



**Got Milk!**  
**Exploring How Student Perceptions and Behaviors**  
**Impact their Milk Selection in Schools**

2016

**Applied Research Division**  
**The University of Southern Mississippi**  
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# Got Milk!

## Exploring How Student Perceptions and Behaviors Impact their Milk Selection in Schools

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2016

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## **The University of Mississippi**

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**GOT MILK! EXPLORING HOW STUDENT PERCEPTIONS AND BEHAVIORS  
IMPACT THEIR MILK SELECTION IN SCHOOLS**

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**EXECUTIVE SUMMARY**

Substantial controversy surrounds the health effects of flavored and unflavored milk in children's diets. Few studies have been conducted to examine the preferences and perceptions of students regarding flavored and unflavored milk. The Institute of Child Nutrition, Applied Research Division (ICN, ARD) conducted a research study to identify elementary and middle school/junior high school students' perceptions of milk, their milk preferences, and their consumption of flavored and unflavored milk. School nutrition (SN) professionals' perceptions were also collected to provide an operational view of students' milk selection and consumption behaviors. The study's protocol included the development of case study instruments and researchers' training and analysis protocol that were piloted by an ICN, ARD research coordinator. Following the research design's embedded, replicable, multiple-cases, case study protocol, the communications format, focus group and observation procedures, and instruments were tested by the ICN, ARD research coordinator and revised for training researchers for case study site selection and data collection. The protocol was then revised for Phase II of the study.

A team of researchers was trained to follow the pilot protocol to collect, analyze, and report qualitative data in schools across the United States (U.S.). Six research teams were selected from a pool of applicants to attend a training session on how to conduct the case study site visits and data collection in United States Department of Agriculture regions across the country. Each team was instructed to follow the embedded, replicable, multi-case, case study protocol to select and arrange visits to four distinct elementary and middle school/junior high

schools. Researchers were trained to follow a systematic approach to conduct interviews and focus groups with SN professionals and students (elementary students in grades 3-5, and middle school/junior high school students in grades 7-8), to conduct behavioral observation procedures, and to record mealtime behaviors associated with milk selection and consumption at each site. All six research teams completed the collection of qualitative data from 24 sites across the U.S., and then attended a debriefing session with the ICN, ARD research coordinator to discuss research findings and reporting methodology. Research results indicate that although students prefer flavored milk, other factors play a key role in their consumption decisions such, as milk temperature, social dynamics, and meal times.

## INTRODUCTION

Milk is one of the primary dietary sources of calcium in the United States. Calcium is an essential nutrient that supports bone growth in children. Milk also contains other key nutrients for optimal health, such as vitamin A, vitamin D, phosphorus, magnesium, potassium, vitamin B-12, and zinc. Through various processing mechanisms, ingredients may be added to milk, or its fat and water content may be modified to meet specific dietary needs and to create other varieties. There are many studies that confirm milk consumption is beneficial for children. Even though milk contains many nutrients needed to support children's growth and development, past research has indicated a decline in milk consumption, primarily because of competition from sugar-sweetened beverages (Johnson, Panely, & Wang, 2001; Li & Drake, 2015; Murphy, Douglass, Johnson, & Spence, 2008; Thompson, Bachman, Watson, Baranowski, & Cullen, 2007).

As part of the United States Department of Agriculture (USDA) meal pattern requirements, students in grades K-12 receive one serving (8 ounces) of milk with every reimbursable meal. Milk must be low-fat (1% milk fat or less for unflavored milk) or fat-free (unflavored and flavored), and students must be offered at least two choices (USDA, 2012). Although flavored milk has been noted as the students' most preferred choice for milk, it has been criticized for adding unnecessary sugar to children's diets (Patterson and Saidel, 2009). Yet, research has shown that children who consume flavored milk are more likely to meet their calcium requirement without consuming significantly more added sugar than children who do not drink milk (Murphy, Douglass, Johnson, & Spence, 2008; Yon, Johnson, & Stickle, 2012).

The school food environment has the ability to affect children's eating patterns, provide essential nutrients, and deliver nutrition education (Connors, Bednar, & Klammer, 2001). During

the elementary school years and even into the middle school/junior high school years, the cafeteria can offer a wellness environment where children can learn how foods they eat can affect their health. Past research has been conducted on the health effects of milk consumption. However, there is limited research on students' milk preferences and selection in schools. Gaining a better understanding of students' perceptions will assist school nutrition (SN) professionals in providing products and services that will satisfy their customers. Literature suggests that the best method to determine a customer's perception is to ask them (Meyer, 2000; Roseman & Niblock, 2006). Therefore, the purpose of this study is to identify the milk preferences of elementary and middle school/junior high school students, and to determine how their preference impacts milk selection in school foodservice settings.

### **Research Objectives**

The objectives of this research study included the following:

- Identify milk preferences of elementary and middle school/junior high school students;
- Identify the perceptions of elementary and middle school/junior high school students toward the milk selection offered in schools;
- Identify the perception of SN professionals toward milk selection and preferences of students; and
- Identify factors that may influence elementary and middle school/junior high school students' perception and selection of milks offered in schools.

## **METHODOLOGY**

### **Research Plan**

The purpose of this study was to identify milk preferences and milk consumption behaviors of elementary and middle school/junior high school students. This study also determined how school nutrition (SN) professionals' perceptions and food service operation practices have an impact on their milk selection in schools. The research objectives and goals were addressed by utilizing research data and qualitative research procedures (embedded, multiple cases, case study methodology) to identify elementary and middle school/junior high school students' milk preferences, perceptions, influences, and barriers for milk selection and consumption. Data were collected to identify the perceptions of SN professionals' towards student milk selection and preferences.

