TRANSLATION OF A FACE-TO-FACE NUTRITION TRAINING TO AN ONLINE

TRAINING FOR EARLY CARE AND EDUCATION PROVIDERS: A COMPARISON OF

OUTCOMES

by

TAYLOR RAGAN

(Under the Direction of Caree Cotwright)

ABSTRACT

Early care and education (ECE) teachers play an important role in childhood obesity prevention in their classrooms. Online trainings are a convenient and easily accessible means of promoting nutrition education to teachers. The central hypothesis of this study was that an online training for ECE teachers enrolled in the Healthy Child Care Georgia (HCCG) intervention would be an effective means of training as compared to the face-to-face HCCG training. The specific aims of this study were to: 1) Determine the feasibility of an online nutrition education training for ECE teachers; and 2) Determine the effectiveness of the online training when compared to the face-to-face training indicated by changes in knowledge and intentions to provide nutrition education in the classroom. Generally, both groups had comparable changes in knowledge and intentions to change wellness best practices. The feasibility survey also indicated that participants found the online training to be satisfactory and acceptable.

INDEX WORDS: Nutrition, childhood obesity, obesity prevention, online training, teachers

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COMPARISON OF OUTCOMES

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CHAPTER 1

INTRODUCTION

Obesity is a growing global concern, especially among children (Ickes, McMullen, Haider, & Sharma, 2014). Once considered a health concern related almost exclusively to wealthy nations, obesity is now a problem that most countries face in some capacity (Ickes et al., 2014). Childhood obesity has many economic, health, and psychological consequences associated such as 30% higher medical costs as compared to those of a normal weight, higher blood pressure and cholesterol, and reduced self-esteem (Ickes et al., 2014). Health disparities exist in rates of childhood obesity among ethnic and racial minorities, with Hispanic children (15.6%) and non-Hispanic Black children (10.4%) having the highest rates, and then non-Hispanic White children with the lowest rates (5.2%) (Nelson et al., 2018). Parents play a vital role in the prevention of childhood obesity, along with early care and education (ECE) teachers acting as role models. Nutrition education for ECE teachers can provide a framework for childhood obesity prevention in the classroom (Ickes et al., 2014). Online training for these ECE teachers can be a useful step in overcoming barriers related to face-to-face training for nutrition education interventions.

ECE teachers have an impact on the students in their classrooms. About 70% of preschool-age children are in some sort of care outside of the home, which allows for a majority of this population to be influenced by ECE teachers (Natale, Lopez-Mitnik, Uhlhorn, Asfour, & Messiah, 2014). ECE teachers can do this by encouraging young children to eat new foods, demonstrating trying new foods, eating with their students, and talking about healthy eating

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(Natale et al., 2014). However, many teachers are not adequately trained on how to implement best practices related to childhood obesity prevention to have the most impact possible as role models. Programs that provide proper training and guidance in these areas are essential to the success of obesity prevention practices in the classroom.

Healthy Child Care Georgia (HCCG) is a six-week childhood obesity intervention that focuses on children aged 3 to 5, and it is a USDA SNAP-Ed funded program (Cotwright et al., 2017). HCCG includes a combined approach of wellness best practices in the classroom and a direct nutrition education curriculum, Eat Healthy, Be Active (EHBA). EHBA includes activities, books, and lesson plans which are developmentally appropriate. There are five key concepts covered: 1) eat a variety of foods, 2) eat breakfast, 3) stop eating when you are full, 4) drink water, and 5) be physically active. Before the six-week intervention, teachers engage in a four-hour training to cover obesity prevention best practices and the EHBA curriculum. There is currently no online training that allows teachers to review material covered in training. Without an online resource, expansion of HCCG to other parts of Georgia where a face-to-face training might not be possible is limited. This research study focused on developing an online training adapted from the existing HCCG face-to-face training.

This research study determined if there were comparable increases in knowledge and intentions to change wellness best practices when comparing the online training and the face-to-face training. The specific aims were to 1) determine the feasibility of an online nutrition education training for ECE teachers and 2) determine the effectiveness of an online training when compared to the face-to-face training indicated by changes in knowledge and intentions to provide nutrition education in the classroom. The central hypothesis was that an online training for ECE teachers enrolled in the HCCG intervention will be an effective means of training as

compared to the face-to-face training. This was determined through pre-test and post-test surveys given to teachers participating in the face-to-face training and the online training, and the results were compared. Teachers completing the online training also completed a feasibility survey that provided feedback on the effectiveness of the online training.

Prevention measures are essential to decrease this growth in rates of childhood obesity. These methods start in the home with parents and need to occur in the ECE setting from an early age. Children are in the ECE setting for a large portion of their week, and nutrition plays an essential role in impacting a child's dietary intake and health status. ECE providers can act as role models to help influence children's eating behaviors to lead to a healthier lifestyle. Training is essential for ECE providers to help them understand their role in these obesity prevention efforts and give them the resources to do so. Online training can allow for widespread nutrition education for ECE teachers that can combat the issues of time, money, location, and resources necessary for a face-to-face training. There is a gap in knowledge related to the feasibility and effectiveness of an online training for nutrition intervention. An online training for ECE teachers participating in the HCCG intervention would provide future expansion of this program to other parts of Georgia to help impact the growing epidemic of childhood obesity.

CHAPTER 2

LITERATURE REVIEW

Childhood Obesity

Globally, the prevalence of childhood obesity has increased from 4.2% in 1990 to 6.7%

in 2010, and it is expected to increase to 9.1% by 2020 (Ickes et al., 2014). In the United States,

along with several other countries, the incidence of childhood obesity is increasing at a faster rate

than adult obesity (Ickes et al., 2014). This increase is seen more dramatically in those

populations that are urbanized as well as in wealthier countries (Ickes et al., 2014). Obesity rates

for children ages 2 to 19 in 2010 were three times those from 1980 (Ickes et al., 2014). The

national estimate of childhood obesity among children ages 2 to 19 is 17%, with the highest rates

occurring during adolescence (Rouse et al., 2019). There were significant increases in obesity

and morbid obesity from 2015 to 2016 in children aged 2 to 5 (Skinner, Ravanbakht, Skelton,

Perrin, & Armstrong, 2018). If changes are not made, the current generation of American

children could live shorter and unhealthier lives than those generations before them (Moore,

Wilkie, & Desrochers, 2017).

There are many negative consequences related to childhood overweight and obesity. One

of these is the development of cardiovascular disease (CVD), which is one of the leading causes

of global mortality (Umer et al., 2017). CVD has several risk factors, including high blood

pressure, impaired glucose tolerance, poor lipid profile, and increased cholesterol, among other

factors (Ickes et al., 2014; Umer et al., 2017). An estimated 70% of children and adolescents who

are obese exhibit at least one risk factor of CVD (Umer et al., 2017). There is also an increased

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likelihood of developing type 2 diabetes due to possible insulin resistance and glucose intolerance (Ickes et al., 2014). There are also economic consequences, including increased medical costs of about 30% as compared to normal-weight individuals (Ickes et al., 2014). Obesity also makes up over 20% of total health care expenses (Rouse et al., 2019).

Additionally, psychological consequences are present in the form of low self-esteem, depression, and the stigma related to overweight or obese individuals (Ickes et al., 2014). These children also might face teasing or may develop an eating disorder (Moore et al., 2017). There are also education-related consequences when obesity leads to poor health, including lower academic success as well as higher rates of dropout (Rouse et al., 2019). While there are many consequences related to obesity, there are several determinants that also impact someone's susceptibility to becoming obese.

There are several determinants related to obesity. Some of these include genetics, maternal behaviors, physical activity, family food behaviors and environment, and access to food (Ickes et al., 2014). Genetics plays a role in children's taste preferences in addition to how likely a child responds to signals of satiation, which can lead to obesity (Moore et al., 2017). However, children with genetic susceptibility to becoming obese do not always become obese, depending on their environment (Moore et al., 2017). Children who live with a single mother tend to have a higher susceptibility to becoming obese than those in a two-parent household due to time and financial constraints that limit the ability to achieve a healthier lifestyle (Moore et al., 2017). Socioeconomic status also impacts obesity rates with factors such as food insecurity, safety in play areas, access to food, access to high-quality food, and employment stability, all playing a role (Moore et al., 2017).

Several other factors additionally play a role in obesity risk. Ethnicity and race play a part in increased risk for overweight or obesity among children. The rates are not equal among different races and ethnicities, with one-fourth of Black children, one-fifth of Hispanic children, and about one-seventh of White children being overweight or obese (Moore et al., 2017). Differences in gender are only significant among White children, with males being slightly more likely to be obese than females (Moore et al., 2017). Hispanic children ages 2 to 5 have the highest prevalence of obesity at 15.6% as compared to non-Hispanic Black children at 10.4% and non-Hispanic White children at 5.2% (Nelson et al., 2018). There are several significant racial and ethnic differences related to risk factors for childhood obesity, including consumption of sugar-sweetened beverages, television viewing, lack of sleep, and early solid food introduction (Nelson et al., 2018). It is essential to address these disparities to help with the future prevention of childhood obesity.

Prevention of Childhood Obesity

The most significant contributors to childhood obesity include increased energy intake, decreased energy expenditure, and the child's environment. Children do not consume the recommended daily servings of fruits and vegetables, with only 21% consuming the recommended value, and 40% of calories consumed tend to be empty calories (Moore et al., 2017). Additionally, among children ages 6 to 11, only 42% of these children are achieving the recommended 60 minutes of moderate to vigorous physical activity each day (Moore et al., 2017). To prevent childhood obesity, changes are necessary for the home and school environments to encourage healthy eating habits and to increase physical activity.

Prevention starts during infancy (Redsell et al., 2010). Breastfeeding has been shown to have a protective effect against childhood obesity (Redsell et al., 2010). It is believed that weight

gain during infancy by children consuming formula comes from the higher protein content of the formula (Redsell et al., 2010). Also, the early introduction of solid foods at younger than four months of age has been shown to have a significant association with overweight or obesity by the age of 3 (Redsell et al., 2010). The baby's temperament was also shown to lead to increased risk for obesity because many mothers would use food to calm down their babies if they got too fussy (Redsell et al., 2010). It has been shown that many parents fail to recognize the signs of overweight or obesity in their children, which results in reduced engagement in childhood obesity interventions (Bentley, Swift, Cook, & Redsell, 2017). Estimates of miscalculation of overweight status in children range from 32% to 79% of mothers who think their children are at the right weight (Moore et al., 2017). Many parents also lack awareness when it comes to the impact of childhood overweight or obesity on a child's health status as well as the child's overall well-being (Bentley et al., 2017). Increasing awareness with parents can help them realize the importance of making changes at home.

Children develop their dietary and activity patterns from the home environment, which can increase or decrease a child's risk for obesity (Moore et al., 2017). Many factors from the family environment can play a role in childhood obesity including purchasing styles, dietary preferences of parents, weight status of parents, the role of family meals, family physical activity, and the knowledge of the parents, among many other factors (Moore et al., 2017). In the early stages of childhood, these children learn lessons from the family environment rather than making decisions about their consumption (Moore et al., 2017). While developing healthy habits is essential to reducing obesity risk in children, the development of bad habits are very hard to reverse once put into place (Moore et al., 2017). Since it is difficult to change these bad habits, it

is important for parents to be knowledgeable about what they can do to prevent these habits from forming.

Increasing parents' knowledge of nutrition helps to reduce the risk of obesity (Moore et al., 2017). Parents who have prior nutrition knowledge tend to provide healthier foods, have children who consume more fruits and vegetables, and have children who consume less food containing fat as well as less fast food (Moore et al., 2017). While increases in knowledge are essential to a healthier lifestyle for children, parents must overcome barriers to help them lead this lifestyle (Moore et al., 2017). Some of these barriers include limited time, lack of cooperation among family members, food preferences of children, and advertisements (Moore et al., 2017). A majority of parents, 97%, found it essential for their child to have a healthy diet, but 44% found it difficult to ensure this occurred (Moore et al., 2017). Promoting increased self-efficacy among parents is vital for encouragement to overcome these barriers (Moore et al., 2017).

School Nutrition and Childhood Obesity

The Child and Adult Care Food Program (CACFP), a U.S. Department of Agriculture (USDA) food program, focuses on promoting the health of infants and children as well as older adults or adults that require some kind of assistance (Murphy, 2011). The program focuses on serving children younger than 12, but it also serves migrant children 15 years of age or younger and children in afterschool programs and shelters who are younger than 18 (Murphy, 2011). CACFP serves almost 3.3 million children across the United States (Murphy, 2011). The program is administered in family or group homes, centers, and independent centers (Murphy, 2011).

The recommendations for meals provided through CACFP are to "increase the variety of fruits and vegetables, increase the proportion of whole grains, and decrease the content of solid fats, added sugars, trans fats, and sodium" (Murphy, 2011). Soft drinks, fruit drinks, and candy are not allowed (Murphy, 2011). Meal components include fluid milk, fruits/vegetables, grains/bread, and meat/meat alternates (Murphy, 2011). Breakfast must include three meal components, lunch and supper must include four meal components, and snacks must include two meal components (Murphy, 2011).

The Healthy, Hunger-Free Kids Act of 2010 (HHFKA) focused on promoting health and wellness in ECE settings through CACFP (USDA, 2016). It required that CACFP meal patterns are up to date with the most recent Dietary Guidelines, updated nutrition science, and relevant recommendations from scientific agencies and organizations (USDA, 2016). One change included separating the combined fruit and vegetable component into separate components at lunch, supper, and snacks (USDA, 2016). Another was to include at least one grain serving per day that is whole-grain rich and preventing grain-based desserts from being used as a grain component (USDA, 2016). These changes were implemented in October 2017 (USDA, 2016).

It has been shown that participating in CACFP promotes children receiving nutritious meals and snacks (Hasnin et al., 2020). Compared to non-CACFP centers, CACFP centers were less likely to serve sugar-sweetened beverages and more likely to serve low-fat or fat-free milk (Cotwright et al., 2019). Serving meals family-style is considered a best practice recommendation among programs participating in CACFP, and it can be a way to help improve consumption of healthy foods that are served due to increased self-regulation of food (Hasnin et al., 2020). Directors from CACFP centers tend to report experiencing fewer barriers to serving healthier foods in the ECE setting as compared to non-CACFP centers (Daniel et al., 2020).

Fewer reported barriers might be due to these centers already serving healthier foods, receiving reimbursements for serving these healthier foods, and receiving nutrition training (Daniel et al., 2020). Overall, CACFP is an important program in helping to prevent obesity among children due to the important nutrition policies that are in place.

Role of Early Care and Education (ECE) Teachers in Reducing Childhood Obesity

ECE teachers are essential for the prevention of childhood obesity. Children are entirely dependent on adults in the home setting and the ECE setting (Natale et al., 2014). Most preschool-aged children in the United States (about 70%) are placed in some sort of care outside of the home, with 50% of four and five-year-olds in center-based care (Farewell, Puma, Powers, & Belansky, 2018a). Children consume anywhere from 50% to 67% of their daily energy intake while in the ECE setting (Dev, McBride, Speirs, Blitch, & Williams, 2016). Early childhood behaviors are learned, which allows the perfect opportunity to influence nutrition choices for a healthier lifestyle early in life (Natale et al., 2014). This establishes the need for ECE teachers to act as role models for these children to promote a healthier lifestyle while they are in their care (Natale et al., 2014). It is important for ECE teachers to understand what specific actions they can take to promote healthier eating of children while in their care.

