

## **Distribution Agreement**

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

---

Emily Catheryne Gordon

---

Date

Primary Caregiver Health Literacy and Recommended Beverage Selection for their Young  
Children

By  
Emily C. Gordon  
Master of Public Health

Hubert Department of Global Health

---

Julie A. Gazmararian, PhD, MPH  
Committee Chair

---

Aryeh D. Stein, MPH, PhD  
Committee Member

---

Jean A. Welsh, PhD, MPH, RD  
Committee Member

Primary Caregiver Health Literacy and Recommended Beverage Selection for their Young  
Children

By  
Emily C. Gordon

Bachelor of Arts,  
University of Richmond,  
2013

Thesis Committee Chair: Julie A. Gazmararian, PhD, MPH

An abstract of  
A thesis submitted to the Faculty of the  
Rollins School of Public Health of Emory University  
in partial fulfillment of the requirements for the degree of  
Master of Public Health  
in the Hubert Department of Global Health  
2016

**Acknowledgements:**

The final version and submission of this thesis would not be possible without the support of the faculty and staff at Emory University, Children's HealthCare of Atlanta, and Children's Medicine Primary Care-Suwanee.

I would like to thank Dr. Julie A. Gazmararian for her dedication to the long and arduous writing process to ensure the quality of this work.

Thank you to Dr. Aryeh D. Stein for his insight into the methods and analysis.

Thank you to Dr. Jean A. Welsh for her insight into nutrition and dietary behaviors and also remaining the point of contact with Children's Healthcare of Atlanta throughout this entire process.

Amelia Jazwa, Farah Keong, and Aimee Adams, from Children's Healthcare of Atlanta were beyond welcoming to me during my time there for practicum and data collection. Together you all have been extremely during my extensive data analysis and writing period. My practicum experience would not have been the same without the three of you. Even now you all are always there to help out when I need it. Also thanks to Carson Ward for being a trooper and collecting a few extra surveys. I know you did not want to spend your summer in a waiting room.

I would also like to acknowledge the entire staff of Children's Medicine Primary Care. Thank you for welcoming me to your facility for the six weeks that I was there for data collection and helping me in anyway that you could. It was a pleasure to be considered part of the staff for the short time that I was there.

Finally I would like to acknowledge my family and friends who were supportive and patient with me since I started working on this thesis back in June. To my Mom, Poppy, and Aunt Jeanine- since the first day of kindergarten when I walked out of the door by myself ready for school before anyone else was ready, the three of you have been behind me and supported me no matter what. Amanda Williams, thank you for sticking it and never jumping ship. MaryKate Miller and Samantha Shortridge the constant texts of encouragement were exactly what I needed to push through these last twenty odd days. Or maybe I just needed a cup of Sunyo and Wonder Woman underwear to feel like a champ, Kate Baur that made my day.

## **Abstract**

### **Primary Caregiver Health Literacy and Recommended Beverage Selection for their Young Children**

By Emily C. Gordon

#### Background

Both low health literacy and obesity have a higher prevalence in minority race/ethnic populations, additionally, parental health literacy has been associated with childhood obesity. Childhood obesity has been linked with the early introduction of sugar-sweetened beverages, and sugar-sweetened beverage consumption is also higher in minority youths. However, few studies have investigated beverage consumption in young children or the relationship between parental health literacy with beverage choice. This study examined that relationship in regards to current nutrition recommendations.

#### Methods

This study included 268 parent/ primary caregivers who had a child (six months - six years) and attended one of three primary care clinics in the Metro Atlanta area between May 2013 and July 2015. Trained interviewers administered surveys to assess knowledge and practice of nutrition related recommendations along with Newest Vital Sign health literacy test. Beverage choice was classified as “Follows recommendations” or “Does not follow recommendations” while primary caregiver health literacy scores were classified by low literacy (0-1), limited low literacy (2-3), and adequate literacy (4-6). Logistic regression models were used to determine the association between health literacy and beverage choice of primary caregivers. Sociocontextual characteristics, age and gender of primary caregiver, education, income, and preferred survey language were included as covariates.

#### Results

Of all participants, the average age was 31 years and 97% were the mother/ father of the child brought to the clinic. More than half of participants were female (64%). Only 23% of participants were Caucasian, 36% Africa American/ Black, and 41% Latino/ Hispanic participants (41%). A majority of participants had low or limited health literacy skills (77%). Adequate health literacy of primary caregivers increased the odds of selecting a recommended beverage for their child compared to primary caregivers with low health literacy (OR= 2.7 CI 0.6 -11.5).

#### Conclusion

The results of this study suggest greater that primary caregiver health literacy is associated with the selection of a recommended beverage as the most frequent option offered for their young children. Further investigation of the association of primary caregiver health literacy with the compliance of other recommended nutrition and health behaviors may provide understanding to how parental behavior during early childhood may increase the risk of childhood obesity.

Primary Caregiver Health Literacy and Recommended Beverage Selection for their Young  
Children

By

Emily C. Gordon

Bachelor of Arts  
University of Richmond  
2013

Thesis Committee Chair: Julie A. Gazmararian, PhD, MPH

A thesis submitted to the Faculty of the  
Rollins School of Public Health of Emory University  
in partial fulfillment of the requirements for the degree of  
Master of Public Health  
in the Hubert Department of Global Health  
2016

## Table of Contents

<b>Chapter 1: Introduction</b> .....	<b>1</b>
A. Problem Statement .....	2
B. Purpose statement.....	2
C. Research Questions .....	2
D. Significance Statement.....	2
<b>Chapter 2: Literature Review</b> .....	<b>4</b>
A. Health Literacy.....	4
B. Health Literacy and Childhood Obesity.....	5
C. Beverage Consumption and Other Predictors of Childhood Obesity .....	7
D. Sociocontextual Determinants of Health, Health Literacy, and Nutrition.....	8
E. Summary of Literature Review .....	9
<b>Chapter 3: Methodology</b> .....	<b>10</b>
A. Research Design .....	10
B. Population .....	10
C. Procedure .....	10
D. Instruments.....	11
1. Survey Instrument .....	11
2. The Newest Vital Sign Health Literacy Test.....	11
E. Data Measure.....	12
1. Health Literacy.....	12
2. Recommended Beverage Choice .....	12
3. Sociocontextual Factors .....	12
F. Plan for Analysis .....	13
1. Demographic Characteristics and Health Literacy of Participants .....	13
2. Recommended Beverage Choice .....	13
3. Primary Caregiver Health Literacy and Recommended Beverage Choice.....	13
H. Delimitations and Limitations.....	14
1. Delimitations .....	14
2. Limitations .....	14
G. Ethical Considerations .....	15
<b>Chapter 4: Results</b> .....	<b>16</b>
A. Demographic Characteristics and Health Literacy of Participants .....	16
Table 1. The distribution of primary caregivers' health literacy categories by sociocontextual characteristics.....	17
B. Recommended Beverage Choice .....	18
Table 2. The distribution of primary caregivers' beverage choice for young children by sociocontextual characteristics .....	19
C. Primary Caregiver Health Literacy and Recommended Beverage Choice .....	20
Table 3. The distribution of primary caregivers' beverage choice for young children by health literacy categories .....	20

Table 4. Logistic regression models of the relationship between primary caregiver health literacy and the selection of a recommended beverage as the most frequently offered beverage for their young children .....	21
<b>Chapter 5: Discussion/ Conclusion .....</b>	<b>22</b>
<b>Chapter 6: Implications/ Recommendations.....</b>	<b>25</b>
<b>Chapter 7: References .....</b>	<b>27</b>
<b>Chapter 8: Appendix.....</b>	<b>34</b>
A. Additional Tables.....	34
Table 1. The demographic characteristics of index child.....	34
Table 2. The distribution of beverage choice of primary caregivers for young children during and between meals.....	34
B. Survey Instrument and Newest Vital Sign test .....	36
1. English Version .....	36
2. Spanish Version .....	53
3. Certificate of Accuracy .....	69
C. Assisting images.....	70
1. Beverage Images - English Version .....	70
2. Beverage Images - Spanish Version .....	71
3. Ice Cream Carton image of Newest Vital Sign test – English Version .....	73
4. Ice Cream Carton image of Newest Vital Sign test – Spanish Version .....	75



## Chapter 1: Introduction

Health literacy measures an “individual’s capacity to obtain, process, and understand basic health information,” and has been shown to play a role in an individual’s health behavior and access to care, which in turn affects their health outcomes [1] [2]. Health literacy tends to be lower in minority groups and low-income populations and is a substantial barrier to individuals of these populations for participating in health seeking behaviors [1] [3-4]. Increased parental health literacy has also been found to have an association with reducing the risk of childhood obesity [5]. The increased risk of childhood obesity has also associated with increased sugar-sweetened beverage (SSB) consumption [6-7]. The consumption of sugar-sweetened beverages also tends to be higher in minority groups despite the recent decrease in consumption nationwide [8].

Currently, it is estimated that 25% of young children in the United States are obese (defined as a Body Mass Index [BMI] at or above 95<sup>th</sup> percentile for children of same age and sex) with a higher prevalence of obesity in African American and Latino populations [9-11]. While parental health literacy has been studied in relation to childhood obesity, there is limited research investigating the relationship of parental health literacy with beverage choice practices. To date, previous research has not investigated the association between primary caregiver health literacy and beverage choice or how race/ethnicity affects this relationship.

This study examined the relationship between primary caregiver health literacy and caregivers’ selection of a recommended beverage for their young children during meals. Though this study did not focus on childhood obesity as a primary outcome, the results provide insight regarding primary caregivers’ most common beverage choice practices and how they are influenced by health literacy, race/ethnicity, and other sociocontextual factors.

**A. Problem Statement**

Despite the evidence that low parental health literacy and the early introduction to SSBs both are associated with increased risk of childhood obesity, there is a lack of literature examining the relationship between health literacy of primary caregivers with the compliance of nutrition recommendations regarding their beverage choice for young children. There is minimal research on this relationship specifically in young children or looking at it through a sociocontextual lens to identify how race/ethnicity attenuates this relationship.

**B. Purpose Statement**

The purpose of this research is to determine the relationship of primary caregivers' health literacy skills with the most frequent selection of a recommended beverage for their young children during meals that follow the current, United States Department of Agriculture (USDA) Dietary and the American Academy of Pediatrics (AAP) guidelines [12-14].

**C. Research Questions**

What is the relationship of primary caregivers health literacy to health behavior, specifically the selection of a recommended beverage as the beverage most frequently offered to their young children during meals? Does the relationship between primary caregiver health literacy and most frequent beverage choice change when accounting for race/ethnicity and other sociocontextual factors?

**D. Significance Statement**

Understanding the role of primary caregiver health literacy in relation to beverage choice provides insight into how parental health knowledge relates to the practice of obesity related behaviors. This research makes at least three contributions to the field of public health. First, it provides insight regarding the health literacy skills of parents of young children in the Metro

Atlanta area. Low health literacy skills in this racially diverse sample suggest the need for targeted health literacy programs, to cater to groups of different social, economic, or racial/ethnic backgrounds [15]. Second, it quantifies primary caregivers' most frequent beverage choice in relation to current beverage recommendations for young children. By knowing caregivers' most frequent beverage choice for children either during or between meals, it identifies an area of intervention for decreasing exposure to sugar-sweetened beverages and childhood obesity risk. Finally, it identifies the relationship between primary caregiver's health literacy with beverage choice of parents for young children and how this relationship is modified by sociocontextual factors. The association will identify one pathway of how primary caregiver nutrition related knowledge relates to behavior associated with childhood obesity.