This research study was conducted in two phases. In the first phase, the Institute of Child Nutrition, Applied Research Division (ICN, ARD) research coordinator developed and piloted the study's qualitative research protocol, data collection instruments, and training procedures for replicating research procedures. Information from the pilot was reviewed by ICN, ARD research coordinator, and by experts in the field who provided suggestions and recommendations for revision to both of the instruments and to the researchers' training and data analysis protocols. In the second phase of the study, a team of six researchers located at universities across the country were trained to identify and conduct case study site visits in diverse elementary and middle school/junior high schools. The research team conducted case study site visits that included collecting qualitative data through focus groups with elementary school students, middle school/junior high school students, and SN professionals, and observing student milk consumption behaviors at breakfast or lunch periods. Their findings were written and audio

recorded, and then analyzed using the Constant Comparative Method to report the results based upon research objectives.

### **Research Design**

The embedded, replicable, multiple-cases, case study design with a literal replication format (Yin, 2003) was used to develop the case study protocol to guide the research study. Case study methodology is a qualitative approach that has been used to describe the scope and depth of a phenomena in various settings (multiple-phase approach) using specific characteristics. The literal replication format was developed based on previous research and analysis of qualitative data to describe students' perceptions and behaviors associated with milk. The multiple-case design allows for the exploration of similarities and differences between and within data from each case using the case study instruments (Baxter & Jack, 2008; Yin, 2003). The embedded approach described by Scholz and Tietje (2002) was selected as a part of the case study approach to allow for more detailed inquiry and exploration. This approach also allows for data collection from multiple groups of subjects following the same research objectives and provides a protocol for integrating qualitative data into a single research study. Following this research design, the protocols developed for this study included case study site visit communication letters; informed consent and assent forms; the focus group instruments for elementary school and middle school/junior high school students; interview/focus group instrument for SN professionals; and an observation instrument. Researchers' training and debriefing protocols and a data analysis plan were also created to ensure that all researchers collecting and analyzing data for the study were following the research methodology. The ICN, ARD research coordinator evaluated a site visit to assess that researchers were following the established research design of the study.

Researchers provided periodic feedback and quarterly reports of their progress with site selection, data collection, and analysis.

### ***Informed Consent***

The ICN, ARD research coordinator followed research protocol and consent procedures established by the Human Subjects Protection Review Committee at The University of Southern Mississippi for the pilot and overall study. The approved Institutional Review Board application from The University of Southern Mississippi was shared with researchers so that they might follow the same research protocol, as a part of the research design's replicable case study procedures. For all research protocols, no identifying codes were used to identify participants from the pilot and case study site visits in Phase I and Phase II of this study. Participants in the research study included only those SN professionals who signed consent forms, and the students whose parents signed consent forms.

### ***Selection and Training of Researchers***

A competitive "Request for Application" announcement was distributed nationwide to solicit researchers with qualitative methodology experience to partner in collecting data for this research study. Six researchers from universities across the United States were selected and signed a subcontract agreement to attend a training session on how to identify case study sites, conduct site visits, and record and analyze data. The researchers also received the communications protocol and draft contact information for communicating with a SN director to serve as the liaison at each school case study site. Additional resources were provided to researchers which included the parental consent forms; school district contact letter about the site visit's purpose; information for conducting focus groups; students' assent statement; focus group questions for SN professionals and elementary and middle school/junior high school students;

and the observation instrument to record students' milk drinking selection and consumption behaviors.

To ensure that research integrity was maintained, researchers were instructed to follow their university's research governance for contacting participants, obtaining SN staff and parental consent, student assent, data collection, and analysis procedures. Communication between sponsored program representatives at each university assisted in the management of the research study. Researchers provided a copy of their approval to conduct research from their Human Subjects Protection Review Committee after signing their "Memorandum of Understanding" statements, and completing their university cooperative agreement contracts.

#### ***Data Collection Instruments and Supporting Documents***

The research protocols and instruments were developed using previous ICN, ARD research, literature review, and information from child nutrition professionals and experts in the field. The protocols were then pilot tested in one school district and in an after-school program in a different geographical location that had students enrolled from elementary and middle school/junior high schools from four school districts in rural and metropolitan areas. The questions were revised and consolidated to one form with the same questions. The instrument was reviewed by ICN, ARD researchers, and then piloted in one school district for confirmation. The SN director for that school district provided the feedback necessary for establishing the communications protocol between the researchers and the SN directors who would serve as the liaisons for each site visit. The ICN, ARD staff and SN director also reviewed the consent, assent, and observation forms, and confirmed the content for each. No revisions were made after the final pilot case site visit.

The case study site visit and data collection protocols were refined so that each could be used as a guide by researchers to address milk-related concepts and issues in various settings.

The site visit protocol included the following items:

- Letter/E-mail to the SN director and school authority to request their participation in the study; and
- School nutrition professionals' and parents' consent forms and student assent forms.

The data collection protocols included the following items:

- Interview and focus group questions for SN professionals;
- Focus group questions for elementary and middle school/junior high school students; and
- An observation form.

#### ***Interview and Focus Group Questions for School Nutrition Professionals***

Ten questions were developed from the objectives and goals of the study to capture SN professional responses, and to capture elementary, and middle school/junior high school student responses. For SN professionals, the questions asked about their perception of students' milk consumption; milk-related food service issues that impact students' preferences and consumption (i.e., delivery, storage time and temperature, milk service, and waste disposal issues); impact of the role of staff; observed students' milk preferences; barriers of milk consumption; and perceived best practices to increase students' perceptions and consumption of milk. The information collected from SN professionals described students' dining and milk consumption behaviors, food service operational issues, and challenges that impact students' consumption.

The following questions were designed to evaluate students' milk beliefs:

- Question 1: "How important is milk for students?"