There are several adverse outcomes for children when certain controlling feeding practices are used by ECE teachers (Dev et al., 2016). These include pressuring a child to eat certain foods, restricting certain foods, encouraging children to clean their plates, and offering food as a reward (Dev et al., 2016). Some of the adverse outcomes associated with these practices include increased consumption of sugar-sweetened beverages, decreased ability to regulate intake, increased likelihood of refusing certain foods, and increased susceptibility for childhood obesity (Dev et al., 2016). However, the use of healthful feeding practices is

associated with positive outcomes for children (Dev et al., 2016). These practices include letting the child decide what and how much they will consume and encouragement for trying new foods through modeling and repeat exposure to the previously unknown food item (Dev et al., 2016). The positive outcomes associated with these practices include increased ability to regulate intake and willingness to try new foods (Dev et al., 2016). Encouraging providers to use healthful feeding practices instead of controlling feeding practices is an essential step in influencing childhood obesity (Dev et al., 2016). It has been shown that the feeding practices exhibited by an ECE teacher can affect a child's dietary intake and eating behaviors (Dev et al., 2016). Also, watching other children have healthy eating practices encourages a child to model the same behavior (Dev et al., 2016).

There are several policy, system, and environment best practices to help with childhood obesity prevention in the preschool setting. For mealtimes, meals should be served family-style, teachers should sit with their students at mealtimes and eat the same foods, and food should not be used to punish or reward students (Farewell, Puma, Powers, & Belansky, 2018b). For food served, there should be a variety of fruits and vegetables available, all grains should be whole-grains, only 4 ounces of 100% juice should be served no more than twice per week, foods that are higher in fat and sugar should be served less than once per week, and water should be easily accessible for students (Farewell et al., 2018b). For outdoor play, students should be led in structured activities by the teacher, two to three play opportunities should be available to students each day, and physical activity should not be used as a punishment or removed due to poor behavior (Farewell et al., 2018b). While all of these might not be feasible depending on the school and the available resources, ECE teachers need to understand that these practices are the gold standard they should strive to implement these in their classrooms.

Role of Training for Early Care and Education (ECE) Teachers

Policy and regulations regarding nutrition are critical ways to influence ECE teachers

(Larson, Ward, Neelon, & Story, 2011). Some key nutrition and physical activity-related items

that states tend to regulate include "water is freely available, sugar-sweetened beverages are

limited, children are not forced to eat, food is not used as a reward, support is provided for

breastfeeding and provision of breast milk, screen time is limited, and physical activity is

required daily" (Larson et al., 2011). There are many variations on regulations from state to state

regarding childhood obesity, and these regulations are updated regularly (Larson et al., 2011).

Many states do not require ECE teachers to receive nutrition training (Deavenport, Kreutzer, &

Rao, 2014). Nutrition education training is essential for ECE teachers since they can influence

child nutrition and impact the childhood obesity epidemic (Deavenport et al., 2014). Research

shows that training ECE teachers about evidence-based nutrition policies and practices can lead

to improvements in nutrition policies and education for the providers and children (Hollar et al.,

2018). About 70% of states in the U.S. require that the topic of nutrition be taught in conjunction

with the health education curriculum, with 83% of school districts requiring it (Story, Nanney, &

Schwartz, 2009). In the School Health Policies and Practices Study, it was found that teachers

from all grade levels wanted more development and training regarding nutrition (Story et al.,

2009). Some providers in ECE centers claimed that they received training regarding the

avoidance of controlling feeding practices (Dev et al., 2016). However, it was generally agreed

upon that more extensive nutrition education is needed (Dev et al., 2016).

Healthy Child Care Georgia

Healthy Child Care Georgia (HCCG) is a program focusing on the prevention of obesity

in the ECE setting using the policy, systems, and environment approach in Georgia (Cotwright et

al., 2017). A policy, systems, and environment approach focuses on three things: "1) the rules governing an organization, 2) the systems that are part of the organization, and 3) the physical environment of the organization" (Cotwright et al., 2017). HCCG aims to improve knowledge and self-efficacy of ECE teachers to implement policies and practices related to the prevention of childhood obesity, nutrition and physical activity education, and the wellness environment (Cotwright et al., 2017). The intervention is grounded in Social Cognitive Theory and applies the principles of reciprocal determinism in regards to the influence of an ECE teacher's behavior influencing both individual characteristics as a teacher and the ECE environment (Cotwright et al., 2017). The theory also focuses on observational modeling such as a child modeling healthy behavior of an ECE teacher (Cotwright et al., 2017). The concept of self-efficacy is also vital for these providers to conduct the intervention in their classrooms (Cotwright et al., 2017). The program includes ECE teacher training, technical assistance, and direct education for ECE teachers classrooms serving children ages three to five (Cotwright et al., 2017). A four-hour training session occurs before implementing the curriculum to present the curriculum and activities in addition to exposure to obesity prevention policies and practices (Cotwright et al., 2017). Guidance is given to ECE providers to develop action plans related to nutrition and physical activity in the classroom (Cotwright et al., 2017). Technical assistance is provided by graduate students who visit the ECE teachers, answer questions, and provide any additional resources that might be requested (Cotwright et al., 2017).

The direct education component is a six-week classroom curriculum called Eat Healthy, Be Active (Cotwright et al., 2017). All materials needed for the intervention are provided for participants and are given to classrooms to keep after the intervention is completed (Cotwright et al., 2017). Five key concepts are covered over the six weeks, including: 1) eating a variety of

foods, 2) being physically active, 3) eating breakfast, 4) stopping eating when full, and 5)

drinking water (Cotwright et al., 2017). Children also have the opportunity to try fruits and

vegetables, both familiar and unfamiliar, each week (Cotwright et al., 2017). There is also a

component to involve families, including educational newsletters, recipes, and activities

(Cotwright et al., 2017). There is a need for an online training component in addition to the face-

to-face training already in place to help with any issues of time, money, and location. An online

training will also allow for possible future expansion of the HCCG program to other parts of

Georgia when face-to-face training may not feasible. Currently, the HCCG program has been

limited to Clarke County and the surrounding counties due to nutrition coaching and weekly

observations that the HCCG team does weekly. This has limited the HCCG cohort sizes to about

four classrooms with approximately twenty-two students in each classroom. In the future, a train-

the-trainer model with FACS agents will help to allow expansion of the program to other parts of

Georgia, and an online training would be vital for this model.

Online Training

Face-to-face training can be expensive and time-consuming (Chlipalski, Quick, Auld, &

Baker, 2018b). Online training overcomes these problems in addition to the issue of location

(Chlipalski et al., 2018b). An online training prevents participants and instructors from having to

drive to a location which might not be within a reasonable distance for them. Online training also

provides consistency, offers easy access for review, saves resources, and saves time for

participants and those leading the training (Chlipalski et al., 2018b). This form of training is

easier to update and allows for faster dissemination (Chlipalski, Baker, Olson, & Auld, 2018a).

Specifically, there is often a great deal of turnover in the ECE setting; therefore, online training

allows new teachers to quickly gain new information in a short amount of time (Hoffman et al.,

2020). Additionally, online training allows for individualized learning through flexibility with when and where the training can be done and accommodations for different learning styles through the ability to include different aspects for auditory, visual, and kinesthetic learners to enhance learning (Gance-Cleveland, Aldrich, Dandreaux, Oetzel, & Schmiege, 2015). Online training should be user-friendly, video-based or offer text with audio, and flexible for users (Chlipalski et al., 2018b).

While there are many advantages of using online training, there are several disadvantages or barriers that must be acknowledged. Those engaging in an online training might feel disconnected or isolated from the lack of face-to-face interaction and discussion (Wasserman & Migdal, 2019). There is also a lack of immediate response if a question arises during the online training, which can be frustrating or result in the issue of not being asked at all (Wasserman & Migdal, 2019). Additionally, computer access and a reliable Internet connection are essential for success of an online training (Chlipalski et al., 2018b). Technological problems could cause frustration, possibly to the point of not completing the training if they are not able to be rectified (Wasserman & Migdal, 2019). The satisfaction of an online training might be reduced if a lack of computer literacy exists, an outdated computer is used, or there is a lack of support to complete the training (Gance-Cleveland et al., 2015). Initial development costs can be high, but the long-term impact outweighs the cost (Chlipalski et al., 2018a).

Methods to assess the trainings include a demographic survey, knowledge assessments, and self-efficacy evaluations (Chlipalski et al., 2018a). The demographic surveys include age, education, primary language, years in the field, and preferences for training type (Chlipalski et al., 2018a). Knowledge assessments include various questions related to the topic and training

(Chlipalski et al., 2018a). Self-efficacy is evaluated through a Likert scale with five possible choices ranging from strongly agree to strongly disagree (Chlipalski et al., 2018a).

In a study conducted with managers to improve their confidence to support the mental health of their team, an online training and face-to-face training were compared (Gayed et al., 2019). The data suggested that both the face-to-face training and the online training effectively increased the confidence of the managers to address mental health issues (Gayed et al., 2019). However, they did have problems with retention and adherence to the program when it came to the online training (Gayed et al., 2019). They mentioned that it is essential to understand the audience and their likelihood of engaging in an online training platform to have the most effectiveness and benefit (Gayed et al., 2019). However, this study suggests that an online training can be as effective as a face-to-face training.

Some existing face-to-face programs such as Nutrition and Physical Activity Self-Assessment for Child Care (NAPSACC), an evidence-based obesity prevention initiative for the ECE setting, were only able to reach about 20% of the current Early Child and Education programs nationwide (Ward, Vaughn, Mazzucca, & Burney, 2017). This is exacerbated in rural areas as well due to transportation and lack of personnel available (Ward et al., 2017). Go NAPSACC, the online format of NAPSACC, was found to be effective in improving nutrition environments and was feasible (Ward et al., 2017). The online program helped overcome the barriers of both time and resources needed by the regular NAPSACC program (Ward et al., 2017). It also allowed for the expansion of the program to areas not previously reached (Ward et al., 2017). With another online continuing education training covering childhood obesity for health care providers, satisfaction with the online training was high, and their intentions to

change parts of their practice in relation to aspects of the training increased after viewing the training (Gance-Cleveland et al., 2015).

Rationale

ECE teachers can have an impact on the prevention of childhood obesity in their classrooms. Childhood obesity is on the rise, with 17% of children ages 2 to 19 who are obese (Rouse et al., 2019). There are several consequences of childhood obesity, including developing cardiovascular disease or type 2 diabetes (Ickes et al., 2014; Umer et al., 2017). With a majority of the preschool-age population in some sort of care outside of the home, more children can be impacted by a teacher acting as a role model to promote healthy eating and physical activity (Natale et al., 2014). With this opportunity for teachers to serve as role models, they must receive proper training on ways to implement best practices related to obesity prevention in their classrooms.

Previous studies have shown that online trainings are a useful and feasible tool in training and can be an effective alternative to a face-to-face training. It was found that online trainings can reach those populations where transportation might be an issue as well as overcoming the barriers of time and resources (Ward et al., 2017). It was also found that an online training can be comparable to a face-to-face training (Gayed et al., 2019). However, it is essential to note that there can be issues related to retention and adherence when online trainings are used (Gayed et al., 2019).

The rationale for this study was that using an online training not only allows for flexibility with busy schedules of ECE teachers and training facilitators, but it also allows for the training to be given in locations where face-to-face training might not be feasible. The study was significant in that it shows the efficacy and feasibility of online trainings for nutrition education

purposes with ECE providers. This study contained critical evidence as to whether or not online

nutrition education trainings can be used in future nutrition education interventions. The research

team was qualified to conduct the research because of combined expertise in nutrition education

(Cotwright and Bales) and online trainings and education (Bales and Harrison).

Hypothesis and Specific Aims

The central hypothesis is that an online training for ECE teachers enrolled in the HCCG

intervention will be an effective means of training as compared to the face-to-face HCCG

training.

The specific aims of this study are to:

1. Determine the feasibility of an online nutrition education training for ECE teachers

   through formative evaluation.

2. Determine the effectiveness of the online training when compared to the face-to-face

   training indicated by changes in knowledge and intentions to provide nutrition education

   in the classroom.

CHAPTER 3

METHODOLOGY

Study Design

The study design included the development and implementation of an online nutrition training for ECE teachers adapted from the HCCG program. It was a quasi-experimental pre-test/post-test design. A convenience sample was used. The feasibility of the online training was determined through a survey given after completion of the online training. This study examined an increase in knowledge and intentions for increasing nutrition education in the classroom through a pre- and post-test with both face-to-face and online trainings.

IRB Approval

All methods and procedures were approved by the University of Georgia Institutional Review Board on Human Subjects before any procedures with human subjects were initiated.

Study Sample and Recruitment

Participants were between the ages of 20 and 65. Participants were recruited from ECE teachers enrolled in the fall 2019 and spring 2020 cohorts of the HCCG intervention and a convenience sample of ECE teachers from Head Start and Pre-K programs in Georgia. The ECE teachers from the fall 2019 and spring 2020 HCCG cohorts were assigned to the face-to-face training condition (N=8). For recruitment for the online training, flyers were sent out to ECE programs in Georgia via the UGA Extension network with information about how to participate (Appendix F and G). Teachers who desired to participate could either email or text a designated Simple Text number to receive more information about the training. Simple Text is a program

that sent the eligibility survey link when participants would text the designated Simple Text

number with the keyword HCCG. Simple Text also allows for the creation contact lists and to

text a large group of people without using a personal phone number. It also allows for replying to

individuals if they text a question.

Teachers that signed up were sent a link to an eligibility survey. The inclusion criteria for

the online training were that participants must have access to a computer and reliable internet, be

a teacher for children aged 3 to 5, and have no previous exposure to HCCG. Eligible teachers

received a link for the training online. These ECE teachers were assigned to the online training

condition (N=73).

Online Training Development

The content from the face-to-face HCCG training guided content for the online training.

An instructional designer was hired to assist with the development of the online training.

Articulate 360 was used, and it allowed for the creation of interactive content for online learning

and is a training development tool. Articulate Online was the learning management system that

housed the training. It allowed for participants to take the training and for researchers to track

participation such as how long someone took to complete the training. The training included

interactive knowledge checks to engage participants. The training consisted of text as well as

audio to help those who are both auditory and visual learners. For the development of the online

training, the key components of the face-to-face training were translated to include background

on childhood obesity, obesity prevention best practices, and information about the EHBA

curriculum. The online training included four modules that were about fifteen minutes each so

that the training would be around one hour. The modules were on childhood obesity, EHBA,

obesity prevention best practices, and resources and technical assistance. With the EHBA

module, six videos lasting about three- to five-minutes each of some of the activities were included to allow the ECE teachers to visualize the activities. These videos were filmed with local ECE teachers. Twelve lesson plans were included for those activities that did not have a video (Appendix E).

