

At-home and Away-from-home Eating Patterns Influencing Preadolescents' Intake of Calcium-rich Food as Perceived by Asian, Hispanic and Non-Hispanic White Parents



Continuing Education Questionnaire available at www.sne.org/ Meets Learning Need Codes for RDs and DTRs 1040, 4160, 5130, and 3000.

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ABSTRACT

Objective: To explore at-home and away-from-home eating patterns influencing Asian, Hispanic, and non-Hispanic white preadolescents' intake of calcium-rich food from a parental perspective.

Design: Individual semistructured interviews.

Setting: Home or community site.

Participants: Convenience sample (n = 201) of self-reported Asian (n = 54), Hispanic (n=57), and non-Hispanic white (n = 90) parents of 10- to 13-year-old children recruited from community youth programs.

Phenomenon of Interest: Description of at-home and away-from-home family eating patterns.

Analysis: NVivo software to code and sort transcript segments, qualitative data analysis procedures.

Results: Participants from all groups shared common at-home and away-from-home meal patterns. A lack of time often resulted in negative factors that impacted intake of calcium-rich food and beverages including breakfast on the run, fewer home-prepared or shared family meals, and more frequent meals eaten away from home. Asian and Hispanic parents indicated eating out less frequently than non-Hispanic white parents. Parents from all groups lacked expectations for their child to drink calcium-rich beverages with meals.

Conclusions and Implications: Practical strategies are needed to facilitate intake of calcium-rich food and beverages through more frequent family meals at home and parental expectations for children's intake of calcium-rich beverages with meals.

Key Words: calcium-rich foods, preadolescents, parents, interviews, Hispanic, Asian

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INTRODUCTION

Most older children and adolescents in the United States do not consume enough calcium from food and beverages to meet the recommended intake.¹ At the same time, optimal calcium intake is critical at this life stage for bone mass acquisition.² Studies indicate that food and nutrient intake among children is strongly influenced by the social and physical environments including at-home and away-from-home food³ and meal patterns.⁴ For example, when adolescents ate meals with all or most of their family more frequently, intake of calcium-rich food was greater.⁵

Secular food consumption trends show an increase in the frequency of eating food away from home compared to 20-30 years ago.⁶ As children age, the predominant caloric source shifts from home to school/day care and fast-food establishments. For children 6 to 11 years and 12 to 17 years of age, the largest nonhome sources of calories from 1994 to 1996 were school/day care and fast-food establishments, respectively.⁷ Food prepared at restaurants and other food-service establishments was shown to contain less dietary calcium on a per-calorie basis compared to food prepared at home.⁷ The frequency with which children ate at fast-food restaurants was related to not meeting the requirement for calcium intake,⁸ and children who ate fast food drank less milk compared with those who did not eat fast food on one survey day.⁹ Intake of milk has decreased, whereas intake of sweetened beverages has increased among children over the past 3 decades.¹⁰ National dietary intake data showed that consumption of sugar-sweetened beverages decreased the likelihood that children would achieve the calcium recommendation.¹¹ Soft drink consumption was inversely related to dairy intake among girls, and milk served at meals was positively associated with dairy consumption among boys.¹²

Application of Social Cognitive Theory (SCT) involves a focus on families as an important element of the physical and social environment influencing dietary behaviors of children.¹³ In an intervention trial, mothers who began taking calcium supplements also increased calcium intake in their children.¹⁴ In other studies, mothers and daughters showed similarities in milk consumption¹⁵ and lifetime calcium consumption.¹⁶ Although the family/parental perspective regarding calcium intake for children is therefore important, little in-depth information is available regarding the way main meal preparers view the need to manage meal patterns to influence calcium intake of children.