- Question 2: “Do you think that students know the benefits of drinking milk?”
- Question 10: “What types of resources are needed to increase students’ perceptions and consumption of milk?”

Questions two and three were developed to capture students’ milk perceived consumption were included:

- Question 2: “Do you think that students know the benefits of drinking milk?”
- Question 3: “Do you think that students are drinking enough milk at school?”

Questions four and seven were created to capture participants’ concerns about milk and selection and consumption challenges:

- Question 4: “What are some of the foodservice issues you have faced related to the delivery, storage, and serving milk?”
- Question 7: “What do you think are some of the barriers that prevent students from drinking their milk?”

School nutrition professionals were asked three questions (five, eight, and nine) related to adult and peer roles in motivating, encouraging, and influencing students to select and consume milk:

- Question 5: “What do you think school nutrition staff could do to encourage students to drink milk?”
- Question 8: “Is trading milk an issue?”
- Question 9: “If you were able to have more of an impact on students’ perceptions and consumption of milk, what would you do?”

Question six referred to SN participants’ observations of students’ milk flavor preferences: “Do you think there is a difference between flavored milk and unflavored milk?” The final section of

the focus group asked SN professionals for suggestions and recommendations for improvements.

These questions included question five, nine and ten:

- Question 5: "What do you think school nutrition staff could do to encourage students to drink milk?"
- Question 9: "If you were able to have more of an impact on students' perceptions and consumption of milk, what would you do?"
- Question 10: "What types of resources are needed to increase students' perceptions and consumption of milk?"

***Focus Group Questions for Elementary and Middle School/Junior High School Students***

There were 22 questions developed to address the objectives and goals for this project.

Questions one, two, and ten captured students' perceived milk beliefs:

- Question 1: "How important is milk for students like you?"
- Question 2: "What does milk do for the body?"
- Question 10: "Who encourages you to drink milk at school?"

Students' perceptions of milk consumption were included in seven questions. Question 18 asked:

"Do you drink more milk at school or at home?" Questions three, four, six, and seven were related to drinking milk at school:

- Question 3: "Do you think that students drink enough milk at school?"
- Question 4: "Do you drink milk at school?"
- Question 6: "Do you drink milk for both meals at school?"
- Question 7: "What makes you want to drink milk at school?"

Students were asked about consuming milk at home in questions 16 and 17:

- Question 16: "Do you drink milk at home?"

- Question 17: “If you drink milk at home, what type of milk do you drink?”

Students’ perceived concerns, challenges, and barriers were captured in questions eight and 19.

- Question 8: “What would stop you from drinking milk at school?”
- Question 19: “What do you think prevents students from drinking milk at school sometimes?”

Questions seven and 13 were asked to capture what motivates and who encourages students to select and consume milk:

- Question 7: “What makes you want to drink milk at school?”
- Question 13: “Do milk commercials and posters make you want to drink more milk at school?”

Four questions were also included that asked students to identify the role of individuals who encouraged or influenced their milk choice and consumption decisions:

- Question 9: “What do you think the nutrition staff could do to encourage students to drink milk?”
- Question 10: “Who encourages you to drink milk at school?”
- Question 14: “Do famous people who drink milk make you want to drink milk at school?”
- Question 15: “Do your friends encourage you to drink milk at school?”

Students’ perceptions and preferences about flavored and unflavored milk were captured in these focus group questions:

- Question 5: “What is your favorite flavor of milk to drink at school?”
- Question 11: “What type of milk do you drink at school? Why or why not?”

- Question 22: “When did you learn to drink flavored milk?”

Question 12 and its accompanying probing questions asked students about their perception of differences between flavored and unflavored milk: “Do you think there is a difference between flavored milk and unflavored milk? Why or why not? What is it?”

The final set of focus group questions asked students about their recommendations for improving and encouraging milk selection and consumption at school. Question 20 asked students, “If you had the job to encourage students like you to drink milk at school, what would you do?” Question 21 asked students, “Do you have any other comments related to students’ perceptions and consumption of milk?” These questions allowed students to openly share their ideas that could have a positive impact on students’ selection and consumption of milk at school.

### ***Milk Behavioral Observation Form***

The “Behavioral Observation Form” was created to capture milk availability, service, and students’ milk selection, consumption, and milk waste behaviors. The form consisted of a section to record data collection information (i.e., date, case study site, observers’ names, meal observed, meal time, and location of meal/milk consumption environment). The form also included a short checklist that related to the objectives of the study and to the focus group questions about the milk selection and consumption environment. The checklist included 16 points of observation specifically for capturing milk behaviors. These included:

- Students’ access to milk (i.e., countertop, milk cooler, provided on tray by teacher or SN staff);
- Placement of flavored versus unflavored milk;
- Available milk flavors during the meal service;
- Milk service (i.e., in cartons or small jugs);

- Encouragement by SN staff to students to acquire milk as a meal component;
- Visibility of milk promotion materials (i.e., posters);
- Observed students' milk selection behaviors;
- Observed students' consumption behaviors;
- Observed teachers' behaviors (i.e., encouraging milk consumption);
- Observed students' milk waste behaviors (i.e., pouring milk on tray, floor, or in the garbage);
- Observed milk waste containment system; and
- Teachers' dining habits and other interactions with students (i.e., teachers eating with students).

An additional section was included next to the check list for observers to provide their comments related to the 16 points of observation. The researchers combined the observed milk selection and consumption data with the focus group data to describe aspects of students' milk preferences and consumption behaviors.

### *Case Study Site Visit Protocol*

The researchers were trained to select a minimum of four diverse school districts in at least two United States Department of Agriculture (USDA) regions. Diversity characteristics included the selection of sites that were distinctive by size (small, medium, or large school districts), geographical location (rural, metropolitan), and child nutrition program distinction (low/high free and reduced rates for school meals). Since the study focused on students' milk preferences and consumption, researchers were instructed to contact SN directors to serve as liaisons. The ICN, ARD research coordinator provided sample documents for all case study site visit protocol communications.