## **Chapter 2: Literature Review**

The following review highlights the current research in health literacy, the association of health literacy to childhood obesity, sugar-sweetened beverage consumption and other factors associated with increased childhood obesity risk, and the association of socio-contextual determinants with health literacy, diet, and overall nutrition.

### **A. Health Literacy**

Health literacy is defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions and services needed to prevent or treat illness” [1]. The concept of health literacy includes: understanding the risk of certain behaviors, following and managing treatment for care, and seeking proper preventative care [1] [2] [3]. Besides having access to healthcare, individuals must have basic health knowledge and understanding of relevant health information to make the most informed decision for their situation. Meanwhile increased health literacy is related to increased self-management of care and reduced poor outcomes due to chronic disease status [16] [17-18]. In many cases low health literacy is a barrier to utilization of health care systems, increases the risk of poor health outcomes, and correlates to both parents and adolescents’ experience with the healthcare system [19].

It is estimated that one-third of the United States has low health literacy skill, which is associated with lowered participation in the healthcare system and can result in poor health outcomes for those who do not seek care [20-22]. Though higher education does not always translate to higher health literacy skills there is an association between the two [20]. Low income has also been associated with low health literacy levels suggesting the mediation of sociocontextual factors on health literacy levels and related health behaviors [23-24].

Summary: Health literacy has an association with many aspects of care including utilization of healthcare resources and poor health outcomes for children.

## **B. Health Literacy and Childhood Obesity**

As parental health literacy increases so does chance of parents' participation in positive health seeking behavior and the improved health outcomes in their children [2] [4] [25].

Previously two studies have demonstrated the association between low parental health literacy and the increased risk of childhood obesity [26-27]. This is important because within the United States childhood obesity has almost tripled in the past 20 years and as of 2010 there were 12 million obese children nationwide [28-29]. The prevalence of overweight/obese for children aged two to five is estimated to be 25% [30]. The prevalence of obesity is higher within African American and Latino minority groups and in certain areas of the United States, such as the southeast region [10] [29].

A cross sectional survey involving 230 child-parent pairs found that parental health literacy had an association with the weight of children aged 7-11 years [28]. High health literacy skill in parents was associated with a protective effect against obesity in children aged 7-11 (AOR= 0.75 CI 0.56, 1.00) [28]. However obesity in children aged 12 to 19 was not associated with parental health literacy and was in fact associated with the child's own health literacy skill (AOR= 5.26 CI 0.18, 0.58) [28]. Since the association between parental health literacy and childhood obesity was only significant in the 7-11 age group it appears that parental health literacy is most important and influential towards the risk of obesity for children at earlier stages of development. In addition, a study focusing on infant feeding practices and care found that low literacy in parents was related to increased odds of parents practicing obesogenic behaviors

(defined as a clustering of nutrition, physical activity, or lifestyle behaviors associated with an increased risk of obesity) during child's infancy [31-32].

Studies have been conducted to identify how parental health literacy can affect prevention as well as the outcome of obesity [33-34]. The STRONG Kids Study found that parents with low health literacy were less likely to identify the recommended weight loss strategies for children and to seek out healthcare providers as a resource regarding weight loss for their children [33]. Another study following 865 parent-infant pairs saw a decrease in prevalence of obesity at age two for children, with the use of a parental health literacy specific intervention [34]. Educational tool-kits and supplemental materials designed for low health literacy skills proved to be effective in increasing the knowledge parents of all literacy levels knowledge of nutrition and obesity and in turn reducing the prevalence of obesity in this population [34]. Both of these studies show the important connection of parental health literacy to both weight management in children and the prevention of childhood obesity. These findings suggest that parental health literacy has an effect on children's health outcomes as early as the age of two and that more research is needed in parents of young children to better understand how parental health literacy and behavior during early developmental periods relate to childhood obesity.

Summary: Early intervention programs focusing on parental health literacy have been proven to be effective in reducing the prevalence of childhood obesity while parental health literacy is associated with child obesity risk in children up to age 11. This suggests that parental literacy is influential to the outcome of childhood obesity and more importantly may increase the risk of obesity in children as early as age two.

### **C. Beverage Consumption and Other Predictors of Childhood Obesity**

In childhood obesity genetic disposition only contributes to 5% of present cases [4]. The lack of genetic evidence contributing to obesity in children suggests that other factors such as diet, metabolic rates, physical activity, health literacy, and modeled parental behaviors prove to be the more influential to the rise in childhood obesity rates [4] [27] [31] [33-34].

Beverage consumption is one factor that has a significant association with childhood obesity and is often studied [35]. The current United States Department of Agriculture (USDA) Dietary Guidelines for Americans and American Academy of Pediatrics beverage recommendations for young children include milk, water, and 100% fruit juice [7] [12]. Though milk is considered a recommended and healthy beverage for children, the fat content of the milk provided for young children has previously been researched as a risk factor contributing to childhood obesity. However the consumption of whole fat milk instead of low or fat free milk during childhood does not increase the risk of childhood obesity [36].

Early juice exposure is also influential to later dietary behaviors for children. Project Viva followed 1,163 children throughout childhood (~ age 11) focusing on “pre-, and perinatal factors, pregnancy outcomes and offspring health,” and found that early introduction of juice into a child’s diet increases their frequency and quantity of consumption over time [37]. The results of the study concluded that children who were exposed to juice prior to age one were associated with higher juice intake at early childhood (ages two-five) along with higher consumption of juice and other sugar-sweetened beverages during mid-childhood (ages 6-11) [37]. Another recent longitudinal study following 9,600 children ages two to five years of age indicated that among children ages four to five, frequent sugar-sweetened beverage (SSB) drinkers had a 1.4 times higher odds of being obese than infrequent SSB drinkers (adjusted for race/ethnicity and

socio-economic status  $p < 0.01$ ) [38]. In contrast, water intake prior to age one has no association with the intake of juice or SSBs in early or mid-childhood and the substitution of milk or water for SSBs has been shown to reduce body fat composition and BMI [39].

Summary: All types of milk and water are healthy substitutes, which can decrease fat composition when consumed, as a substitute for SSBs. Early introduction to juice and other sugar- sweetened beverages increases consumption throughout childhood and has been linked to childhood obesity in children as early as age five.

#### **D. Sociocontextual Determinants of Health, Health Literacy, and Nutrition**

Health literacy has been associated with many sociocontextual determinants of health such as education level, race/ethnicity, and occupation level [40-41]. The interaction between health literacy and sociocontextual factors relates to healthcare participation, health outcomes, diet and nutrition [3-4] [42-43].

Dietary patterns have been associated with both health literacy and sociocontextual factors, in which increased health literacy is associated with improved Healthy Eating Index (HEI) scores and reduced consumption of SSBs [8] [44] [46]. One study of 376 individuals from the Mississippi Delta, a primarily African American and low-income community, explored the relationship of health literacy with Healthy Eating Index Score [44]. This cross sectional survey found that increased health literacy was associated with a 34-kcal/day decline of caloric intake of SSBs [45]. This study concluded that health literacy influenced beverage consumption and overall Healthy Eating Index scores [44].

Aside from the relationship between health literacy and SSB consumption it is important to note that NHANES data shows that intake of total calories, calories from SSB's, and calories salty snacks in children vary by race/ethnicity [45]. Despite that in recent years the total number



of calories in each of these categories has declined in some race/ethnicity groups, there is still prominent difference in dietary patterns between children of different races. These differences in beverage consumption may also be seen in children of younger ages contributing to varying risk of childhood obesity.

Summary: Both health literacy skills and beverage consumption vary between race/ethnic groups. However previous research has been limited to school-aged children and adults, while this study examined the relationship between primary caregiver health literacy to beverage choice specifically in young children (under six years of age).

### **E. Summary of Literature Review**

Parental health literacy has been linked to navigation through the health system and health outcomes of children including, childhood obesity [27] [31] [34]. The early introduction to juice or other sugar-sweetened beverages prior to 12 months of age also has a relationship to the onset of childhood obesity [35-39]. In addition, both race/ethnicity and health literacy are associated with nutrition and dietary patterns leading to increased consumption of sugar-sweetened beverages and HEI scores [8] [44] [46].

This review has highlighted the potential connection between parental health literacy, sociocontextual factors, and parental behavior to demonstrate that evidence suggests that all of these factors are associated to behavior and outcome of childhood obesity. However, research has not yet sufficiently explored the relationship of primary caregiver health literacy relates with the selection of a recommended beverage for their young child. This study identified the relationship between primary caregiver health literacy and beverage choice and how it is influenced by race/ethnicity and other sociocontextual factors.

## **Chapter 3: Methods**

### **A. Research Design**

This observational study was designed to assess the health literacy, the knowledge, and the practice of primary caregivers regarding nutrition and diet recommendations for their young children.

### **B. Population**

This study included 268 participants from a convenience sample of parents and guardians attending the waiting rooms of three primary care clinics in the Metro Atlanta area, selected to provide a racially/ethnically diverse sample. All parents and caregivers in the waiting room were asked about the children in their household, those who had had at least one child between the ages of six months and less than six years of age in their household were eligible for participation. In situations with more than one qualifying child, one child was randomly selected to serve as the index child. In these circumstances, caregivers were asked to think about the index child when responding to certain survey questions (see Appendix). Parents and caregivers in the waiting room under 18 years of age, without a child between the ages of six months and six years, or who could not complete the survey in either English or Spanish were excluded from the study.

### **C. Procedure**

Six trained bilingual interviewers conducted surveys between 2013 and 2015 at three race/ethnically diverse clinics: clinic 1 serves a primarily African American/Black population (87 approached, 84 completed, response rate 97%), clinic 2 serves a primarily Latino/Hispanic population (106 approached, 104 completed, response rate 98%), and clinic 3 serves a primarily Caucasian population (112 approached, 80 completed, response rate 71%). Interviewers

approached individuals in the waiting rooms of the clinics for participation, if participants agreed, interviewers read aloud each question of the survey, and recorded responses on paper copies. The interviewer also administered the Newest Vital Sign Health Literacy test at the end of each survey. Participants were given the option to complete the questions regarding race/ethnicity, education, and income independently or with the assistance of the interviewer. All surveys that were handed to the participant for completion were re-collected before the participant left the primary care clinic. All surveys were conducted in the preferred language of the participant, within the waiting room area, and took approximately ten minutes to complete.

#### **D. Instruments**

##### 1. The survey instrument

The survey instrument was specifically designed after reviewing literature to identify the most recent guidelines for young children regarding nutrition and diet. The initial survey was piloted for cognitive understanding in 20 individuals. A certified translator was used to translate the survey into Spanish (see Appendix). The final survey used in this study contained a series of questions to characterize the sample population, to assess knowledge of nutrition and physical activity recommendations relevant to young children, and to identify typical beverage choice of primary caregivers for their young children (see Appendix).