Information about wellness best practices and obesity prevention were reinforced through knowledge checks in the online format. Core components included training on obesity prevention best practices in the ECE setting and activities from the EHBA curriculum. An internal laboratory beta-testing of the online training was conducted before being sent to the participants. The online training was disseminated and analyzed through surveys and compared to the face-to-face training. A pre-test was administered to participants in both the online and face-to-face training conditions to measure knowledge of obesity prevention and wellness best practices taught during the training. Intentions to increase the quality and quantity of nutrition education in the classroom were also measured. After the training, knowledge and intentions to change were measured via a post-test.

The online training participants were asked to complete a feasibility and acceptability survey to assess the use of the online format for the training. There were incentives for participants that completed the online training and surveys. There was a $50 e-gift card drawing for completing the eligibility survey. The first 50 people that completed all components of the study (pre-test, online training, and post-test) received a $15 e-gift card, and participants who completed all study components were eligible for a second $50 e-gift card drawing. All participants who completed all parts also received a Certificate of Completion.

Intervention

        The face-to-face training was conducted in two phases. The first took place in October 2019 with the fall 2019 cohort of HCCG. There were four teachers involved in the training. HCCG cohorts are small due to available resources, including the budget and HCCG team members, and nutrition coaching provided to teachers. HCCG cohorts are typically limited to about four classrooms with approximately twenty-two children in each classroom. Participants were administered the pre-test survey before the training began. The training lasted about three hours, and it included a PowerPoint and demonstration of the EHBA games and activities. A video was used to demonstrate one of the activities involving the MyPlate large mat that teachers receive. There was discussion about various topics, and the teachers completed action planning with assistance from the training leaders. The lead researchers led the training with support from the program assistant and two graduate students, including myself. The post-test was given at the end of the training. The second training took place in January 2020 with the spring 2020 cohort of HCCG. Four teachers attended in total. The same procedures were followed for participants in the second training.

        The three components of the online training were sent out to all eligible participants. The pre-test survey link used an authenticator, which only allowed for people who completed the eligibility survey to complete the pre-test. The authenticator also enabled participant identification. The pre-test was placed at the beginning of the training and had to be completed before the teachers could start the training. After they finished the pre-test, they were automatically directed to the online training via a link. After completing the online training, they were automatically directed to the post-test. The post-test, which included the feasibility survey, also used an online authenticator. Participants who experienced any technical issues were

provided an email address for the UGA Childhood Obesity Prevention Laboratory. ECE teachers were given a period of two weeks to complete all study components to be eligible for incentives.

Measures

A pre- and post-test survey examined changes in knowledge and intentions to 1) increase nutrition education, and 2) improve the wellness environment in the classroom. A feasibility and acceptability survey was conducted to gain participant feedback on the online training experience related to mediators and challenges for program completion.

An eligibility survey was first used to determine if potential participants were eligible to participate in the online training (Appendix A). This included demographic information to help compare the online training group to the face-to-face training group. The face-to-face training group had a similar survey to gather demographic data (Appendix B).

The pre- and post-test surveys to examine knowledge and intentions were created from best practices for obesity prevention (Appendix C). The knowledge survey was adapted from a previously validated survey. The pre- and post-tests were identical. The knowledge portion of the survey included ten multiple-choice questions that either had one or multiple answers, as indicated with the question. Knowledge was assessed by calculating a composite knowledge score from all the possible correct answers an individual could achieve. The survey included questions on material included in the training. The highest knowledge score that could be achieved was 22. The intentions to change portion of the survey included seven statements asking how likely the teacher was to change a behavior, which was evaluated through a Likert scale. The Likert scale went from 1 to 5. One point indicated that the individual was "extremely unlikely" to change the behavior. The highest score of five points indicated that the individual was "extremely likely" to change the behavior. The seven statements that assessed intentions to

change included: increase availability of water access, limit 100% fruit juice to 4-6 oz per day, never offer sugar-sweetened beverages, only serve 1% or non-fat milk, serve meals family-style, allow for at least 120 minutes of physical activity both indoor and outdoor, and limit screen time to no more than 30 minutes per week.

The feasibility survey was only used for the online training, and it was completed after all parts of the online training had been finished (Appendix D). There were ten questions in total. Six of the questions were answered using a Likert scale. Ease of use of the training was evaluated with the question: "Did you find this training easy to use?" It used a 5-point Likert scale with 1 indicating not easy and 5 indicating very easy. Satisfaction of the training was determined using the question: "How satisfied were you with this training?" It used a 5-point Likert scale with 1 indicating not satisfied and 5 indicating very satisfied. Engagement of the training was determined using the question: "How engaging was the training?" It used a 5-point Likert scale with 1 indicating very un-engaging and 5 indicating very engaging. Relevance of the training was determined using the statement: "The topics covered were relevant to you." It used a 5-point Likert scale with 1 indicating not relevant and 5 indicating very relevant. Organization of the training was determined using the statement: "The content was organized and easy to follow." It used a 5-point Likert scale with 1 indicating strongly disagree and 5 indicating strongly agree. Usefulness of the training was determined using the statement: "This information will be useful." It used a 5-point Likert scale with 1 indicating strongly disagree and 5 indicating strongly agree. To determine if the length of the training was satisfactory, the multiple-choice question "Was the length satisfactory?" was asked. Answer choices included too short, just right, and too long. The open-ended questions included: "What did you like best about this online

training," "How can this online training be improved," and "Do you have any additional comments."

Statistical Analysis

Based on data from similar studies (Ward et al., 2017), standard deviations for changes in nutrition environment scores and intentions to increase nutrition education and improve the wellness environment were estimated (Lyn, Maalouf, Evers, Davis, & Griffin, 2013) in the classroom. A power calculation was performed to determine sample size using the G*Power Program, using standard deviations and expected mean differences between the intervention (online) and control (face-to-face) groups. To achieve a power of .80 with an alpha of .05, detecting a medium effect size, a sample size of 76 per group (face-to-face or online) was needed. Previous studies from Ward et al. and Lyn et al. showed a retention rate of 93-95%. The estimated attrition rate for the proposed study was, therefore, 5%. Based on these calculations, and accounting for an attrition rate of 5%, a sample size of 152 + (.05 x 152) = 160 people (80 people in each group) was needed to preserve power. However, this study did not reach the recommended 80 people per group from the power analysis due to the use of a convenience sample.

Percentages were used to report demographic data to show similar characteristics among the groups. For all data analyses, SPSS was used (version 24.0.0, Chicago, IL). A paired t-test was used to assess changes in knowledge with the face-to-face training group. A sign test was used to examine changes in the intention to increase nutrition education and improve the classroom's wellness environment as well as for changes in knowledge for the online training group. An ANCOVA test was used to compare the changes in the knowledge scores between the face-to-face and online training groups. The Mann-Whitney U test was used to compare the

differences in the intentions to change scores between the face-to-face and online training

groups. Measures of feasibility and acceptability of the training are reported as percentages and

means. Any previous exposure to other obesity prevention methods will be shown at baseline by

any high pre-test scores.

CHAPTER 4

RESULTS

Participant Demographics

For the face-to-face training, there were eight participants from the Fall 2019 and Spring 2020 cohorts of HCCG in a small rural county in Georgia. One-hundred percent of the ECE teachers were female and were employed for 40 or more hours per week. The ages of the ECE teachers were 21-29 (12.5%), 30-39 (25%), 40-49 (25%), and 50-59 (37.5%). Most (75%) had a graduate degree, while the rest (25%) had a bachelor's degree. Only two races or ethnicities were represented, including White/Caucasian (62.5%) and Black/African-American (37.5%). Income level varied and included $25,000-$49,999 (25%), $50,000-$74,999 (50%), and $75,000-$99,999 (25%). Most (75%) had been working in the ECE setting for ten or more years, while 12.5% had been working 1-3 years, and another 12.5% had been working 6-9 years (Table 1).

For the online training, two-hundred and four teachers completed the eligibility survey, and 147 teachers completed the pre-test from several different counties throughout Georgia. Only 73 participants completed all components of the training. Thirty-five point eight percent of people who took the eligibility survey completed all components of the training, and 49.7% of those who took the pre-test completed all components. Most (90.4%) were employed for 40 or more hours per week. Most (78.6%) identified as female while one participant preferred not to answer. The ages of the participants were 21-29 (6.8%), 30-39 (42.5%), 40-49 (24.7%), 50-59 (20.5%), and 60 or older (5.5%). Most had a bachelor degree (42.5%) or a graduate degree (38.4%). Most were White/Caucasian (53.4%) or Black/African-American (38.4%), and other

races or ethnicities including Asian (1.4%), Spanish/Hispanic/Latino (1.4%), and multiple races

(4.1%) were also represented. Income levels varied with most being $25,000 or higher. Most

have been working in the ECE setting for 10+ years (57.5%). Two people responded that they

did not work in the child care setting which could stem from lack of understanding that the child

care setting and ECE setting are the same (Table 1).

Table 1. Demographic Data from Participants in the HCCG Face-to-Face and Online Trainings			
Characteristic	Category	Face-to-Face (n [%])	Online (n [%])
Gender	Male	0 (0%)	0 (0%)
	Female	8 (100%)	72 (98.6%)
	Prefer not to answer	0 (0%)	1 (1.3%)
Age	18-20	0 (0%)	0 (0%)
	21-29	1 (12.5%)	5 (6.8%)
	30-39	2 (25%)	31 (42.5%)
	40-49	2 (25%)	18 (24.7%)
	50-59	3 (37.5%)	15 (20.5%)
	60 or older	0 (0%)	4 (5.5%)
Education	High school graduate/GED	0 (0%)	1 (1.4%)
	Some college	0 (0%)	1 (1.4%)
	Associate degree	0 (0%)	5 (6.8%)
	Bachelor degree	2 (25%)	31 (42.5%)
	Some postgrad work	0 (0%)	7 (9.6%)
	Graduate degree	6 (75%)	28 (38.4%)
Employment Status	Employed, working 40 or more hours per week	8 (100%)	66 (90.4%)
	Employed, working 1-39 hours per week	0 (0%)	4 (5.5%)
	Not employed, looking for work	0 (0%)	1 (1.4%)
	Not employed, NOT looking for work	0 (0%)	2 (2.7%)
	Retired	0 (0%)	0 (0%)
	Disabled, not able to work	0 (0%)	0 (0%)
Income Level	$0-$9,999	0 (0%)	1 (1.4%)
	$10,000-$24,999	0 (0%)	4 (5.5%)
	$25,000-$49,999	2 (25%)	24 (32.9%)
	$50,000-$74,999	4 (50%)	17 (23.3%)
	$75,000-$99,999	2 (25%)	10 (13.7%)
	$100,000 and above	0 (0%)	15 (20.5%)
	No response	0 (0%)	2 (2.7%)
Race/Ethnicity	White/Caucasian	5 (62.5%)	39 (53.4%)
	Black or African-American	3 (37.5%)	28 (38.4%)

|			
	Asian	0 (0%)	1 (1.4%)
	American Indian or Alaska Native	0 (0%)	0 (0%)
	Native Hawaiian or Pacific Islander	0 (0%)	0 (0%)
	Spanish/Hispanic/Latino	0 (0%)	1 (1.4%)
	Multiple races	0 (0%)	3 (4.1%)
	No response	0 (0%)	1 (1.4%)
Years in ECE Setting	1-3 years	1 (12.5%)	5 (6.8%)
	3-5 years	0 (0%)	8 (10.9%)
	6-9 years	1 (12.5%)	16 (21.9%)
	10+ years	6 (75%)	42 (57.5%)
	I do not work in the child care setting.	0 (0%)	2 (2.7%)

Findings from the Pre- and Post-test Knowledge Survey

The Shapiro Wilk test for normality showed that the change in knowledge from pre- to post-survey was normally distributed (p=.282) for the face-to-face training results. A paired t-test was used to assess the difference between the pre- and post-survey scores. The scores increased from a mean of 17.000 (SD=2.14) to a mean of 18.875 (SD=1.81). However, there was no significant change between pre- and post-survey scores (t[7]=1.691, p=.135).
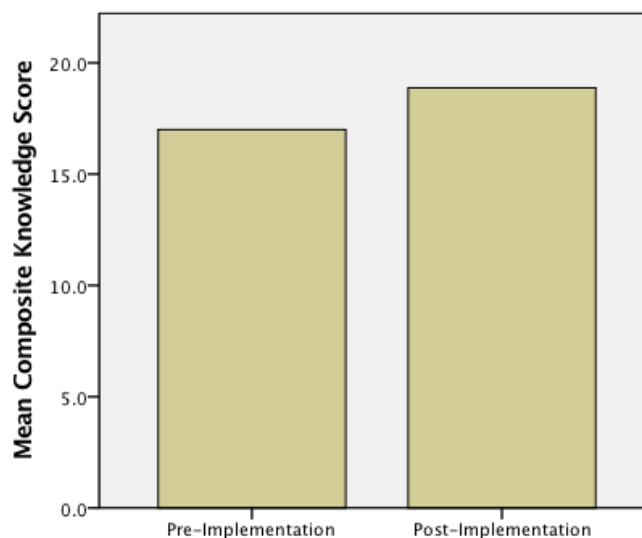
Figure 1. Changes in Mean Composite Knowledge Score for Face-to-Face Nutrition Training

for ECE Teachers

The Shapiro Wilk test for normality showed that the change in knowledge from pre- to post-survey was not normally distributed (p=.026) for the online training results. A sign test was used to assess the difference between the pre- and post-survey scores. There was a significant change between pre- and post-survey scores (p < .001). The scores increased from a mean of 16.630 (SD=2.06) to a mean of 19.700 (SD=1.88).
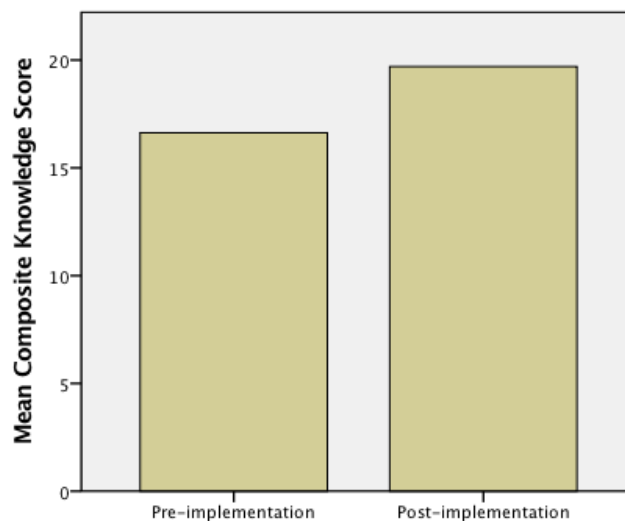

Figure 2. Changes in Mean Composite Knowledge Score for Online Nutrition Training for ECE Teachers