Cultural differences based on the racial or ethnic background of the family also influence meal patterns and the types of food served to children. These cultural differences may contribute to differences in observed intake of calcium-rich food¹⁷ and calcium,¹⁸ and eating occasions related to calcium intake¹⁹ by children and adolescents according to racial or ethnic group. The social and physical environments including the source of food (at home and away from home) which influence calcium intake for children may vary by age, race, and gender. These demographic

factors played a significant role in the total amount, types, and relative proportions of beverages consumed by children and adolescents.²⁰

The purpose of this study was to conduct a qualitative exploration from a parental perspective of household meal patterns and beverage considerations that influence intake of calcium-rich food by early adolescents from selected racial and ethnic groups. The information will be used to identify nutrition education needs and strategies to increase calcium intake for the selected subgroups.

METHODS

Participants and Recruitment

This study was an analysis of a portion of data collected as part of the USDA multistate research project, W1003.²¹ Researchers from 12 states self-selected to join the multi-state study. Researchers in all 12 states recruited a convenience sample of parents using fliers, word of mouth, personal contact, and e-mail. A variety of participants based on education and income were recruited from churches, youth groups and clubs such as 4-H or Girl and Boy Scouts, local health departments, child athletic teams, county extension offices, and nutrition education programs. Participants were selected if they were a parent or guardian of a child (10-13 years old) living in their home, and if the parent or guardian considered themselves to be primarily responsible for food acquisition and preparation for the household. Each state recruited and interviewed parents from 2 of the 3 racial/ethnic groups according to each state's demographics and to obtain an adequate sample size for each group. Each state's University Institutional Review Board approved the study.

Interview Training and Interview Guide

Interview questions regarding meal patterns which could affect early adolescent calcium intakes were developed based on concepts from SCT¹³ and from qualitative and quantitative data from previous studies.^{22,23} For this analysis, constructs of SCT that were addressed focused on the environment, such as the physical environment of the home (eg, food and beverage availability, the provision of meals) and the social environment of the family (eg, parental expectations for calcium intake). Eight of the researchers pilot-tested the initial interview guide with 28 parents representing the 3 racial/ethnic groups. Results of the pilot-testing were discussed, and questions found to be confusing to parents were reworded by consensus. Ordering of questions found by the researchers to disrupt continuity during the interviews was reorganized, also by consensus.

All interviewers received the same training, which included reading background articles with descriptions of qualitative data collection methods^{24,25} and viewing a qualitative interview videotape demonstration. Interviewers then participated in a conference call discussion, facilitated

by an expert in qualitative methods, about data collection methods. Most states had 2 interviewers: the researcher (university faculty) and a second interviewer (graduate research assistant, undergraduate nutrition student, or paid program assistants). Researchers in 6 of the 12 states also supervised a practice interview with the second interviewer before collecting data.

Semistructured face-to-face interviews were conducted in each state. Interviews were carried out in public settings (restaurants, workplaces, book stores), community settings (cooperative extension offices, community centers, athletic facilities) or in homes, based on the preference of the parent. Interviews lasted 60 minutes on average, ranging 30 to 90 minutes. Participants received \$20 to \$25 dollars (in cash or gift certificates). About 75% of the interviews were conducted solely in English; 4 states had some portion of the interview involve Spanish, Chinese, or Hmong. The interviews were audiotaped, and interviewers took handwritten notes.

The participants' rights and the purpose of the study were explained, and informed consent and permission to audiotape the interview were obtained prior to starting. Parental and household demographic characteristics were recorded on a short form prior to audiotaping. The complete interview guide included questions on the frequency of use of calcium-rich food and beverages by both parents and children; why these food items were or were not purchased or consumed; family meal patterns; parental expectations for meal and snack time food and beverage consumption; frequency and reasons for dining out; food and beverages chosen when dining out; impact of extracurricular activities on meals; conversations parents had with their children regarding food and health; and parental knowledge and attitudes about calcium and health (benefits of calcium, bone health, calcium requirements and needs throughout the lifespan, parental concerns of child's calcium intake and calcium-rich food sources). This paper focuses on analysis of the data from questions regarding family meal patterns at home and away from home.