##### 2. The Newest Vital Sign Health Literacy test

The Newest Vital Sign (NVS), which is validated for use in both English and Spanish speakers, was used to measure participant health literacy skills [47-49]. During this test participants are handed the food label of an ice cream carton and asked to answer six questions regarding the nutrition facts on the label (see Appendix). The number of correct responses out of

six is the raw health literacy score for the test, which corresponds to the following health literacy categories: low literacy (0-1), limited low literacy (2-3), and adequate literacy (4-6) [47].

## **E. Data Measures**

### **1. Health Literacy**

Participant health literacy skills were measured using the Newest Vital Sign instrument and resulting scores were categorized by the following health literacy levels: Low Literacy (0-1), Limited Literacy (2-3), Adequate Literacy (4-6) [47].

### **2. Recommended Beverage Choice**

Parents were asked two questions regarding beverage choice in which they were to choose the beverage offered most frequently both “During meals” and “Between meals”. Participants were provided a list of common beverages with pictures for assistance in selection. The choices included; fruit-flavored drinks, 100% fruit juice, whole fat milk, reduced fat (2%) milk, skim (no-fat) milk, flavored milk, plain water, bottle water with antioxidants/vitamins, Gatorade, diet drinks, soda/soft drinks, energy drinks, other (See Appendix). Participants who responded with choosing plain water, 100% fruit juice, whole fat milk, reduced fat milk, and skim milk were characterized as selecting a beverage that “Follows recommendations” [7] [12] [36]. All other participant responses were categorized as selecting a beverage that “ Does not follow recommendations.”

### **3. Sociocontextual Factors**

Participant gender was recorded as an observation of the interviewer. Participant’s preferred survey language, age, race/ethnicity, relationship to child, highest level of education, and income were self-reported. Preferred survey language, relationship to child and gender are binary categorical variables. Race/ethnicity has three categories, Caucasian, Latino/Hispanic, or

African American/Black. Both education and income are coded as continuous categorical variables where increasing education or income level corresponds to a higher recorded value.

## **F. Analysis**

### **1. Demographic Characteristics and Health Literacy of Participants**

The average Newest Vital Sign health literacy score was calculated for the total sample and each race/ ethnicity group, differences between the average for each race/ethnic group were compared using a chi square test ( $\alpha=0.05$ ). The differences of participant distribution in each health literacy category among sociocontextual characteristics were compared using a chi square test ( $\alpha=0.05$ ).

### **2. Recommended Beverage Choice**

Differences in the distribution of responses for most frequent beverage choice amongst “During meal” and “Between meals” were compared using a chi square test ( $\alpha=0.05$ ). The differences of distribution for the most frequent selection of either a “Follows recommendations” or “Does not follow recommendations” beverage among sociocontextual characteristics were compared using a chi square test ( $\alpha=0.05$ ).

### **3. Primary Caregiver Health Literacy and Recommended Beverage Choice**

The difference of participant distribution for beverage selection among health literacy category was compared using a chi square test ( $\alpha=0.05$ ). The relationship of parental health literacy and the selection of a “Follows recommendation” beverage for during meal beverage by primary caregivers for young children was assessed using logistic regression analysis, where low literacy was the reference for comparison. A second logistic regression model was created to include race/ethnicity in which the Caucasian group was the reference, along with a fully adjusted model to include all sociocontextual factors, which were associated with differences in

health literacy category distribution. The fully adjusted model included all sociocontextual factors associated with health literacy as confounders. All statistical analysis was completed in SAS 9.4.

## **H. Delimitations and Limitations**

### **1. Delimitations**

This study has a racially diverse composition, which can be representative of the diverse population of Atlanta. The diversity will provide insight into how the typical beverage choice of primary caregivers for their young children differs by race/ethnicities within the Metro Atlanta Area. This study is also powered at 90% confidence with the assumption that low literacy had a prevalence of 25%, thus the sample size is able to detect the true health literacy skill of the entire sample. Thus the estimate of health literacy will be accurate for our study population but can also be used as an estimate for how many primary caregivers may have low health literacy skill within the entire Metro Atlanta Area

In addition, the Newest Vital Sign is a validated nutrition related health literacy test. This test can determine the health literacy skill of the participants and can also serve as a proxy for participant's knowledge of nutrition recommendations. Using this test as a proxy for nutrition related knowledge could support the relationship between health literacy and knowledge to behavior. The Newest Vital Sign is a standard instrument that has been validated in both English and Spanish making it an adaptable tool to measure health literacy and knowledge in our diverse study population.

### **2. Limitations**

Though each interviewer was trained prior to fieldwork, there was no validation for inter-interviewer consistency in the administration of the survey instrument or the NVS test. Thus

differences between survey implementation among interviewers and survey sites could have altered participants' response to survey questions including the Newest Vital Sign test. Also the key dependent variable for most frequent beverage choice provided for young children either "During meal" or "Between meals" is subject to respondent bias due to the design of the survey. This may result in a skewed distribution of beverage choice rather than the identifying the most frequent beverage selection of primary caregivers.

The convenience sample of this study only includes primary caregivers of young children that were actively seeking a primary care appointment for a child. This may decrease the external validity of the study reducing its generalizability to primary caregivers who do not attend primary care appointments or have access to a primary care doctor. The sample solely consisted of participants within the Metro Atlanta Area and results may not be representative of all primary caregivers of young children with in Georgia or the United States.

#### **G. Ethical Considerations**

Participation in this study was completely voluntary and did not influence or prevent the care received at the clinic. All participants provided consent prior to initiation of the survey and did not receive any compensation for their time. No personal identifying information was collected during the course of this research. The study received IRB exemption from the Emory University Institutional Review Board on 9/7/2012, under study ID IRB00057249.

## **Chapter 4: Results**

### **A. Demographic Characteristics and Health Literacy of Participants**

The average health literacy score for all participants was two out of six. Latino/ Hispanic participants had an average score of one compared to three for African American/Black and four for Caucasian participants, out of six. These average health literacy scores were statistically different among each race/ethnicity groups.

A descriptive analysis of the population determined that the average age of participants was 31 years of age and 96.7% of participants were either the mother or the father of the child at the clinic. Of participants surveyed only 21.8% had completed a college degree or higher and 54.7% reported a household income of under \$50K. Latino/Hispanic participants made up 41% of the participant population, which contributes to about 40% of the surveys conducted in Spanish (Table 1).

Overall 76% of the population was classified as having low or limited health literacy. Of those who were classified as having low literacy skills, 89% were Latino/Hispanic, 7% were African America/Black, and 4% were Caucasian. In contrast, of those who were classified as having adequate health literacy, nearly 70% were Caucasian, 25% were African/American, and less than 5% were Latino/Hispanic. The distribution of participants in each health literacy category differed significantly on all sociocontextual factors including; age and gender of primary caregiver, relationship to child, race/ethnicity, preferred survey language, education, and income (Table 1).



Table 1. The distribution of primary caregivers' health literacy category by sociocontextual characteristics

	<b>Health literacy category</b>			
	<b>Total sample</b> N=268	<b>Low literacy</b> (0-1) N=101	<b>Limited low literacy</b> (2-3) N=104	<b>Adequate literacy</b> (4-6) N=63
<b>Sociocontextual characteristics</b>				
<b>Age of primary caregiver*</b> (Mean and standard deviation)	31 (7)	32 (5)	28 (6)	34 (8)
	%	%	%	%
<b>Gender of primary caregiver<sup>§*</sup></b>				
Male	35.7	51.5	26.9	25.4
Female	64.3	48.5	73.1	74.6
<b>Relationship to child*</b>				
Mother/Father	96.7	100	97.1	90.5
Other caregiver	3.3	0.0	2.9	9.5
<b>Race/Ethnicity*</b>				
Caucasian	23.5	4.0	14.5	69.8
African American/Black	35.5	6.9	69.2	25.4
Latino/Hispanic	41.0	89.1	16.3	4.8
<b>Preferred language of survey*</b>				
English	60.2	13.9	86.5	95.2
Spanish	39.8	86.1	13.5	4.8
<b>Highest level of education<sup>§*</sup></b>				
Grade school or less	19.9	27	3.9	0.0
Some high school	20.7	23	29.1	3.2
High school/ GED	28.6	33	36.9	7.9
Some college	17.3	9.0	21.4	23.8
College graduate	14.7	7.0	4.8	42.9
Post-graduate	7.1	1.0	3.9	22.2
<b>Income<sup>§*</sup></b>				
<\$15,000	19.9	26	24.5	3.2
\$15,000- \$34,499	23.6	20	34.3	12.9
\$35,000-\$49,999	11.2	9.0	15.7	8.1
\$50,000- \$74,000	9.7	6.0	10.8	14.5
>\$75,000	15.7	2.0	5.0	56.5
Don't know/ refused	18.73	37.0	9.8	4.8

§Any missing values have been excluded from analysis

\*At least one of the health literacy categories is statistically different (Chi square  $p < 0.05$ )

## **B. Recommended Beverage Choice**

The distribution of participant most offered beverage choice did not differ between “During meal” and “Between meals” (see Appendix). Only during meal beverage choice responses were included in further analysis. Overall, 75% of participants chose beverages that follow the current nutrition recommendations as their most frequently offered beverage for young children during meals. The only sociocontextual factor that had a statistically significant difference in relation to most frequent beverage selection was education of the primary caregiver (Table 2).

Table 2. The distribution of primary caregivers' most frequent beverage choice for young children by sociocontextual characteristics

	Beverage choice	
	Follows recommendations N=206	Does not follow recommendations N=62
<b>Sociocontextual characteristics</b>		
<b>Age of primary caregiver</b> (Mean and standard deviation)	32 (7)	29 (6)
	%	%
<b>Gender of primary caregiver<sup>§</sup></b>		
Male	37.3	30.7
Female	62.7	69.3
<b>Relationship to child</b>		
Mother/Father	97.6	93.5
Other caregiver	2.4	6.5
<b>Race/Ethnicity</b>		
Caucasian	27.2	11.3
African America/Black	30.1	53.2
Latino/ Hispanic	42.7	35.5
<b>Preferred language of survey</b>		
English	60.2	64.5
Spanish	39.8	35.5
<b>Highest level of education<sup>§*</sup></b>		
Grade school or less	11.8	11.3
Some high school	18.6	27.4
High school/ GED	26.5	35.5
Some college	17.7	16.1
College graduate	17.2	6.5
Post-graduate	8.3	3.2
<b>Income<sup>§</sup></b>		
<\$15,000	18.6	25.0
\$15,000- \$34,499	22.6	28.3
\$35,000-\$49,999	10.3	15.0
\$50,000- \$74,000	10.8	6.7
>\$75,000	18.6	6.7
Don't know/ refused	19.1	18.3

§Any missing values have been excluded from analysis

\*Beverage choice is statistically different (Chi square  $p < 0.05$ )

### C. Primary Caregiver Health Literacy and Recommended Beverage Choice

There was no significant difference in the proportion of low literacy participants whose choice for their young children follows current recommendations and those whose beverage choice does not follow recommendations. However, more than half of participants with limited low literacy (52%) chose beverages that did not follow recommendations, which was significantly different than those who chose recommended beverages (35%) ( $p < 0.05$ ). More participants of adequate health literacy skill selected a beverage that followed the recommendations (26.7%) than those who chose a beverage that does not follow the recommendations (12.9%) (Table 3).