**Findings from the Pre- and Post-test Intentions to Change Survey**

Face-to-Face Training Results

For the first question (increase availability of water access), 12.5% (1) scored a 2, 37.5% (3) scored a 4, and 50% (4) scored a 5 on the pre-test. On the post-test, 12.5% (1) scored a 4 and 87.5% (7) scored a 5 (Table 2, Figure 3). There was a trend towards an increase in intentions to change from pre- to post-test. A non-parametric test was used because the data are ordinal. The sign test showed that the difference in scores was not significant (p=.250).
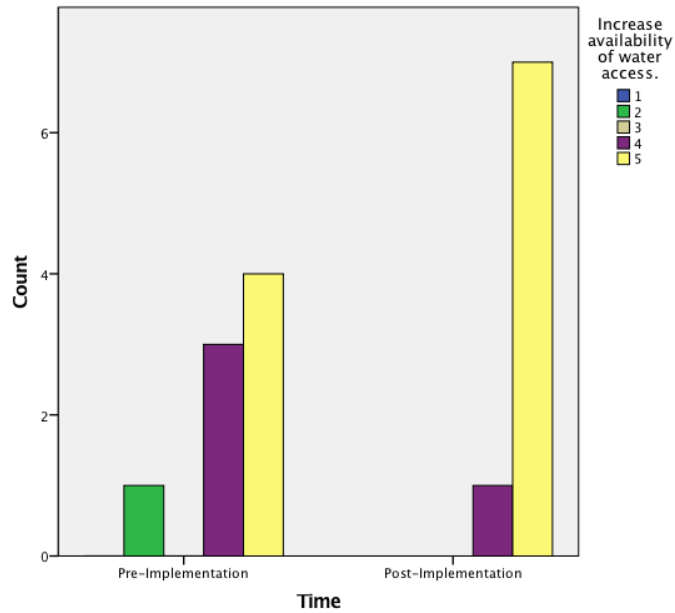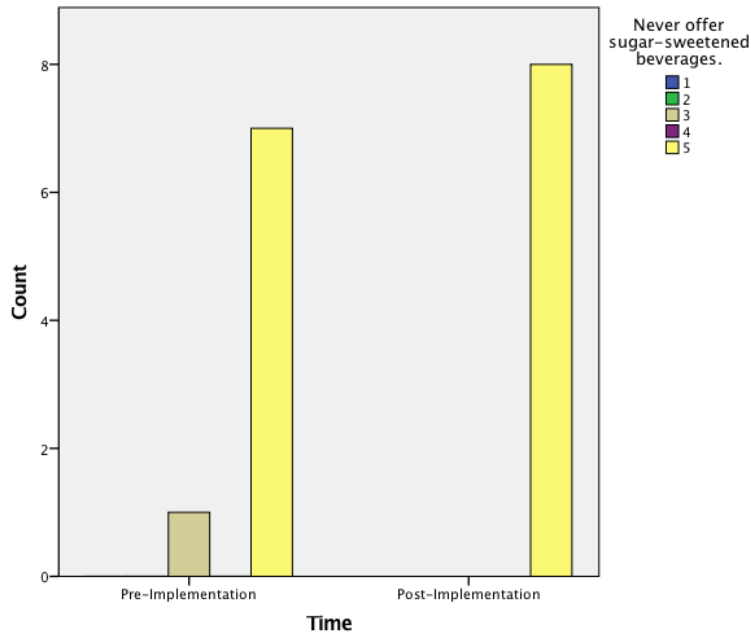
Figure 3. Face-to-Face Intentions to Change Scores for "Increase availability of water access"

in Nutrition Training for ECE Teachers

For the second question (limit 100% fruit juice to 4-6 oz per day), 12.5% (1) scored a 2, 12.5% (1) scored a 4, and 75% (6) scored a 5 on the pre-test. On the post-test, 100% (8) scored a 5 (Table 2, Figure 4). There was a trend towards an increase in intentions to change from pre- to post-test. A non-parametric test was used because the data are ordinal. The sign test showed that the difference in scores was not significant (p=.500).
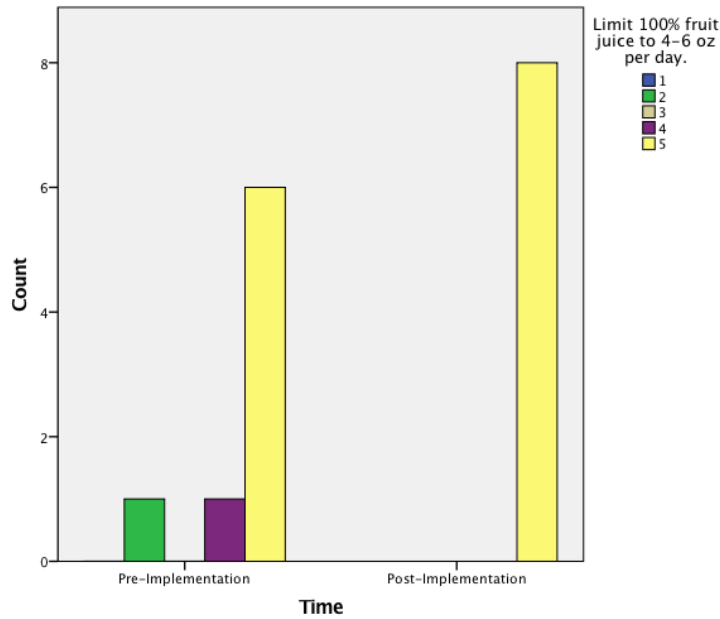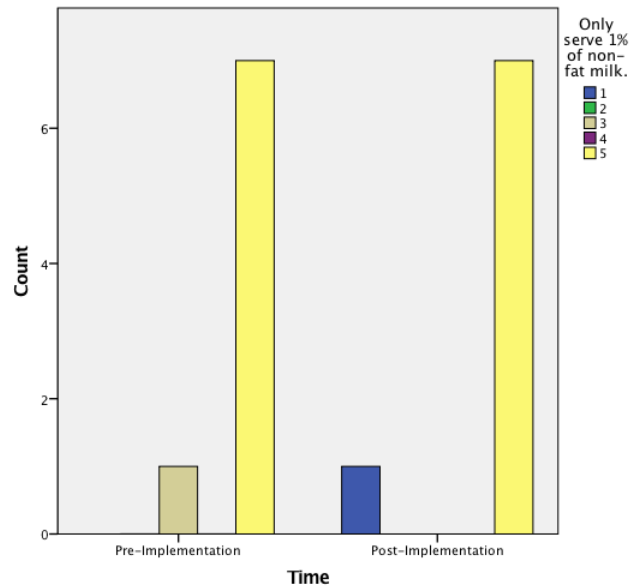
Figure 4. Face-to-Face Intentions to Change Scores for "Limit 100% fruit juice to 4-6 oz per day" in Nutrition Training for ECE Teachers

For the third question (never offer sugar-sweetened beverages), 12.5% (1) scored a 3, and 87.5% (7) scored a 5 on the pre-test. On the post-test, 100% (8) scored a 5 (Table 2, Figure 5). There was a trend towards an increase in intentions to change from pre- to post-test. A non-parametric test was used because the data are ordinal. The sign test showed that the difference in scores was not significant (p=1.000).
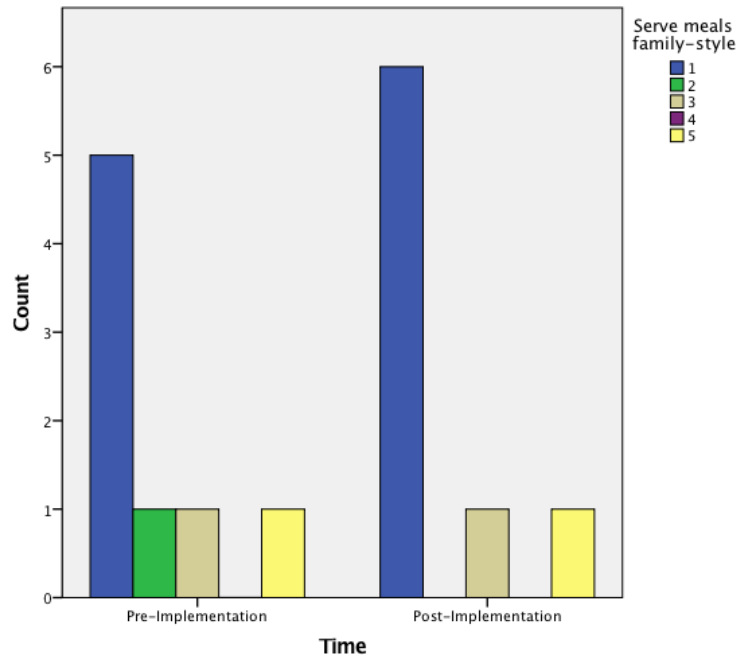
Figure 5. Face-to-Face Intentions to Change Scores for "Never offer sugar-sweetened beverages" in Nutrition Training for ECE Teachers

For the fourth question (only serve 1% or non-fat milk), 12.5% (1) scored a 3, and 87.5% (7) scored a 5 on the pre-test. On the post-test, 12.5% (1) scored a 1 and 87.5% (7) scored a 5 (Table 2, Figure 6). There was a trend towards a decrease in intentions to change from pre- to post-test. A non-parametric test was used because the data are ordinal. The sign test showed that the difference in scores was not significant (p=1.000).
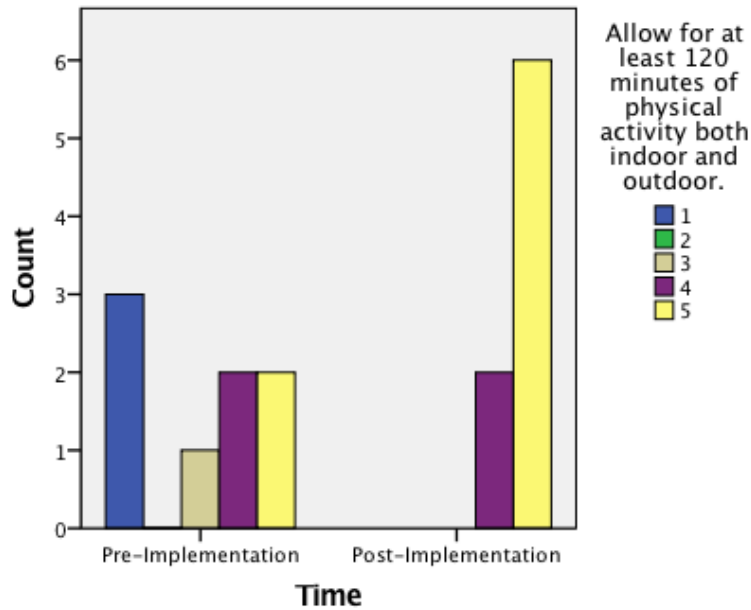
Figure 6. Face-to-Face Intentions to Change Scores for "Only serve 1% or non-fat milk" in

Nutrition Training for ECE Teachers

For the fifth question (serve meals family-style), 62.5% (5) scored a 1, 12.5% (1) scored a 2, 12.5% (1) scored a 3, and 12.5% (1) scored a 5 on the pre-test. On the post-test, 75% (6) scored a 1, 12.5% (1) scored a 3, and 12.5% (1) scored a 5 (Table 2, Figure 7). There was a trend towards a decrease in intentions to change from pre- to post-test. A non-parametric test was used because the data are ordinal. The sign test showed that the difference in scores was not significant (p=1.000).
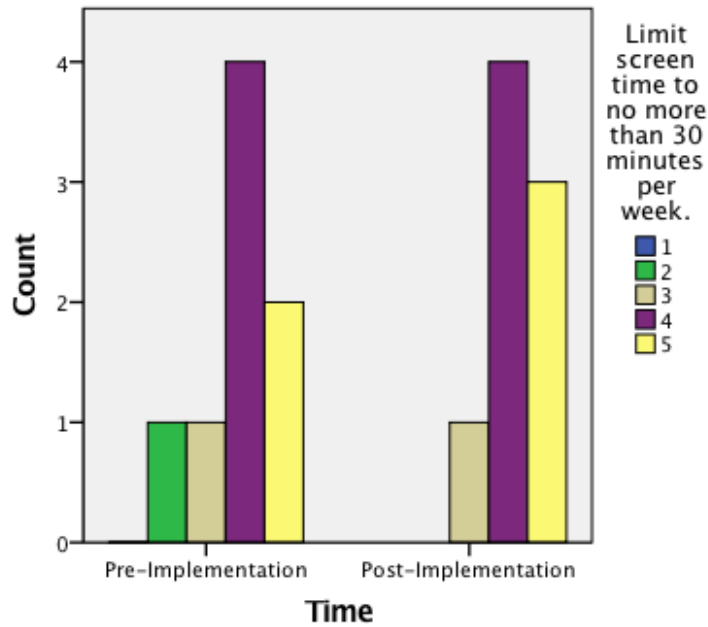
Figure 7. Face-to-Face Intentions to Change Scores for "Serve meals family-style" in Nutrition Training for ECE Teachers

For the sixth question (allow for at least 120 minutes of physical activity both indoor and outdoor), 37.5% (3) scored a 1, 12.5% (1) scored a 3, 25% (2) scored a 4, and 25% (2) scored a 5 on the pre-test. On the post-test, 25% (2) scored a 4, and 75% (6) scored a 5 (Table 2, Figure 8). There was a trend towards an increase in intentions to change from pre- to post-test. A non-parametric test was used because the data are ordinal. The sign test showed that the difference in scores was not significant (p=.062).