Data Analysis

Interviews conducted in English were transcribed verbatim in each state. Interviews taped in a language other than English were translated by a bilingual interviewer either during the interview or during the transcription process. Transcribed interviews were sent to the Colorado State University's Nutrition Assessment and Evaluation Center for coding using NVivo software (QSR NVivo 2.0, QSR International, Doncaster Australia, 2003). Details of this analysis have been published elsewhere.²⁶ After coding, queries were submitted to search for transcript segments and sorted for analysis. Queries were designed to find segments that could answer the particular research questions of parental perspective of household meal patterns and beverage considerations that influence intake of calcium-rich

food by their early adolescents. Segments were presented for analysis by parent race/ethnic group, and they were also organized so that responses from individual participants could be followed in context to obtain a holistic picture of each family's eating patterns and parental attitudes and practices.²⁶ At least 2 researchers independently read the sorted coded segments from each group (race/ethnic group) of transcripts, generated common themes, and identified exceptions using thematic content analysis procedures.²⁴ The researchers met to confirm themes prior to preparing summaries to address the research questions.

RESULTS

Participant Demographics

Interviews were conducted in 12 states and resulted in 201 usable transcripts from the 3 target racial/ethnic groups. Self-reported information indicated the participants were of Hispanic ($n = 57$, 28%), Asian ($n = 54$, 27%) and Non-Hispanic white ($n = 90$, 45%) race/ethnicity and were primarily female (95%). Many of the Asian (58%) and Hispanic (40%) participants reported that they primarily spoke a non-English language in the home. Convenience sampling in areas with major universities resulted in 58% of all participants reporting that they were college graduates; however, Hispanic participants were less likely to be college graduates. The mean age of children was 11.6 ± 1.0 years and the distribution of females and males was 54% and 46%, respectively. In some cases, children were of mixed race/ethnicity ($n = 33$, 16%), with a parent of different ethnicity from the child.

Parents were asked to describe a typical pattern of family meals, including location, time, food/beverage choices, most common meal preparer, and frequency of having meals together. The interview transcripts were analyzed to identify potential relationships between meal patterns and food choices influencing calcium consumption.

Meal Patterns

Most parents reported a typical pattern of eating breakfast at home, with a handful reporting that their child skips breakfast or eats it in the car or on the school bus. In general, breakfast is not reported as a communal family meal; rather, members eat separately because of schedules or time constraints. Some parents reported having to prod children to eat breakfast. An Asian parent reported, "It's hard to get kids to eat a lot of breakfast. . . . They are trying to hurry. . . . So usually their breakfast is something very quick . . . we are not able to have breakfast together. . . ."

Of all the meals, breakfast was often reported to be self-prepared by children; parents stated that their child is "on their own" in the mornings. One Hispanic parent said ". . . usually we're all on our own. I don't get up and cook a breakfast." However, a few parents reported making a point of fixing breakfast for their child and spending morn-

ing time together. An Asian parent said, “We don’t always get to sit down together for (breakfast), but we are always at the kitchen table. Some are coming and some going, but for a few minutes we are together.”

A wide variety of breakfast food was reported, most quick or requiring little preparation. Cereal with milk (especially common for children) and cereal bars or other calcium-fortified items were common quick choices providing some calcium. Hispanic participants also listed tortillas, burritos, tacos, and chorizo as breakfast food. Asian parents mentioned leftovers, as well as soy milk, yogurt, and cheese. Milk and juice were the most frequent beverages for children, with parents choosing coffee; both Asian children and parents reported choosing tea. Several parents, particularly Asians, had an expectation that their child drink “one cup of milk” at breakfast. An Asian parent mentioned, “Usually in the morning . . . he has to drink one cup of milk. That’s what my rule is, have to drink milk for a little boy.” An interesting meal routine among some of the Asian (Hmong) participants was the making of a traditional broth-based meat, rice, or noodle and vegetable dish that would be consumed over the day for all meals by family members.

