iBEVSMART: THE DEVELOPMENT OF AN e-LEARNING BEVERAGE POLICY TRAINING FOR EARLY CARE AND EDUCATION PROVIDERS IN GEORGIA

by

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(Under the Direction of Caree J. Cotwright)

ABSTRACT

Sugar-sweetened beverages (SSBs) have been shown to contribute to childhood obesity as well as other morbidities. However, many school-aged interventions to reduce SSB consumption and body weight are inconclusive, leading to a need for interventions before school entry. This pilot study aimed to determine (1) changes in knowledge among ECE providers after completing a beverage policy e-learning program and (2) changes in intentions to implement beverage policies among ECE providers in Georgia after completing an e-learning program about beverage guidelines for children 0-5 years old. After completing the training program, there was an increase in knowledge among providers while intentions to implement beverage best practices largely remained the same. Future large-scale studies are needed to assess if ECE providers will change the beverages they offer to their children.

INDEX WORDS: Child care, eLearning, online training, sugar-sweetened beverages, beverage policy, early care and education, nutrition, child care providers, early childhood provider, Georgia

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CHAPTER 1

INTRODUCTION

Childhood obesity is a major concern with recent figures showing over 18% of children in the United States are obese[1]. Obesity in children increases risk for mortality, cardiometabolic comorbidities, and many other health problems[2,3]. These severe consequences, along with rising rates leads to a need for interventions aimed at lowering childhood obesity. The prevalence of obesity is also seen to increase as age increases[4] leading to a need to implement interventions that target children at younger ages. One method of reducing obesity rates is to target sugar-sweetened beverage (SSB) consumption, which has been shown to contribute to childhood obesity[5,6,7,8]. With rising consumption rates of added sugars and SSBs mirroring rising obesity rates[7,8], it is important target SSB consumption in a method to control obesity rates. It is also important to target younger children, as toddlers who regularly drink SSBs are more likely to be overweight as they grow older than their peers who do not drink SSBs[9]. Early care and education (ECE) programs are a prime setting for nutrition interventions targeting young children with nearly 75% of children under 5 spending at least part of the day in child care[10]. The rising popularity of e-learning has led to an effective way to provide training to a large, geographically-diverse audience such as ECE providers[11,12,13].

The purpose of this study was to determine if an interactive e-learning program increases knowledge of and intentions to implement beverage policies among ECE providers in Georgia. Chapter 2 of this study will describe the background for the development of an interactive, e-learning program about beverage guidelines for

children 0-5 years old. An overview of childhood obesity, sugar-sweetened beverages, and the importance of the ECE setting will be presented. Additionally, current compliance to national standards and the use of eLearning as a training tool will be presented.

Chapter 3 will describe the methods for determining changes in knowledge and changes in intentions to implement beverage policies among participants. The specific aims of this study are to determine (1) the changes in knowledge among ECE providers after completing the iBevSmart online beverage training and (2) the changes in intentions to implement beverage policies among ECE providers in Georgia after completing the iBevSmart online beverage training. We hypothesized that completion of an e-learning program will increase knowledge about and intentions to implement beverage guidelines.

To recruit for this study, we used a convenience sample of ECE providers in Georgia. The iBevSmart program contained 4 modules containing information and games about 4 key categories: sugar-sweetened beverages, juice, milk, and water. Modules included information about identification of appropriate choices, best practices, and tips for complying with best practices Data was collected through a pre and post-test design. Chapter 4 will discuss the development of the iBevSmart program as well as the results from the pre-test, post-test, and feasibility questionnaire. Chapter 5 will discuss the key findings from his study and the goals of future research in this area.

CHAPTER 2

LITERATURE REVIEW

Trends in Childhood Obesity in the United States

Obesity has been a growing concern in the past few decades as rates and weight-related comorbidities in America continue to grow. Data from the first National Health and Nutrition Examination Survey (NHANES) in 1971 showed that less than 15% of adults 20-74 were classified as obese[4]. By 2015-16, the prevalence of obesity had risen to nearly 40%[4]. The obesity epidemic had continued to grow among adults and the rate of obesity among children has mirrored this trend. Between 1988 and 1994, only 10% of children were classified as obese[14]. Prevalence of obesity in children 2-19 years old increased from 13.9% in 1999-2000 to 18.5% in 2013-14[15], with the most recent data reporting a prevalence of 18.5%[1]. While the current youth obesity rates are half that of adult obesity rates, they have steadily rising over the past few decades without signs of stopping. Even in infants and toddlers under 2 years, the rate of obesity is nearly 10%[16]. There is also evidence that rates increase with age, with the prevalence of obesity in 2013-14 in children 2-5, 6-11, and 12-19 being 9.4%, 19.6%, and 20.6% respectively[14]. Because of this, prevention efforts in early childhood are critical.

Risk for Overweight and Obesity in Infancy in the United States

Obesity during infancy is difficult to define, and different reporting agencies use different classifications. Some define it as +2 z scores (~97.7th percentile) on the World Health Organization's (WHO) weight-for-recumbent length growth standards, while

others define it as over the 95th percentile on the CDC's weight-for-recumbent length growth charts[17]. Regardless of the classification, the term "obese" is rarely used when dealing with infants. Instead, infants are described with "high weight-for-recumbent length", which is still determined based on the WHO or CDC growth charts mentioned above and may differ between studies. As of 2013-14, around 8% of children under 2 years had high weight-for-recumbent length according to WHO growth standards, and 9% according to CDC growth standards[17]. The trends in obesity in children under 2 years are not well documented, with most studies only assessing weight-for-length. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), is one of the few programs that collects infant data on a large scale. WIC is a federal program that provides supplemental food and nutrition education to low-income pregnant and postpartum women and children 0-5 years who are at nutritional risk[18]. They define high-weight-for-recumbent length as ≥2 SDs above their own calculated sex- and age-specific z scores based on WHO growth charts. Of the 17 million children age 3-23 months they examined, rates of high-weight-for-recumbent length increased from 13.4% in 2000 to 14.5% in 2004, staying constant until 2010, before decreasing to 12.3% in 2014[19], which is higher than the national rate of 8% in 2013-14[17]. So while we have seen a rise in WIC-reported infant rates, they have decreased slightly in recent years.

Overweight and Obesity in Children 2-5 Years old in the US

According to the CDC, children 2-20 should use BMI for age, as a reference population is needed instead of using weight for stature[20]. CDC defines overweight for children aged 2-19 as between the 85th and 95th percentile and obesity as over the 95th

percentile of BMI for age according to the CDC growth charts[21]. The CDC does not have a classification for extreme or severe obesity among children, but it is typically defined as above 120% of the 95th percentile[14,22]. Among preschool aged children, 2-5 years old, rates of obesity increased from 7.2% in 1988-94 to 13.9% in 2003-04 before decreasing to 9.4% in 2013-14[14]. The age group of 2-5 is the only group of children that had a decrease in obesity prevalence, while the others increased or plateaued. Children 6-11 saw an increase from 11.3% in 1988-94 to 19.6% in 2007-08 and then did not change, while children 12-19 increased from 10.5% in 1988-94 to 20.6% in 2013-14[14]. However, as of 2015-16, the prevalence of obesity in children 2-5 has increased to 13.9%[1]. When looking at extreme obesity, rates did not significantly change among children 2-5, while it increased for all other age groups[14].