Figure 8. Face-to-Face Intentions to Change Scores for "Allow for at least 120 minutes of physical activity both indoor and outdoor" in Nutrition Training for ECE Teachers

For the seventh question (limit screen time to no more than 30 minutes per week), 12.5% (1) scored a 2, 12.5% (1) scored a 3, 50% (4) scored a 4, and 25% (2) scored a 5 on the pre-test. On the post-test, 12.5% (1) scored a 3, 50% (4) scored a 4, and 37.5% (3) scored a 5 (Table 2, Figure 9). There was a trend towards an increase in intentions to change from pre- to post-test. A non-parametric test was used because the data are ordinal. The sign test showed that the difference in scores was not significant (p=1.000).
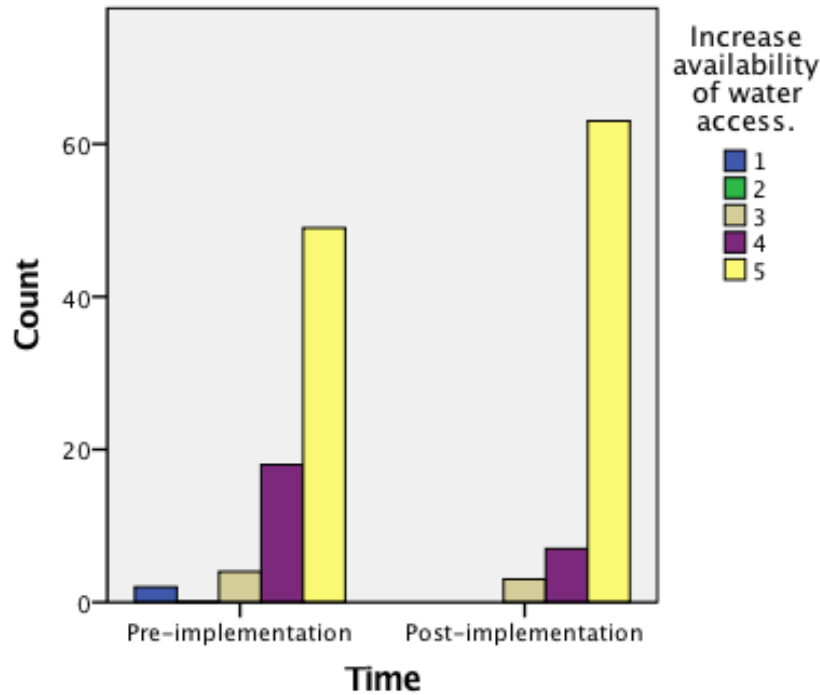
Figure 9. Face-to-Face Intentions to Change Scores for "Limit screen time to no more than 30 minutes per week" in Nutrition Training for ECE Teachers

Online Training Results

For the first question (increase availability of water access), 2.7% (2) scored a 1, 5.5% (4) scored a 3, 24.7% (18) scored a 4, and 67.1% (49) scored a 5 on the pre-test. On the post-test, 4.1% (3) scored a 3, 9.6% (7) scored a 4, and 86.3% (63) scored a 5 (Table 2, Figure 10). A non-parametric test was used because the data are ordinal. The sign test showed that the change was significant (p=.004). There was a significant increase in intentions to change from pre- to post-test.
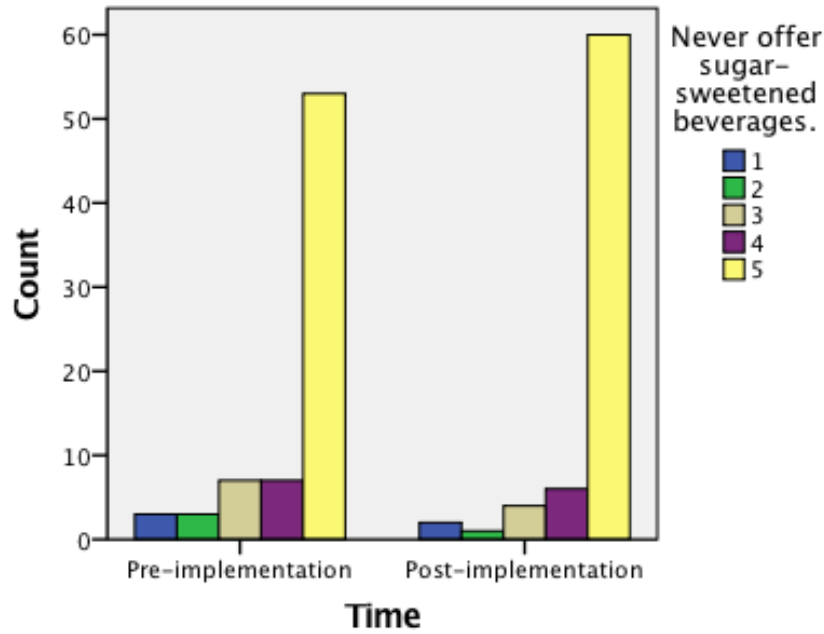
Figure 10. Online Intentions to Change Scores for "Increase availability of water access" in Nutrition Training for ECE Teachers

For the second question (limit 100% fruit juice to 4-6 oz per day), 1.4% (1) scored a 1, 2.7% (2) scored a 2, 16.4% (12) scored a 3), 32.9% (24) scored a 4, and 46.6% (34) scored a 5 on the pre-test. On the post-test, 8.2% (6) scored a 3, 16.4% (12) scored a 4, and 75.3% (55) scored a 5 (Table 2, Figure 11). A non-parametric test was used because the data are ordinal. The sign test showed that the change was significant (p<.001). There was a significant increase in intentions to change from pre- to post-test.
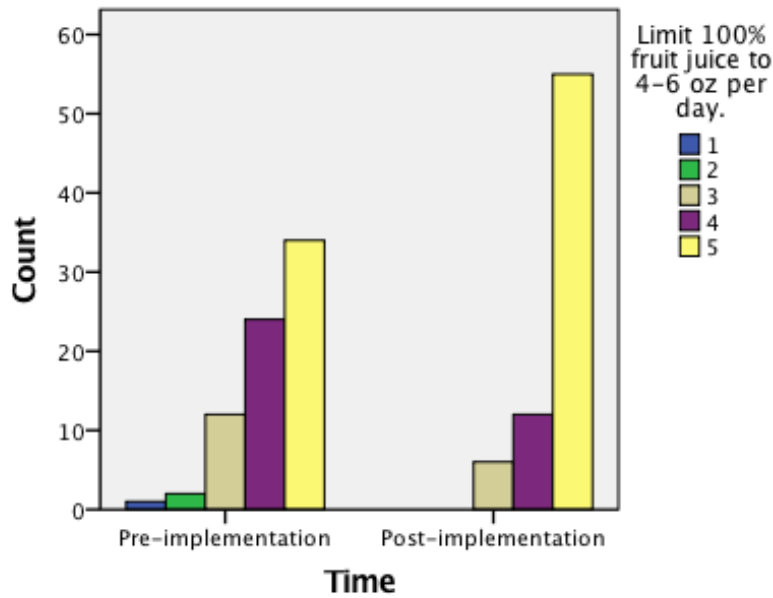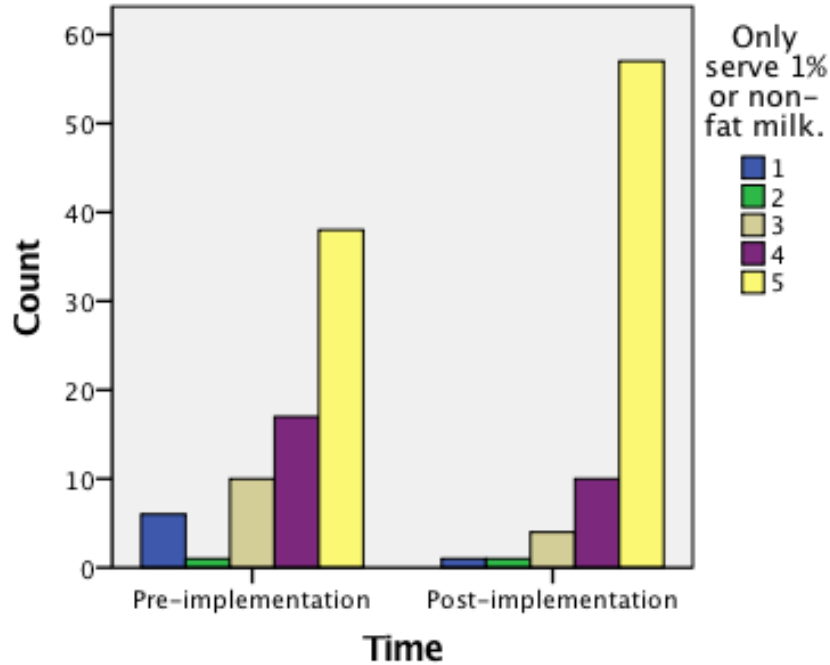
Figure 11. Online Intentions to Change Scores for "Limit 100% fruit juice to 4-6 oz per day" in

Nutrition Training for ECE Teachers

For the third question (never offer sugar-sweetened beverages), 4.1% (3) scored a 1,

4.1% (3) scored a 2, 9.6% (7) scored a 3, 9.6% (7) scored a 4), and 72.6% (53) scored a 5 on the

pre-test. On the post-test, 2.7% (2) scored a 1, 1.4% (1) scored a 2, 5.5% (4) scored a 3, 8.2% (6)

scored a 4, and 82.2% (60) scored a 5 (Table 2, Figure 12). There was a trend towards an

increase in intentions to change from pre- to post-test. A non-parametric test was used because

the data are ordinal. However, the sign test showed that the change was not significant (p=.052).
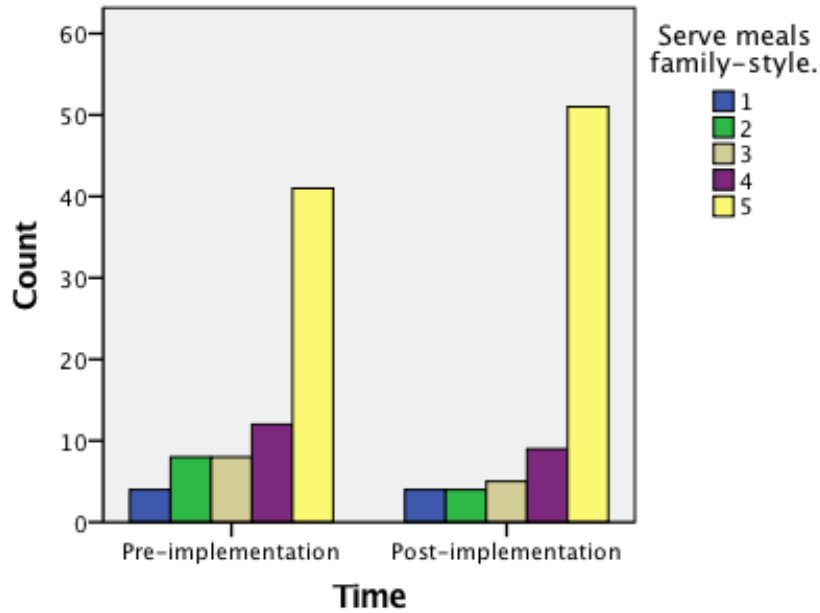
Figure 12. Online Intentions to Change Scores for "Never offer sugar-sweetened beverages" in Nutrition Training for ECE Teachers

For the fourth question (only serve 1% or non-fat milk), 8.3% (6) scored a 1, 1.4% (1) scored a 2, 13.9% (10) scored a 3, 23.6% (17) scored a 4, and 52.8% (38) scored a 5 on the pre-test. On the post-test, 1.4% (1) scored a 1, 1.4% (1) scored a 2, 5.5% (4) scored a 3, 13.7% (10) scored a 4, and 78.1% (57) scored a 5 (Table 2, Figure 13). A non-parametric test was used because the data are ordinal. The sign test showed that the change was significant (<.001). There was a significant increase in intentions to change from pre- to post-test.
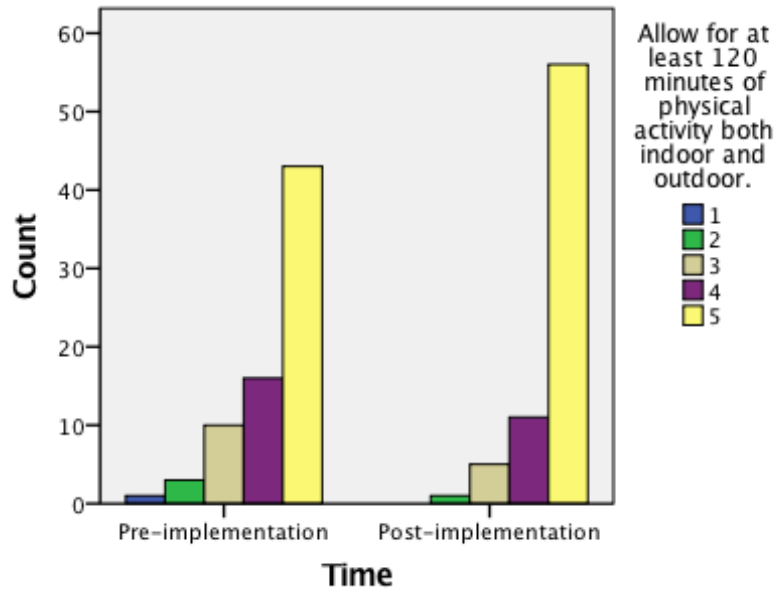
Figure 13. Online Intentions to Change Scores for "Only serve 1% or non-fat milk" in Nutrition

Training for ECE Teachers

For the fifth question (serve meals family-style), 5.5% (4) scored a 1, 11.0% (8) scored a 2, 11.0% (8) scored a 3, and 16.4% (12) scored a 4, and 56.2% (41) scored a 5 on the pre-test. On the post-test, 5.5% (4) scored a 1, 5.5% (4) scored a 2, 6.8% (5) scored a 3, 12.3% (9) scored a 4, and 69.9% (51) scored a 5 (Table 2, Figure 14). A non-parametric test was used because the data are ordinal. The sign test showed that the change was significant (p=.011). There was a significant increase in intentions to change from pre- to post-test.

Figure 14. Online Intentions to Change Scores for "Serve meals family-style" in Nutrition

Training for ECE Teachers

For the sixth question (allow for at least 120 minutes of physical activity both indoor and outdoor), 1.4% (1) scored a 1, 4.1% (3) scored a 2, 13.7% (10) scored a 3, 21.9% (16) scored a 4, and 58.9% (43) scored a 5 on the pre-test. On the post-test, 1.4% (1) scored a 2, 6.8% (5) scored a 3, 15.1% (11) scored a 4, and 76.7% (56) scored a 5 (Table 2, Figure 15). A non-parametric test was used because the data are ordinal. The sign test showed that the change was significant (p=.001). There was a significant increase in intentions to change from pre- to post-test.