Table 3. The distribution of primary caregivers' most frequent beverage choice for young children by health literacy categories

	Beverage choice	
	Follows recommendations N= 206	Does not follow recommendations N= 62
Health literacy*	%	%
Low literacy (0-1)	38.3	35.5
Limited low literacy (2-3)	35.0	51.6
Adequate literacy (4-6)	26.7	12.9

\*Beverage choice is statistically different (Chi square  $p < 0.05$ )

Logistic regression analysis identified that the odds of a parent's most frequently offered beverage being a recommended beverage for a young child is 1.9 (CI 0.8-4.6) times higher for a parent of adequate health literacy than a parent of low health literacy ( $p > 0.05$ ). There was a slight increase in the odds ratio when adjusting for differences in health literacy by race/ethnicity

however it was not significant (OR= 2.1 CI 0.6- 7.3  $p>0.05$ ). When including all confounding sociocontextual factors associated with health literacy, i.e., age of primary caregiver, gender of primary caregiver, education, income, preferred survey language, in addition to race/ethnicity in a fully adjusted logistical regression model the odds ratio increased to 2.7 but was still not significant CI 0.6- 11.5  $p>0.05$ ) (Table 4).

Table 4. Logistic regression models of the relationship between primary caregiver health literacy and the selection of a recommended beverage as the most frequently offered beverage for their young children

<b>Model</b>	<b>Point estimate</b>	<b>Range</b>	<b>P-value</b>
<b>Crude</b>			
Low literacy	-	-	-
Limited low literacy	0.6	(0.3 - 1.2)	0.15
Adequate literacy	1.9	(0.8 - 4.6)	0.15
<b>Adjusted for race/ethnicity</b>			
Low literacy	-	-	-
Limited low literacy	1.1	(0.4 - 2.9)	0.79
Adequate literacy	2.1	(0.6 - 7.3)	0.22
Caucasian	-	-	-
African American/Black	0.3	(0.1 - 0.9)	0.03
Latino/ Hispanic	0.8	(0.2 - 2.7)	0.75
<b>Adjusted for all associated variables</b>			
Low literacy	-	-	-
Limited low literacy	1.1	(0.4 - 3.1)	0.79
Adequate literacy	2.7	(0.6 - 11.5)	0.18
Age of primary caregiver*	1.1	(1.0 - 1.1)	0.06
Gender of primary caregiver	0.9	(0.5 - 1.8)	0.75
Relationship to child*	0.1	(0.01 - 0.6)	0.01
Preferred survey language	0.2	(0.01 - 3.2)	0.26
Caucasian	-	-	-
African American/Black	0.5	(0.1 - 1.4)	0.18
Latino/ Hispanic	3.9	(1.8 - 82)	0.39
Education	1.1	(0.8 - 1.5)	0.48
Income	1.0	(0.99 - 1.0)	0.75

\*Denotes statistical significance of category in the model

## **Chapter 5: Discussion/ Conclusion**

This study found that less than 24% of primary caregivers had adequate health literacy skills and that health literacy skill varied between race/ethnic groups. Though the relationship was not statistically significant it determined that adequate primary caregiver health literacy was associated with the increased odds of a recommended beverage being the most frequently offered beverage for a young child. These odds increased when accounting for race/ethnicity and other sociocontextual factors.

These findings support previous studies indicating that health literacy is low in the adult population of the United States but also show that low health literacy is disproportionately present in Latino/Hispanic groups compared to other race/ethnicities [19-21]. Within our study Latino/Hispanic participants has the lowest average NVS scores while both African American/Black and Caucasian participants' average scores were above the sample average. This suggests that the African American/Black and Caucasian participants in this study may be different than the Latino/Hispanic participants. The difference in health literacy scores may be attributable to language barriers observed during the implementation of the Newest Vital Sign test. Though a majority of participants chose to conduct the survey in English, about 40% of the surveys were conducted in Spanish for Latino/Hispanic participants. Based on the open-ended responses of the surveys conducted in Spanish, it suggests that participants may not have understood the scenario of the NVS test or that the questions did not translate well. Although the NVS test has been validated in both English and Spanish, responses in our study population suggest otherwise, possibly contributing to the low average NVS health literacy score in the Latino/Hispanic participants [49]. Other tests of health literacy that were designed specifically for the Spanish

speaking population may prove to be more effective in measuring health literacy in this population.

Though the average NVS health literacy score was low for the population, more than 75% of primary caregivers chose a recommended beverage as the most frequent beverage they offer to their young child during meals. Despite the differences seen in beverage consumption by race/ethnicity among older children, beverage consumption for young children as chosen by primary caregivers did not vary among race/ethnic groups in this study [45]. This contradicts previous studies, which emphasize the differing patterns in beverage consumption by race/ethnicity and show that at young ages, children typically consume beverages that follow current nutrition guidelines of water, milk, or 100% fruit juice.

However the estimate from this study that 25% of the primary caregivers provide SSBs for their children is extremely low considering previous literature. Though not many studies have been conducted in this area of research to quantify beverage consumption of young children nationwide, it is estimated that anywhere from 66% to 94% of children consume SSBs daily [50] [51]. Our sample may be an under estimate in comparison to other studies because our sample includes a smaller age range of children and only accounts for beverage choice during meals. The selection of the most frequent beverage does not account for the true variety of beverages that primary caregivers may provide their child during meal times or even between meals. Also previous studies have included young children and those of school age (over the age of six) while the cut off for inclusion of our study was six years of age and may reduce the overall estimate in comparison.

The adjusted model, which accounts for age and gender of primary caregiver, relationship to child, and preferred survey language, did magnify relationship between primary

caregiver health literacy and selecting a recommended beverage as the most frequent beverage offered to young children during meals. Though there was no statistical significance to this model the substantial increase in odds between the models shows that the relationship between increased health literacy and parental behaviors should not be discredited. More importantly, this increase suggests a relationship between one or more of these sociocontextual factors with health literacy, which may in fact be amplifying the association to beverage choice. Regardless, these models show that primary caregiver health literacy is associated with daily lifestyle behaviors related to their young children's diet in particular recommended beverage choice and support previous literature relating socio-contextual factors to health literacy and the association of increased health literacy with positive health seeking behaviors [3-4] [37] [31] [34] [44].

In conclusion, this study suggests that most primary caregivers in the Metro Atlanta area often select beverages that follow the current nutrition recommendations for their young children during meals and that this behavior does not vary significantly between race/ethnic groups. However, increased primary caregiver health literacy does have an associate with beverages most often provided for their young child. The association between primary caregiver health literacy and the selection of a recommended beverage as the most frequent beverage offered during meals for a young child does increase when adjusting for sociocontextual factors of the caregiver. This research supports that both primary caregiver health literacy and social environments are influential to nutrition related behaviors of caregivers for their young children [44].



## **VI. Chapter 6: Implications/ Recommendations**

This study has two major public health implications. The first implication is that a majority of primary caregivers often follow the suggested beverage recommendations when selecting beverages for their young children, and the second is that increased caregiver health literacy is associated with the primary caregiver's selection of a recommended beverage for their young children.

The first claim suggests that though beverage choice and consumption, in particular consumption of sugar-sweetened beverages, varies by race/ethnicity for school-aged children, beverage consumption in young children (six months- six years old) is similar among different race/ethnicities [45]. In this study a majority of primary caregivers followed the nutrition recommendations for beverages (i.e., plain water, milk, or 100% fruit juice) and chose these beverages as their most frequent choice for their child during meals over other beverage options. Thus behavior change of primary caregivers regarding beverage selection and sugar-sweetened beverages during meals may not be the most effective strategy in this this target population in preventing childhood obesity in children under the age of six.

On the other hand, the second implication supports previous claims that parental health literacy is a determinant of behavior during early development and is associated with health outcomes in children [25] [27] [31]. Since primary caregiver health literacy was associated with the most frequent selection of a recommended beverage option it may also be associated with other behaviors related to nutrition and physical activity recommendations for young children. Thus primary caregiver health literacy could influence behavior towards young children and also be associated with childhood obesity risk.

Though compliance with beverage recommendations seemed to be similar among all primary caregivers, the association between caregiver health literacy and beverage selection supports the need for additional research investigating the behavior of caregivers in relation to all nutrition and physical activity recommendations for young children. In understanding how these recommendations are being met in young children through their parents behavior we will have a better idea of additional behaviors that should be targeted in combination with limited SSB consumption to reduce risk of childhood obesity within the Metro Atlanta Area. In addition this research may provide insight to barriers primary caregivers face in attempting to meet the nutrition and other health related recommendations for their children.

## Chapter 7: References

- [1] About Health Literacy. Retrieved May 28, 2015 from [www.hrsa.gov/publichealth/healthliteracy/healthlitabout.html](http://www.hrsa.gov/publichealth/healthliteracy/healthlitabout.html)
- [2] Peek ME, Wilson SC, Gorawara-Bhat R, et al. (2009). Barriers and facilitators to shared decision-making among African Americans with diabetes. *J Gen Intern Med*; 24 (10): 1135-1139.
- [3] Peerson A, Saunders A. (2009). Health Literacy revisited: what do we mean and why does it matter? *Health Promotion Int*; 24 (3): 285- 296.
- [4] Kamble S, Boyd AS. (2008). Health Disparities and social determinants of health among African- American women undergoing percutaneous coronary interventions (PCI). *J Cult Divers*; 15 (3): 132-142.
- [5] Sahoo K, Sahoo B, Choudrhury AK, et al. (2015). Childhood obesity: causes and consequences. *J Family Med Prim Care*, Apr-Jun; 4 (2): 187-192.
- [6] DeBoer MD, Scharf RJ, Demmer RT. (2013). Sugar-Sweetened beverages and weight gain in 2- to 5- year – old children. *Pediatrics*; 132 (3): 413- 420.
- [7] Pan L, Li R, Park S, et al. (2014). A longitudinal analysis of sugar- sweetened beverage intake in infancy and obesity at 6 years. *Pediatrics*; 134 (1): S29-35.
- [8] Babar NF, Muzaffar R, Khan MA, Imdad S. (2010). Impact of socioeconomic factors on nutritional status in primary school children. *J Ayub Med Coll Abbottabad*; 22 (4): 15- 18.

[9] Center for Disease Control and Prevention. (2015). Defining Childhood Obesity: BMI for Children and Teens. Retrieved March 28, 2016 from

<http://www.cdc.gov/obesity/childhood/defining.html>

[10] Guerrero AD, Mao C, Fuller B, et al. (2016). Racial and ethnic disparities in early childhood obesity: growth trajectories in body mass index. *J Racial Ethn Health Disparities*; 3 (1): 129-137.

[11] Peerson A, Saunders A. (2009). Health literacy revisited: what do we mean and why does it matter? *Health Promotion Int*; 24 (3): 285- 296.