Almost all parents indicated that their child eats lunch at school, choosing the school lunch, or bringing their own. Bag lunches often included sandwiches, chips and fruit, cheese, and fortified snack food that provided some calcium. Parents reported that fruit juices or drinks were typical bag lunch beverages. One Hispanic parent said, “She enjoys cheese and crackers . . . little Lunchables mini pizzas. We try to include a drink or beverage of some sort, primarily Capri Sun, sometimes it’s Sunny Delight.” Some parents were uncertain or seemed unconcerned about their child’s school lunch choices. In addition, they reported assuming that the child chooses milk at school, but were really not sure. A non-Hispanic white parent indicated, “Um, I’m afraid to ask what she eats. I don’t know what she eats for lunch now. I used to check. Now she’s in middle school, I haven’t nosed around too much.”

Parents expressed confidence in the child’s intake of adequate calcium because of beliefs that their child drank milk at school or ate other calcium-rich food during the day. A Hispanic parent said, “She has never actually been a real big fan of milk. So, she might choose water more often and that is ok with me because she gets her calcium. She likes broccoli, eats yogurt, ice cream and other things. It does not bother me all that much. . . . But it is also okay with us that she has a Capri Sun, the ones that’s the fruit juices, and things like that.” Parents also indicated that children think that they get enough milk. An Asian parent said, “They say that they get enough milk at school and don’t want any more at home.”

Parents reported that dinner is usually eaten at home in the early evening. A few Hispanic parents reported a more traditional pattern of consuming their main meal early in the afternoon, with a light evening meal. A Hispanic parent reported, “They never buy school lunch. (It’s) a

snack to them . . . they get home about 3:30 to 4:00, we have what we call our lunch. . . . Our main meal is about 4:00 in the afternoon.”

Mothers had the primary responsibility for dinner preparation, with occasional help from fathers and children; among Asian and Hispanic families, extended family members also prepare dinner. Across all racial/ethnic families, the dinner meal consists of a meat, vegetable, and a starchy food like potatoes, rice, beans, or pasta, and a variety of casseroles, pasta dishes, and salads were also reported. Although dinner was similar, some differences existed between race/ethnic groups. Calcium-rich leafy greens were typically not part of the meal, except among some Asian families. Asian and Hispanic parents reported consuming food associated with their respective cultures. An Asian parent reported, “Our dinner is very similar like the lunch, typical Chinese meals, rice, meat, 1 or 2 vegetables prepared separately from meat. We may also make a soup, egg-drop soup or vegetable soup.”

Participants indicated greater likelihood of eating evening meals together, typically seated at a table or counter, and infrequently in front of the television. A Hispanic parent said “Dinner we . . . eat together. My married daughter and her husband come for dinner almost every night, so we can eat together. They bring my grandchildren, and it is a family thing. There are 9 of us at the table.”

Milk was an option at the dinner meal, and parents often expressed a wish that their child would choose milk, but the majority of parents did not expect it. Only occasionally did parents describe more structured guidelines regarding milk with meals. An Hispanic parent related, “She’ll always do 2 glasses of milk, and then the third will be her choice, if she wants something different. . . . If she hasn’t had her 2 glasses of milk, definitely she will say, ‘oh, I haven’t had my two glasses of milk,’ and so she’ll have her milk.”

Parents described work and/or activity schedule conflicts as obstacles to communal family meals and as interference to the meal in general. A non-Hispanic parent said, “Depending on the schedule, if we eat at home then we all try as hard as we can to all eat dinner together . . . sometimes like if one boy has a soccer practice and the other boy has a lacrosse practice and the times are different, my husband and I may each take one child and either feed them at home or grab something to eat out. That’s why we eat out so much because they almost always have something going on.”

Most parents indicated their child can choose “whatever they want” for meal beverages. Some Hispanic and a few non-Hispanic white parents listed fruit drinks, lemonade, or Kool-Aid as choices they give their child. A Hispanic parent said, “He will have a pop if I let him or I’ll make him have water or he will have a glass of milk. And now I just got Kool-Aid so they’re going to start drinking Kool-Aid.” Asian parents often mentioned “soup” as the meal beverage—a broth made by boiling meat, bones, and

vegetables in water. Willingness to drink milk with meals was reported to decrease as children aged, owing to taste or other reasons. An Asian parent said, "I'd like them to drink more milk. But it's hard to get them drink milk because they don't like the taste."

