International Journal of Community Medicine and Public Health
Meeralsulaimani AF et al. Int J Community Med Public Health. 2026 Dec;13(12):xxx-xxx
https://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20264250

Review Article

Household beverage consumption patterns and their influence on dental erosion risk

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Received: 01 November 2026
Revised: 13 November 2026
Accepted: 16 November 2026

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ABSTRACT

Dental erosion is a growing oral health concern characterized by the irreversible loss of dental hard tissues through chemical processes involving acids of non-bacterial origin. Frequent consumption of acidic beverages, including carbonated soft drinks, fruit juices, energy drinks, and sports drinks, contributes to enamel demineralization and increases the risk of erosive tooth wear. Household beverage consumption patterns play a significant role in shaping dietary behaviors, particularly among children and adolescents who develop their preferences through family interactions and shared routines. Parental drinking habits, purchasing decisions, and the availability of acidic beverages at home influence the frequency and duration of dietary acid exposure. Children often adopt beverage preferences observed in their parents, potentially establishing consumption patterns that persist into adulthood. The relationship between shared beverage habits and dental erosion is influenced by several factors, including beverage acidity, consumption frequency, drinking methods, salivary protection, and individual susceptibility. Prolonged sipping and repeated consumption between meals may extend acid contact with dental surfaces, increasing the likelihood of enamel damage. Socioeconomic circumstances, cultural preferences, and parental awareness also contribute to differences in household beverage choices and associated oral health risks. Family-based preventive strategies emphasize reducing acidic beverage availability, encouraging water consumption, and promoting healthier drinking routines. Parental involvement in dietary education can support behavioral modifications and improve children's understanding of beverage-related oral health consequences. Regular dental examinations, early identification of erosive changes, and individualized dietary counseling remain essential for managing erosive tooth wear. Although household members may share similar drinking habits, differences in biological characteristics and oral protective mechanisms can produce varying clinical outcomes. Addressing beverage consumption within the family environment provides opportunities to reduce repeated acid exposure, strengthen preventive practices, and promote sustainable oral health behaviors across different age groups and generations while supporting broader efforts to prevent diet-related dental erosion throughout childhood and later life.

Keywords: Dental erosion, Household beverage habits, Acidic beverages, Parental influence, Family-based prevention

INTRODUCTION

Dental erosion is an increasingly recognized oral health concern affecting individuals across different age groups, particularly children and adolescents. It is characterized by the progressive and irreversible loss of dental hard tissues due to chemical dissolution by acids of non-bacterial origin. Unlike dental caries, which involves bacterial activity, dental erosion occurs primarily through repeated exposure to intrinsic or extrinsic acids. Intrinsic acids originate mainly from gastric sources, whereas extrinsic acids are commonly associated with dietary habits, particularly the consumption of acidic beverages such as carbonated soft drinks, fruit juices, energy drinks, and sports drinks. Prolonged exposure to these substances can gradually weaken tooth enamel, contributing to dentin exposure, tooth sensitivity, aesthetic concerns, and functional complications.[1]

Dietary behaviors play a significant role in the development and progression of dental erosion. The erosive potential of beverages depends on several factors, including their acidity, titratable acidity, mineral composition, and frequency of consumption. Research has demonstrated that frequent consumption of acidic drinks is associated with an increased risk of erosive tooth wear, especially among younger populations. Moreover, drinking behaviors such as prolonged sipping, holding beverages in the mouth, and consuming acidic drinks between meals may increase the duration of the acid exposure and contribute to enamel demineralization. Individual susceptibility also varies according to salivary flow, buffering capacity, and oral hygiene practices.[2]

Although beverage consumption is often considered an individual lifestyle choice, dietary behaviors are strongly influenced by the household environment. Family members frequently share food preferences, purchasing decisions, meal routines, and beverage consumption habits. Parents and caregivers play an important role in shaping children's dietary preferences by determining which beverages are available at home and establishing daily consumption patterns. Children may also develop similar habits through observation and imitation of older family members. Evidence from household-based research has demonstrated associations between parental and children's beverage consumption patterns, suggesting that dietary behaviors may be shared across generations.[3]

These shared patterns may have important implications for dental health, particularly when acidic beverages are regularly available and consumed within households. Children raised in environments where soft drinks and fruit juices are frequently consumed may experience repeated dietary acid exposure from an early age. A population-based study among preschool children identified acidic beverage consumption as a predisposing factor for erosive tooth wear, emphasizing the importance of early dietary exposures in dental health outcomes. However, the relationship between household beverage habits and dental erosion may also be influenced by socioeconomic conditions, parental knowledge, cultural preferences, and access to healthier alternatives.[4]

