequently consumed sugar-sweetened beverages

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [SODAstudyquestionnaire.docx](#)
- [SODATopicGuideCYP.docx](#)
- [SODATopicGuideParentandcarer.docx](#)