[12] Office of Disease Prevention and Health Promotion. (2010). Dietary Guidelines for Americans, 2010. Retrieved February 6, 2016 from <http://health.gov/dietaryguidelines/2010/>

[13] MyPlate. (n.d.). Retrieved May 19, 2015, from <http://www.choosemyplate.gov/about.html>

[14] American Academy of Pediatrics. (2015). Tips from Preventing Food Hassles. Retrieved January 23, 2016 from <https://www.healthychildren.org/English/healthy-living/nutrition/Pages/Tips-for-Preventing-Food-Hassles.aspx>

[15] Centers for Disease Control and Prevention. (2015). Health Literacy Activities by State. Retrieved February 14<sup>th</sup>, 2016 from <http://www.cdc.gov/healthliteracy/statedata/>

[16] Hijmans M, Waverjin G, Rademakers J, et al. (2015). Functional, communicative, and critical health literacy of chronic disease patients and their importance for self-management. *Patient Educ Couns*; 98 (1): 41- 48.

- [17] Callahan LF, Hawk V, Rudd R, et al. (2013). Adaptation of the health literacy universal precautions toolkit for rheumatology and cardiology – application for pharmacy professional to improve self-management and outcomes in patients with chronic disease. *Res Social Adm Pharm*; 9 (5): 697- 608.
- [18] Omachi TA, Sarkar U, Yelin EH, et al. (2013). Lower health literacy is associated with poorer health status and outcomes in chronic obstructive pulmonary disease. *J Gen Intern Med*; 28 (1): 74- 81.
- [19] Lambert V, Keogh D. (2014). Health literacy and its importance for effective communication. Part 1. *Nurs Child Young people*; 26 (3): 31- 37.
- [20] Paasche-Orlow MK, Parker RM, Gazmararian, et al. (2005). The prevalence of limited health literacy. *J Gen Internal Med*; 20: 175.
- [21] Lambert V, Keogh D. (2014). Health Literacy and its importance for effective communication. Part 1. *Continuing Professional Development*; 26 (3): 31-37.
- [22] Davis TC, Michielutte R, Askov EN, et al. (1998). Practical assessment of adult literacy in health care. *Health Edu Behav*; 25 (5): 613- 624, 23 Nov/Dec 2014.
- [23] Fry-Bowers EK, Maliski S, Lewis MA, et al. (2014). The association of health literacy, social support, self-efficacy and interpersonal interactions with health care providers in low-income Latina mothers. *J Pediatr Nurs*; 29 (4): 309- 320.
- [24] Beauchamp A, Buchbinder R, Dodson S, et al. (2015). Distribution of health literacy strengths and weaknesses across socio-demographic groups: a cross-sectional survey using the Health Literacy Questionnaire (HLQ). *BMC Public Health*; 15: 678.

- [25] Morrison AK, Schapira NM, Gorelick MH, et al. (2014). Low caregiver health literacy is associated with higher pediatric emergency department use and non-urgent visits. *Acad Pediatr*; 14 (3): 309- 314.
- [26] Carbone ET, Zoellner JM. (2012). Nutrition and health literacy; a systematic review to inform nutrition research and practice. *J Acad Nutr Diet*; 112 (2): 254- 265.
- [27] Chari R, Warsh J, Ketterer T, et al. (2014). Association between health literacy and child and adolescent obesity. *Patient Edu Couns*; 94 (1): 61- 66.
- [28] Ogden C, Carroll M. Prevalence of obesity among children and adolescents United States, trends 1963-1965 through 2007-2008. Hyattsville (MD): National Center for Health Statistics; 2010.
- [29] Ogden CL, Carrol MD, Kit BK, Flegal KM. (2012). Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *JAMA*; 307 (5): 428- 490.
- [30] Ogden CL, Carroll MD, Kit BK, Flegal Km. (2014). Prevalence of childhood and adult obesity in the United States, 2011- 2012. *JAMA*; 311 (8): 806-814.
- [31] Yin HS, Sanders LM, Rothman RL, et al. (2012). Parent Health Literacy and “obesogenic “ Feeding and Physical activity – Related Infant Care Behaviors. *Journal Pediatr*; 164 (3): 577- 583.
- [32] Leech RM, McNaughton SA, Timperio A. (2014). The clustering of diet, physical activity, and sedentary behaviors in children and adolescents; a review. *Int J Behav Nutr Phys Act*; 11 (4).
- [33] Liechty JM, Saltzman JA, Musaad SM, STRONG Kids Team. (2015). Health literacy and parent attitudes about weight control for children. *Appetite*; 91: 200- 208.

- [34] Sanders LM, Perrin EM, Yin HS, et al. (2014). “Greenlight Study”: A controlled trial of low-literacy early childhood obesity prevention. *Pediatrics*; 133 (6): 1724- 1737.
- [35] Malik VS, Pan A, Willett WC, Hu FB. (2013). Sugar-sweetened beverages and weight gain in children and adults: a systematic review and meta-analysis. *Am J Clin Nutr*; 98 (4): 1084-1102
- [36] Huh SY, Rifas-Shiman SL, Rich-Edwards JW, Taveras EM, Gillman MQ. (2010). Prospective association between milk intake and adiposity in preschool age children. *J Am Diet Assoc*; 110 (4): 563-570.
- [37] Sonneville KR, Long MW, Rifas-Shiman SL, et al. (2015). EM Juice and water intake in infancy and later beverage intake and adiposity: could juice be a gateway drink? *Obesity* Jan; 23 (1):170- 176.
- [38] Zheng M, Rangan A, Olsen NJ, et al. (2015). Substituting sugar-sweetened beverages with water or milk is inversely associated with body fatness development from childhood to adolescence. *Nutrition*; 31 (1): 38-44.
- [39] DeBoer MD, Scharf RJ, Demmer RT. (2013). Sugar-Sweetened beverages and weight gain in 2- to 5- year – old children. *Pediatrics*; 132 (3): 413-20.
- [40] Davis TC, Michielutte R, Askov EN, et al. (1998). Practical assessment of adult literacy in healthcare. *Health Edu Behav*: 25 (5): 613- 624.
- [41] Hijmans M, Waverjin G, Rademakers J, et al. (2015). Functional, communicative, and critical health literacy of chronic disease patients and their importance for self-management. *Patient Educ Couns*; 98(1): 41- 48.

- [42] James DC, Harville C, Efunbumi O, Martin MY. (2015). Health literacy issues surrounding weight management among African American women: a mixed methods study. *J Hum Nutr Diet*; 28: S41- 49.
- [43] Gwynn KB, Winter MR, Cabral HJ, et al. (2016). Racial disparities in patient activation: Evaluating the mediating role of health literacy with path analyses. *Patient Educ Couns*; S0738-3991 (15): 30173-7.
- [44] Zoellner J, You W, Connell C, et al. (2011). Health literacy is associated with healthy eating index score and sugar-sweetened beverage intake: finding from the rural lower Mississippi Delta. *J Am Diet Assoc*; 111 (7): 1010- 1020.
- [45] Bleich SN, Wolfson JA. (2015). Trends in SSBs and snack consumption among children by age, body weight, and race/ethnicity. *Obesity*; 23 (5): 1039-46.
- [46] Macario E, Emmons KM, Sorenson G, et al. (1998). Factors influencing nutrition education for parents with low literacy skills. *J Am Diet Assoc*; 98 (5): 559- 564.
- [47] Weiss BD, Mays MZ, Martz, W, et al. (2005). Quick Assessment of literacy in primary care: The newest vital sign. *Ann Fam Med*; 3(6): 514- 522.
- [48] Baker DW, Williams MV, Parker RM, et al. (1999). Development of a brief test to measure functional health literacy. *Patient Educ Couns*; 38: 33-42.
- [49] Osborn CY, Weiss BD, Davis TC, et al. (2007). Measuring adult literacy in health care: Performance of the newest vital sign. *Am J Health Behav*; 31 (1): S36-46.
- [50] Bleich SN, Wolfson JA. (2015). U.S. adults and child snacking patterns among sugar sweetened beverage drinkers and non-drinkers. *Prev Med*; 72: 8-14.



[51] Nickelson J, Lawrence JC, Parton JM, et al. (2014). What proportion of preschool-aged children consume sweetened beverages? *J Sch Health*; 84 (3): 185-194.

## Chapter 8: Appendix

### A. Additional Tables

Table 1. The demographic characteristics of index child.

<b>Index child</b>		
	<b>N = 268</b>	<b>%</b>
<b>Age</b>		
6-<12 months	26	9.7%
1-<2 years	59	22.0%
2-<3 years	52	19.4%
3-<4 years	43	16.0%
4- <5 years	33	16.4%
5- <6 years	43	16.0%
<b>Gender<sup>§</sup></b>		
Male	136	51.1%
Female	130	48.9%
<b>Child between 6-18 in household<sup>§</sup></b>		
Yes	141	52.8%
No	126	47.2%
<b>Family History of Diabetes or Hypertension</b>		
Yes	153	57.1%
No	113	42.2%
Don't know/refused	2	0.7%
<b>Parents' perception of child's health<sup>§</sup></b>		
Healthy	251	98.1%
Not Healthy	5	1.9%

§Any missing values have been excluded from analysis

Table 2. The distribution of beverage choice of primary caregivers for young children during meal and between meals

	<b>During Meal</b>	<b>Between Meals</b>
	<b>N= 268</b>	<b>N=267</b>
	<b>%</b>	<b>%</b>
<b>Beverage Choice</b>		
Fruit flavored drinks	11.2	9.7
100% Fruit juice	19.8	14.6
Milk¶	23.5	27.7
Flavored Milk	3.4	3.0
Plain water	33.6	31.8
Bottled water with antioxidants/vitamins	1.1	1.5
Gatorade	0.8	3.4
Diet Drinks	0.4	0.4
Sodas/soft drinks	0.4	1.1
Energy Drinks	0	0
Other	4.9	6.7

¶ Milk category includes primary caregivers selection of whole fat, low fat (1%), or skim/no fat milk

**B. Survey Instrument and Newest Vital Sign test**

## 1. English version

Survey ID \_\_\_\_\_

<p><b>Children’s Healthcare of Atlanta, Emory University</b></p> <p><b>Knowledge of Nutrition and Physical Activity (KNAPA) Study Among Parents of Young Children</b></p>
---

S1. Interviewer Name \_\_\_\_\_

S2. Clinic Name \_\_\_\_\_

**S3. Sex of Parent**

- Male  
 Female

**S4. Sex of Child**

- Male  
 Female

**S5. Would you prefer the interview to be conducted in English or Spanish?**

- English  
 Spanish

**Screening (Do not read)**

The parent or caregiver accompanying the child must be at least 18 years old and able to complete the interviewer-assisted survey in either English. Additionally, the child being seen at the clinic must be at least 6 months old and less than 6 years old

**Introduction (Read aloud)**

Hello. I am a part of a research team at Children’s Healthcare of Atlanta. We are talking to parents to learn more about the choices they make when deciding how and what to feed their young children. Would you be interested in hearing more about the study and possibly participating? The study involves a short questionnaire that takes about 5-10 minutes to complete. No information that can identify you or your child will be collected. There are no anticipated risks or any direct benefits to you for participating in this study. The information will be used to design disease prevention programs for parents and children. If you decide to take part, you can change your mind and stop participating at any point. Your choice whether or not to participate will not influence the care provided to your child during your visit today or in the future. Are you willing to participate?