ANALYSIS

Dental erosion associated with shared beverage habits within households represents an important oral health concern, particularly among children and adolescents. Family environments influence beverage preferences, purchasing decisions, and daily consumption patterns. Children frequently adopt dietary behaviors observed in their parents, potentially increasing their exposure to acidic drinks. Grimm et al. found that soft drink consumption among school-aged children was associated with environmental and behavioral factors, including beverage availability and preferences. These findings suggest that household beverage choices may contribute to the development of consumption habits that increase susceptibility to dental erosion.[5]

Frequent exposure to acidic beverages can gradually damage dental hard tissues, particularly when consumption occurs repeatedly throughout the day. The risk of erosion is influenced not only by beverage acidity but also by drinking frequency, oral conditions, and individual susceptibility. Oudkerk et al identified dietary and behavioral factors associated with tooth wear, highlighting the multifactorial nature of this condition. Within households, shared consumption routines may expose multiple family members to similar dietary risks, although the severity of erosion can differ between individuals.[6]

HOUSEHOLD BEVERAGE HABITS AND DENTAL EROSION

Household beverage consumption patterns can influence the development of dental erosion, particularly when acidic drinks become part of everyday family routines. The availability of carbonated beverages, packaged fruit juices, and flavored drinks within the home may encourage frequent consumption among family members. Children are especially influenced by their surrounding environment, where beverage preferences develop through repeated exposure and observation of parental behaviors. Zahid et al reported associations between children's beverage consumption and parent- and home-related factors, emphasizing the influence of household beverage availability on children's dietary choices. Regular access to acidic drinks may increase the frequency of exposure to erosive substances, creating conditions that favor progressive enamel loss.[7]

Family consumption habits are shaped by purchasing practices, cultural preferences, and established mealtime routines. Beverages commonly served during meals or family gatherings may become familiar choices for children, reinforcing consumption patterns over time. Van de Gaar et al. examined family and home-related factors

associated with sugar-sweetened beverage consumption among children and identified relationships involving parental modeling and household availability. These findings indicate that children's beverage choices are closely connected to their domestic environment. However, shared beverage consumption does not necessarily produce identical dental outcomes, as exposure frequency and individual biological characteristics vary among household members.[8]

The erosive effects of commonly consumed beverages are influenced by their chemical composition and contact with dental surfaces. Carbonated soft drinks often contain phosphoric or citric acid, while fruit-based beverages may contain organic acids capable of promoting enamel demineralization. Inchingolo et al described the damaging effects of carbonated soft drinks on dental enamel and highlighted the relationship between acidic beverage consumption and erosive changes.[9] Repeated sipping throughout the day can prolong acid exposure, particularly when beverages are consumed outside regular meals. Household routines involving frequent refreshments may therefore influence cumulative exposure to dietary acids.

The relationship between beverage consumption and dental erosion also requires consideration of age-related susceptibility and the progression of erosive tooth wear. Primary teeth differ structurally from permanent teeth, potentially affecting their response to acidic challenges. Gatt and Attard investigated risk prediction for erosive tooth wear among preschool-aged children, emphasizing the importance of identifying relevant risk factors during early childhood. Within families, differences in salivary protection, drinking behavior, and existing enamel condition may influence the clinical presentation of erosion. These individual variations can complicate the assessment of household dietary exposure, particularly when family members consume similar beverages at different frequencies and under different oral conditions.[10]

PARENTAL INFLUENCE ON BEVERAGE CONSUMPTION

Parental behavior plays a substantial role in shaping children's beverage preferences, particularly during early childhood when dietary habits are largely established within the family environment. Children frequently observe and imitate their parents' drinking behaviors, making parental consumption patterns relevant to their exposure to acidic beverages. Liu et al investigated associations between family members' sugar-sweetened beverage consumption and children's subsequent intake in China. Their findings indicated that beverage consumption among family members was associated with children's drinking patterns over time. Such relationships are particularly relevant to dental erosion because repeated consumption of acidic beverages can increase the duration and frequency of contact between dietary acids and dental surfaces.[11]

Parental knowledge about the potential health consequences of sugary beverages does not always translate into healthier consumption practices. Lundeen et al examined parent-adolescent pairs and reported that adolescents' sugar-sweetened beverage intake was associated with parental intake rather than parental knowledge of beverage-related health risks.[12] This distinction suggests that children's dietary behaviors may be influenced more strongly by what parents regularly consume than by the health information communicated within the household. Parents who frequently drink carbonated beverages may unintentionally normalize their consumption, even when they recognize the potential consequences of excessive intake.

