RESEARCH
Research Paper

Shared Perceptions on Upstream Factors that Influence Water and Sugar-Sweetened Beverage Consumption Among Hispanic Families in the Greater Washington, DC, Metro Area: Qualitative Results From Focus Group Discussions

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ABSTRACT

Background Hispanics in the United States are among those with highest consumption of sugar-sweetened beverages (SSBs) and lowest consumption of water. These dietary disparities are rooted in systemic influences that must be identified and addressed.

Objective The study aimed to describe how Hispanic parents currently living in the greater Washington, DC, metro area and born outside of the United States, perceived upstream factors that influenced their current beverage choice.

Design Six qualitative focus groups were conducted in Spanish in 2021.

Participants/setting Hispanic parents (n = 31) of children enrolled in Early Head Start in the greater Washington, DC, metro area were recruited (all women, born outside the United States, and spoke Spanish as a first language).

Statistical analysis Verbatim transcripts were analyzed deductively using the Community Energy Balance Framework.

Results The five key findings were: Growing up (in their countries of origin in Central America and Mexico) participants were used to drinking water, often gathered it from the source, and liked its flavor. Relatives passed down their knowledge about potabilization of water, the health benefits of drinking water, and health consequences of drinking SSBs. Growing up, prepackaged SSBs were not as accessible compared with where they now live in the United States. Participants perceived that sociocultural hospitality norms dictated that guests should be served SSBs and not water. Participants noted that messages regarding juice and water across US public health programs and policies were not aligned.

Conclusions These findings suggest there are opportunities for public health messaging and procurement of safe, palatable drinking water in lieu of SSBs and juice.
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HIGH CONSUMPTION OF SUGAR-SWEETENED BEVerages (SSBs) increases risk for dental caries, type 2 diabetes mellitus, obesity, and other cardiometabolic disorders.[1-6] The Dietary Guidelines for Americans recommend drinking plain water to reduce SSB consumption;[7] however, there are disparities in water consumption: racial and ethnic minority groups in the United States tend to report lower total water intake compared with other groups. They often avoid drinking water and giving it to their children because of concerns about the safety of their tap water.[8-14] Lack of trust in the quality and safety of tap water in the United States has been attributed to myriad interrelated factors, including early life experience with water insecurity, built and contextual environments,[8,15-17] being born outside of the United States,[8,9] historical dynamics of social inequities, and mistrust of government institutions.[15] For example, a qualitative study among Latinos in Philadelphia reported that a low level of acculturation (mostly driven by the years living in the United States and using Spanish as first language) was associated with themes around tap water mistrust and avoidance.[14]

Mistrust in tap water safety has been associated with decreased plain water intake and increased likelihood of SSB consumption in observational studies.[9-11,14] A randomized controlled trial showed that providing a low-cost water filter pitcher at home (with or without a curriculum about the benefits of drinking water and the consequences of sugary drinks) led to a significant increase in water consumption and decrease in SSB consumption among Hispanic parents and their infants/toddlers in the greater Washington, DC,

metropolitan area.[18] A qualitative study with the same parents explained that filtering the tap water improved its palatability and perception of safety, made water more readily available at home, and seemed to both directly and indirectly replace SSB consumption.[19] These findings underscored the need to address the underlying factors related to water security, such as perceptions around tap water safety and its palatability, and identify systemic levers for intervention to decrease SSB intake. Therefore, this study aimed to describe the perspectives of Hispanic parents living in the greater Washington, DC, metropolitan area about upstream factors that influence their beverage choices.

RESEARCH SNAPSHOT

Research Question: How do Hispanic parents born outside the United States and now living in a predominantly Hispanic community in the greater Washington, DC, metro area describe the upstream factors that influence their current beverage choices?

Key Findings: Growing up in their countries of origin (Central America and Mexico) parents drank water from its source. They had learned from their own families about how to make it potable and the health benefits of drinking water rather than sugar-sweetened beverages, but the latter were inaccessible. In the United States, parents refused to serve water and continued to serve sugar-sweetened beverages to guests because of sociocultural hospitality norms. Parents perceived that health messages and assistance programs were misaligned regarding the promotion of juice and access to safe, palatable water in the United States.

METHODS

To describe upstream factors that influence beverage consumption, 6 focus group discussions (FGDs) were conducted with Hispanic parents whose children were enrolled in Early Head Start programs in the greater Washington, DC, metropolitan area (hereafter greater DC metro area).