**Interviewer to read each of the following questions to parent. Response options to be read only if specified. Parent responses to be recorded by interviewer.**

### **Parent Information**

**A1. What is your relationship with the child brought to the clinic today?**

- Mother / Father
- Grandparent
- Other relative (describe \_\_\_\_\_)
- Unrelated primary caregiver (describe \_\_\_\_\_)
- Other (describe \_\_\_\_\_)
- Refused

**A2. Are you the primary care provider, the one who makes the majority of decisions about the daily care of this child?**

- Yes
- No
- Don't know/unsure
- Refused

**A3. When were you born?**

\_\_\_\_\_      \_\_\_\_\_  
Month              Year

**STOP** if parent *UNDER 18 years old (born after June 1997)* or if interviewer is *NOT the primary care provider for the child*

**A4. Are there any children in the household between 6 and 18 years old?**

- Yes
- No
- Don't know/unsure
- Refused

### **Child Information**

Now I am going to ask you some questions about the child here with you in clinic. Please think about this child when you answer these questions.

**B1. How old is this child?**

- 0 - < 6 months
- 6 - <12 months
- 1 - < 2 years
- 2 - < 3 years
- 3 - < 4 years
- 4 - < 5 years

- 5 - < 6 years
- Don't know/unsure
- Refused

**STOP** if child is between 0 – 6 months of age

**B2. Would you describe your child as “underweight”, “normal weight”, “overweight”, or “very overweight”?**

- Underweight
- Normal weight
- Overweight
- Very overweight or obese
- Don't know/unsure
- Refused

**B3. Has the child's parent, grandparent, brother or sister, aunt or uncle ever been diagnosed with diabetes (high sugar) or high blood pressure?**

- Yes
- No
- Don't know/unsure
- Refused

**B4. Was this child ever breastfed?**

- Yes
- No
- Don't know / unsure
- Refused

*If YES, proceed to question B4a*

*If NO, DON'T KNOW, or REFUSED, proceed to question B5*

**B4a. How long was this child fed ONLY breastmilk?**

- For less than 3 days
- For more than 3 days but less than 2 months
- For more than 2 months but less than 6 months
- For 6 months or more
- Don't know / unsure
- Refused

**B5. Would you describe this child as generally healthy?**

- Yes
- No (describe \_\_\_\_\_)
- Don't know / unsure
- Refused

**Diet & Nutrition**

**C1. What is the recommended portion of fruits and vegetable for a typical child's meal?**

- ¼ (or 25%)  
 ½ (or 50%)  
 ¾ (or 75%)  
 The whole plate (or 100%)  
 None (or 0%)  
 Don't know/unsure  
 Refused

**C2. How often should the grain-containing foods such as breads, pastas, and cereals that you give your child be 100% whole grain?**

- Never  
 10% of the time  
 At least 25% of the time  
 At least 50% of the time  
 Don't know/unsure  
 Refused

**(Read Aloud):** The next three questions have to do with this sheet of different beverages. Please refer to the images on this sheet when answering the questions. *(Hand parent sheet of images of different beverages)*

**C4. Which of these beverages does your child drink most frequently DURING MEALS?**

Please list your **top choice**

**Number**

- \_\_\_\_\_ Fruit-flavored drinks (01)  
 \_\_\_\_\_ 100% fruit juice (02)  
 \_\_\_\_\_ Whole fat milk (03)  
 \_\_\_\_\_ Reduced fat (2%) milk (04)  
 \_\_\_\_\_ Skim (no-fat) milk (05)  
 \_\_\_\_\_ Flavored milk (06)  
 \_\_\_\_\_ Plain water (07)  
 \_\_\_\_\_ Bottled water with antioxidants/vitamins added (08)  
 \_\_\_\_\_ Gatorade (09)  
 \_\_\_\_\_ Diet drinks (10)  
 \_\_\_\_\_ Sodas/soft drinks (11)  
 \_\_\_\_\_ Energy drinks (12)  
 \_\_\_\_\_ Other, specify (13) \_\_\_\_\_  
 Don't know/unsure (88)  
 Refused (99)

**C5. Which of these beverages does your child drink most frequently BETWEEN MEALS?**

Please list your **top choice**

**Number**

- \_\_\_\_\_ Fruit-flavored drinks (01)  
 \_\_\_\_\_ 100% fruit juice (02)  
 \_\_\_\_\_ Whole fat milk (03)

- \_\_\_\_\_ Reduced fat (2%) milk (04)
- \_\_\_\_\_ Skim (no-fat) milk (05)
- \_\_\_\_\_ Flavored milk (06)
- \_\_\_\_\_ Plain water (07)
- \_\_\_\_\_ Bottled water with antioxidants/vitamins added (08)
- \_\_\_\_\_ Gatorade (09)
- \_\_\_\_\_ Diet drinks (10)
- \_\_\_\_\_ Sodas/soft drinks (11)
- \_\_\_\_\_ Energy drinks (12)
- \_\_\_\_\_ Other, specify (13) \_\_\_\_\_
- Don't know/unsure (88)
- Refused (99)

**C6a. Of the beverages on the sheet, which 3 do you believe are the best choices for your child to drink as a healthy alternative to beverages high in sugar at meals and snacks?**

Please list your **top 3 choices – 1, 2 & 3** – in order of preference.

**Number**

- \_\_\_\_\_ Fruit-flavored drinks (01)
- \_\_\_\_\_ 100% fruit juice (02)
- \_\_\_\_\_ Whole fat milk (03)
- \_\_\_\_\_ Reduced fat (2%) milk (04)
- \_\_\_\_\_ Skim (no-fat) milk (05)
- \_\_\_\_\_ Flavored milk (06)
- \_\_\_\_\_ Plain water (07)
- \_\_\_\_\_ Bottled water with antioxidants/vitamins added (08)
- \_\_\_\_\_ Gatorade (09)
- \_\_\_\_\_ Diet drinks (10)
- \_\_\_\_\_ Sodas/soft drinks (11)
- \_\_\_\_\_ Energy drinks (12)
- \_\_\_\_\_ Other, specify (13) \_\_\_\_\_
- Don't know/unsure (88)
- Refused (99)

**C6b. Are you aware of any specific guidelines related to the amount or type of juice that is appropriate for children? (check all mentioned)**

- Amount needs to be limited
- Juice given to children should be 100% juice
- No, not aware of any recommendations
- Other, specify \_\_\_\_\_
- Don't know/unsure
- Refused

**C6c. Did you know that it is recommended that the juices you provide for your child should be 100% fruit juice?**

- Yes
- No
- Don't know/unsure
- Refused



**C6d. Do you know how you can tell if juice is 100% fruit juice? (select all mentioned)**  
 (Prompt: if they respond “the label” ask them to be specific)

- Front of the package
- Ingredients lists
- Nutrition facts panel
- Other, please specify \_\_\_\_\_
- Don't know/unsure
- Refused

**C6e. Were you aware that the amount of 100% fruit juice that your child drinks should be limited?**

- Yes
- No
- Don't know/unsure
- Refused

**C6f. If yes, what is the most 100% juice that your child should drink in a day.?**

\_\_\_\_\_ (indicate amount and unit of measure)

*If one of the milk options WAS selected in question C6a (options 3 through 6) as one of the best beverage choices, SKIP Q C7 and proceed to Q C8*

**C7. Many experts recommend milk for young children. Can you please tell me why milk was not included among your top 3 beverage choices? (Check all mentioned)**

- Child lactose intolerant
- Child doesn't like milk
- Family doesn't drink milk
- Concerned about the hormones in milk
- Other health concerns related to milk, specify \_\_\_\_\_
- Don't know/unsure
- Refused

**C8. What do you identify as the differences between skim milk and whole milk? (Read through answers and check all that apply)**

- Skim milk has less fat than whole milk
- Skim milk has less calcium as whole milk
- Skim milk has less essential nutrients as whole milk
- Skim milk is not as natural as whole milk
- Skim milk has fewer calories than whole milk
- Don't know/unsure
- Refused

### **Physical Activity**

**D1. What is the recommended minimum amount of physical activity that school-age children should get?**

- At least 2 hours per day, every **day**
- At least 1 hour per day, every **day**
- At least 1 hour per day, 3-4 days per **week**

- There is no recommendation for physical activity in children
- Don't know/unsure
- Refused

**D2. What is the recommended maximum amount of time children 2 years & older should spend watching TV, playing video games, or be on a computer?**

- 1 to 2 hours per **week**
- 1 to 2 hours per **day**
- 3 to 4 hours per **day**
- Don't know/unsure
- Refused

### **Attitudes and Behaviors**

**For the next 4 questions, please indicate how strongly you agree or disagree with the statement.** (Read response options 1 through 5 for clarity if needed)

**E1. Overweight children are likely to be overweight as adults.**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know/unsure
- Refused

**E2. Children often need to try a new food multiple times before learning to like it.**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know/unsure
- Refused

**E3. It is ok for a child to have access to a computer or TV screen in the room where they sleep.**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know/unsure
- Refused

**E4. It is ok to make my child something else that they like and are sure to eat if they reject the meal that has been served.**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- Don't know/unsure
- Refused

**E5. What do you believe is the most important influence on the eating habits of young children?**

- Parent's eating habits
- Advertising
- Parent practices, i.e. what is purchased and offered
- Childcare environment
- Other, specify \_\_\_\_\_
- Don't know/unsure
- Refused

### **Child Nutrition Education**

**F1. Would you be interested in learning more about current dietary and/or physical activity recommendations for young children?**

- Yes
- No
- Don't know/unsure
- Refused

*If YES, proceed to question F2*

*If NO, DON'T KNOW, or REFUSED, proceed to question F3*

**F2. What is the maximum would you be willing to pay for an appointment to discuss your child's nutrition or activity needs with your child's healthcare provider?**

- Nothing
- \$10
- \$25
- \$50
- Don't know/unsure
- Refused

**F3. Have you ever attended a class or training to help you learn more about healthy diets for children?**

- Yes.
- No
- Don't know/unsure

Refused

**F4. If yes, was this a class through the WIC program or another class?**

- WIC  
 Other, please specify \_\_\_\_\_  
 Don't know/unsure  
 Refused

### Health Literacy

The following six questions will have to do with this food label. This information is found on the back of a container of a pint of ice cream.

*Interviewer to hand parent food label sheet.*

*Interviewer will **then read aloud each** of the following questions to parent.*

**H1. If you eat the entire container, how many calories will you eat?**

Number of Calories: \_\_\_\_\_

**H2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have?** (Note: if parent answers "2 servings," ask "How much ice cream would that be if you were to measure it into a bowl?")