The influence of parents also extends to the organization of the household food environment. Decisions regarding grocery purchases, beverage storage, and the availability of drinking water can shape children's daily choices. Qiu et al investigated parental attitudes and adolescent dietary behaviors in China, identifying associations involving the home availability of junk foods and sugar-sweetened beverages. These findings illustrate how parental preferences and purchasing decisions may influence consumption through the beverages accessible within the home. From an oral health perspective, regular availability of acidic drinks may facilitate repeated consumption between meals, potentially increasing cumulative erosive exposure.[13]

However, parental decisions surrounding beverage provision are not determined solely by nutritional awareness. Newman et al explored parental perspectives on family beverage choices and identified practical challenges affecting efforts to reduce sugary drink consumption. Family preferences, established routines, and difficulties encouraging water consumption can complicate attempts to modify drinking behaviors. These circumstances may be particularly relevant in households where children have developed strong preferences for flavored or sweetened beverages. Parental responses to children's requests, the use of beverages during recreational activities, and differences in drinking preferences between siblings can influence the frequency and timing of acidic beverage consumption.[14]

FAMILY-BASED PREVENTION STRATEGIES

Preventing dental erosion within households requires changes in daily beverage consumption rather than relying exclusively on individual oral hygiene practices. Families influence the availability, frequency, and timing of acidic drink consumption, making the home environment a suitable setting for preventive interventions. Replacing carbonated beverages and acidic fruit drinks with water during routine meals and between-meal activities may help reduce repeated acid exposure.

Wang et al evaluated combined school- and family-based interventions among Chinese schoolchildren and reported reductions in sugar-sweetened beverage consumption. Their findings support the involvement of parents in dietary education, although reduced sugar intake does not automatically demonstrate protection against dental erosion, since beverage acidity also contributes to enamel dissolution.[15]

Family participation may improve the consistency of dietary changes, particularly when parents and children follow similar beverage routines. Zoellner et al investigated the Kids SIPsmartER intervention among middle-school students and their caregivers, demonstrating that structured educational approaches could reduce sugar-sweetened beverage consumption. The intervention incorporated behavioral strategies addressing drinking habits within the family context. Establishing accessible drinking-water options, reducing household purchases of acidic beverages, and encouraging shared consumption goals may make healthier choices easier to maintain. Such approaches can also accommodate differences in children's preferences and parental responsibilities without placing the burden of prevention entirely on younger family members.[16]

Clinical recommendations should address how beverages are consumed, alongside their composition. Donovan et al discussed contemporary approaches to diagnosing and managing dental erosion, emphasizing dietary counseling and the reduction of exposure to erosive acids. Families may benefit from limiting acidic drinks to mealtimes rather than allowing continuous sipping throughout the day.[17] When acidic beverages are consumed, avoiding prolonged retention in the mouth and reducing direct contact with tooth surfaces may help limit erosive challenges. Preventive counseling should also distinguish between beverages that contain sugar and those that are acidic, as sugar-free formulations may retain erosive potential.

Professional dental care can reinforce household prevention through early identification of enamel changes and individualized dietary guidance. Leven and Ashley described the importance of identifying etiological factors and implementing preventive measures for tooth wear. Regular dental examinations provide opportunities to assess erosive lesions, discuss beverage frequency, and evaluate protective practices such as appropriate fluoride toothpaste use. For children, dietary histories collected with parental involvement may reveal repeated exposure patterns that are overlooked during routine consultations.[18] Discussions with caregivers can examine daily beverage availability, drinking practices before bedtime, and the influence of school schedules and extracurricular activities on consumption frequency.