Background and Study Setting

The work presented in this article emerged from a substantive and long-standing community-academic partnership that employed community-based participatory mixed methods to establish the topic of focus, document and address the multiple barriers and facilitators to drinking water (mainly from tap) instead of SSBs and excess juice in predominantly Hispanic communities in the greater DC metro area.[17-20] The greater DC metro area refers to a geographic area composed of urban and suburban neighborhoods in Washington, DC, and in the state of Maryland (Prince George's and Montgomery counties).[21] According to previously published data from parents and young children who have participated in studies of this community-academic partnership, 40% of parents reported that they had access to tap water but that the water was not of good quality; meanwhile, parents reported that they consumed on average 32 fl oz/day bottled water and provided bottled water to their children, who drank 6.7 fl oz/day. Parents also consumed on average 18 fl oz/day SSBs and provided approximately 3 fl oz/day to their children (aged between 6 months and 2 years),[18] exceeding recommendations.[22,23]

Theoretical Framework

This study was guided by the Community Energy-Balance Framework (CEBF), which posits reciprocal domains of influence on health behaviors in ethnic minority and immigrant populations in the United States, including individual-level factors, family attributes, ethnic minority community characteristics, and aspects of the general population and culture in the host country.[24] The CEBF provided structure for data collection and analysis to explore how beverage consumption behaviors are influenced by, and in turn may also influence, family environments and dynamics, sociocultural and structural characteristics of the immigrant and host communities in the United States, and the historical experiences of migration.

Focus Group Discussion

A facilitation guide was developed by the research team to elicit both shared and diverging perspectives about the underlying factors that influence behavior following the CEBF.[24] The guide used open-ended questions and photo elicitation methods[25] to explore factors within the home and family environments, including potential conflicts across generations and across sex roles for deciding what gets purchased or served; barriers and facilitators in community institutions; and culture and population in the United States, including the experience of being an immigrant. Photographs for the photograph elicitation approach were obtained from public domains to depict beverages or beverage consumption behaviors representing scenarios in family environments, institutions, and events in the community. The FGD and photograph elicitation guide were developed in Spanish and pretested for comprehension and flow via individual interviews with community data collectors (see the Figure).

Participant Sampling

To guarantee that participants had been exposed to knowledge about benefits of replacing SSBs with water, purposive sampling was used to recruit from among parents who were in the intervention arm of the Water Up!@Home randomized controlled trial, which was conducted in this community and explained in detail elsewhere.[18] To participate, parents had to be willing to discuss openly, in a group setting, whether (and why) they had maintained beverage-related behavior changes from the Water Up!@Home trial. Recruiters explicitly sought participants who were able and unable to maintain behavior change after the intervention. Further eligibility criteria included identifying as Hispanic, being born outside the United States, speaking Spanish as a first language, being a resident of the greater DC metro area, and being the parent of an Early Head Start child. Beyond these eligibility criteria, no other individual-level demographic data were collected to maintain participants' trust. Members of this community-academic partnership frequently work with families that may have undocumented relatives and are therefore sensitive about offering any sociodemographic information or even speaking about their migration experience to any authority, including researchers. The sociodemographic profile of the population served by this ongoing community-academic

Historical experiences: You all shared that you come from different countries, so now, can you tell me a little bit about what were some of the common drinks that you drank there?
Let's now talk about water: Tell me, when you were in your home country, what was the water like? Would you say that drinking water is part of your culture? Where did you get the water from?

Now we are going to play a game now where I will ask you to sort different pictures of drinks according to whether you associate them more with drinking them in your home country or in the US. *Do this activity as a group and get a consensus from the group about where to place each card.*

Adaptations to host country: Thinking about your life now in the USA: What has happened to the types of beverages that you drank since you came to the USA? Are you able to continue to consume the same beverages that you used to consume in your country?

Intervention Targets: Community & family food environments: We are interested in getting to know the neighborhood and community in which you live now in the USA in within your county, how did you decide to live there? In terms of how you access beverages, what does your neighborhood look like?
Now we are going to play another game with photos where I am going to ask you to sort these by whether we can agree if the people here are more likely to drink water or a sugary drink like a soda or horchata.
Moderator show pictures, as a group pile sort them into those two groups. Then generate a discussion to understand why it is that they sorted them in that way. What is the story behind the picture?