Information was provided to researchers to contact SN directors by e-mail or letter. The prototype request for SN directors provided: the purpose of the study, the site visit protocol, recommendations for selecting participants (SN staff, elementary and middle school/junior high schools); a request for a letter of support; a Human Subjects Protection Review Committee “Memorandum of Understanding” statement; and a timeline for interviews/focus groups and observations. The researchers also included their contact information should the SN director or other school site liaison have additional comments about their participation in the study. If necessary, a letter requesting school board or school administrator permission was also created for researchers to use as a template, if the need arose for school authority support.

Once approval and letters of support were received from the school districts, the researchers were instructed to send a confirmation e-mail to the SN director/liaison. The confirmation e-mail provided additional information for the site visit activities and the procedures for obtaining consent. The researchers conducted a follow-up phone call to the SN director to discuss the case study site visit protocol/procedures, and to clarify procedures for the site visit. An itinerary for site visit arrangements was coordinated between the SN director and the researchers to conduct the case study activities. The protocol also included information for obtaining informed consent from parents who agreed to allow their children to participate in the study; SN staff consent to take part in the focus groups; and students' assent to participate in focus groups. Structured interviews/focus groups and the observation process were scheduled to take approximately one day to complete at each site visit. Due to limitations of student and SN staff flexibility in scheduling, the order of interviews/focus groups and observations were arranged by the liaison to accommodate participants.

### **Site Visits**

Data collection using the focus group protocol with SN staff, students, and a behavioral observation of a meal occasion occurred during a one-to-two day visit in a school district for each case site. The site visits included the following research activities, in no particular order:

- Meet with the SN director/case study site liaison to discuss the scheduling of site visit activities;
- Conduct focus groups with the SN staff;
- Conduct focus groups with the elementary students (grades 3-5) and the middle school/junior high school students (grades 7-8); and
- Complete a behavioral observation of meal service (breakfast or lunch for each grade category).

### ***School Nutrition Staff Interview/Focus Groups***

The SN liaisons explained the purpose of the study to the SN staff focus group participants prior to the researchers' site visit. The SN staff who agreed and were able to participate were read an assent form prior to focus group sessions. The assent form provided an overview of the study, and the staff members' rights to decline any questions or cease participation without penalty. The interview/focus group instrument included a demographic section to capture information about the school district; the district's USDA region; the liaison's name; the date of the interview/focus group; the number of participants; and a checkbox confirming that consent forms were signed and the assent statement was read. The questions asked SN staff about their perceptions about milk; their views about students' milk consumption; the staff's impact on students' milk consumption; resource needs associated with milk; and food

service operational issues. All focus groups were conducted within 45 minutes to an hour, with six to eight SN staff members.

***Elementary and Middle School/Junior High School Student Focus Groups***

Following the guidelines of the Human Subjects Protection Review Committee, parental consent was required for students to participate in the research study. A template for parental consent for elementary and middle school/junior high school students' participation was developed for the researchers to follow and provide to the liaisons. Researchers were able to adapt the template using the research requirements of their university for involving children in research studies. If school districts had their own consent protocols, these were incorporated to ensure that participants' rights were protected. The parental consent template included information about the study; students' voluntary role to share their perceptions and consumption behaviors in a focus group session; and students' rights to refuse to answer questions or to decline participation without penalty or punishment. Only signed parental consent forms could serve as parents' permission for students' participation.

A student assent statement template was also developed for researchers to use following research guidelines. Only students with signed and returned parental consent forms were allowed to participate in the research study. School nutrition professionals were also asked to sign the consent forms, and to confirm each participant taking part in each focus group session. Student participants were read the assent statement prior to the focus group session. The assent statement included information that provided details to students about the purpose of the study; their level of participation and time in the focus groups; and their rights to decline at any time without penalty or punishment.

Researchers utilized the 22-question focus group instrument designed for elementary and middle school/junior high school students. The questions allowed researchers to ask students about their perceptions associated with milk (i.e., knowledge and perceived benefits); flavor preferences; milk consumption behaviors; and who/what influences and serves as barriers that impacts their consumption. Two focus groups were conducted with students classified as elementary students (grades 3-5) and middle school/junior high school students (grades 7-8). The questions for the student focus group sessions were previously piloted, and the sessions were completed within 45 minutes or less to accommodate student class schedules.

### **Debriefing Session and Initial Data Synthesis and Analysis**

All focus group and observation data were recorded in written and electronic formats, and transcribed for analysis. Focus group data was audio recorded, and included a research team's notes. After the case study site visit, all qualitative data were transcribed following the process provided in the researchers' training session. Each researcher was responsible for examining all raw data using several analytical strategies.

The transcripts were analyzed using the Constant Comparative Method Data, Kaleidoscope Method to categorize, tabulate, and cross-check responses and observations that addressed the initial purpose of the study. The Constant Comparison Method, Kaleidoscope Method described by Dye, Schatz, Rosenburg, and Coleman (2000) was used, because it provided a synopsis of the data based upon the embedded, multiple-cases designed and implemented to conduct this study. This method utilizes the constant comparison methods described by Patton (1990) and Glaser and Strauss (1985) to follow the four distinct stages for categorizing and describing data: comparing factors applicable to each objective captured from focus group questions and observed behaviors; integrating focus group and observation

categories and their properties; delimiting theories and assumptions; and writing the synopsis of data. This comparison method has been confirmed to be an ideal method for combining inductive category coding with observations from social settings. Therefore, as the researchers record responses using instruments constructed to capture categorical objectives, the data is compared across the categories. This method also allows for continuous refinement throughout the data collection and analysis process and feedback that describe relational aspects of the study.