Consequences of Childhood Obesity

Obesity during childhood may leads to a large number of complications during life. For example, in a systematic review published in the International Journal of Obesity, childhood overweight and obesity significantly increases risk for both premature mortality and morbidities such as diabetes, hypertension, ischemic heart disease, and stroke in later life[2]. This review looked at studies examining associations between childhood overweight and obesity, and premature mortality, cardiometabolic morbidity, and/or other morbidities in adulthood. One of the studies (n=226,678) found that overweight children 14-19 years had a significant increase in mortality from ischemic heart disease, metabolic disease, respiratory disease, and colon cancer. In another (n=128,121), overweight children 14-19 had a 1.4 times higher risk of all-cause mortality than normal-weight peers. The only study out of 8 that did not see an

increased risk in mortality used recalled perceived overweight instead of an objectively measured weight. When looking at morbidity outcomes, one study (n=2639) observed that overweight or obesity at age 5 significantly increases diabetes risk at age 21. In another study looking at heart disease (n=276,825), increasing BMI z-scores at age 7-13 was associated with significant, linear increases in coronary heart disease. All 11 studies looking at comorbidities found an increased risk of diabetes, stroke, coronary heart disease, or hypertension in adulthood.

Not only does childhood obesity increase risk of multiple comorbidities in adulthood, it increases risk in younger ages as well. Cardiovascular disease in particular is becoming a significant issue in children. In a survey of Baltimore high-schoolers, students who were obese had a 7.28 higher odds of having high blood pressure compared to non-obese peers[23]. In another study of Taiwanese children 9-13, researchers looked at comorbidities when stratifying for gender. In both girls and boys, overweight and obese children had significantly higher rates of systolic blood pressure, diastolic blood pressure, and HDL cholesterol[24]. In a large analysis of 26,000 children, approximately 13 years old with an average BMI of 29.4, researchers looked at multiple cardiovascular disease risk factors, such as blood pressure, HDL and LDL cholesterol, triglycerides, and carbohydrate metabolism. Out of the total group, almost 50% had at least one cardiovascular disease risk factor[25], and that number increased as BMI increased. In the extremely obese category, nearly 60% of children had at least one risk factor. Overweight and obesity is increasing children's risk factor for developing more serious heart disease, and these risk factors may be getting worse. When looking at trends in children's blood pressure since 1963, rates of high blood pressure and pre-high

blood pressure are increasing[26]. A decrease was seen between 1976-80 and 1988-94, but began increasing again afterwards. This increase in blood pressure has been attributed to the matching rise in obesity[26].

Another issue related to obesity in nonalcoholic fatty liver disease. Nonalcoholic fatty liver disease (NAFLD) is the excess buildup of fat on the liver not caused by alcohol, and is most common in people 40-60 years old[27]. However, rates of NAFLD has been rising at an alarming rate in children[28] and has been associated with childhood obesity[3]. In a study by Eminoğlu and colleagues, children 7-14 were assessed for non-alcoholic steatohepatitis (NASH), a more severe form of NAFLD. Liver ultrasounds were performed on over 100 patients ranging from obese to normal-weight. They found that 52.4% of obese children had NASH[29]. They also found when separating by liver status, obese children with NASH had significantly higher BMIs than obese children without NASH[29].

Along with a wealth of physiological risk factors associated with childhood obesity, psychological morbidity can also have an impact on health. Obese children are more likely to experience psychological problems, such as low self-esteem and behavioral problems, than non-obese children[2]. In young girls, higher weight status is associated with depression and anxiety disorders[30,31,32]. In a study assessing over 800 individuals at 4 different points in their life from childhood to adulthood, females with anxiety disorder had significantly higher BMI z-scores than comparable females without an anxiety disorder[30]. Females with depression also had significantly higher BMI z-scores, and early onset of depression was associated with higher BMI z-score later in life[30]. With so many risk factors associated with childhood obesity, there is an increased

need for discovering successful ways to impact rising childhood obesity rates. One area of interest is targeting sugar-sweetened beverage consumption.

The Impact of Sugar-Sweetened Beverages on Obesity and Childhood Health

Sugar-sweetened beverages, or SSBs, are a contributing factor to weight gain and obesity[5,6,7,8]. SSBs are any non-alcoholic drink sweetened with added sugars, including sodas, fruit drinks, sports drinks, energy drinks, and sweet teas[8]. Rising consumption rates of added sugars mirror rising obesity rates[7,8]. Based on data from the latest National Health and Nutrition Examination Survey (NHANES), children 2-19 years old get 6.9% of their total energy consumed from added sugars in beverages[33]. On average, children consume 29.3 grams of sugars from non-dairy SSBs alone[33]. The American Heart Association recommends children limit added sugar consumption to less than 25 grams a day, from both food and beverages, and children under 2 years should avoid all added sugar[28]. The effects of SSBs and added sugars on weight and obesity have been demonstrated in several studies. For example, in a British cohort of over 2400 children, researchers obtained 3 day food records at ages 10 and 13 along with waist circumference (WC), BMI, and total body fat mass (TBFM). They found that increased consumption of SSBs from 10 to 13 was associated with higher WC, BMI, and TBFM[34]. They also found the association between SSB consumption and WC was still significant when accounting for BMI and TBFM. This suggests that not only are SSBs associated with weight gain in children, but may be specifically associated with central adiposity. In another study of mother-toddler pairs, high intake of SSBs was associated with a 0.46 increase in toddler weight-for-height z-score[35]. From the Early Childhood Longitudinal

Survey—Birth Cohort (ECLS-B), a large multimethod study by the National Center for Education Statistics following a sample of children born in 2001, researchers analyzed SSB consumption and BMI z scores among 9600 participants between ages 2-5. Drinking 1 or more serving of SSBs daily was associated with not only a higher BMI, but also a greater increase in BMI over time[7].

Other studies have also shown the association between SSBs makers of other diseases, such as cardiovascular disease. For example, in an analysis of NHANES data of children 3-11 years, increased SSB intake was associated with increased C-reactive protein concentrations and decreased HDL cholesterol[36]. In another cross-sectional study of over 2100 adolescents, added sugar consumption was associated with increased levels of LDL cholesterol and mean triglycerides and decreased levels of HDL cholesterol[37]. A cross-sectional analysis by Bremer and colleagues, looking at NHANES data of almost 7000 children ages 12-19 years, also found a relationship between SSB consumption and markers of cardiovascular disease. Participants were divided into groups by SSB consumption: low, consuming approximately 0.01 serving per day; medium, consuming approximately 2.5 servings per day; and high, consuming 7.4 servings per day. The outcomes of this study included multiple markers of cardiovascular health. It was found that increasing SSB consumption was associated with increased levels of systolic blood pressure, waist circumference, and BMI, and decreased HDL cholesterol[38].