According to participants, children's carbonated soft drink intake varied widely, from daily to a few times per week or weekly. A few parents, primarily Asians, indicated that their children never drink carbonated soft drinks. Most parents restrict drinking carbonated soft drinks with home meals, and very few allow their child to choose carbonated soft drinks with any meal. A Hispanic parent indicated, "Well, if they don't drink anything it is okay with me. They can drink milk, juice, water. All that is better than soda. Soda is the last choice they have. Soda is for me." Parents reported attempts to restrict carbonated soft drink consumption for their child by limiting the number consumed each day, not keeping the beverage at home, and allowing only on special occasions.

Parents were asked about snacking patterns because snacks can provide calcium-rich food for early adolescents. Parents indicated that most snacks were self-prepared by children and consumed directly after school. It was uncommon that children purchased snacks after school or ate snacks at a friend's house. Snack choices were fairly similar for all race/ethnic groups; however Asian parents were more likely to report snacks of higher protein, entrée, or staple leftover food. Hispanic participants mentioned fruit more often than the other groups, as well as Mexican food such as tortillas.

Milk was seldom reported as a snack beverage. Choice of beverage was dependent on the nature of the snack, such as milk with cookies. Calcium-rich snack food made available to children most often included cereal and milk, yogurt, snack or energy bars, and ice cream.

Food Away From Home

Parents were asked where and how often they or their children eat out, get carryout, or order delivered meals and the reasons for doing so. Eating out is an occasion when milk was not a typical beverage choice, and healthful food choices were more difficult to find. Parents described types of food and beverages chosen when eating out.

All participants reported eating dinners away from home ranging from rarely to 3 times per week or more. Asian and Hispanic participants reported lower frequency of eating out—with more than half of both groups reporting only occasional (1-2 per week) or infrequent (1-2 per month) dining out. Asians were more likely than other racial/ethnic groups to say that they rarely or never eat away from home.

Eating out was most often related to busy lifestyles ("we are too busy" or "it is too late to cook"). Other reasons included wanting to try a new or different food, needing a break from cooking, or that the children like to eat out. For

example, a non-Hispanic white parent said, ". . . when I get home there is almost no time. As soon as I get in the door the kids want to eat. . . . So there are some really easy kinds of things that I can grab on the way home." The reasons for and frequency of eating out seemed to be related. All participants eating out on a weekly basis described "convenience" as a reason for eating out. In contrast, most participants eating out rarely, or fewer than 1 or 2 times per month, indicated eating out for "special occasions" (celebrating birthdays, holidays, graduation), or as family and friend time, or for socialization (to reward a child; teach manners). Asians were more likely to report eating out primarily for either socialization or celebration. For example, an Asian parent said, "We eat out about . . . you know, special days . . . birthday or something special like some award, you know, good grades maybe once every 2 months."

Children's and parents' activities and events influence how often families eat food prepared away from home and the types of food consumed away from home. Children's activities and transportation needs create mealtime schedule conflicts, causing families to eat separately, eat later, or get takeout or fast food. In some cases, grabbing meals on the way home from an event or using drive-through restaurants was not even considered eating out by the participant. A parent responded that they rarely eat out, but later in the interview referred to getting carryout fast food or pizza every Friday.

Among racial/ethnic groups, Asians were least likely to describe their child's activities as impacting family meals. They indicated that their child's activities less often involved sports and more often were music or dance related, which seemed to interfere less with meals. Non-Hispanic white participants were much more likely to mention that travel to their child's activities (usually sports) increased the frequency of eating out. One non-Hispanic white parent indicated, "If (the son) has a football game, say down in (the city) . . . you know, if it just gets too late and things are happening and you just go, okay guys, you've got to eat, so we'll just grab something."