Following the Dye, et al. (2000) data comparison method, thematic coding of key characteristics specific to the research objectives were analyzed from the SN staff's and students' focus group notes and observations for pertinent data. The research teams combined themes from focus group and observation data for each category identified from the objectives of the study. The principal investigator from each team then met with the ICN, ARD research coordinator in a debriefing session to discuss their initial research findings, commonalities, and unique results. The researchers also made the final decisions about combining focus group and observation data, categorizing the data into individual case and research team summaries, identifying researchers' roles and responsibilities for completing the project analysis, and creating a timeline for reporting and disseminating research results. Each researcher then conducted a review of their data, and submitted a copy of their transcripts and result summaries. The ICN, ARD research coordinator conducted the final comparative analysis of data, and sent the final copy of the results to the researchers. The information was then formatted for reporting according to the research methodology.

## **RESULTS AND DISCUSSION**

The purpose of this study was to identify milk preferences and perceptions of elementary and middle school/junior high school students and school nutrition (SN) professionals' perceptions of students' milk-related consumption behaviors. Researchers for this study captured data from students and SN professionals to provide insight into students' selection of flavored and unflavored milk during meal service in schools. The pilot visits occurred in the Southeast United States Department of Agriculture region, within one school district that had schools in a rural and metropolitan area, and in one afterschool program in a different geographical location that served children from four school districts. Twenty-five site visits with observation of a meal service at each site and focus groups that included SN staff, elementary students (grades 3-5), and middle school/junior high school students (grades 7-8) from twelve states were conducted between November 2014 and June 2015. The objectives of the site visits were to assess SN staff's and students' perceptions, and students' milk preferences and consumption behaviors. Students of both genders were represented in the focus groups. Seven major themes emerged from the focus group sessions about milk from both SN staff and students participating in the sessions:

- Perceived beliefs of milk benefits;
- Perceived milk consumption behaviors;
- Concerns and challenges about milk;
- Motivation and encouragement/influence to increase milk consumption behaviors;
- Flavor perceptions; and
- Recommendations for improved acceptance.

Researchers were able to observe full meal periods for each case site visit and monitor students' access, milk selection, consumption, and waste behaviors. Observations of milk selection and consumption behaviors confirmed the behaviors discussed in the focus groups. In accordance to the Constant Comparative Method described by Dye, et al, (2000), researchers organized themes for each individual case site, and placed the data into categories from the focus group and observation raw data. Each research team then conducted their own comparative analysis of their four-to-five site visits to create a summary across their sites. Then, each researcher submitted their raw data and summaries to the Institute of Child Nutrition, Applied Research Division research coordinator. Other factors that were confirmed during the observations with the focus group data were milk waste, students' selection of preferred milk flavors, and the social aspects associated with food and drink consumption of students. These were incorporated into the results from the focus groups.

### **Focus Group Discussions with School Nutrition Professionals**

During the focus group discussions, over 40 SN directors and staff responded to 10 questions that related to the objectives and goals of the study. There were no differences in focus group data collected from SN professionals that worked in elementary or middle school/junior high schools.

### ***Perceptions of Students' Beliefs and Consumption***

Respondents answered three questions related to their perceptions of students' opinions about milk. Overall, the SN staff respondents perceived that milk was very important for students, and were aware of the nutrients that it provides for their growth and development. School nutrition professionals also perceived that the older elementary and middle school/junior high school students were aware of some of milk's health benefits.

Moderators asked SN staff members two questions about students' milk consumption at school. Perceptions of whether students consumed enough milk at school yielded mixed views. Some respondents indicated that students waste or throw away a lot of milk and do not consume enough. Others believed that students drank most of their daily consumption of milk at school, but do not consume enough milk to meet their daily needs. Respondents believed that students' consumption behaviors were related to their preferences for flavored milk, health issues, or other factors that resulted in students' not choosing milk with their meal or throwing it away.

### *Perceptions of Milk Concerns and Challenges*

Two questions captured SN staff's concerns and the perceived challenges they believed had an impact on students' milk consumptions. School nutrition staff members identified vendor, management, and student issues as the primary challenges that effect students' milk consumption. Vendor issues related to milk delivery were associated with improper or time-related delivery issues that altered the milk in quality and taste. Respondents also perceived that staff issues related to customer service, and management issues related to storage and display of milk options, had an impact on students' milk selection preferences and consumption.

### *Motivating, Encouraging, and Influencing Students to Select and Consume Milk*

School nutrition professionals perceived that they play a pivotal role in motivating students to select and consume milk. Many SN staff members reported that they encourage students to select their choice of milk because it is a meal component. However, they are also motivated to encourage students to select and consume milk because of its perceived health benefits, and they believe that more opportunities for nutrition education are needed. They also identified teachers, parents, and peers as having an influence on students' milk selection preferences and consumption.

### ***Perceptions of Students' Milk Flavor Preferences***

Respondents reported that flavored milk was the most preferred milk choice for students over unflavored milk. Chocolate milk was the most preferred flavor of milk followed by strawberry. School nutrition professionals believed that flavored milk is most preferred by students because of its sweeter taste and texture, versus the plain and watery mouthfeel of unflavored milk.

### ***Recommendations for Improvements***

School nutrition professionals responded that nutrition education, encouragement, and visual resources were important tools that could influence students' milk selection and consumption. The expansion of flavor offerings; the need to address milk delivery and service issues (i.e., sustaining milk temperatures during service times); and parental involvement were also factors identified as having an impact on students' milk selection and consumption behaviors. A summary of SN professionals' focus group responses as codes and illustrative quotes are presented in Table 1.