Figure 15. Online Intentions to Change Scores for "Allow for at least 120 minutes of physical

activity both indoor and outdoor" in Nutrition Training for ECE Teachers

For the seventh question (limit screen time to no more than 30 minutes per week), 2.7% (2) scored a 1, 5.5% (4) scored a 2, 16.4% (12) scored a 3, 21.9% (16) scored a 4, and 53.4% (39) scored a 5 on the pre-test. On the post-test, 1.4% (1) scored a 2, 11.0% (8) scored a 3, 15.1% (11) scored a 4, and 72.6% (53) scored a 5 (Table 2, Figure 16). A non-parametric test was used because the data are ordinal. The sign test showed that the change was significant ($p<.001$). There was a significant increase in intentions to change from pre- to post-test.
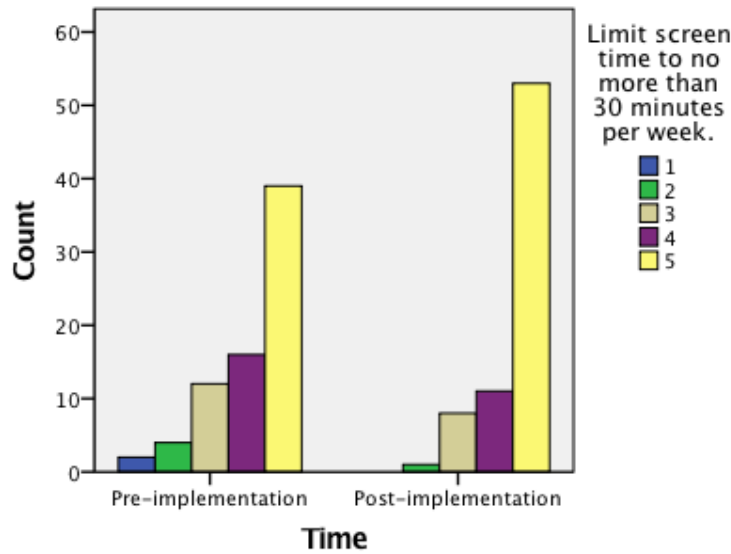
Figure 16. Online Intentions to Change Scores for "Limit screen time to no more than 30

minutes per week" in Nutrition Training for ECE Teachers

Table 2. Face-to-Face and Online Trainings Intentions to Change Frequency Chart				
Likert Scale	Face-to-Face Pre-Test (n=8)	Face-to-Face Post-Test (n=8)	Online Pre-Test (n=73)	Online Post-Test (n=73)
Increase availability of water access.				
1 (extremely unlikely)	0% (0)	0% (0)	2.7% (2)	0% (0)
2 (moderately unlikely)	12.5% (1)	0% (0)	0% (0)	0% (0)
3 (neither likely or unlikely)	0% (0)	0% (0)	5.5% (4)	4.1% (3)
4 (moderately likely)	37.5% (3)	12.5% (1)	24.7% (18)	9.6% (7)
5 (extremely likely)	50% (4)	87.5% (7)	67.1% (49)	86.3% (63)
Limit 100% fruit juice to 4-6 oz per day.				
1 (extremely unlikely)	0% (0)	0% (0)	1.4% (1)	0% (0)
2 (moderately unlikely)	12.5% (1)	0% (0)	2.7% (2)	0% (0)
3 (neither likely or unlikely)	0% (0)	0% (0)	16.4% (12)	8.2% (6)
4 (moderately likely)	12.5% (1)	0% (0)	32.9% (24)	16.4% (12)
5 (extremely likely)	75% (6)	100% (8)	46.6% (34)	75.3% (55)
Never offer sugar-sweetened beverages.				
1 (extremely unlikely)	0% (0)	0% (0)	4.1% (3)	2.7% (2)
2 (moderately unlikely)	0% (0)	0% (0)	4.1% (3)	1.4% (1)
3 (neither likely or unlikely)	12.5% (1)	0% (0)	9.6% (7)	5.5% (4)
4 (moderately likely)	0% (0)	0% (0)	9.6% (7)	8.2% (6)
5 (extremely likely)	87.5% (7)	100% (8)	72.6% (53)	82.2% (60)
Only serve 1% or non-fat milk.				
1 (extremely unlikely)	0% (0)	12.5% (1)	8.3% (6)	1.4% (1)
2 (moderately unlikely)	0% (0)	0% (0)	1.4% (1)	1.4% (1)
3 (neither likely or unlikely)	12.5% (1)	0% (0)	13.9% (10)	5.5% (4)
4 (moderately likely)	0% (0)	0% (0)	23.6% (17)	13.7% (10)

5 (extremely likely)	87.5% (7)	87.5% (7)	52.8% (38)	78.1% (57)
Serve meals family-style.				
1 (extremely unlikely)	62.5% (5)	75% (6)	5.5% (4)	5.5% (4)
2 (moderately unlikely)	12.5% (1)	0% (0)	11.0% (8)	5.5% (4)
3 (neither likely or unlikely)	12.5% (1)	12.5% (1)	11.0% (8)	6.8% (5)
4 (moderately likely)	0% (0)	0% (0)	16.4% (12)	12.3% (9)
5 (extremely likely)	12.5% (1)	12.5% (1)	56.2% (41)	69.9% (51)
Allow for at least 120 minutes of physical activity both indoor and outdoor.				
1 (extremely unlikely)	37.5% (3)	0% (0)	1.4% (1)	0% (0)
2 (moderately unlikely)	0% (0)	0% (0)	4.1% (3)	1.4% (1)
3 (neither likely or unlikely)	12.5% (1)	0% (0)	13.7% (10)	6.8% (5)
4 (moderately likely)	25% (2)	25% (2)	21.9% (16)	15.1% (11)
5 (extremely likely)	25% (2)	75% (6)	58.9% (43)	76.7% (56)
Limit screen time to no more than 30 minutes per week.				
1 (extremely unlikely)	0% (0)	0% (0)	2.7% (2)	0% (0)
2 (moderately unlikely)	12.5% (1)	0% (0)	5.5% (4)	1.4% (1)
3 (neither likely or unlikely)	12.5% (1)	12.5% (1)	16.4% (12)	11.0% (8)
4 (moderately likely)	50% (4)	50% (4)	21.9% (16)	15.1% (11)
5 (extremely likely)	25% (2)	37.5% (3)	53.4% (39)	72.6% (53)

Comparison of Outcomes from Face-to-Face and Online Trainings

An ANCOVA analysis was used to determine if there were any statistically significant differences in outcomes between the face-to-face training and the online training related to knowledge scores. There was not a significant difference between the knowledge scores of the face-to-face training participants and the online training participants [F (1, 78) = 2.579, p=.112]. Based on the residual plot for the knowledge scores, there appeared to be a ceiling effect as the scores got closer to the highest score of 22. However, the data generally meets the assumptions necessary for this analysis.

A Mann-Whitney U test was used to determine if there were any statistically significant differences in outcomes between the face-to-face training and the online training related to intentions to change (Table 3). For "increase availability of water access," there was not a significant difference between the results of the face-to-face training and the online training (U=237.000, SE=49.274, p=.264). For "limit 100% fruit juice to 4-6 oz per day," there was not a significant difference between the results of the face-to-face training and the online training

(U=318.500, SE=55.283, p=.632). For "never offer sugar-sweetened beverages," there was not a significant difference between the results of the face-to-face training and the online training (U=297.000, SE=50.202, p=.921). For "only serve 1% or non-fat milk," there was not a significant difference between the results of the face-to-face training and the online training (U=371.500, SE=55.432, p=.152). For "serve meals family-style," there was not a significant difference between the results of the face-to-face training and the online training (U=342.500, SE=51.559, p=.327). For "allow for at least 120 minutes of physical activity both indoor and outdoor," there was a significant difference between the results of the face-to-face training and the online training (U=155.500, SE=5154.944, p=.013). For "limit screen time to no more than 30 minutes per week," there was not a significant difference between the results of the face-to-face training and the online training (U=316.000, SE=54.407, p=.659).

| Table 3. Mann-Whitney U Test Results			
	Mann-Whitney U	Standard Error	p-value
Increase availability of water access.	237.000	49.274	.264
Limit 100% fruit juice to 4-6 oz per day.	318.500	55.283	.632
Never offer sugar-sweetened beverages.	297.000	50.202	.921
Only serve 1% or non-fat milk.	371.500	55.432	.152
Serve meals family-style.	342.500	51.559	.327
Allow for at least 120 minutes of physical activity both indoor and outdoor.	155.500	54.944	.013
Limit screen time to no more than 30 minutes per week.	316.000	54.407	.659

Findings from the Feasibility Survey

In response to "did you fine this training easy to use," the majority of participants (89.0%) said that it was very easy to use. Some rated the ease of the training at a 4 (9.6%) and a 3 (1.4%) (Table 4, Figure 17).
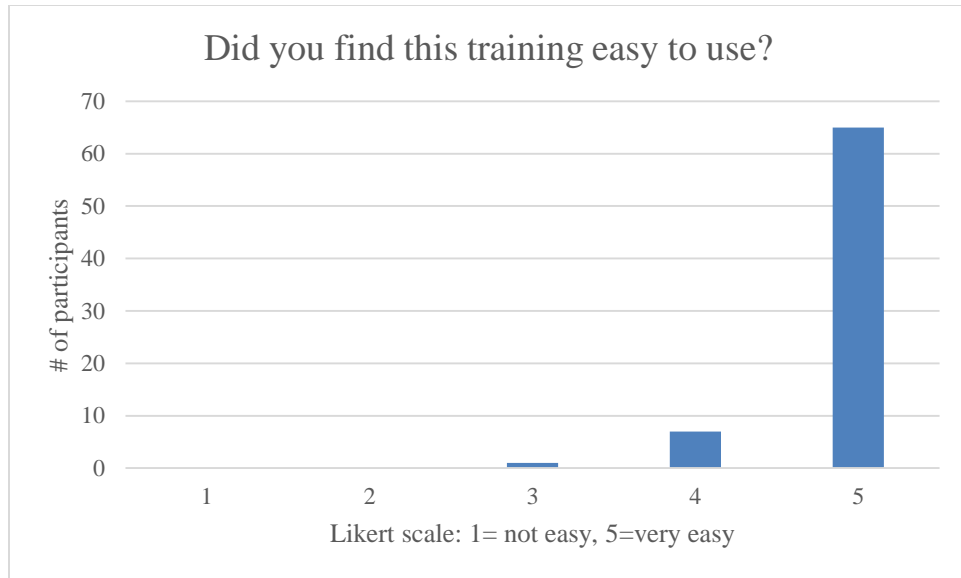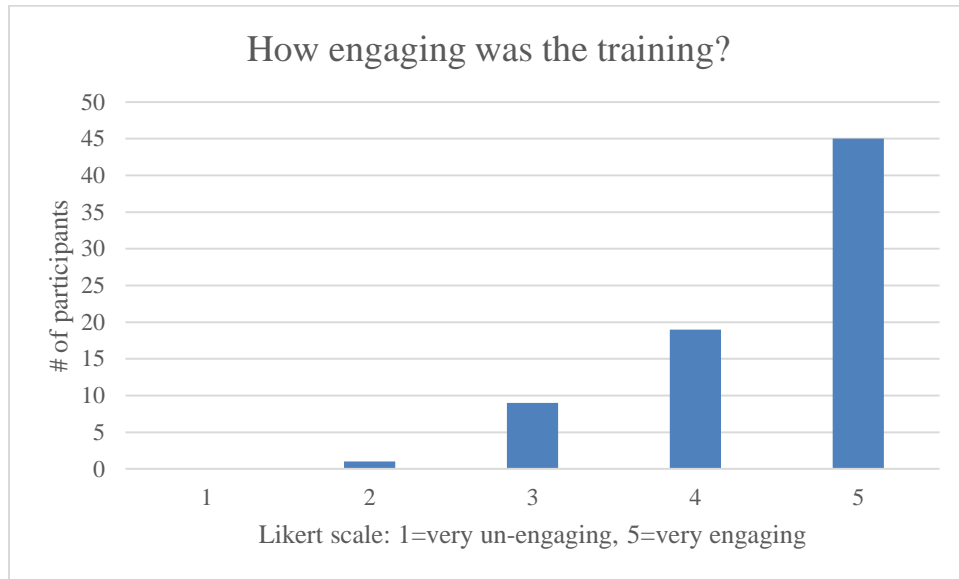
Figure 17. Feasibility Survey Response: Did you find this training easy to use?

In response to "how satisfied were you with this training," most (79.5%) of participants rated their satisfaction at a 5. Others rated their satisfaction at a 4 (17.8%), 3 (1.4%), and 1 (1.4%) (Table 4, Figure 18).
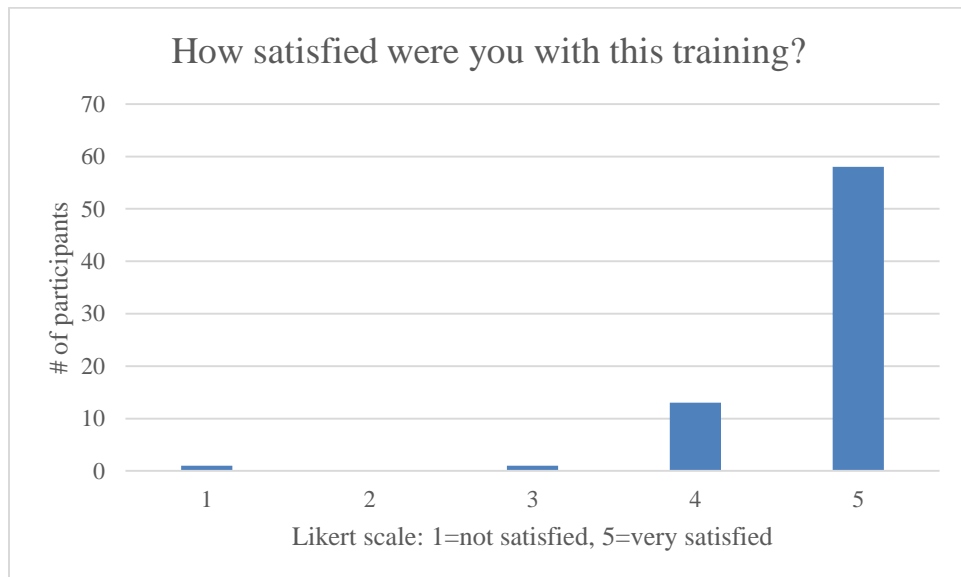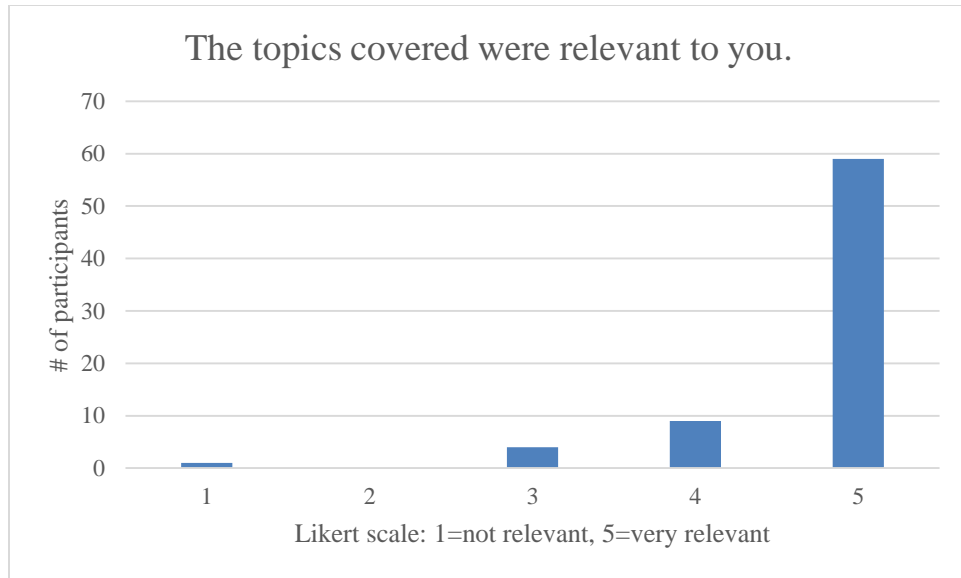

Figure 18. Feasibility Survey Response: How satisfied were you with this training?