Several parents spoke of limiting the frequency of the family eating out. The most common limiting reason was cost, most often mentioned by participants with large families. An Asian parent said, "(We don't) very often, because when you eat out it is very expensive. If you take your whole family out to eat you spent as much as you would for a whole week of meals at home, so we don't really go out to restaurants." A few parents expressed concerns about the health consequences of eating out too often.

All participants described typical American food (pizza, hamburgers, chicken) as food consumed away from home. Hispanic and Asian parents sometimes indicated that their children preferred American rather than their native or cultural food. Almost all participants indicated that they and their child typically drink carbonated soft drinks when eating away from home. Water was the second most common beverage when eating out, followed by milk, tea, coffee, alcohol, or juice.

DISCUSSION

This study represents an in-depth examination of patterns of meal and beverage consumption among non-Hispanic white, Hispanic, and Asian early adolescents. The results provide insight from a family/parental perspective regarding how the social and physical environments affect meal and beverage consumption patterns with implications for intake of calcium-rich food and beverages. Little qualitative information is currently available regarding the food and beverage patterns that occur among families with early adolescents by racial/ethnic subgroups with a focus on how these patterns affect calcium intake. Although many studies focus on effects of food and beverage patterns on intake of calcium-rich food by younger children or adolescents, less attention has been paid to these effects in early adolescents, including the relationship between lifestyle and meal patterns.

In this study, parents described breakfast as the most natural fit with milk consumption. Milk was the most frequently mentioned beverage (cold or hot), and milk with ready-to-eat cereal was the most common breakfast food served. Breakfast improves the nutritional quality of adolescents' diets, especially when including ready-to-eat cereal.^{11,27} Studies have indicated that breakfast is strongly correlated with milk and calcium intake.^{28,29}

Parents often mentioned that they assumed their child drank milk with school lunch, although many were uncertain about their child's choices at lunch. These results are consistent with findings from parents who were surveyed about their beliefs regarding the school lunch program.³⁰ Most (90%) agreed that their child would receive a nutritious lunch if they participated in the program, but only 31% agreed that they know how much their child eats if he or she participates.³⁰ Although parents may be unsure of what and how much their child eats in school, the perception of a high overall diet quality of school meals has been confirmed in several studies.^{4,31} Children participating in school lunch consumed more calcium, 4 times more milk, and less carbonated soft drinks and/or fruit drinks over 24 hour compared to nonparticipants in school lunch.³¹

Milk was not consistently mentioned as the beverage of choice at dinner among any of the groups. Asian parents were more likely to serve traditional Asian food during dinner and often offered beverages more traditional to their culture (tea, water, soup) rather than milk. Because milk is a substantial source of dietary calcium,³² these findings may help explain why non-Hispanic white adolescents had higher calcium intakes compared to Asians in several studies.³³

Snacks did not consistently include milk. Instead, the snack beverage was related to the type of food eaten, with little effort to restrict choice among carbonated soft drinks, water, and juice. Children previously reported that other beverages such as soft drinks, water, and fruit-flavored drinks often replace milk as a snack or are consumed with snacks.²³ However, most parents in the current study were

more concerned about restricting intake of carbonated soft drinks by children than encouraging milk consumption with snacks, which may not be as beneficial as promoting intake of milk and other calcium-rich beverages.

Reduced milk intake and the concurrent increase in adolescent intake of other drinks over time may be explained in part by parental attitudes and expectations about consuming milk.³⁴ As children become older and more autonomous, they become less likely to choose milk as a beverage.^{20,28} Parents may be able to moderate these changes by making healthful food available and encouraging its consumption. Zabinski et al showed that food and beverage intake among adolescents was correlated with household eating rules.³⁵ Thus, parents may contribute to a home environment which encourages healthful choices for children as they begin to regulate their own food choices.