Table 1

*School Nutrition Focus Group Responses*

<b>Questions/Themes</b>	<b>Codes</b>	<b>Illustrative Quotes</b>
<p><b>Perceptions of Students’ Beliefs</b> (Questions 1, 2, and 10)</p>	<p><i>Milk...</i></p> <ul style="list-style-type: none"> <li>• is very important for growth and development</li> <li>• supports strong bones and teeth</li> <li>• contains calcium and vitamin D</li> <li>• provides energy</li> <li>• tastes good</li> </ul>	<p><i>“I think it’s very important, gives them vitamin D and helps their bones and stuff so yeah; it gives them energy.”</i></p> <p><i>“...kids are always on the go and like they don’t have very much time for lunch. It’s really a fast way to get something that’s good for them, primarily calcium to build up their bones for the future.”</i></p>
<p><b>Perception of Students’ Milk Consumption</b> (Questions 2 and 3)</p>	<p><i>Students...</i></p> <ul style="list-style-type: none"> <li>• are aware of the benefits of milk</li> <li>• consume enough milk at school</li> <li>• are sometimes unable to consume milk due to lack of time for meal service, socializing, or other factors</li> <li>• students waste (throw away) a lot of milk</li> </ul>	<p><i>“For the amount of time they’re actually in school, eight ounces isn’t very much because that’s like an eight hour day and there’s not that much time to drink the rest that they probably need, you know.”</i></p>
<p><b>Milk Concerns and Challenges</b> (Questions 4 and 7)</p>	<p><i>Students’ milk consumption is impacted by...</i></p> <p>Vendor Issues</p> <ul style="list-style-type: none"> <li>• late delivery times</li> <li>• dirty or damaged milk containers</li> </ul> <p>Management Issues</p> <ul style="list-style-type: none"> <li>• milk cooler temperature issues</li> </ul> <p>Student Issues</p> <ul style="list-style-type: none"> <li>• health issues (i.e., allergies, intolerance)</li> <li>• peer pressure</li> <li>• preferences not available (i.e., packaging, flavor, temperature)</li> </ul>	<p><i>“I would say every once in a while the people who deliver to us don’t always get their milk delivery – that’s what happened today – so, sometimes, we don’t have enough or we run out.”</i></p> <p><i>“You know things like that – that’s just equipment and stuff....and kids get a frozen thing of milk, they’re not inclined to take it again.”</i></p>

(Table 1 continues)

(Table 1 continued)

*School Nutrition Focus Group Responses*

Questions/Themes	Codes	Illustrative Quotes
<p><b>Motivation and Encouragement/Influence</b> (Questions 5, 8, and 9)</p>	<p><i>Students are motivated/encouraged by:</i></p> <ul style="list-style-type: none"> <li>• School nutrition staff</li> <li>• Teachers</li> <li>• Peers</li> <li>• Other students</li> <li>• Parents</li> </ul>	<p><i>“Well, we typically ask when they come through the line if they’ve forgotten their milk. ‘Did you forget your milk?’ ...because sometimes they do.”</i></p>
<p><b>Milk Flavor Preferences</b> (Questions 6)</p>	<ul style="list-style-type: none"> <li>• Students prefer chocolate milk</li> <li>• Chocolate milk is thicker than unflavored milk</li> <li>• Flavored milk has more sugar</li> <li>• Flavored milk tastes sweeter</li> </ul>	<p><i>“I used to think that chocolate probably wasn’t the best choice for the kids. But my thought is at least they’re getting it; and it does have a lot of fortification and nutrition in it now than maybe when it first came out. So, I think any milk is, you know, better than not taking it.”</i></p>
<p><b>Recommendations for Improvements</b> (Questions 5, 9, and 10)</p>	<p><i>School nutrition staff believe that they could have more of an impact on students’ perceptions and consumption of milk if....</i></p> <ul style="list-style-type: none"> <li>• students are reminded to pick up milk</li> <li>• more variety is offered</li> <li>• better milk containers were available</li> <li>• they had more posters and nutrition education resources                             <ul style="list-style-type: none"> <li>○ cartoon characters - elementary students</li> <li>○ materials that are more identifiable – middle school/junior high school students</li> </ul> </li> </ul>	<p><i>“...education about the benefits of milk and maybe putting that kind of stuff in the classroom like even more....like maybe putting that (pointing to the MyPlate poster) downstairs in the classrooms.”</i></p> <p><i>“I’m thinking continuing to have a variety of flavors helps for our students to want to get the milk. Like if we have strawberry versus just white milk or chocolate milk, I feel like they’re more likely to drink it.”</i></p>

## **Focus Group Discussions and Observations of Elementary and Middle School/Junior High School Students**

During the focus group discussions, over 348 elementary and middle school/junior high school students responded to 22 questions related to the objectives and goals of the study. Researchers noted no differences between elementary students' focus group responses and those of middle school/junior high school students. Focus group and observation data were combined and thematically coded using the analytic method described by Dye et al. (2000).

### ***Perceived Milk Beliefs***

Students answered three questions about their perceived milk knowledge and beliefs/perceptions. Students described milk as necessary for building strong bones and teeth, and agreed with the statement, "Milk gives you bones of steel." Most students considered milk to be important, and recognized that it helps them grow and be healthy. Milk was also recognized as giving students energy to "stay in the game," "quench their thirst," and "wash down a meal." Some elementary students accurately listed the major nutrients in milk (vitamins A and D, protein, and calcium), and described the role of these nutrients in their bodies, while other students had misconceptions about milk's nutritional significance. Student participants also identified milk as being beneficial for hydration. Many participants indicated milk is their main beverage consumed with their meals. Most students believed that milk "tastes really good."