In response to "how engaging was the training," most (61.6%) of participants rated the training at a 5. Others rated the engagement at a 4 (26.0%), 3 (12.3%), and 2 (1.4%) (Table 4, Figure 19).
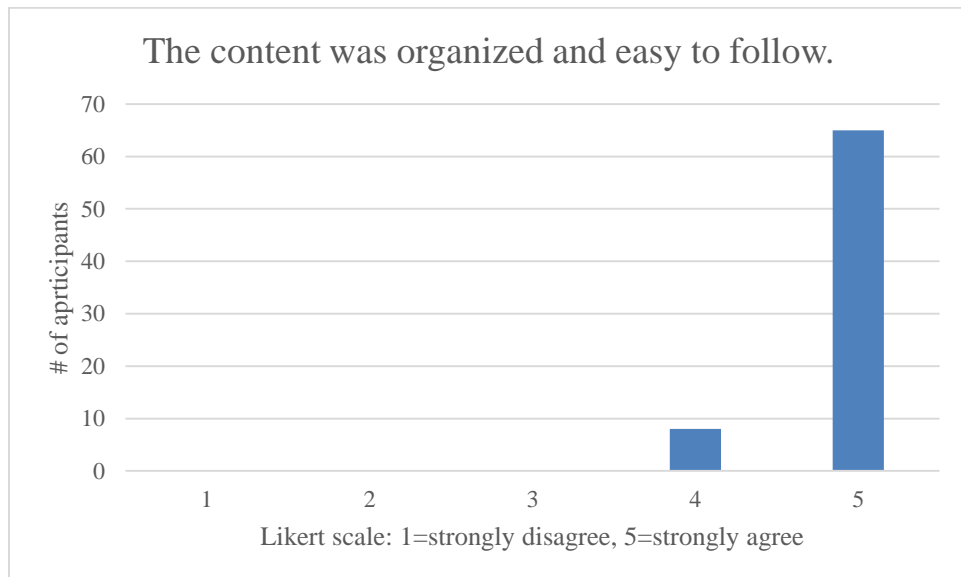

Figure 19. Feasibility Survey Response: How engaging was the training?

In response to "the topics covered were relevant to you," most (80.8%%) of participants rated the relevance of the training at a 5. Others rated the relevance at a 4 (12.3%), 3 (5.5%), and 1 (1.4%) (Table 4, Figure 20).
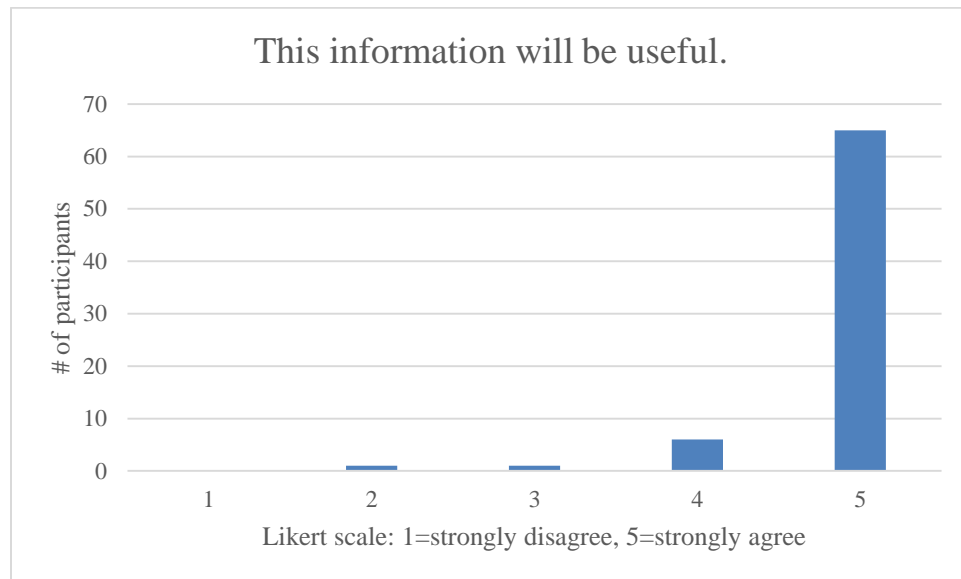
Figure 20. Feasibility Survey Response: The topics covered were relevant to you.

In response to "the content was organized and easy to follow.," most (89.0%) of participants rated the organization of the training at a 5. Others rated the organization at a 4 (11.0%) (Table 4, Figure 21).

Figure 21. Feasibility Survey Response: The content was organized and easy to follow.

In response to "this information will be useful," most (89.0%) of participants rated the organization of the training at a 5. Others rated the organization at a 4 (8.2%), 3 (1.4%), and 2 (1.4%) (Table 4, Figure 22).
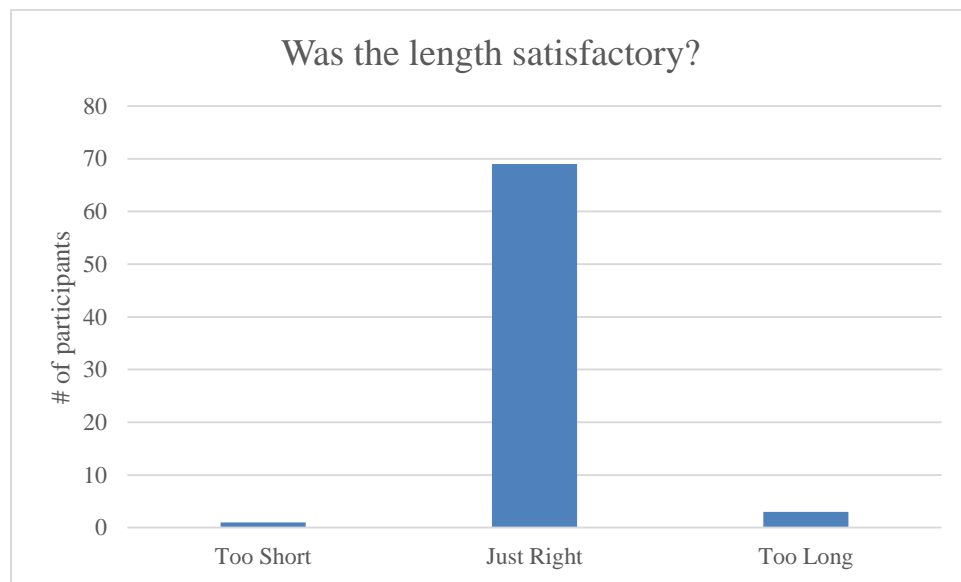

Figure 22. Feasibility Survey Response: This information will be useful.

Table 4. Feasibility Statement Likert Scale Scores for Online Nutrition Training with ECE Teachers					
	1	2	3	4	5
Did you find this training easy to use? (1=not easy, 5=very easy)	0 (0%)	0 (0%)	1 (1.4%)	7 (9.6%)	65 (89.0%)
How satisfied were you with this training? (1=not satisfied, 5=very satisfied)	1 (1.4%)	0 (0%)	1 (1.4%)	13 (17.8%)	58 (79.5%)
How engaging was the training? (1=very un-engaging, 5=very engaging)	0 (0%)	1 (1.4%)	9 (12.3%)	19 (26.0%)	45 (61.6%)
The topics covered were relevant to you. (1=not relevant, 5=very relevant)	1 (1.4%)	0 (0%)	4 (5.5%)	9 (12.3%)	59 (80.8%)
The content was organized and easy to	0 (0%)	0 (0%)	0 (0%)	8 (11.0%)	65 (89.0%)

follow. (1=strongly disagree, 5=strongly agree)					
This information will be useful. (1=strongly disagree, 5=strongly agree)	0 (0%)	1 (1.4%)	1 (1.4%)	6 (8.2%)	65 (89.0%)

In regard to the length of the survey, most (94.5%) said that it was just right, and 1.4% said it was too short and 4.1% said it was too long (Figure 23).

Figure 23. Feasibility Survey Response: Was the length satisfactory?

Overall, feedback to the open-ended questions was fairly positive. Some of the things that participants mentioned liking best about the online training include, convenience, user friendly, the resources, informative, the videos, and it was easy to follow (Table 5). Some of the things that were mentioned for improvement included fewer introductions, breaking it up, shortening the training, more resources, and make it more mobile friendly (Table 6). Some additional comments that were mentioned included family style dining not being realistic in their ECE

setting, wanting more of the resources used for HCCG, and trouble with the section of the

training that goes through the weekly activities (Table 7).

Table 5. Responses of ECE Teachers to a Feasibility Survey: What did you like best about this online training?
Convenient
user friendly
I like all of the resources provided. I also like the embedded links for furthering the topic and knowledge. Videos are always great for visual learners!
Easy to navigate. It was very informative.
Informative
Information
The additional resources available
That some one else was reading the slides
Easy
information and organization of materials and resources
Very easy to follow
The layout of the training was very nice. The information was spot on.
That it didn't take too long
It was very informative and easy to follow along with.
Easy to follow the steps
good information to promote healthy eating and practices in the ECE setting
The information about the drinking of water.
Activities offered
You can go at your own pace. The resource tabs had a lot of good information.
water use
Well organized and it was a good length.
I enjoyed the activities given!
Good resource and shows how to implement in a classroom. Minimal materials needed.
teach you ways to help parents understand healthy practices
It was very straight forward
The resources
videos of the lesson actually being carried out
Very informative
I was able to take the train at my own past.
It provided a video of an actual lesson. Many training "say" but when you see the lesson being taught, it is a buy in.
very informative
The resources and the way that you are able to self pace as needed.

the video examples and lesson resources
It gives me some tools to implement best practices in an area that was lacking in our curriculum.
It was very organized and easy to understand.
The content
Straightforward
The information on screen time. I can give that information to my parents.
I liked the videos of the curriculum being taught in a real classroom setting.
I liked the classroom ideas given. I plan to try them out in my class.
The graphics, the quality of information and tips along the way
informative, easy to navigate, clear audio
The resources available
Easy to follow
Loved it
I enjoyed the videos.
It was engaging.
Very informative
I like the ease of the training and how informative it was, especially for PreK teachers. The resources were great too!
It was very informative
ease
It has the video to follow
Format of slides as well as videos.
I loved the 6 week program with activities for students to learn.
I enjoyed the resources and the videos. I also enjoyed that the training was quick and to the point.
The training gave insights to how as a teacher I can promote healthy eating and drinking in the classroom.
That I could navigate it at my own speed and that it provided self-checks along the way
The encouraging tones of the teachers
It was nice to be able to see some of the activities via video.
I like the wealth of information. The games, songs, and activities you can do with the children.
Format was easy to use
can do anytime and from anywhere
Good information.
Access to the lesson plans
I liked the resources provided. It will help me tremendously in providing and teaching my students about the best nutritional habits.
Easy of use and resources provided

Table 6. Responses of ECE Teachers to a Feasibility Survey: How can this online training be improved?
It could be accessible to more teachers
Not have so many introductions to each section
Everything was great
It was great
break it up so it is not so long
There was a glitch when I did not look at the weekly tabs in order. It kept repeating the week one info and I had to problem solve how to move on.
Shorten the training!
matching the words being spoken with words on slide
More information
Having a way to go in and review resources
I thought it was great! More videos of actual lessons would be a bonus.
it is just right and included all the components and resources to improve classroom healthy practices .
Possibly links to additional resources for more activities and parent resources.
I think more ideas on physical activities would have been good.
It is an excellent course and needs no changes.
Some parts of the weekly curriculum could not be magnified, so it was hard to read.
I found the training to be very useful, especially the Resources tab. I don't see areas to improve.
I don't know. Train the people in kitchen too.
Include additional resources.
It was awesome, but you could add a few more check for understanding slides with questions.
I had to keep going back and answer the questions over if I logged out and started another day.
More mobile phone friendly
Offer the plans and bear puppets to the participants
Making sure that the school administration understands the importance of explicit teaching of healthy eating

Table 7. Responses of ECE Teachers to a Feasibility Survey: Do you have any additional comments?
Will this program be available to use in the GA Pre-K classroom this coming school year?
I really enjoyed the training
The training was awesome.
It would be great to actually get the lesson plans even if I did not get selected to be a part of the training. The plans are wonderful.
Obviously during this time (covid19) I believe family style dining in a child care center would not be recommended.
Loved it! Great job.

Check the spelling of Deficiencies on your slide:)
I would like to know where to get the materials used: the bear, the large my plate mat, book recommendations, etc.
I enjoyed this and hope to get to do these activities with my class.
Great training!
I am unable to open the week 6 complete lesson and EHBA activities in the resources tab, when selected it jumps to week 4
Teachers only eat with kids, we dont order and cook the food.
I am glad to have had they opportunity to take part in the training and it will be helpful when school resumes.
N/A Love the resources.
in the elementary school setting - my prek students can not do family style which is unfortunate.
I would like to implement this curriculum in my classroom. Is there a place to order it plus the bear puppet online?
I think it is important for the children to understand where their food comes from and how we impact our planet through food consumption. We can teach how to be good conservationist through healthy eating since many of the bad for you food items come in non-recyclable packaging. I have heard some debate about the health benefits of different milks. For example, whole milk is better than reduce fat. It would be nice for you to speak a little more to the science behind why you recommend reduce fat milk.

CHAPTER 5

DISCUSSION

This study hypothesized that an online training for ECE teachers enrolled in the HCCG intervention would be an effective means of training as compared to the face-to-face training. Study findings revealed that this was true for most aspects related to changes in nutrition knowledge and intentions to change wellness behaviors in the classroom when comparing the groups.

Changes in Knowledge and Intentions

For the face-to-face training, there was no significant increase in knowledge from pre- to post-test, but there was a trend towards increased knowledge. For the online training, there was a significant increase in knowledge. A study by Chlipalski, et al. showed that their online training was effective in increasing knowledge from pre- to post-test (2018a). Their results show that an online training is also an effective means of increasing knowledge as shown with similar results in this study.

For the face-to-face training, there were no significant changes in intentions to change from pre- to post-test, but there was a trend towards increased intentions for most statements. However, there did appear to be a non-significant decrease in intentions for two statements: "only serve 1% or non-fat milk" and "serve meals family-style." For "only serve 1% or non-fat milk," teachers do not have control over the types of milk served, so this possibly led to a decrease in intentions. However, the school where these teachers are located does only serve 1% or non-fat milk. Also, depending on the school or facility, teachers may or may not be able to

serve meals family-style. At the school with the face-to-face training participants, they did not have the option for family-style meals because they serve children through a cafeteria line and eat in the cafeteria. This led to decreased intentions to change once they learned what family-style meals meant.

For the online training, the changes in intentions from pre- to post-test were found to be significant with respondents indicating significant increases in intentions. With one exception, the results were not significant for "never offer sugar-sweetened beverages." However, there did appear to be a trend towards increased intentions to change for this statement.

Comparison of Changes in Knowledge and Intentions

There was not a significant difference between the knowledge scores of the face-to-face training participants and the online training participants. This means that there were similar changes from pre- to post-test for both groups, so the results of both trainings were comparable. Both groups also showed a general increase in knowledge from pre- to post-test, as stated previously. Based on a study by Gayed et al., an online training and face-to-face training for managers were compared, and it was found that there were similar improvements in confidence between baseline and completing the training (2019). These results were found to be similar to this study. This shows that online trainings can be a reasonable alternative to a face-to-face training for increasing knowledge.

Most of the intentions to change responses had no significant difference between the face-to-face and online trainings. However, there was a significant difference related to "allow for at least 120 minutes of physical activity both indoor and outdoor." This difference could be because of differences between schools or counties in what they can do for physical activity and how much time they can allow for it. All of the face-to-face training participants were from the

same school, so it is more likely that they would have similar responses related to this statement. Based on a study by Chlipalski et al., their online training was effective in increasing self-efficacy from pre- to post-test which is similar to our results (2018a). This shows that online trainings can provide the tools to increase self-efficacy to make changes.