Fruit juice is high in sugar and may contribute to obesity, especially in preschool-aged children[39]. According to the Feeding Infants and Toddlers Study (FITS), almost 66% of toddlers 19-24 months and 58% of toddlers 15-18 months drink 100% fruit

juice[40]. The American Academy of Pediatrics (AAP) recommends limiting 100% fruit juice intake to 4-6 ounces for children 1-6 years old and no juice at all for infants under 6 months[41]. While AAP allows up to 4-6 ounces of 100% juice for infants 6-12 months[41], national infant meals patterns do not allow fruit juice for children under 1 year[42]. Juice is still highly consumed among toddlers and infants[40], which leads to concerns over its effect on weight status. In one study, consistent juice drinkers at 2 years of age had higher odds of being overweight by age four than non-juice drinkers, however the same difference was not found between ages 4 and 5[39]. The same study also found children who drank 100% juice consistently at age 2 had greater increases in BMI z-score by age 4 than non-juice drinkers. In a study conducted by Sonneville et al, children who drank at least 16 ounces of juice at 1 year old had higher BMI z-scores during early and mid-childhood[43]. Researchers also found that juice consumption at 1 year was associated with greater juice and SSB intake, and adiposity during early and mid-childhood.

Besides the link to weight gain and comorbidities such as cardiovascular disease, both juice and SSB consumption is linked to a decrease in milk consumption[8]. FITS found 100% juice and SSBs were inversely related to calcium density[40]. Milk, or a calcium-rich alternative is necessary for bone health, especially in growing children[44]. In a study by Black and colleagues, in children with long-term milk avoidance, daily calcium intakes were low and calcium-rich alternatives or supplements were rarely used[45]. These children were also found to be shorter, have smaller skeletons, have lower total-body bone mineral content, and lower z-scores for areal bone mineral density than similar children that did not avoid milk[45].

Trends in Beverage Consumption

While beverages are associated with weight and comorbidities, the trends in consumption among children show if there is a need to change consumption. In 1977-78, the average consumption of SSBs in children 2-18 was 88kcal per day[8]. In 1999-2000, the average consumption for children aged 2-18 had increased to 166kcal per day. This number has decreased to nearly 150 kcal in 2010[8], and approximately 130kcal per day in 2013-14[46]. In addition, one cohort found 25% of children consumed SSBs as infants[8]. Evidence shows the likelihood of consuming SSBs increases with age[8]. Among children under 2, most drink some form of milk, however as juice and SSB consumption increases, the amount of milk consumed decreases[40]. In a similar manner, as children become older and the percentage of milk decreases and the percentage of juice, fruit drinks, sodas, and other SSBs increases[40]. In a study conducted by Nickelson and colleagues, among children 3-5 years old, an estimated 94% consumed sweetened milk products, 88% consumed fruit drinks, 63% consumed sodas, and 56% consumed sports drinks and sweet tea[16]. Researchers found that age was the most consistent predictor of SSB intake[16,40,47]. Findings suggests that interventions to decrease SSB intake be implemented with pre-schooled aged children (0-5) to be most effective[16,48].

Importance of the Early Care and Education (ECE) Setting for Obesity Prevention

The early childhood years are an important period in the formation of many weight related behaviors, specifically dietary intake and eating habits[,49,50,51]. These habits formed in early childhood can have a lasting effect and influence preferences and habits in adult years[52]. The early care and education (ECE) field is therefore, a prime

setting for nutrition interventions aimed at influencing beverage habits early in life. ECE programs are any licensed or license-exempt programs that provide care and education to children from birth to kindergarten[53]. Programs can include child care centers, family child care homes, Prekindergarten classrooms, and Head Start programs[54]. Nearly 75% of children under 5 spend at least part of the day in child care[10], and almost 80% of children under 5 with working parents spend nearly 40 hours each week in ECE programs[55]. In Georgia alone, there are over 330,000 children in ECE programs each year[56]. As children can receive up to 2/3 of their daily nutrition in ECE programs[57], this becomes a critical location to build healthy habits and prevent obesity.

ECE Providers Role in Obesity Prevention

ECE providers can have a large influence on a child's dietary habits. They serve a large population of children and can provide a majority of their daily nutrition[10,55,56,57]. Role modeling is an important aspect of the role providers have on child dietary behaviors[58,59]. It has been shown that children are more likely to accept new foods if a provider modeled happily eating the new food[58]. National guidelines even recommend providers sit with children and engage during mealtimes as a way to incorporate positive role modeling[59,60]. Many interventions aimed at improving nutrition in early childhood will aim to educate the providers who will then be able to use this knowledge in their practice. . Educating providers specifically about appropriate beverages to serve to children may improve the beverages children are consuming.

National Beverage Policies for the ECE Setting

Beverage guidelines for ECE settings have been developed by several national

organizations including Caring for Our Children, National Academy of Medicine (NAM), and the Centers for Disease Control and Prevention. Caring for Our Children (CFOC) is a publication of health and safety standards for ECE programs in a collaboration between the American Academy of Pediatrics, the American Public Health Association, and the National Resource Center for Health and Safety in Child Care and Education. The National Academy of Medicine (NAM), formerly the Institute of Medicine (IOM), is a national non-profit, non-governmental organization that provides advice on health and medicine. The Centers for Disease Control and Prevention's (CDC) Division of Nutrition, Physical Activity, & Obesity have created publications regarding healthy beverages in ECE settings. There are also meal pattern guidelines provided by the United States Department of Agriculture Child and Adult Care Food Program (CACFP).

Table 1. National Beverage Policies and Best Practices

	CACFP[1]	NAM[2]	CFOC[3]	CDC[4]
No SSBs[5]	✓ (best practice)		✓	✓
No juice before 12 months	✓	✓	✓	✓
≤ 4-oz 100% juice for 12 months-5 years	✓		✓	✓
Whole milk for 12-23 months	✓		✓	✓
Low-fat or fat-free milk for 2-5 years	✓	✓	✓	✓
All day water availability	✓	✓	✓	✓

[1] Child and Adult Food Care Program (CACFP) is a meal reimbursement program for meals and snacks served in child care and adult care settings and sets nutrition requirements and best practice recommendations. Eliminating SSBs is a recommended best practice.
[2] National Academy of Medicine (NAM), formerly the Institute of Medicine (IOM), encouraged ECE programs to follow CACFP guidelines and to have stricter water standards compared to CACFP meal pattern guidelines
[3] Caring for Our Children (CFOC) produced a set of national obesity prevention standards for all ECE settings based on the best evidence, experience, and expertise in the US on health and safety practices and policies for ECE settings.
[4] The Centers for Disease Control and Prevention (CDC) provides obesity prevention recommendations for ECE programs.
[5] Sugar-sweetened drinks are sweetened with sugar, high fructose corn syrup, or other caloric sweeteners.

CACFP is a national program that subsidizes nutritious foods in child care and adult care programs[60]. Any program can use these guidelines, however CACFP-participating programs are required to, and failure to comply prevents programs from receiving reimbursements or meals served.