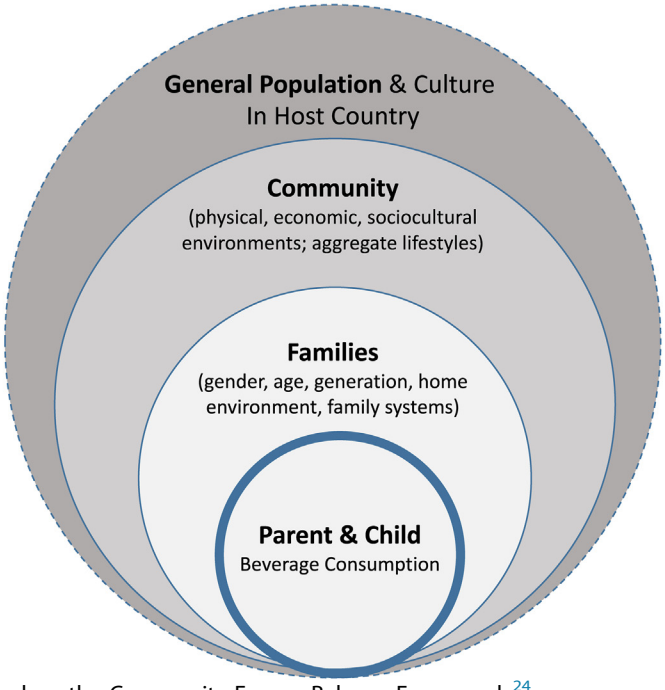

Figure. Sample of focus group discussion guide questions based on the Community Energy Balance Framework.[24]

partnership is relatively homogenous, including a majority who are aged 26 to 40 years, report a yearly income <$40,000, spend ≥$25/month on bottled water, speak Spanish as a first language, were born in Central America, and migrated to the United States 10 to 15 years ago.[17,20]

Potential participants were contacted sequentially by a trained bilingual research assistant who explained the purpose of the study, the risks and benefits, and inquired about their interest in participating. Segmentation parameters for the FGDs were established according to participants' residence (DC, Montgomery, and Prince George's counties; 2 FGDs per segmentation parameter, according to best practices of qualitative sampling[26,27]) because the built environment, municipal water provider, and service barriers and facilitators may differ in each of the geographic areas. The recruitment stopped when 6 to 8 participants per focus group were confirmed. Sample size was determined *a priori* based on budget restrictions, the research team's knowledge of the segmentation parameters, and anticipating saturation at 2 focus groups per parameter. Guidance was also followed for establishment of focus group discussion and thematic saturation.[28]

Data Collection

Six FGDs were conducted during November 2021 in Spanish via a virtual platform, moderated by a community-based data collector (coauthor I.R.) who has more than 20 years of experience conducting bilingual qualitative research. The study was approved by the George Washington University Institutional Review Board, and all participants provided verbal informed consent. FGDs were audio recorded, each lasting 1 to 2 hours. Copious notes were also taken by a research assistant and the principal investigator (author U.C.R.) who listened to each of the virtual discussions live, doing a preliminary assessment of themes as they emerged and preliminary thematic saturation[29] and asking the facilitator to probe further for negative cases or alternative explanations that may have not been clear live during the discussion. Audiotapes were transcribed verbatim in Spanish by a bilingual research assistant. Participants received a $50 gift card upon completion of the FGD.

Data Analysis

All transcripts were loaded into Atlas.ti version 9[30] for qualitative data management and coding. Two bilingual research team members, who had previous training and experience with qualitative data analysis, independently coded the same transcripts following broad CEBF domains: individual, household, local built environment, sociocultural environment, and local and national policies and programs. Then they met with the entire team to discuss areas of disagreement and refine themes within each domain. Thematic saturation, defined as the point in which no additional major themes are emerging, was assessed by analyzing each focus group discussion transcript sequentially. Thematic saturation was reached after reviewing the second transcript from the FGD. A final round of coding was conducted to clarify major themes, identify potential negative cases, alternative explanations and describe how participants related the themes to each other. Thematic categories were refined to include contrasts and descriptions that reflect the history of migration and domains in country of origin vs in the United States. Findings were presented to our community partner at Early Head Start for further interpretation and wording of themes and domains to best reflect the relationships between themes in each domain.

RESULTS

A total of 31 Hispanic parents participated in six FGDs. Participants were all women; they were born and grew up in Mexico, Guatemala, El Salvador, or Honduras before migrating to the United States as adults. Themes were analyzed by county/city of residence in the greater DC metro area (the segmentation parameter pre-established in the methods), but results were ultimately combined and are presented collectively because the same themes emerged across place of residence.