Amount of Ice Cream: \_\_\_\_\_

**H3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 grams of saturated fat each day, which includes 1 serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?**

Grams of Saturated Fat: \_\_\_\_\_

**H4. If you usually eat 2500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?**

Percentage of Daily Value: \_\_\_\_\_

**H5. Pretend you are allergic to the following substances:**

- Penicillin
- Peanuts
- Latex gloves
- Bee stings

**Is it safe for you to eat this ice cream?**

Yes (1)

No (2)

*If NO, proceed to question H6*  
*If YES, proceed to Q1*

**H6. Why not?**

Answer: \_\_\_\_\_

**Demographic information: The following questions should be filled out by the parent:  
(offer assistance should it be needed)**

**Q1. How would you identify your race or ethnicity?**

- Latino or Hispanic (1)  
 African American or Black (2)  
 Caucasian (3)  
 Asian or Pacific Islander (4)  
 Other (please specify) (5)
- \_\_\_\_\_

**Q2. What is the last year of school you have completed?**

- Grade school or less (1)  
 Some high school (2)  
 High school graduate/GED (3)  
 Some college (4)  
 College graduate (5)  
 Post-graduate work (6)

**Q3. Which of the following categories includes your annual household income before taxes?**

- Less than \$15,000 (1)  
 \$15,000 - \$34,999 (2)  
 \$35,000 - \$49,999 (3)  
 \$50,000 - \$74,999 (3)  
 \$75,000 — or more (4)  
 Don't know [DO NOT READ] (4)  
 Refused [DO NOT READ] (5)

**Q4. Would you describe yourself as “underweight”, “normal weight”, “overweight”, or “very overweight”?**

- Underweight (1)  
 Normal weight (2)  
 Overweight (3)  
 Very overweight or obese (4)  
 Don't know/unsure (4)  
 Refused (88)  
(99)

**That is the end of the interview. Thank you for your time!**

## 2. Spanish Version

N.º de encuesta \_\_\_\_\_

<p style="text-align: center;"><b>Children's Healthcare of Atlanta, Universidad de Emory</b></p> <p style="text-align: center;"><b>Estudio del conocimiento sobre alimentación y actividad física (KNAPA) en padres de niños pequeños</b></p>
---

S1. Nombre del entrevistador \_\_\_\_\_

S2. Sexo del padre o la madre encuestado

- Masculino  
 Femenino

S3. ¿Prefiere que la entrevista se haga en inglés o en español?

- Inglés  
 Español

*El personal de enfermería debe llenar esta parte*

<u>Cuidador principal:</u>	<u>Niño(a):</u>
N1. Estatura: _____ (pulgadas / cm)	N3. Estatura: _____ (pulgadas / cm)
N2. Peso: _____ (libras / kg)	N4. Peso: _____ (libras / kg)

**Selección (no se debe leer)**

El padre, la madre o el cuidador que acompaña al niño debe tener al menos 18 años de edad y ser capaz de contestar la encuesta con un entrevistador en inglés o español. Además, el niño que es atendido en la clínica debe tener al menos 6 meses de edad y ser menor de 6 años.

**Presentación (leer en voz alta)**

Hola. Trabajo con un equipo de investigación de la Universidad de Emory. Estamos hablando con los padres para saber más acerca de las decisiones que toman sobre cómo alimentar a sus hijos pequeños y qué alimentos les dan. ¿Le interesaría saber más sobre el estudio y quizás participar? El estudio tiene un cuestionario corto que se puede finalizar en unos 10 minutos. No se reunirá ningún tipo de información que pueda identificarlo a usted o a su hijo. No se prevén riesgos ni beneficios directos para usted por la participación en el estudio. La información se usará para crear programas de prevención de enfermedades para padres e hijos. Si decide participar, puede cambiar de parecer e interrumpir su participación en cualquier momento. Su decisión de participar o no participar no afectará la atención que se le brindará a usted o a su hijo en la consulta de hoy o en futuras consultas. ¿Desea participar?

***El padre o la madre debe llenar esta parte:***

<p><b>Q1. ¿Cómo identifica su raza o grupo étnico?</b></p> <p><input type="checkbox"/> Latino o hispano (1)</p> <p><input type="checkbox"/> Afrodescendiente o negro (2)</p> <p><input type="checkbox"/> De raza blanca o caucásico (3)</p> <p><input type="checkbox"/> Asiático o nativo de las islas del Pacífico (4)</p> <p><input type="checkbox"/> Otra raza o grupo étnico (5) (especifique, por favor)</p>	<p><b>Q3. ¿Cuál de las categorías siguientes abarca el ingreso anual de su hogar antes de pagar impuestos?</b></p> <p><input type="checkbox"/> Menos de \$15,000 (1)</p> <p><input type="checkbox"/> \$15,000 - \$24,999 (2)</p> <p><input type="checkbox"/> \$25,000 - \$34,999 (3)</p> <p><input type="checkbox"/> \$35,000 - \$49,999 (4)</p> <p><input type="checkbox"/> \$50,000 - \$74,999 (5)</p> <p><input type="checkbox"/> \$75,000 - \$99,999 (6)</p> <p><input type="checkbox"/> \$100,000 - \$149,999 (7)</p> <p><input type="checkbox"/> \$150,000 o más (8)</p> <p><input type="checkbox"/> No sabe [NO SE DEBE LEER] (88)</p> <p><input type="checkbox"/> No desea contestar [NO SE DEBE LEER] (99)</p>
<p><b>Q2. ¿Cuál es el último año de estudios que cursó?</b></p> <p><input type="checkbox"/> Escuela primaria o menos (1)</p> <p><input type="checkbox"/> Algo de escuela secundaria (2)</p> <p><input type="checkbox"/> Graduado de escuela secundaria/GED (Diploma de educación general básica) (3)</p> <p><input type="checkbox"/> Algo de universidad (4)</p> <p><input type="checkbox"/> Graduado universitario (5)</p> <p><input type="checkbox"/> Estudios de posgrado (6)</p>	

***El entrevistador debe leer cada una de las preguntas siguientes al padre o a la madre. Las diferentes opciones de respuesta solo se deben leer cuando así está indicado. El entrevistador debe anotar las respuestas del padre o la madre.***

**Información sobre el padre o la madre**

(1)

(2)



**A1. ¿Cuál es la relación o parentesco con el niño que vino a la clínica hoy?**

- Madre o padre  
 Abuelo o abuela  
 Otro pariente (describa \_\_\_\_\_)  
 Cuidador principal pero no pariente (describa \_\_\_\_\_)  
 Otra relación o parentesco (describa \_\_\_\_\_)  
 No desea contestar

**A2. ¿Es usted el cuidador principal, la persona que toma la mayor parte de las decisiones sobre los cuidados diarios del niño?**

- Sí  
 No  
 No sabe/no está seguro  
 No desea contestar

**A3. ¿En qué año nació?**

\_\_\_\_\_

Año

**INTERRUMPIR AQUÍ** si el padre o la madre tiene MENOS de 18 años de edad (si nació después de diciembre de 1994) o si el entrevistado NO es el cuidador principal del niño

**A4. Por favor, enumere las edades de todos los hijos en su hogar, de menor a mayor. (El hogar abarca a todos los que comen juntos).**

	Edad		Edad
Hijo 1	_____	Hijo 4	_____
Hijo 2	_____	Hijo 5	_____
Hijo 3	_____	Hijo 6	_____

**Información sobre el niño**

Ahora le voy a hacer algunas preguntas sobre el niño que está aquí con usted, en la clínica. Por favor, piense en este niño cuando conteste las preguntas.

**B1. ¿Qué edad tiene este niño?**

- 0-< 6 meses (1)  
 6 - <12 meses (2)  
 1 - <2 años (3)  
 2 - <3 años (4)  
 3 - <4 años (5)  
 4 - <5 años (6)  
 5 - <6 años (7)  
 No sabe/no está seguro (88)  
 No desea contestar (99)

(1)  
(2)

**B2. ¿De qué sexo es el niño?**

- Masculino
- Femenino
- No sabe/no está seguro
- No desea contestar

**B3. ¿Cuál fue el peso del niño al nacer?**

\_\_\_\_\_ libras y \_\_\_\_\_ onzas

O

\_\_\_\_\_. \_\_\_\_kilogramos

- No sabe/no está seguro
- No desea contestar

**B4. ¿Diría que en general el niño es sano?**

- Sí
- No (describa \_\_\_\_\_)
- No sabe/no está seguro
- No desea contestar

**B5. ¿Diría que el niño tiene "bajo peso", "peso normal", "sobrepeso" o "mucho sobrepeso o es obeso"?**

- Bajo peso (1)  
 Peso normal (2)  
 Sobrepeso (3)  
 Mucho sobrepeso u obeso (4)  
 No sabe/no está seguro (88)  
 No desea contestar (99)

**B6. ¿Alguna vez uno de los padres, abuelos o hermanos del niño recibieron el diagnóstico de ataque al corazón, accidente cerebrovascular (ataque cerebral), diabetes (azúcar alta) o presión arterial alta?**

- Sí (1)  
 No (2)  
 No sabe/no está seguro (88)  
 No desea contestar (99)

### Fuentes de información sobre la salud

Ahora le voy a hacer preguntas sobre salud y nutrición y la alimentación de su hijo.

**C1. ¿Cuáles son las tres fuentes de información sobre alimentación saludable que usted usa? Por favor, enumere sus primeras 3 opciones (1, 2 y 3), en orden de importancia.**

*(Nota: no se debe leer la lista, anotar 1, 2 y 3 tal como se menciona)*

#### Número

- \_\_\_\_\_ Amigo(a) (1) C1\_1 \_\_\_\_\_  
 \_\_\_\_\_ Pariente (2) C1\_2 \_\_\_\_\_  
 \_\_\_\_\_ Doctor (3) C1\_3 \_\_\_\_\_  
 \_\_\_\_\_ Internet (4)  
 \_\_\_\_\_ Libros (5)  
 \_\_\_\_\_ Revista (6)  
 \_\_\_\_\_ Televisión (7)  
 \_\_\_\_\_ Otra fuente (por favor, especifique) (8) \_\_\_\_\_

- No sabe/no está seguro (88)  
 No desea contestar (99)

**C2. ¿Alguna vez usa la información nutricional de las etiquetas de los alimentos, como calorías o ingredientes, cuando decide qué alimentos o bebidas va a comprar?**

- Sí (1)  
 No (2)  
 No sabe/no está seguro (88)  
 No desea contestar (99)

**C3. ¿Alguna vez este niño fue amamantado?**

- Sí  
 No  
 No sabe/no está seguro

No desea contestar

*Si la respuesta es "SÍ", continúe en la pregunta C3a*

*Si la respuesta es "NO", "NO SABE" o "NO DESEA CONTESTAR", continúe en la pregunta D1*

**C3a. ¿Por cuánto tiempo este niño fue alimentado SOLO con leche materna?**

- Por menos de 3 días (1)
- Por más de 3 días pero menos de 1 mes (2)
- Por más de 1 mes pero menos de 3 meses (3)
- Por más de 3 meses pero menos de 6 meses (4)
- Por 6 meses o más (5)
- No sabe/no está seguro (88)
- No desea contestar (99)

**Dieta y alimentación**

**D1. ¿Cuál debería ser la cantidad aproximada de frutas y verduras que los niños deberían comer en cada comida?**

- ¼ (o 25%) (1)
- ½ (o 50%) (2)
- ¾ (o 75%) (3)
- Todo el plato (o 100%) (4)
- Nada (o 0%) (5)
- No sabe/no está seguro (88)
- No desea contestar (99)

**D2. Cuando su hijo rechaza la comida que le sirve, ¿con qué frecuencia le prepara otra cosa que le gusta y es seguro que va a comer?**

- Nunca (1)
- A veces (2)
- Tanto como sea posible (3)
- Siempre (4)
- No sabe/no está seguro (88)
- No desea contestar (99)

**D3. ¿Con qué frecuencia insiste para que su hijo termine el plato (o el biberón o la taza) si deja de comer antes de terminar todo el alimento o la bebida?**

- Nunca
- A veces
- Tanto como sea posible
- Siempre
- No sabe/no está seguro
- No desea contestar