Table 1 provides a breakdown of beverage guidelines by national organization. Only 100% juice should be served and limited to 4-6oz a day. No juice to be provided children under 1 year old[60,62,63,64]. The CFOC and CDC recommend diluting juice with water as needed to reduce the sugar content[62,63], however CACFP only allows full-strength, undiluted juice in their best practices[60]. All guidelines suggest SSBs should be avoided for all ages, although CACFP does not require it[60,62,63]. Milk guidelines vary by age and disease risk. Only human milk or infant formula should be served to children aged up to 1 year. Whole milk should be provided for children aged 1-2 years or 1% for those at risk for obesity or hypercholesterolemia. For children 2 years and over, 1% or fat-free milk should be served. Milk equivalents, such as soy milk, should be provided when recommended by a physician[60,63,64]. Potable water should be available at all times, both indoors and outdoors[60,63,64]. According to CACFP guidelines, water should not be a replacement for milk during meals and snacks, but can be served alongside milk[60]. While there are clearly established guidelines, and in some cases enforced guidelines, data shows that ECE providers' compliance with beverage guidelines is highly variable.

Beverage Policy Compliance

In the GA Child Care Wellness Survey, a large state-wide study of both licensed and license-exempt ECE programs in Georgia, compliance with national beverage guidelines was assessed in over 900 respondents through a self-reported survey[65]. Table

3 shows the results from the study. Among respondents, almost all reported they did not serve SSBs to children 0-5 years old. However, it is important to note that the data is self-reported, and actual compliance may be lower than was reported. 85% of providers were compliant with serving 4-6 ounces of juice or less. Lower compliance was seen in regards to milk and water guidelines. Specifically, only 31% of programs reported serving water at least 3 times per day even though it should be readily available at all times. Only 42% of providers served whole milk to children 1-2 and only 57% served skim or 1% milk to children over 2. CACFP-participating programs generally had higher compliance to beverage policies than non-CACFP-participating programs, but still had low compliance to water and milk guidelines. Interventions to increase compliance to beverage best practices are necessary to improve beverages offered to children.

Table 2. Beverage Policy Compliance Among ECE Providers and CACFP Participating Programs[65]

Beverage Policy	% In Compliance[1]			Significant Comparison[2]
	ECE Providers	CACFP	Non-CACFP	CACFP (C) vs. non-CACFP (N)
No SSBs[3]	96	98	92	C > N*
Serve 4-6oz of juice[4]	85	83	90.1	C < N**
Whole milk to 1-2 year-olds	42	57	46	C > N**
Skim or 1% milk to children 2 years or older	57[5]	79[6]	29[6]	C > N**
Water is available all day[7]	31	36	23	C > N**

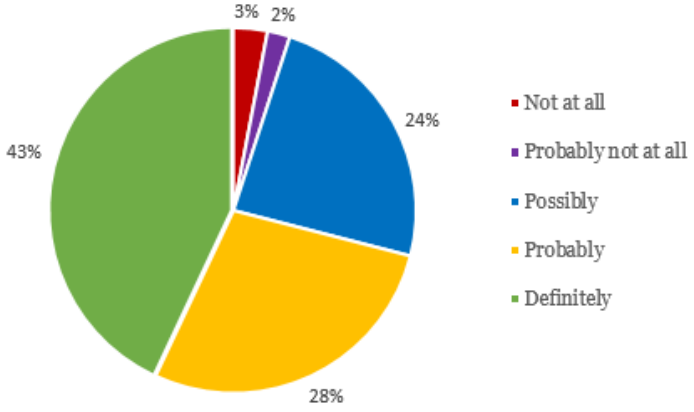
[1] Percentages of total, CACFP participating, and non-CACFP participating ECE providers reporting compliance with beverage policies
[2] For CACFP (C) vs. non-CACFP (N) comparisons by cross-tabulations and Chi-square tests: * $p < .05$ ** $p < .001$
[3] Sugar-sweetened drinks are sweetened with sugar, high fructose corn syrup, or other caloric sweeteners
[4] Percentages include scores for serving no juice and serving juice once a day
[5] Percentages include scores for serving skim milk and 1% milk
[6] Percentages include scores for serving 1% milk only
[7] Percentage combined scores of serving water 3 or more times per day

Use of eLearning as a Training Format

One of the fastest growing trends in educational uses of technology is online

learning[66]. While the ECE setting traditionally uses in-person, classroom-based training, the use of online training is increasing[11]. All state licensing regulations require annual professional development for ECE providers, with Georgia specifically requirement 10 hours clock hours of training[67]. An online format has some advantages to in-person training, especially in the ECE setting where training is mandatory. One of the biggest benefits is the accessibility and flexibility of training. Not all providers have good access, both location and time-wise, to in-person training opportunities. They may choose any accessible trainings to meet their required development hours. However, a majority of child care providers have access to the internet[67,68]. While there are some face-to-face nutrition education programs, most child care providers have little to no training in nutrition[68,69]. Findings from a state-wide survey on beverage compliance in Georgia showed only 23% of participants reporting having had any training in beverage policy[68]. However, many providers say they would be open to learning about nutrition from an online format[69]. Results from the same survey demonstrated that almost all ECE providers would consider using a web-based beverage training program (Figure 1)[68]. 95% of respondents said they would use the internet for a training program. If the programs are made available, educators will use them. To meet growing demand for development training in Texas, extension services launched the Early Childhood Educator Online Training Program portal in 2005 where

Figure 1. Likelihood of Using the Internet for Beverage Training[68]



it now offers nearly 100 courses[12]. From 2010 to 2012, the number of completed face-to-face courses grew from 3,121 to 3,335, while the number of online courses completed grew from 47,642 to 131,743[12]. When examining actual contact hours completed, over 20,000 hours of face-to-face training was logged in 2012 compared to over 208,000 online hours, even though face-to-face classes are generally longer than online classes[12]. These numbers are due to both an increase in courses offered and an increase in scope of audience, so even educators outside the state of Texas made use of the online training programs.

Rationale

Childhood overweight and obesity has become highly prevalent[1], which can lead to adverse health consequences during both childhood and adulthood[2,3]. Consumption of beverages with added sugars is a contributing factor to the rising rates of childhood obesity. ECE programs are an important setting for beverage interventions, with over 330,000 children in Georgia enrolled in ECE programs[56] getting up to 2/3 of their nutrition from these programs[57]. Because of the importance of beverages on health and the impact of ECE programs, national institutions provide guidelines on best practices for use in the ECE setting. However, surveys of compliance to these policies in Georgia show much room for improvement[65]. Since few to no ECE providers in Georgia have ever received beverage training[68], an intervention educating about beverage policy could improve compliance. Access to training can be a barrier for many providers; an online format can increase access and availability of a beverage training program. Based on provider's preferences in Georgia, an interactive eLearning training program could be

an effective method to increase compliance to beverage policies and improve the beverages served in ECE programs.

Specific Aims

The specific aims and hypothesis of this study are:

1) To determine the changes in knowledge among ECE providers after completing the iBevSmart online beverage training.

2) To determine the changes in intentions to implement beverage policies among ECE providers in Georgia after completing the iBevSmart online beverage training.

It is hypothesized that completion of the iBevSmart online beverage training will increase knowledge about and intentions to implement beverage policies among ECE providers.