### ***Milk Concerns and Challenges***

A theme emerged describing supporting factors and challenges in consuming milk at school. This information was gathered using two questions. More than half of the students from the focus groups reported that they drank milk at school. Milk was offered and encouraged at meals and in some schools, students were required to select milk as a meal component. This

behavior was observed by researchers during mealtime observations. Taste, good flavor, and preference for milk influenced students' decisions to drink their milk. Students drank milk because other choices were limited, and milk was offered at every meal. Habit contributed to drinking milk with meals. A student noted that milk with breakfast was, "...important, because I couldn't eat my cereal without milk." Students also reported they drank milk at meals because they were hungry, thirsty, and the milk was filling. Students said they did not drink milk at school because they did not like milk. Others bought or brought other drinks for lunch. Students were quoted as saying, "If they (students) don't drink milk, they could get the juice at breakfast. Or at lunch, they could get the water."

Another challenge noted by students was that they recognized how approved beverages, such as 100% fruit juice, competes with the selection and consumption of milk. A student reflected, "Maybe instead of giving them juice, they just give them milk. Like they don't have to pick between." This statement reflects an understanding that when juice is offered with milk, milk consumption decreases. Students believe careful management practices by foodservice staff would help increase milk consumption by eliminating milk that is spoiled, smells bad or has an off color; by serving milk that is not hot or frozen; and by offering preferred flavors regularly and consistently. Other students offered insight into limited options: "Well, so I was saying... when I go over to friends' houses, they usually drink 2% milk. I don't see a lot of families that drink whole or 1% milk. I think kids would buy more milk if we had more options." The statement reflects potential student difficulty in adjusting to the lower fat content of milk offered at schools because they drink 2% at home. The point was further emphasized when students wanted milk available at school that tasted like milk from the store.

***Motivating, Encouraging, and Influencing Students to Select and Consume Milk***

Motivating and encouraging factors emerged as themes based on responses from three questions posed during the focus groups. When asked about encouragement to drink milk at school, students believed their family, teachers, and SN staff all provided encouragement. Student participants reported widespread support for selecting and consuming milk at school. Students in some schools were encouraged by the cashier to take milk to complete a reimbursable meal. This behavior was observed by researchers during breakfast and lunch service times. Besides external influences, students indicated their selection of milk was self-motivated or intrinsically driven.

***Milk Flavor Perceptions***

Over 50% of the focus group students preferred chocolate milk at school. Students claimed they, "...get chocolate milk, because it really tastes good and sometimes it has zero fat in it. And that one's really good. It's like really creamy." Other flavor preferences included white, strawberry, vanilla, and other flavors. Milk flavor perceptions were further probed with a question about where they consume most of the milk that they drink. Over 50% of the students in the focus groups said they drink milk at both meals at school, and prefer chocolate or other flavored milk over unflavored. Students drink milk primarily during the lunch period. More students drink milk at lunch, because many students eat breakfast at home or breakfast is not offered at school. Students who bring their lunch from home noted that they did not pack milk or purchase milk for lunch. A student stated, "I don't really drink milk here all that much, because I usually (bring) cold lunch." Students reported they did not purchase milk because they purchased other beverages. Milk purchases appeared to be displaced by availability of other beverages; and the more students bring sack lunches to school, the less milk they consume with meals at school.

### ***Recommendations for Improvements***

Students offered ideas for improving milk consumption with responses to three questions. They believed nutrition staff could increase portion size, change containers, check dates, offer more flavors, and offer incentives to increase milk consumption. The greatest encouragement to drink milk came from parents and the SN staff. Offering incentives and nutrition education activities were suggestions to increase milk consumption. Students thought milk marketing posters that related to students' environments would be helpful. Students suggested, "putting up actually cool posters instead of scary ones (vampire)" were ideal; but, they felt that many of the milk posters with professional athletes and actors were cliché and unrealistic. Several students suggested the need for customized posters with messages related to them and their school (i.e., featuring a student of the month, featuring the school mascot, and students drinking milk). Similar to the service-related response of SN staff, students believed that issues related to "searching" for milk that was close to the correct temperature highlight the need to improve milk coolers or milk service practices. Students discussed issues related to their "search" for milk that was not warm nor frozen. Many stated that students who select warm or frozen milk are deterred from consuming milk during that meal or any other mealtime.

Table 2

*Students Focus Group Responses*

<b>Questions/Themes</b>	<b>Codes</b>	<b>Illustrative Quotes</b>
<p><b>Students’ Perceived Milk Beliefs</b> (Questions 1, 2, 10)</p>	<p><i>Milk...</i></p> <ul style="list-style-type: none"> <li>• is very important</li> <li>• helps you grow, is healthy, and is good for you.</li> <li>• tastes good, is good for hydration, and makes you stronger.</li> <li>• has calcium and other nutrients.</li> </ul>	<p><i>“I think milk is good because it tastes really good, and it definitely helps us grow, and gives us nutrients.”</i></p> <p><i>“Milk helps you stay in the game.”</i></p>
<p><b>Students’ Perceived Milk Consumption</b> (Questions 2 and 3)</p>	<p><i>Students.....</i></p> <ul style="list-style-type: none"> <li>• most do not know the health benefits of milk</li> <li>• consume more at lunch</li> <li>• are aware of some benefits of milk</li> <li>• in elementary focus groups – split 50%/50% that students drink enough milk at school</li> <li>• in middle school/junior high school focus groups– 57%/43% believed that students drink enough milk at school</li> </ul>	<p><i>“If students want more, they should get it for free.”</i></p> <p><i>“I don’t think (students get enough milk) because people want more milk and all they can get is one carton if they don’t bring their lunch.”</i></p> <p><i>“...tryin’ to talk to your friends and you don’t wanna waste time drinkin’”</i></p>
<p><b>Milk Concerns and Challenges</b> (Questions 4 and 7)</p>	<p><i>Reasons for Not Drinking Milk</i></p> <ul style="list-style-type: none"> <li>• Socializing during meal service</li> <li>• Do not like the taste</li> <li>• Bring lunch from home</li> <li>• Do not have extra money</li> <li>• Middle school/junior high school cartons are too small/not enough milk</li> <li>• Lack of time</li> <li>• The serving line is too long</li> <li>• The milk cooler does not keep all cartons/jugs at the same temperature</li> </ul>	<p><i>“We have more options than just milk, so like the other options are more appealing to us than milk.”</i></p> <p><i>“....sometimes people just get the milk because it comes with the lunch and they don’t even drink it and throw it away.”</i></p>