CONCLUSION

Shared household beverage habits may contribute to dental erosion through frequent exposure to acidic drinks. Parental behaviors and household beverage availability play a significant role in shaping children's consumption patterns. Family-based preventive strategies, including healthier beverage choices and dietary education, may help reduce erosive risks. Promoting parental awareness and consistent oral health practices is essential for protecting dental health across generations.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Chan AS, Tran TTK, Hsu YH, Liu SYS, Kroon J. A systematic review of dietary acids and habits on dental erosion in adolescents. Int J Paediat Dentist. 2020;30(6):713-33.
2. Salas M, Nascimento G, Vargas-Ferreira F, Tarquinio S, Huysmans M, Demarco F. Diet influenced tooth erosion prevalence in children and adolescents: Results of a meta-analysis and meta-regression. J Dentist. 2015;43(8):865-75.
3. O'Leary C, Cummins S, Smith RD, Cornelsen L. Like parent, like child: a cross-sectional study of intra-household consumption patterns of non-alcoholic beverages among British households with children. Public Health Nutrit. 2022;25(7):1771-9.
4. Pereira AS, Lima LRS, de Lima MdDM, Cacilda Castelo BL, Saul MP, de Fátima Almeida de Deus Moura L, et al. Consumption of acidic beverages is a predisposing factor for erosive tooth wear in preschool children: a population-based study. Oral Health Prevent Dentist. 2020;18(4):b871069.
5. Grimm GC, Harnack L, Story M. Factors associated with soft drink consumption in school-aged children. J Am Dietetic Associat. 2004;104(8):1244-9.
6. Oudkerk J, Grenade C, Davarpanah A, Vanheusden A, Vandenput S, Mainjot AK. Risk factors of tooth wear in permanent dentition: A scoping review. J Oral Rehabilitat. 2023;50(10):1110-65.
7. Zahid A, Davey C, Reicks M. Beverage intake among children: associations with parent and home-related factors. Int J Environmental Res Public Health. 2017;14(8):929.
8. Van de Gaar V, van Grieken A, Jansen W, Raat H. Children's sugar-sweetened beverages consumption: associations with family and home-related factors, differences within ethnic groups explored. BMC Publ Health. 2017;17(1):195.
9. Inchingolo AM, Malcangi G, Ferrante L, Gaetano Del V, Fabio V, Antonio M, et al. Damage from carbonated soft drinks on enamel: a systematic review. Nutrients. 2023;15(7):1785.

10. Gatt G, Attard N. Risk prediction models for erosive wear in preschool-aged children: a prospective study. BMC Oral Health. 2022;22(1):312.
11. Liu X-T, Xiong J-Y, Xu Y-J, Zhao L, Libuda L, Cheng G. Prospective association of family members' sugar-sweetened beverages intake with children's sugar-sweetened beverages consumption in China. Europ J Nutrit. 2023;62(1):175-84.
12. Lundeen EA, Park S, Onufrak S, Cunningham S, Blanck HM. Adolescent sugar-sweetened beverage intake is associated with parent intake, not knowledge of health risks. Am J Health Promot. 2018;32(8):1661-70.
13. Qiu N, Moore JB, Wang Y, Fu J, Ding K, Li R. Perceived parental attitudes are indirectly associated with consumption of junk foods and sugar-sweetened beverages among Chinese adolescents through home food environment and autonomous motivation: a path analysis. Nutrients. 2021;13(10):3403.
14. Newman CM, Zoellner J, Schwartz MB, Joseph P, Kimberly DW, Joseph AS, et al. Knowing is not doing: A qualitative study of parental views on family beverage choice. Nutrients. 2023;15(12):2665.
15. Wang C, Hong X, Wang W, Hairong Z, Jie W, Hao X, et al. The combination of school-based and family-based interventions appears effective in reducing the consumption of sugar-sweetened beverages, a randomized controlled trial among Chinese schoolchildren. Nutrients. 2022;14(4):833.
16. Zoellner JM, You W, Porter K. Kids SIP smart ER reduces sugar-sweetened beverages among Appalachian middle-school students and their caregivers: a cluster randomized controlled trial. Int J Behavioral Nutrit Physical Activ. 2024;21(1):46.
17. Donovan T, Nguyen-Ngoc C, Abd Alraheam I, Irusa K. Contemporary diagnosis and management of dental erosion. J Esthetic Restorative Dentist. 2021;33(1):78-87.
18. Leven AJ, Ashley M. Epidemiology, aetiology and prevention of tooth wear: Epidemiology, aetiology and prevention of tooth wear. Brit Dental J. 2023;234(6):439-44.

Cite this article as: Meeralsulaimani AF, Aljohani AH, Abushal AT, Alfaruqi MA, Albalawi SA, Alqahtani AS, et al. Household beverage consumption patterns and their influence on dental erosion risk. Int J Community Med Public Health 2026;13:xxx-xx.