**D4. ¿Con qué frecuencia decide darle a su hijo alimentos 100% integrales cuando sirve panes, pastas, cereales u otros productos de granos?**

- Nunca
- A veces
- Tanto como sea posible
- Siempre
- No sabe/no está seguro
- No desea contestar

*Si la respuesta es "A VECES", "TANTO COMO SEA POSIBLE" o "SIEMPRE", continúe en la pregunta D4a*

*Si la respuesta es "NUNCA", "NO SABE" o "NO DESEA CONTESTAR", continúe en la pregunta D5*

**D4a. Por favor, dígame tres ejemplos de alimentos 100% integrales que le da a su hijo.**

1. \_\_\_\_\_
  2. \_\_\_\_\_
  3. \_\_\_\_\_
- No sabe/no está seguro
  - No desea contestar

**D5. ¿Cómo puede saber con certeza que un producto de grano como pan, arroz o pasta es 100% integral?**

- Leo la lista de ingredientes en la etiqueta del alimento
- Leo el nombre del producto u otra información en el frente del envase del alimento
- Si el producto de grano es de color café o marrón
- Todo lo anterior
- No sabe/no está seguro
- No desea contestar

**D6. ¿Qué tipo de leche toma su hijo en casa?**

- Descremada, 0% o leche común 1% (1)
- Leche con sabor (2)
- Leche entera (3)
- Leche común 2% (4)
- Otro tipo de leche (de soja, almendras, arroz, coco) (5)
- Mi hijo no toma leche (6)
- No sabe/no está seguro (88)
- No desea contestar (99)

**D7. ¿Cuál es la mejor clase de leche para su hijo?**

- Descremada, 0% o leche común 1% (1)
- Leche con sabor (2)
- Leche entera (3)
- Leche común 2% (4)
- (5)
- (88)
- (99)

- Otro tipo de leche (de soja, almendras, arroz, coco)  
 No sabe/no está seguro  
 No desea contestar

**D8. ¿Cuál de estas 3 bebidas considera que es la mejor para su hijo como alternativa saludable en vez de tomar bebidas con alto contenido de azúcar?**

(Mostrar la hoja con imágenes de diferentes bebidas)

Por favor, enumere sus **primeras 3 opciones (1, 2 y 3)**, en orden de preferencia.

**Número**

- \_\_\_\_\_ Bebidas con sabor a fruta (01)  
 \_\_\_\_\_ Jugos 100% de fruta (02)  
 \_\_\_\_\_ Leche entera (03)  
 \_\_\_\_\_ Leche con contenido reducido de grasa (04)  
 \_\_\_\_\_ Leche descremada (sin grasa) (05)  
 \_\_\_\_\_ Leche con sabor (06)  
 \_\_\_\_\_ Agua sola (07)  
 \_\_\_\_\_ Agua embotellada que contiene antioxidantes o vitaminas (08)  
 \_\_\_\_\_ Gatorade (09)  
 \_\_\_\_\_ Bebidas dietéticas (10)  
 \_\_\_\_\_ Otras bebidas, especifique (11) \_\_\_\_\_

- No sabe/no está seguro  
 No desea contestar

**D9. ¿Con qué frecuencia durante una semana "normal" su hijo toma sodas, bebidas con sabor a fruta, jugos u otras bebidas dulces? (sin incluir bebidas dietéticas)**

- Nunca  
 Menos de 1 vez por semana (1)  
 1-3 veces por semana (2)  
 4-6 veces por semana (3)  
 Una vez por día (4)  
 2-3 veces por día (5)  
 Más de 3 veces por día (6)  
 No sabe/no está seguro (7)  
 No desea contestar (88)  
 (99)

**D10. ¿Con qué frecuencia durante una semana "normal" su hijo toma bebidas con contenido reducido de calorías (como sodas dietéticas, Gatorade G2 y otras bebidas similares)?**

- Nunca  
 Menos de 1 vez por semana (1)  
 1-3 veces por semana (2)  
 4-6 veces por semana (3)  
 Una vez por día (4)  
 2-3 veces por día (5)  
 Más de 3 veces por día (6)  
 (7)  
 (88)  
 (99)

- No sabe/no está seguro  
 No desea contestar

### **Actividad física**

**E1. ¿Cuál es la cantidad mínima recomendada de actividad física que deben hacer los niños en edad escolar?**

- Al menos 2 horas por día, todos los días  
 Al menos 1 hora por día, todos los días  
 Al menos 1 hora por día, 3-4 días por semana  
 No hay una recomendación específica para la actividad física de los niños pequeños  
 No sabe/no está seguro  
 No desea contestar

**E2. ¿Le parece importante limitar la cantidad de tiempo por día que los niños pasan mirando televisión, jugando con videos electrónicos o frente a la computadora?**

- Sí  
 No (1)  
 No sabe/no está seguro (2)  
 No desea contestar (88)  
(99)

*Si la respuesta es "SÍ", continúe en la pregunta E2a*

*Si la respuesta es "NO", "NO SABE" o "NO DESEA CONTESTAR", continúe en la pregunta F1*

**E2a. ¿Cuál es la cantidad máxima recomendada de tiempo por día que los niños de 2 años y mayores deben pasar mirando televisión, jugando con videos electrónicos o frente a la computadora?**

- 1 a 2 horas por semana  
 1 a 2 horas por día  
 3 a 4 horas por día (1)  
 No sabe/no está seguro (2)  
 No desea contestar (3)  
(88)  
(99)

### **Actitudes y comportamiento**

**Para las preguntas siguientes, por favor indique qué tan fuertemente está de acuerdo o en desacuerdo con cada afirmación.** (Lea las opciones de respuesta para clarificar si es necesario)

**F1. Mis amigos y mi familia piensan que es importante que los niños se alimenten de manera saludable.**

- Totalmente en desacuerdo  
 En desacuerdo  
(1)  
(2)  
(3)  
(4)  
(5)

- Neutral
- De acuerdo
- Totalmente de acuerdo
- No sabe/no está seguro
- No desea contestar

**F2. Los niños con sobrepeso tienden a ser adultos con sobrepeso.**

- Totalmente en desacuerdo
- En desacuerdo
- Neutral
- De acuerdo
- Totalmente de acuerdo
- No sabe/no está seguro
- No desea contestar

**F3. Es importante que yo coma bien y esté activo porque soy el modelo a quien mi hijo va a imitar.**

- Totalmente en desacuerdo (1)
- En desacuerdo (2)
- Neutral (3)
- De acuerdo (4)
- Totalmente de acuerdo (5)
- No sabe/no está seguro (88)
- No desea contestar (99)

**F4. Los hábitos alimenticios de los padres influyen de manera muy fuerte en los hábitos alimenticios de los hijos.**

- Totalmente en desacuerdo (1)
- En desacuerdo (2)
- Neutral (3)
- De acuerdo (4)
- Totalmente de acuerdo (5)
- No sabe/no está seguro (88)
- No desea contestar (99)

**F5. A menudo los niños necesitan probar varias veces un nuevo alimento para acostumbrarse y que les guste.**

- Totalmente en desacuerdo (1)
- En desacuerdo (2)
- Neutral (3)
- De acuerdo (4)
- Totalmente de acuerdo (5)
- No sabe/no está seguro (88)
- No desea contestar (99)

**F6. Está bien que los niños tengan una computadora o una televisión en la habitación donde duermen.**

- Totalmente en desacuerdo (1)
- En desacuerdo (2)
- (3)
- (4)
- (5)
- (88)
- (99)



- Neutral
- De acuerdo
- Totalmente de acuerdo
- No sabe/no está seguro
- No desea contestar

**Aquí termina la entrevista. ¡Muchas gracias por su tiempo!**

Entrevistador, debe asegurarse de que este formulario lo tenga el personal de enfermería para poder anotar la estatura y el peso en la primera página.

## 3. Certificate of Accuracy



### Certificate of Accuracy

I, Edurne Chopectia, certified translator by the American Translators Association, (English into Spanish), hereby certify that I have translated the attached document:

**NutritionStudy\_Survey\_121012\_CLEAN.doc**

This document was translated from the English language into the Spanish language and it is an accurate and complete translation of the original document.



Verify at [www.atanet.org/verify](http://www.atanet.org/verify)

\_\_\_\_\_  
Signature of Translator

Edurne Chopectia  
Print Name of Translator

01/02/2013  
Date

ATA License Number: 245864

### C. Assisting Images

#### 1. Beverage Images - English version

Fruit Flavored Drinks (1)



100% Fruit Juice (2)



Whole Fat Milk (3)



Reduced Fat (2%) Milk (4)



Skim (no fat) or Low-Fat (1%) Milk (5)



Flavored Milk (6)



Plain Water (7)



Bottled Water with Antioxidants/  
Vitamins (8)



Gatorade/ Sports Drinks (9)



Diet Drinks (10)



Sodas/Soft Drinks (11)



Energy Drinks (12)



## 2. Beverage Images - Spanish version

100% Jugo de Fruta (2)

Bebidas con sabor de fruta (1)



Leche entera grasa (3)



Leche baja en grasa (2%) Milk (4)



Leche sin grasa (1%) Milk (5)



Leche con sabor (6)



Agua (7)



Agua con vitaminas o anitoxidantes(8)



Gatorade/ Bebidas Deportivas(9)



Bebidas de dieta (10)



Sodas/ Gasoesas (11)



Bebidas de Energia (12)



## 3. Ice Cream Carton image of Newest Vital Sign test - English Version

<b>Nutrition Facts</b>	
Serving Size	1/2 cup
Servings per container	4
<b>Amount per serving</b>	
Calories 250	Fat Cal 120
	<b>%DV</b>
<b>Total Fat</b> 13g	20%
Sat Fat 9g	40%
<b>Cholesterol</b> 28mg	12%
<b>Sodium</b> 55mg	2%
<b>Total Carbohydrate</b> 30g	12%
Dietary Fiber 2g	
Sugars 23g	
<b>Protein</b> 4g	8%
* Percent Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.	
<b>Ingredients:</b> Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.	

Note; This single scenario is the final English version of the newest vital sign. The type size should be 14-point (as shown above) or larger. Patients are presented with the above scenario and asked the questions shown in Figure 1b.

## 4. Ice Cream Carton image of Newest Vital Sign test - Spanish Version

<b>Información Nutricional</b>	
Tamaño de la Porción	½ taza
Porciones por envase	4
Cantidad por porción	
Calorías 250	Cal Grasa 120
	%DV
<b>Grasa Total</b> 13g	20%
Grasas Sat 9g	40%
<b>Colesterol</b> 28mg	12%
<b>Sodio</b> 55mg	2%
<b>Total Carbohidratos</b> 30g	12%
Fibras Dietéticas 2g	
Azúcares 23g	
<b>Proteína</b> 4g	8%

\*Porcentaje de Valores Diarios (DV) se basan en una dieta de 2.000 calorías. Sus valores diarios pueden ser mayores o menores dependiendo de las calorías que usted necesite.

**Ingredientes:** Crema, Leche Descremada, Azúcar Líquida, Agua, Yemas de Huevo, Azúcar Morena, Aceite de Cacahuete (Maní), Azúcar, Mantequilla, Sal, Carragenina, Extracto de Vainilla.