Domain 1: Individual Behaviors Shaped in Country of Origin

Participants shared the experience that they predominantly drank plain fresh water (which they often had to gather themselves) when they were growing up in their countries of origin, and occasionally coffee or a *fresco natural*, which are homemade beverages consisting of sugar and water infused with fruits, botanicals (eg, leaves or flowers), or grains (eg, rice or oats).

> [We drank] water, coffee, natural drinks made from things we grew in our country, like pineapple, jocote (a type of plum), mango; we made drinks with the fruits that we grew. (*FG2, P4*)

Prepackaged or bottled SSBs were rarely consumed, as one participant described:

> In my case, we did not drink [SSBs] a lot, except on Sundays after church when my grandma would buy one for us because we were little and it was a treat… (*FG2, P1*)

Domain 2: Family and Home Dynamics

In Country of Origin. Participants explained that their beverage choices were the result of influence from relatives and family members, and that elders had passed down knowledge about the health benefits of drinking water.

> I drank a lot of water [in my home country] and my mom always made us drink water before going to bed—she said it was good for the kidneys, so we drank a lot of water. (*FG5, P3*)

This knowledge also included strategies that relatives used to make water potable and palatable.

> What my mom did was, she put it in a jug on top of the house. Sometimes we left it for about 2 days, and then we drank the water… so that the sun would kill, you know, everything that's in the water. (*FG1, P2*)

In the United States. At home in the United States, the participants described themselves as the decision makers regarding which foods and beverages to serve their spouses and children. Nonetheless, shopping for foods and beverages was a task that they shared with their spouses, and sometimes shopping for beverages was a separate errand for which the male head of household took responsibility.

When discussing current family-level influences on their water consumption in the United States, participants shared that their spouses and partners supported the idea of drinking more water, but also wanted to have sodas readily available at home for any guests. (This dynamic is also linked to hospitality norms, described in Domain 4).

> There's always water [at home] and [my husband] sometimes goes and buys, maybe a 12-pack of soda in case someone comes over... (*FG2, P3*)

Domain 3: Local Built Environment

In Country of Origin. In their countries of origin, participants elaborated on how they obtained drinking water from various water sources, describing how they were personally familiar with the source of the water, found the water to be palatable, and therefore trusted the source of the water.

> We were trusting and drank water there [referring to country of origin], more than anything [it was] water from the tap […] because we knew from which place the water was coming and where it was emerging from. So then, there [country of origin] there is no problem, not like here (referring to United States) we need to drink the water purified because we do not know where the water comes from, right? (*FG6, P3*)

> When I was young, my mom sent us, we went with buckets to get water from the spring because the flavor was really different. (*FG2, P1*)

Access to and affordability of prepackaged beverages such as sodas was limited, so participants were not exposed to a wide variety of soda brands. Some participants also reported that, due to lack of access and affordability, SSBs were limited to special occasions in their country of origin:

> …It [referring to sodas] was a beverage we could not drink, because economically, we couldn't afford it. *(FG2, P1*)

In the United States. Participants contrasted the local built environment in their country of origin vs the United States as an influence on SSB consumption.

> Since I arrived [in the United States] I've seen [energy drinks] in a 7-11 and everywhere, it's something that you can find here easily and something that back in my country, I don't remember seeing. Maybe in the city, but not where I lived." *(FG2, P1*)

When discussing their everyday lives, shopping, and responsibilities as adults in the United States, participants also mentioned having access to reliable, safe public transit in the city:

> It is very accessible to move from one place to another; there are a lot of buses, a lot of metros (trains). *(FG1, P1*)

Perceptions of tap water in the United States did not emerge as a dominant theme, but in two FGDs, participants expressed distrust in US tap water because they perceived the water to be recycled.

> The quality of water is terrible, I don't feel comfortable opening the tap and drinking a glass of water from there because I have seen in my bills that they charge me for water that goes out and water that comes in so I think the water is recycled...if you leave the water in a

> glass, it gets cloudy, like if you had put in a piece of paper or a sock. (*FG5, P2*)

Whereas other participants did not explicitly report distrust in US tap water, they explained that the low-cost water filter received during the Water Up!@Home trial mitigated some of their concerns about water safety.