(Table 2 continues)

(Table 2 continued)

*Students' Focus Group Responses*

Questions/Themes	Codes	Illustrative Quotes
<p><b>Motivation and Encouragement/Influence</b> (Questions 5, 8, and 9)</p>	<p><i>Students are motivated/encouraged by:</i></p> <ul style="list-style-type: none"> <li>• Family</li> <li>• Teachers</li> <li>• SN staff</li> <li>• Cashier (SN staff)</li> <li>• Self-motivated</li> <li>• Middle school coaches</li> </ul>	<p><i>“No one says you have to drink it, they either say you want to or you don’t, no one forces you.”</i></p> <p><i>“Our lunch ladies do and sometimes our teacher will talk about it, like at the beginning, middle and end of the year.”</i></p>
<p><b>Milk Flavor Perceptions</b> (Questions 6)</p>	<ul style="list-style-type: none"> <li>• Majority of all students preferred flavored versus unflavored milk</li> <li>• Chocolate is the most preferred choice</li> </ul> <p><i>Elementary Students</i></p> <ul style="list-style-type: none"> <li>• Chocolate</li> <li>• Unflavored/plain/white</li> <li>• Strawberry</li> <li>• Vanilla</li> <li>• Almond/other flavors</li> </ul> <p><i>Middle School/Junior High School Students</i></p> <ul style="list-style-type: none"> <li>• Chocolate</li> <li>• Strawberry</li> <li>• Unflavored/plain/white</li> <li>• Vanilla</li> <li>• Almond/other flavors</li> </ul>	<p><i>“If the flavors weren’t available. I don’t like the taste of white milk.”</i></p> <p><i>“The white milk is too thin. It seems like it’s just watered down.”</i></p> <p><i>“[Students] get chocolate milk because it really tastes good and sometimes it has zero fat in it....and that one’s really good. It’s like really creamy.”</i></p>

(Table 2 continues)

(Table 2 continued)

*Students' Focus Group Responses*

Questions/Themes	Codes	Illustrative Quotes
<p><b>Recommendations for Improvements</b> (Questions 5, 9, and 10)</p>	<ul style="list-style-type: none"> <li>• Posters and resources need to be age and grade appropriate.</li> <li>• Need resources that are more relevant and realistic for students</li> <li>• Cartoons for elementary school students on cartons</li> <li>• Posters and other resources with the school mascots, sports teams, school groups, and students</li> <li>• Replace the paper cartons (altered taste)</li> <li>• Change milk cooler design to have more uniform temperature</li> </ul>	<p>Perceptions of Milk Promotion Posters</p> <p><i>“I used to love those when I was a kid.”</i></p> <p><i>“No, it [poster] may have on the younger kids but the older kids it’s just like so what, this person’s drinking a whole bunch of milk every day....”</i></p> <p><i>“Famous people get paid to do it [posters/ads]; may be dishonest about why they drink milk.”</i></p>

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions**

School nutrition (SN) staff and students have knowledge of and recognize the benefits of milk served in schools. The primary preferences among elementary and middle school/junior high school students is for chocolate and other flavored milk. Students noted that their decisions to consume milk are based upon the flavors offered; but are also influenced by service factors, meal service time, their abilities to socialize, and other beverage selections at mealtime. Both SN staff and students noted that parents, nutrition staff, and teachers were the most influential individuals who encourage them to select and consume milk. Popular advertisements, such as milk posters, are considered passé to students, who suggested the need to customize milk messages that are more realistic. Elementary students expressed the need for puzzles and games on the cartons as a way of disseminating nutrition and health messages. Older students were more vocal about the need for packaging that they perceived to have an impact on flavor. Although observed milk behaviors mirrored many of the behaviors and perceptions expressed in the SN staff and student focus groups, other milk and dining behaviors were noted by researchers. Bullying behaviors, milk hoarding, and peer milk selection behaviors were also observed. It should also be noted that researchers did not experience issues getting students to share their milk beliefs and consumption behaviors. Students were expressive about providing their perceptions, and stated the need for their input about other meal components served at school.

### **Recommendations for Future Research**

Findings from the focus groups conducted with SN professionals and elementary and middle school/junior high school students, and observations at the case study sites, indicate the need for further research to better understand selection and consumption decisions among this age group. Areas for future research include the following suggestions:

- Identify the reasons why students bring other beverages to consume with their meals; and
- Identify the milk purchasing and storage challenges that affect students' preferences and consumption behaviors.

Future studies could also investigate temperature fluctuation in milk coolers, and best practices for keeping milk cold (i.e., the temperature of the cooler, the use of curtains, the practice of shutting tops during meal breaks, etc.). The impact of district and SN program service policies on milk selection and consumption should be reviewed, such as time available for lunch and purchasing limits. Additionally, focus group findings suggest a need to further study nutrition education, marketing messages, and effective delivery mechanisms for this targeted age group. Research by the milk industry could explore methods to mimic the mouthfeel of 2% milk in 1% milk and non-fat options, and also investigate ways to improve packaging.

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