CHAPTER 3

METHODOLOGY

Research Design

The research design for this study is a feasibility study with a pre and post-test design that will assess changes in knowledge and intentions of ECE providers using two methodological approaches: 1) a pre and post assessment and 2) and a brief feasibility survey. The pre and post assessment will analyze changes in both knowledge of beverage policy and intent to change beverages served. The feasibility questionnaire will assess the desirability and ease of use of the training program itself.

Recruitment

A convenience sample of child care programs in Georgia was used for this study. The Childhood Obesity Intervention Lab communicated the study details to ECE programs directors via email. Interested participants submitted their contact information in the link provided. Those individuals were then assigned an identification code to complete the online beverage training. A follow-up email was distributed to the ECE providers containing their ID code, and the access link to the consent form and pre-assessment. Participants were sent reminder emails twice for a one-month period. Incentives included resource kits (valued at $15) for the first 50 respondents and a grand prize drawing for one of five 50$ amazon gift cards. The entry form for the grand prize drawing is shown in Appendix C.

Development of iBevSmart Program

iBevSmart was created using Articulate360, a subscription of authoring tools made for course development. The curriculum and script were created using beverage guidelines from the CFOC, NAM, CDC, and CACFP[60,62,63,64]. Results from previous study showed that ECE providers would prefer an interactive, web-based training program[68]. During focus group interviews, there were 4 major themes when providers discusses what they wanted in a program. Researchers also consulted with the Georgia Department of Early Care and Learning (DECAL) to gain input on state stakeholders' vision for training content. Researchers and DECAL partners participated in two consultations, one held prior to training content development and one before the launch of the feasibility study. DECAL partners were supportive of the training content.

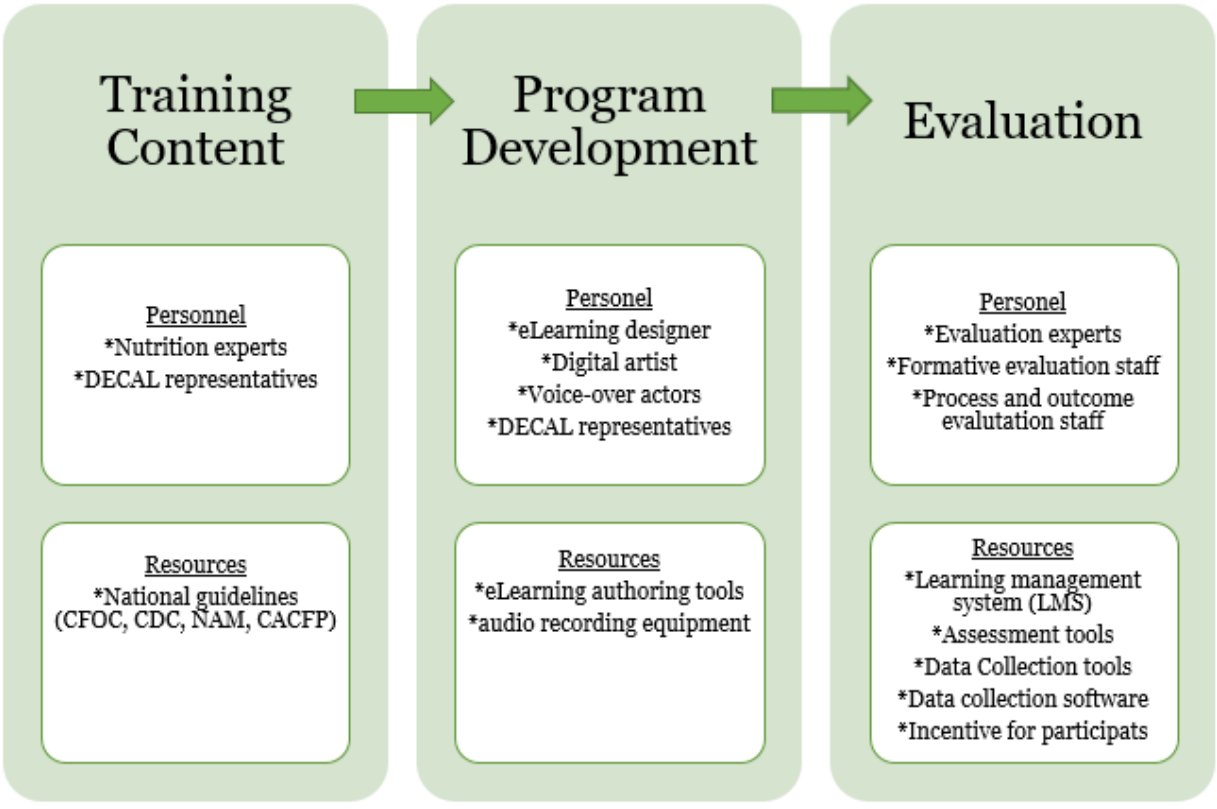


Figure 2 Personnel and Resources used in Development of the iBevSmart eLearning Training

Suggestions included having specific content on label reading and featuring an avatar in the likeness of a child care provider rather than a child-friendly cartoon character. The major themes included the following: 1) They wanted the program to be engaging; 2) They wanted the information to be concise; 3) They wanted some form of accountability from the program and 4) They wanted to know why the information they were learning was important. These 4 themes were used as a basis for creating the training program. Personnel and resources needed for each phase of the program can be seen in Figure 2.

Figure 3 Meet Lydia

The training included 4 modules covering beverage guidelines on SSBs, juice, milk, and water. The categories followed the beverages best practices recommended in

Table 3. Total Cost for eLearning Program Development and Pilot Program Evaluation

Item	Unit	Unit Cost	Total Cost
Personnel			
Graduate student with eLearning content and development support (1/3 time)	12 months	$1,262	$15,144
Personnel total			$15,144
Equipment			
eLearning authoring tools (Articulate 360)	1 year	$499	$499
Learning management system (Articulate Online)	2 months	$199	$398
Equipment total			$897
Evaluation			
Incentive beverage tool kit for participants	10	$14	$140
Incentive gift card for raffle winners	5	$50	$250
Evaluation total			$390
Total			**$16,431**

the CFOC, CDC, and CACFP guidelines. Each module followed a similar pattern including 4 key components: 1) an introduction to the module; 2) background information on the topic; 3) interactive games and quizzes; and 4) a review of the information covered. The eLearning content is presented within a classroom and kitchen background, and is co-led by Lydia, a child care provider. Lydia's role is to present information in an interesting way and to facilitate immersion (see Figure 3). The main goal in the development of this program was to make it as interactive and visually appealing as possible while providing the necessary information. This was done in an effort to follow the themes from the focus group interviews and create an effective training program. Budget and timeline can be seen in Table 3 and Table 4, respectively.

The first step in the development of iBevSmart was choosing a program to create the training. After researching training development software, researchers chose Articulate 360 because of the vast amount of interactive features the software offered.