> Participant: [Referring to water filter salespeople who visit homes] They say the water isn't good, that you should use a better filter, that you should be thinking of your children so they don't get sick. But even so, it's too expensive and you can't afford it.
>
> Moderator: And if you had the money would you buy it?
>
> Participant: No because I have the [WaterUp filter] pitcher and I feel like it's enough. (*FG2, P2)*

Domain 4: Contrasting Sociocultural Influences in Country of Origin vs United States

One important insight that emerged during these discussions, prompted by the photograph elicitation approach, was that participants contrasted sociocultural influences on beverage choices in the United States vs their country of origin. For example, they explained that you could get away with serving exclusively water at "American" and "educational" events.

> I went to a baby shower and some [other] gatherings and never, maybe because that's how Americans are, they've never offered me a juice; only water. (*FG4, P1*)

Participants felt strongly that it would be socially unacceptable for them to serve just water, especially tap water, to other Hispanics at any kind of social gathering. This was related to beliefs about good hospitality, but also to feeling uncertain about the origin and safety of tap water in the United States:

> Sincerely, I do feel a bit uncomfortable for family and guests and maybe for myself when they ask me for a glass of water, the first thing I say is, well, here we drink filtered water, because if I go to their houses what they always offer me is bottled water...sometimes I think of buying bottled water for when guests come, because yesterday, I was speaking with someone... [to whom] I gave filtered water, and they said "I did not like the tap water because it had a bad taste"...so I felt bad. (*FG2 P1)*

Domain 5: Local and National Programs and Policies in the United States

The FGD guide prompted explicitly about whether or not local programs (nongovernmental food assistance via food banks or school/church or city food drives) and national policies (eg, within the Supplemental Nutrition Assistance Program, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and school meals for older siblings) influenced the beverages that they consumed. Participants explained that beverages were rarely provided as part of local food drives and that WIC provided them with milk and juice as the only beverages.

> In WIC, they choose for you… there are certain [juices] there in the stores that are designated for people on WIC. (*FG1, P4*)

Several participants added that their pediatricians had told them to dilute WIC juices with water because they contain too much sugar.

> My kids' pediatrician tells me, WIC gives you juice, but mix it with water because it always has a lot of sugar. (*FG4, P2*)

In one focus group discussion, the moderator directly asked participants:

> Moderator: Okay, and if WIC would give you vouchers to buy water, would you do it, would you use them?
>
> Multiple voices from participants: For sure!

DISCUSSION

This qualitative study sought to describe how Hispanic parents living in the greater DC metro area perceived the upstream factors (eg, family dynamics and sociocultural and structural characteristics of the immigrant and host communities in the United States) that influence their consumption of water and other beverages. These thematic findings provoke key insights and additional research questions as discussed below.

Firstly, these findings contextualize how this particular community of Hispanic parents perceived, trusted, and consumed tap water in their countries of origin and in the United States. In line with previous findings,[17,19] participants in these FGDs shared the experience of drinking predominantly water when they were growing up in Central America and Mexico, despite the fact that today, these countries report some of the highest SSB consumption rates in the world.[31] Participants explained that other beverage choices were extremely limited when they were growing up in household with few economic resources and many in rural areas. They enjoyed water's palatability and trusted its source because their own family relatives had shown them the source and how to make the water potable and safe for drinking. They had also learned from their relatives that drinking water was beneficial for their health. Therefore, in the context of their country of origin, the organoleptic qualities of the water, its availability, and trusted sources of information seem to be reinforcing the behavior of drinking water.[16] In contrast, after settling in the greater DC metro area, participants were unfamiliar with the water source, and therefore did not drink tap water or give it to their children. This is in agreement with previously reported findings from the same community (different participants) who instead of drinking tap water, purchased bottled water.[18] Compared with non-Hispanic White households, ethnic/racial minority households in the United States spend a higher proportion of their income on bottled water and report that they have to give up spending on other necessities to purchase that water.[32] Taken together, these insights suggest a potential opportunity to increase water consumption by ensuring tap water safety and palatability, and promoting its consumption, perhaps similar to the approaches used by some SSB

companies that have leveraged the constructs of Hispanic culture and family values to promote their products.[33]

Another key insight is that, although participants conveyed a lack of trust in tap water in the United States, they also reported that low-cost water filter pitchers alleviated their safety concerns. This is in line with findings from previous work in this community that described that parents trusted the filtered water because they could see the water being filtered, and the palatability of the water improved.[19] Other public health scientists have noted that deep-rooted water safety concerns can arise from structural and social inequities experienced in the United States and may differ from the simpler water safety concerns that can be alleviated with water filters.[15] This distinction warrants further investigation because in the case of deeper concerns it will be more appropriate (in terms of health equity promotion and sustainability) to pursue updates of community water infrastructure in addition to education or promotion of drinking tap water, or providing water filters to use at home.