An increasing amount of food prepared away from home is being consumed by children and adolescents at restaurants and fast-food establishments^{7,34} with implications for poorer dietary quality.²⁸ As the frequency of eating away from home increases, calcium intake of children is reduced.^{7,28} Our results confirmed that carbonated soft drinks are selected instead of milk with meals prepared and consumed away from home with little expectation by parents that children drink milk. Our data also suggested that Hispanic and Asian families ate out less frequently, which may help maintain intake of calcium for these children.

Parents indicated that their family commonly ate food prepared away from home because of lack of time and the need to accommodate activities of family members. Asian parents, in particular, were less likely to identify hectic activity schedules as the reason for eating away from home. Neumark-Stzainer et al also indicated that Asian-American families reported more frequent family meals at home compared to other racial/ethnic groups.⁵ In another study, predictors of the importance that Asian immigrant mothers gave to family meals were based on health motivations as well as the need to eat familiar food.³⁶ Others have confirmed that the frequency of eating away from home, and thus nutrient intake of children, may be compromised by time scarcity³⁷ and work-family spill-over.³⁸

The consistent association between less acculturation and better health and health outcomes has been called the "healthy immigrant effect."³⁹ For example, in Latino children and adolescents, eating breakfast regularly was associated with lower levels of acculturation.⁴⁰ Dietary changes for first- and second-generation Americans of Mexican descent also resulted in greater intakes of fats and sugars than the traditional diet consumed in Mexico.⁴¹ An example of the healthy immigrant effect was also observed in an Asian population, where Korean-American adolescents consumed traditional Asian food less often, but consumed soft drinks more frequently than Korean adolescents.⁴² These changes in patterns could potentially impact intake of calcium-rich food and beverages. Given the mean length of time that the Hispanic and Asian participants in the present study reported living in the United States, it was expected that

some traditional food and beverage intake patterns would be retained, whereas other new patterns would be adopted, including breakfast on the run, lunch at school, greater intake of soft drinks, and fewer home-prepared meals and meals eaten together as a family. In this study, parents reported requests from children for "American" food, but they were less interested in eating this nontraditional food themselves. A greater understanding is needed of how acculturation affects the changes in food and beverage patterns of families in relation to calcium intake for early adolescents.

Limitations to this study include the use of a convenience sample with a high education level limiting the generalizability of the results. However, the sample was derived from 12 states and from participants from various community organizations, thereby increasing the likelihood that diverse perspectives were obtained. The interviews were conducted by interviewers with a range of experience collecting qualitative data, though standardized procedures were used, and interviewers were trained in a consistent manner, which limited interviewer bias.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Health educators are encouraged to work with families to address factors within families which may negatively impact calcium intake. The factors found in this study include family lifestyles that result in meals eaten away from home, the impression of parents that many beverages other than milk were healthful and even necessary for their children, and lack of parental expectation for drinking milk.

In this study, families expressed a desire to eat meals together. The expectation of a traditional family meal may need to be adjusted for families where parents are working and children are involved with activities near dinnertime, and may need to include things like meals eaten together earlier or later, and meals prepared ahead or with quick-serve food.

Although some parents also expressed a desire for their children to drink milk with meals, they allowed children to choose among several beverages. Educators should address beverages in their entirety, including milk, carbonated soft drinks, juices, and fruit drinks, and not assume that emphasis on carbonated soft drink restriction will result in increased milk consumption.

More research is needed on parental expectations and correlations with calcium-rich food and beverage choices of children. Validated measurement tools that examine the influences of parental roles on children's intake need to be developed for consistent use by researchers, especially in the areas of role modeling, expectations/rules, and food socialization practices. The tools need to be specific for different race/ethnic subgroups because of differences in parental intake of calcium from different sources within meal and snack occasions. A better understanding of why

some parents maintain expectations while others appear to "give up" on their children's choices, even within their homes, based on appropriate measurement tools will help educators develop more effective nutrition education for adequate calcium intake in children.

Time scarcity and active lifestyles have a major impact on meal patterns with greater reliance on readily prepared food and food eaten away from home. More research is needed to understand how families are coping and adapting to changing meal patterns with a particular emphasis on how these changes affect calcium intake in children.

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