Table 4. Timeline for Development of eLearning Program

Task	Approximate Time	Comments
Training content	1 month	iBevSmart was based on guidelines by CFOC, CDC, NAM, and CACFP; Representatives from DECAL provided recommendations for direction
eLearning program development	7 months	eLearning program was developed by a graduate student using articulate 360; Representatives from DECAL provided feedback on development
Voiceover recording and integration	1 month	Graduate student volunteers recorded voiceovers during the last month of program development
Internal beta testing for program functionality	1 week	Graduate students and administration provided feedback on iBevSmart
Revision of eLearning program	1 week	Revisions were made to correct issues found during internal beta testing
Program launch	2 months	Program opened for participant use

Figure 4. Remove all the SSBs game

The specific tool in Articulate used for program creation was Storyline 360, which is the main course development software in the subscription. Slides, similar to slides in PowerPoint, can be created and ordered in the program. However, unlike PowerPoint, multiple layers can be added to slides that can be toggled on or off depending on what a user clicks and slides do not have to have a linear progression. Multiple interactive elements are pre-equipped, such as drag-and-drop functions. Other interactive elements must be built from scratch. For example, in the removing SSBs game (Figure 4), the basic premise is a drag-and-drop game. An invisible cache is placed on top of the table; if the correct graphics are clicked and dragged to the cache, a new "correct answer" layer is opened. Each beverage graphic must be "labeled" as a correct or incorrect answer. A layer was also included showing a refrigerator with closed doors. Hovering the mouse over the closed fridge graphic opens a new layer with the open fridge graphic with individual beverage graphics in front. Removing the mouse reverts is back to the layer of the closed fridge graphic. This provides an illusion of participants opening and closing the doors of the refrigerator.

Researchers were also able to confirm with Articulate that participant data would be stored securely. After selecting Articulate 360, researchers began writing script based on beverage best practices and relevant training content. Blocks of text were minimal in an effort to keep information concise as per the needs expressed by ECE providers.

Information was also provided through voice-overs of Lydia's speech. Varying the methods of relaying information was used to keep participants engaged. For example, researchers included some of the effects beverages have on children in an effort to show participants why the information was important.

Games were included not only to make the program interactive, but also to reinforce information and mimic real world scenarios. For example, activities such as making a shopping list and pulling drinks out of a refrigerator, engaged participants in an interactive manner, rather than simply reading (or ignoring) a wall of text. Gaming content also allowed participants to test what they learned without feeling like they were being quizzed on the material. A correct answer, however, was still needed to proceed through the training, so participants could not click random items to complete the modules faster. Requiring correct answers served the dual purpose of reinforcing the information and holding ECE providers accountable, a need expressed during formative research.

Data Analysis

Descriptive statistics were reported for demographic information, such as number of children served, race/ethnicity of children served, and CACFP participation. The questionnaire used in both sections of the pre- and post-test was based on research conducted by Ritchie and colleagues at the University of California Nutrition Policy Institute[70]. Section A of the pre and post-test assess knowledge change of beverage best practices using multiple choice questions. For example, questions included, "Which is the best type of milk for most 1-2 year olds to drink?" and "How often should sugar-sweetened drinks be given to most 2-5 year olds?" as shown in Figure 5. The complete

questionnaire for section A can be seen in Appendix A. Paired t-tests were used to analyze the differences in knowledge from baseline to post-intervention. Hypotheses tests were be considered significant at $p<0.05$.

Section B assessed change in intentions to implement beverage policies by using a 5–point Likert scale ranging from 1 (I was already doing this) to 5 (extremely unlikely) as shown in Figure 6. The complete questionnaire for section B can be seen in Appendix A. Frequency distribution was used to report changes in intentions through percentages of responses in each category. Hypotheses tests were considered significant at $p<0.05$.

Figure 5 Excerpt from Section A of Beverage Assessment

Section A: Please Answer the Following Questions about Beverages Based on Beverage Best Practices

	Unflavored whole milk	Unflavored 2% milk	Unflavored nonfat or 1% milk	Soy or rice milk	Flavored whole milk	Flavored 2% milk	Flavored nonfat or 1% milk	Don't know
1. Which is the best type of milk for most **1-2 year olds** to drink? ***(choose only one)***	☐1	☐2	☐3	☐4	☐5	☐6	☐7	☐8
2. Which is the best type of milk for most **2-5 year olds** to drink? ***(choose only one)***	☐1	☐2	☐3	☐4	☐5	☐6	☐7	☐8

Figure 6 Excerpt from Section B of Beverage Assessment

Section B: Implementing Standards

10. For each of the following **beverage standards**, please rate **your intentions to apply** at your child care program.

Beverage Standard:	Intentions 1=Extremely Unlikely to 5=Extremely Likely						
	I was ALREADY doing this	Extremely Likely	Likely	Neutral	Unlikely	Extremely Unlikely	
a. Serve only unflavored, unsweetened, non-fat or low fat (1%) milk to children two years of age or older.	☐1	☐2	☐3	☐4	☐5	☐6	
b. Never serve sugar-sweetened beverages (beverages with added sweeteners, natural or artificial, including sports drinks, sweet teas, juice drinks with added sugars, flavored milk, soda and diet drinks.	☐1	☐2	☐3	☐4	☐5	☐6	

Analysis of Feasibility Questionnaire

The feasibility questionnaire is both a quantitative and qualitative survey. The questionnaire assesses the desirability and ease of use of the training program using a 5-point Likert scale ranging from strongly agree to strongly disagree (Figure 7) and open-ended questions such as "What aspects of the training could be improved?" The full feasibility questionnaire can be seen in Appendix B. Frequency distribution was used to report change in intentions via percentages of responses in each category. Quantitative data was gathered via open-ended questions.

Figure 7 Excerpt from feasibility questionnaire

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The objectives of the training were clearly defined.	☐	☐	☐	☐	☐
2. The topics were relevant to me.	☐	☐	☐	☐	☐

CHAPTER 4

RESULTS

Pre- and Post-test for Knowledge and Intentions

The training link was sent to 50 ECE providers. Six participants completed both the pre and post-assessments, out of the sample of 50. Due to low response rate and sample size, formal statistical analysis was not performed as proposed. However, to further explore the feasibility of the training, a Wilcoxon signed-rank test was run to show difference in knowledge from baseline to posttest intervention (see Table 5) and descriptive statistics were run to assess changes in intentions (see Table 6). A knowledge score was calculated to assess participant's knowledge of beverage best practices. There was an observed increase in knowledge from baseline to post-intervention. The average correct score from the pre-test was 44.44, while the average score from the post-test was 81.48. Results indicated a trend towards improved knowledge, however the sample size is too small to indicate power for results. Changes in intentions showed minimal changes (see Table 6). Most participants responded they were already practicing the

Table 5. Average Change in Knowledge Scores Baseline to Post-intervention (N=6)

	Mean[1]	Std. Deviation	Minimum	Maximum	p-value[2]
Pre-Test Grade	44.44	21.08	11.11	66.67	
Post-Test Grade	81.48	9.07	66.67	88.89	
					0.027

[1] Average correct answers to Section A of pre-test/post-test
[2] Significance assigned to ≤ 0.05

best practices listed in the assessments. In both questions asking about milk (intentions to serve only non-fat or low-fat milk and intentions to serve only breast milk or formula to infants 0-5 months), the response "I was already doing this" increased by 1 after the intervention. This change should not be considered a change as a result of the training program. Excluding those two results, three questions saw no change between baseline and post-intervention. Intentions in the question asking about water availability also did not change. Most respondents listed they already had water available at all times, which is much higher than prior data[65]. Only one question saw a slight increase in intentions,