A third key insight is related to better understanding and leveraging of sociocultural and hospitality values regarding beverage drinking etiquette in this community. SSBs were reserved for guests and special occasions, both in country of origin and in the United States. That may be in part due to hospitality values and honoring the guest with special treats that are often not available to the rest of the family, and in the United States it could also be attributed, as evidenced by the parents' narratives, to the mistrust in the safety and poor organoleptic qualities of the tap water.

Finally, this study purposefully brought together the topics of drinking water and SSBs with safety of tap water in the United States, shedding light on the multifaceted influences on beverage choice among immigrants from Mexico and Central America living in the greater DC metro area. The findings reveal an opportunity to better align the messaging and programming that supports these families: Most participants obtained their juices exclusively from WIC but also received the recommendation from a health care provider that the juices should be diluted, limited, and/or not fed at all to their young children. Although parents are battling with applying nutrition lessons to everyday life, they grapple with messages that tell them to drink water while receiving assistance to access only juices and milk in an environment where prepackaged beverages are already ubiquitous and affordable. As others have advocated, promotion of drinking water across federal and state or local agencies could be strengthened under one uniform message to drink water over SSBs; for example, by putting clear, actionable guidance regarding drinking water in the Dietary Guidelines for Americans and adding water to the MyPlate graphic, as proposed by the National Drinking Water Alliance and others.[34] The Supplemental Nutrition Assistance Program-Education and WIC should also take steps to support drinking water by educating and providing access to safe, appealing water.[35,36] Participants in the current study also affirmed, when prompted, that they would use WIC benefits to purchase water or water filters if WIC allowed it because currently their main source of drinking water comes from purchasing water that has been packaged in single-use plastic bottles. This signifies an untapped opportunity to engage diverse sectors in the promotion and procurement of water for individual and families' health, an opportunity to improve equity around water security, and to influence climate health by reducing the purchase of single-use plastics.

This study reports the qualitative findings from six FGDs that aimed to understand perspectives that are specific to this group of Hispanic parents living in the greater DC metropolitan area. As with any qualitative study, the aim of this article was not to provide breadth and generalizability to other populations, but rather to provide depth to understand behaviors that occur within a particular set of environments and histories. Although these findings are not generalizable beyond this population and geographic location, a key strength is that it is part of a long line of sequential exploratory and explanatory studies around perceptions and consumption of tap water, juice, and SSBs in the Washington, DC, Hispanic communities, and was rooted in a community-academic partnership to address historical experiences of migration.[17-20,37] Other limitations to the interpretation of results of this qualitative study include the risk that focus group participants may have felt uncomfortable sharing information or opinions that they consider to be socially unacceptable. To counter this, the discussion guide was exploratory, open-ended and designed to elicit both shared and diverging perspectives about factors that influence sustained change in each one of the thematic levels of CEBF. The discussions were facilitated by a local community data collector group with more than 20 years of experience facilitating bilingual FGDs among families in the targeted community, paying special attention to making participants feel comfortable in sharing and comparing their experiences and opinions in the research processes. A second potential limitation is that the study was purposefully constrained to parents who had participated in the Water Up!@Home randomized intervention trial, and although it was not part of the inclusion criteria, all of the participants were women, which may have limited the perspectives that were shared because fathers often contribute to family dynamics and decision-making processes.

CONCLUSIONS

These results describe the complexity of upstream factors that influence beverage choice and safety perceptions of tap water among Hispanic families in the greater DC metro area. Future research is needed to explore opportunities for food assistance programs to facilitate access to safe, palatable water to replace SSBs, and to elucidate potential influences of community water infrastructure improvements on beverage choice.

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STATEMENT OF POTENTIAL CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

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AUTHOR CONTRIBUTIONS

M. Estradé was responsible for data analysis and writing-original draft preparation. R. Burgos-Gil was responsible for conceptualization and validation, writing-reviewing and editing. L. Witting was responsible for writing-reviewing and editing. J. Gittelsohn was responsible for conceptualization and writing-reviewing and editing. I. Rivera was responsible for design, data collection, and data interpretation. U. Colón-Ramos was responsible for conceptualization, design and data collection, data analysis, writing-original draft preparation, and funding acquisition.