Table 6. Changes in Intentions to Implement Beverage Best Practices (n=6)

Beverage Best Practices	Scale	Pre-test (%)	Post-test (%)	Change in (%)
Serve non-fat or 1% milk to children 2-5 years	I was already doing this	50	66.7	+16.7
	Extremely likely	33.3	16.7	-16.6
	Likely	16.7	16.7	0
	Neutral	0	0	0
	Unlikely	0	0	0
	Extremely unlikely	0	0	0
Never serve SSBs	I was already doing this	50	50	0
	Extremely likely	16.7	33.3	+16.7
	Likely	16.7	0	-16.7
	Neutral	0	0	0
	Unlikely	0	0	0
	Extremely unlikely	16.7	16.7	0
Serve only breast milk or infant formula to children 0-5 months	I was already doing this	66.7	83.3	+16.6
	Extremely likely	16.7	16.7	0
	Likely	0	0	0
	Neutral	0	0	0
	Unlikely	0	0	0
	Extremely unlikely	16.7	0	-16.7
Serve 4-6oz or less 100% juice to children 1-5 years	I was already doing this	33.3	33.3	0
	Extremely likely	16.7	33.3	+16.7
	Likely	33.3	0	-33.3
	Neutral	0	0	0
	Unlikely	0	0	0
	Extremely unlikely	16.7	33.3	+16.7
Water available at all times	I was already doing this	83.3	83.3	0
	Extremely likely	16.7	16.7	0
	Likely	0	0	0
	Neutral	0	0	0
	Unlikely	0	0	0
	Extremely unlikely	0	0	0

which asked about never serving SSBs. The last question, which asked about serving no more than 4-6 oz of juice, had one person increase intentions, and one person decrease their intentions. Based on the data seen here, it is inconclusive whether the training program can increase intentions to implement beverage policies.

Feasibility Survey

Ten participants completed the feasibility questionnaire. Responses from the quantitative portion of the questionnaire can be found in Figure 8. Overall, participants rated the training as acceptable and feasible. When asked about the appeal and ease of use, almost 90% of respondents strongly believed the content was organized and easy to follow and the program itself was simple and easy to use. 80% of respondents strongly agreed, and the following 20% agreed the material was presented in a unique and interesting way. Responses about the content was also positive. 90% strongly agreed that the objectives were clearly defined and the topics were relevant. 80% agreed or

Figure 8. How Do Providers Feel About the iBevSmart Training?

strongly agreed that the training experience would be useful in their work, while 80% strongly agreed the training held them accountable for their learning. All 10 respondents responded they would recommend this training program.

The quantitative section gave more insight into the respondents' perception of the training. When asked what did they like most about the training, many said the information about appropriate beverages was their favorite. One respondent said they enjoyed "[l]earning about how to recognize if sugars are added to a drink". Many others mentioned the different teaching methods, citing the video and interactive elements. One respondent said "[i]t was interactive and quizzed me throughout." When asked how the training could be improved, one respondent mentioned difficulty with one of the interactive games, while the others had no recommended improvements. Participants were also asked of any additional ways they may intend to change as a result of the training. Of the 4 who responded to this question, all mentioned practices to improve water. One respondent said they would "insure that drinking water is accessible throughout the day", while another said they would "offer water during meals, even though we have a water fountain in the classroom." From previous data, researchers found that compliance to serving water was the lowest among all beverage categories[66]. This may be indicative that the iBevSmart may improve compliance to water guidelines.

CHAPTER 5

DISCUSSION

Researchers hypothesized that completion of an online beverage training program would result in an increase in knowledge and intentions to implement beverage policies. Results from pre- and post-tests data show there was a significant increase in knowledge from baseline to post-intervention. However, the sample size of this study is too small for true significance. There was also little to no change in intentions to implement beverage policies. However, based on qualitative data from the feasibility survey, most participants mentioned ways in which they would incorporate what they have learned. Specifically, most mentioned practices regarding water, which had the lowest compliance among all beverage categories[66]. Based on data from both the pre- and post-test as well as the feasibility questionnaire, there is evidence that iBevSmart program could increase knowledge and intentions to implement to beverage policies. Researchers also had the goal of creating an attractive, accessible beverage training program for use in future applications that incorporates the preferences of providers found from the GA Child Care Wellness Survey. General consensus from participants is the iBevSmart program is clear, easy to follow, and a unique training. We expect the training can be implemented with favorable results.

Lessons Learned

There were multiple lessons learned during the development of the iBevSmart training. These lessons are summarized in Table 7. Incorporation of these lessons will

make future studies and applications of the iBevSmart program more effective and efficient.

Table 7. Lessons Learned during iBevSmart Training Development
Lessons Learned during Program Development
• Articulate 360 has numerous program features for online learning. Program design, therefore, required an extensive amount of time to master for overall training development. • Games and graphics should be decided on along with the program content so all artwork can be requested at once instead of as needed. • Editing voice-overs becomes time consuming if the recording quality is poor. Rehearsal of sound bites with voice-over actors should be completed before final recordings. • Articulate 360 does not include an efficient format for electronic pre- and post-assessment surveys. Another program such as Qualtrics must be used for assessment.
Lessons Learned during Data Evaluation
• Consult with ECE providers to determine the best incentive for a 1 hour online training. • Recruitment from ECE directors to ECE providers may not be the most efficient way to gain participants. • Unless explicitly disallowed in Articulate Online, participants may be able to forward the training to providers outside of the study.

Strengths of this Study

There were multiple strength to this study. This is one of the first studies to explore eLearning technology as a means to teach beverage policy. The use of an innovative and interactive format differentiates this program from similar web-based training programs. The focus on the aesthetics of the program, with the use of attractive and cohesive graphics, assists in the innovate design. This study was also based on the needs assessment findings from a larger study. A need for a beverage policy training, and a desire for an interactive, web-based training, has been established in this population. Researchers also partnered with the GA Department of Early Care and

Learning (DECAL). Representatives from DECAL provided insight and feedback at multiple points throughout the development of the iBevSmart program.

Limitations of this Study

There were multiple limitations to this study. One limitation was the use of a convenience sample. The data may be biased to show more intent and higher completion rates, as it is assumed many centers who have worked with us previously will be more motivated to change and complete the intervention. This study is also measuring intentions to change behaviors, which does not always translate into true behavioral change. The limited time-frame of this study does not allow us to track actual change to see if ECE providers change their beverage options, or if changed options improve obesity rates in the ECE programs.

Implications for Future Research

Future research will need to include a larger sample size for formal data analysis as well as significant data. In partnership with the Georgia Department of Early Care and Learning, researchers will conduct a large scale trial to test the effectiveness of the training. The training will be disseminated to ECE providers as an approved training for continuing education credits (CEUs) related to nutrition. Based on the small sample size, new incentives are needed to encourage participation. Providing CEUs as part of a state-approved training may be an appropriate incentive for ECE providers. Ultimately, innovative trainings such as iBevSmart may contribute to reduce obesity risk and promote healthier choices to stakeholders in the ECE setting.

CHAPTER 6

CONCLUSION

In conclusion, an interactive e-learning program has potential to increase the knowledge of and intentions to implement beverage policies among ECE providers. Articulate 360, a subscription of course-development tools, was used to create the iBevSmart training program. A digital artist was used to make almost all graphics for the program in an effort to make a more attractive and cohesive program. Study participants unanimously agreed the program was clear, easy to use, and a unique format.

There was a trend of increased knowledge after completion of the iBevSmart training program. There was little to no change in intention based on the quantitative data, but qualitative data suggests participants will implement some of what they have learned, specifically regarding water best practices. However, there are multiple limitations to the study. The small sample size and use of a convenience sample do not allow significant conclusions to be drawn. Future studies are needed with a larger, randomized sample. Improved incentives may be a method of increasing sample size. A future study would also need a lengthy follow-up to assess if providers are offering different beverages instead of only examining intent. In partnership with the GA Department of Care and Early Learning (DECAL), providing continuing education credits (CEUs) related to nutrition after completion of the iBevSmart program may be an effective incentive for ECE providers.

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APPENDIX A

eLearning Survey of Child Care Providers_Posttest

INSTRUCTIONS: *Please read each statement or question carefully and mark the box that best fits your child care center or home. It is important to answer each question. Choose only one answer box, unless it says to choose all answers that apply.*

*There are **no right or wrong answers** – only what you think. Thank you!*

Section A: Please Answer the Following Questions about Beverages Based on Beverage Best Practices

	Unflavored whole milk	Unflavored 2% milk	Unflavored nonfat or 1% milk	Soy or rice milk	Flavored whole milk	Flavored 2% milk	Flavored nonfat or 1% milk	Don't know
1. Which is the best type of milk for most **1-2 year olds** to drink? ***(choose only one)***	☐1	☐2	☐3	☐4	☐5	☐6	☐7	☐8
2. Which is the best type of milk for most **2-5 year olds** to drink? ***(choose only one)***	☐1	☐2	☐3	☐4	☐5	☐6	☐7	☐8

	Never	Not more than once a month	Not more than once a week	Not more than a few times a week	Not more than once a day	Not more than a few times a day	Unlimited	Don't know
3. How often should **sugar-sweetened drinks** be given to most 2-5 year olds. ***(choose only one)***	☐1	☐2	☐3	☐4	☐5	☐6	☐7	☐8
4. How often should **diet (zero or very low calorie) drinks** be given to most children 2-5 years old? ***(choose only one)***	☐1	☐2	☐3	☐4	☐5	☐6	☐7	☐8
5. How often should **100% juice** be given to most children 2-5 years old? ***(choose only one)***	☐1	☐2	☐3	☐4	☐5	☐6	☐7	☐8

		Not visible	**Visible, but only available during designated water breaks**		**Easily visible and available on request**		**Easily visible and available for self-serve**	**Don't know**
6.	Drinking water **indoors** for young children should be: ***(choose only one)***	☐1	☐2		☐3		☐4	☐5
7.	Drinking water **outdoors** for young children should be: ***(choose only one)***	☐1	☐2		☐3		☐4	☐5
8.	During meals and snacks, drinking water should be: ***(choose only one)***	☐1 Available for children to self-serve at the table	☐2 Served to each child by provider	☐3 Served only on request by child	☐4 Not served at the table, but available from a drinking fountain	☐5 Only provided when milk is NOT served	☐6 Only provided when 100% juice is NOT served	☐7 Only provided in hot weather to avoid dehydration	☐8 Never or rarely provided ☐9 Don't know
9.	Which of the following are usually considered sugar-sweetened drinks? ***(mark all that apply)***	☐1 Regular soda ☐9 Fruit Drink	☐2 Sports drinks ☐10 Sweet Tea	☐3 Flavored milk ☐11 Vitamin Water	☐4 Sunny Delight ☐12 Don't know	☐5 Agua frescas	☐6 Capri Sun	☐7 Kool-aid	☐8 Lemonade

Section B: Implementing Standards

10. For each of the following **beverage standards**, please rate **your intentions to apply** at your child care program.

Beverage Standard:	**Intentions** **1=Extremely Unlikely to 5=Extremely Likely**						
	I was ALREADY doing this	**Extremely Likely**	**Likely**	**Neutral**	**Unlikely**	**Extremely Unlikely**	
a. Serve only unflavored, unsweetened, non-fat or low fat (1%) milk to children two years of age or older.	☐1	☐2	☐3	☐4	☐5	☐6	
b. Never serve sugar-sweetened beverages (beverages with added sweeteners, natural or artificial, including sports drinks, sweet teas, juice drinks with added sugars, flavored milk, soda and diet drinks.	☐1	☐2	☐3	☐4	☐5	☐6	
c. Serve only breast milk and infant formula to infants 0-5 months old.	☐1	☐2	☐3	☐4	☐5	☐6	
d. Serve no more than one serving that's 4-6 ounces for 1-6 year olds of 100% juice per day.	☐1	☐2	☐3	☐4	☐5	☐6	
e. Make sure that clean and safe drinking water is readily available at all times, including indoors and outdoors and with meals and snacks.	☐1	☐2	☐3	☐4	☐5	☐6	

APPENDIX B

Please answer a few brief questions to provide feedback about this training program.

Instructions: Please indicate your level of agreement with the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The objectives of the training were clearly defined.	☐	☐	☐	☐	☐
2. The topics were relevant to me.	☐	☐	☐	☐	☐
3. The content was organized and easy to follow.	☐	☐	☐	☐	☐
4. The program was simple and easy to use.	☐	☐	☐	☐	☐
5. The material was presented in an interesting and unique way.	☐	☐	☐	☐	☐
6. This training experience will be useful in my work.	☐	☐	☐	☐	☐
7. I would recommend this program to others.	☐	☐	☐	☐	☐
8. This training held me accountable for my learning.	☐	☐	☐	☐	☐
9. The time allotted for this training was appropriate.	☐	☐	☐	☐	☐

10. What did you like most about this training?

11. What aspects of the training could be improved?

12. In what ways, if any, do you intend to change your practice as a result of this training?

13. Please share other comments here:

THANK YOU FOR YOUR TIME!

Would you like to enter a drawing for a $50 Amazon e-gift card? ____ YES ____NO

APPENDIX C

IBevSmart Participant Drawing and Healthy Beverage Kits

We will use your contact information to enter you in a drawing for one of five $50 Amazon e-gift cards. The first 100 participants to submit their survey will receive a resource kit filled with nutrition education and healthy beverage materials for young children.

Your contact information and survey responses are completely confidential. Thank you!

PRIZE ENTRY	
Your Name:	_____
Child Care Program Name:	_____
Email Address:	_____
Work Phone:	_____

APPENDIX D

Screenshots from the iBevSmart Training Program


I need milk for the infants less than one year old. What milk do I need to get for them? Click on the correct milk.
Sweetened Vanilla Soy Milk
Whole MILK
Chocolate MILK
Unsweetened Rice Milk
Breastmilk 8/16
1% MILK
I need:


Adding fresh fruit or herbs, like berries and mint, can make water taste better with no extra calories. Older kids can even make their own fruit and herb combinations.
Next