Feasibility

The findings from the feasibility survey showed general acceptability and satisfaction with the online training. Engagement of the training could be improved based on the percentage of people who ranked engagement at a 5 (61.6%) compared to other aspects of the training that were ranked at a 5 (79.5% or greater). Originally, more activities throughout the training were intended to be included in this training, but due to 508 compliance requirements, it was not possible to include as many activities as intended. However, more knowledge checks, videos, and resources could be included. Several people stated that the training was too long either by answering the multiple-choice question regarding length (4.1%) or in the open-ended questions. However, the training is reduced to about an hour from a four-hour training. Reducing the time of the training further could reduce the ability of the training to convey the necessary information that needs to be covered. One person stated to "break it up so it is not so long." Including breaks between sections throughout the training might help to keep participants engaged so that they do not feel like the training is quite so long. One comment was received from a participant that indicated: "There was a glitch when I did not look at the weekly tabs in order. It kept repeating the week one info and I had to problem solve how to move on." Looking into the cause of this problem and fixing it should help improve satisfaction with the training and ease of use. Based on a study by Gance-Cleveland et al., they found that satisfaction with their online continuing

education was high on average (3.2/4) indicating that e-learning is a satisfactory mode of delivering education or a training (2015).

Strengths of this Study

There are several strengths to this study. This study is innovative in that it is a novel exploration into the efficacy of online trainings for ECE providers to implement a nutrition intervention focused on obesity prevention. Therefore, findings from this study will help contribute to e-learning health literature. This study shows the feasibility and acceptability of an online format for an obesity prevention training. Thus, it shows that online trainings are a feasible and acceptable way to promote nutrition education among ECE teachers. Online trainings are also an easy way to spread information when certain barriers are in place preventing someone from traveling or groups from gathering to do a traditional face-to-face training.

Limitations of this Study

There are several limitations to this study. First, access to reliable and fast internet service can impact feasibility and satisfaction when related to an online training. If participants do not have access to reliable internet service, then they may report lower satisfaction. Also, a randomized controlled trial is ideal for any study design. However, due to time constraints, it is not feasible to do this in the current study. Another limitation is the small sample size of the face-to-face training participants. However, this study shows that an online training is a feasible option in the HCCG intervention in training ECE teachers who participate.

Implications for Future Research

Based on available literature, this is the one of the first studies to compare an online training to a face-to-face training for ECE teachers that focuses on nutrition education related to obesity prevention. Findings from this study can provide information for researchers on the

feasibility and acceptability of an online training for ECE teachers. This SNAP-Ed project may improve health equity for low income Georgians due to the focus on childhood obesity prevention. Future studies could have ECE teachers who would participate in HCCG and be assigned to either the face-to-face or online training condition and compare how effective the trainings were in preparing them for participating in the actual HCCG program. Also, studies could be done regarding stand-alone online trainings with nutrition education for ECE teachers. This could also be expanded to parents, since parents are crucial for obesity prevention in children. Additionally, COVID-19 was an influential part to this process that led to more online learning and working from home than ever before. This illustrates the importance of online trainings and online learning as a method to provide training moving forward.

CHAPTER 6

CONCLUSION

In conclusion, teachers play a vital role in childhood obesity prevention for their students. Training teachers in nutrition education can help them in promoting obesity prevention best practices in their classroom. Most trainings tend to be face-to-face, however, online trainings can be a good alternative to help overcome barriers of face-to-face trainings such as time and travel. This project found that an online training is a feasible and effective alternative to face-to-face trainings. No significant differences were found between the face-to-face training group and the online training group in knowledge scores from pre- to post-test. The groups also had similar increases in knowledge scores from pre- to post-test. Overall, there were no significant differences in changes in intentions to change between the face-to-face training group and the online training group, except for the intention to "allow for at least 120 minutes of physical activity both indoor and outdoor." This could be due to the diversity of locations that the online training participants are from in Georgia as compared to the single location of the face-to-face participants. Also, intentions to change generally increased from pre- to post-test for both groups besides for the intention to "serve meals family-style." This could be attributed to the fact that more online training participants are able to participate in this dining style at their facilities as compared to the face-to-face training participants who were not able to do this with their kids.

Further, our findings showed that the online training was an acceptable alternative to the face-to-face training due to the results from the feasibility survey. Overall, the feedback was positive stating that they enjoyed the resources and information included in the training.

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Participants stated that certain parts of the survey could be improved such as the engagement of the training, the length of the training, and a certain aspect of the training that led to some technical difficulties. These suggestions can be used to improve the training for future use.

The online training was found to be a feasible and effective means of nutrition education as compared to the already existing face-to-face training. These findings are useful for future research related to online training for nutrition education. Also, these findings will allow for further expansion of HCCG to other parts of Georgia that were previously inaccessible due to travel barriers that existed because of the face-to-face training.

REFERENCES

Bentley, F., Swift, J. A., Cook, R., & Redsell, S. A. (2017). "I would rather be told than not
know" - A qualitative study exploring parental views on identifying the future risk of
childhood overweight and obesity during infancy. *BMC Public Health, 17*(1), 684-684.
doi:10.1186/s12889-017-4684-y

Chlipalski, M., Baker, S., Olson, B., & Auld, G. (2018a). Research Brief: Evaluation and
Lessons Learned From the Development and Implementation of an Online Prenatal
Nutrition Training for EFNEP Paraprofessionals. *Journal of Nutrition Education and
Behavior*. doi:10.1016/j.jneb.2018.11.013

Chlipalski, M., Quick, D., Auld, G., & Baker, S. (2018b). *Needs assessment regarding online
training for paraprofessionals in the Expanded Food and Nutrition Education Program*
(Vol. 56).

Cotwright, C. J., Bales, D. W., Lee, J. S., Parrott, K., Celestin, N., & Olubajo, B. (2017). Like
Peas and Carrots: Combining Wellness Policy Implementation With Classroom
Education for Obesity Prevention in the Childcare Setting. In (Vol. 132, pp. 74S-80S).

Deavenport, A., Kreutzer, C. B., & Rao, S. (2014). An opportunity to increase early childhood
nutrition training among providers: California licensing laws in child care centers. *ICAN:
Infant, Child & Adolescent Nutrition, 6*(1), 14-17. Retrieved from http://proxy-
remote.galib.uga.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=l
hh&AN=20143055274&site=eds-live

Dev, D. A., McBride, B. A., Speirs, K. E., Blitch, K. A., & Williams, N. A. (2016). Research: "Great Job Cleaning Your Plate Today!" Determinants of Child-Care Providers' Use of Controlling Feeding Practices: An Exploratory Examination. *Journal of the Academy of Nutrition and Dietetics, 116*, 1803-1809. doi:10.1016/j.jand.2016.07.016

Farewell, C. V., Puma, J. E., Powers, J., & Belansky, E. S. (2018a). Assess, Identify, Make it Happen (AIM) for Preschools: A Tool to Decrease Early Childhood Obesity. *Health Promotion Practice, 19*(6), 935-945. doi:10.1177/1524839917746677

Farewell, C. V., Puma, J. E., Powers, J., & Belansky, E. S. (2018b). Assess, Identify, Make it Happen (AIM) for Preschools: A Tool to Decrease Early Childhood Obesity. *Health Promotion Practice, 19*(6), 935. Retrieved from http://proxy-remote.galib.uga.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=edb&AN=132459044&site=eds-live

Gance-Cleveland, B., Aldrich, H., Dandreaux, D., Oetzel, K. B., & Schmiege, S. (2015). Article: A Virtual Childhood Obesity Collaborative: Satisfaction With Online Continuing Education. *Journal of Pediatric Health Care, 29*, 413-423. doi:10.1016/j.pedhc.2015.01.006

Gayed, A., Tan, L., LaMontagne, A. D., Milner, A., Deady, M., Milligan-Saville, J. S., . . . Harvey, S. B. (2019). A comparison of face-to-face and online training in improving managers' confidence to support the mental health of workers. In (Vol. 18).

Hoffman, J. A., Schmidt, E. M., Arguello, D. J., Eyllon, M. N., Castaneda-Sceppa, C., Cloutier, G., & Hillman, C. H. (2020). Online preschool teacher training to promote physical activity in young children: A pilot cluster randomized controlled trial. *School Psychology*. doi:10.1037/spq0000349

Hollar, T. L., Cook, N., Natale, R., Quinn, D., Phillips, T., & DeLucca, M. (2018). Training early
childcare providers in evidence-based nutrition strategies can help improve nutrition
policies and practices of early childcare centres serving racially and ethnically diverse
children from low-income families. *Public Health Nutrition, 21*(7), 1212-1221. Retrieved
from http://proxy-
remote.galib.uga.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=l
hh&AN=20183334999&site=eds-live

Ickes, M. J., McMullen, J., Haider, T., & Sharma, M. (2014). Global school-based childhood
obesity interventions: a review. *International Journal Of Environmental Research And
Public Health, 11*(9), 8940-8961. doi:10.3390/ijerph110908940

Larson, N., Ward, D. S., Neelon, S. B., & Story, M. (2011). Research: What Role Can Child-
Care Settings Play in Obesity Prevention? A Review of the Evidence and Call for
Research Efforts. *Journal of the American Dietetic Association, 111*, 1343-1362.
doi:10.1016/j.jada.2011.06.007

Lyn, R., Maalouf, J., Evers, S., Davis, J., & Griffin, M. (2013). Nutrition and Physical Activity
in Child Care Centers: the Impact of a Wellness Policy Initiative on Environment and
Policy Assessment and Observation Outcomes, 2011. In (Vol. 10).

Moore, E. S., Wilkie, W. L., & Desrochers, D. M. (2017). All in the Family? Parental Roles in
the Epidemic of Childhood Obesity. *Journal of Consumer Research, 43*(5), 824-859.
doi:10.1093/jcr/ucw059

Natale, R. A., Lopez-Mitnik, G., Uhlhorn, S. B., Asfour, L., & Messiah, S. E. (2014). Effect of a
child care center-based obesity prevention program on body mass index and nutrition
practices among preschool-aged children. *Health Promotion Practice, 15*(5), 695-705.

Retrieved from http://proxy-

remote.galib.uga.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=l

hh&AN=20143302426&site=eds-live

Nelson, C. C., Colchamiro, R., Perkins, M., Taveras, E. M., Leung-Strle, P., Kwass, J., & Woo

    Baidal, J. A. (2018). Racial/Ethnic Differences in the Effectiveness of a Multisector

    Childhood Obesity Prevention Intervention. *American Journal of Public Health, 108*(9),

    1200. doi:10.2105/AJPH.2018.304511

Redsell, S. A., Atkinson, P., Nathan, D., Siriwardena, A. N., Swift, J. A., & Glazebrook, C.

    (2010). Parents' beliefs about appropriate infant size, growth and feeding behaviour:

    implications for the prevention of childhood obesity. *BMC Public Health, 10*, 711-711.

    doi:10.1186/1471-2458-10-711

Rouse, H., Goudie, A., Rettiganti, M., Leath, K., Riser, Q., & Thompson, J. (2019). Prevalence,

    Patterns, and Predictors: A Statewide Longitudinal Study of Childhood Obesity. *Journal*

    of School Health, 89(4), 237-245. doi:10.1111/josh.12741

Skinner, A. C., Ravanbakht, S. N., Skelton, J. A., Perrin, E. M., & Armstrong, S. C. (2018).

    Prevalence of Obesity and Severe Obesity in US Children, 1999-2016. In (Vol. 141).

Story, M., Nanney, M. S., & Schwartz, M. B. (2009). Schools and obesity prevention: creating

    school environments and policies to promote healthy eating and physical activity. *The*

    Milbank Quarterly, 87(1), 71-100. doi:10.1111/j.1468-0009.2009.00548.x

Umer, A., Kelley, G. A., Cottrell, L. E., Giacobbi, P., Jr., Innes, K. E., & Lilly, C. L. (2017).

    Childhood obesity and adult cardiovascular disease risk factors: a systematic review with

    meta-analysis. *BMC Public Health, 17*(1), 683-683. doi:10.1186/s12889-017-4691-z

Ward, D. S., Vaughn, A. E., Mazzucca, S., & Burney, R. (2017). Translating a child care based

    intervention for online delivery: development and randomized pilot study of Go

    NAPSACC. *BMC Public Health, 17*(1), 891. doi:10.1186/s12889-017-4898-z

Wasserman, E., & Migdal, R. (2019). Professional Development: Teachers' Attitudes in Online

    and Traditional Training Courses. *Online Learning, 23*(1), 132-143. Retrieved from

    http://proxy-

    remote.galib.uga.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=

    eric&AN=EJ1211174&site=eds-live

ELIGIBILITY SURVEY

What is your name?

_____

What is your email?

_____

What is your zip code?

_____

What is your gender?

- Male
- Female
- Prefer not to answer

What is your age?

- 18-20
- 21-29
- 30-39
- 40-49
- 50-59
- 60 or older

What is your highest level of education achieved?

- High school graduate/GED
- Some college
- Associate degree
- Bachelor's degree
- Some postgrad work
- Graduate degree

Which of the following best describes your employment status?

- Employed, working 40 or more hours per week
- Employed, working 1-39 hours per week
- Not employed, looking for work
- Not employed, NOT looking for work
- Retired
- Disabled, not able to work

How much total combined money did members of your HOUSEHOLD earn last year?

- $0-$9,999
- $10,000-$24,999
- $25,000-$49,999
- $50,000-$74,999
- $75,000-$99,999
- $100,000 and above

What is your race/ethnicity?

- White/Caucasian
- Black/African-American
- Asian
- American Indian or Alaska Native
- Native Hawaiian or Pacific Islander
- Spanish/Hispanic/Latino
- Multiple races

How long have you been working in the child care setting?

- 1-3 years
- 3-5 years
- 6-9 years
- 10+ years
- I do not work in the child care setting.

Do you work with children between the ages of 3-5 years old?

- Yes
- No
- I do not work with children in the child care setting.

Do you have access to a computer?

- Yes
- No
- Maybe

APPENDIX B

DEMOGRAPHIC SURVEY FOR FACE-TO-FACE TRAINING

What is your name?

_____

What is your gender?

- Male
- Female
- Prefer not to answer

What is your age?

- 18-20
- 21-29
- 30-39
- 40-49
- 50-59
- 60 or older

What is your highest level of education achieved?

- High school graduate/GED
- Some college
- Associate degree
- Bachelor's degree
- Some postgrad work
- Graduate degree

Which of the following best describes your employment status?

- Employed, working 40 or more hours per week
- Employed, working 1-39 hours per week
- Not employed, looking for work
- Not employed, NOT looking for work
- Retired
- Disabled, not able to work

How much total combined money did members of your HOUSEHOLD earn last year?

- $0-$9,999
- $10,000-$24,999
- $25,000-$49,999
- $50,000-$74,999
- $75,000-$99,999
- $100,000 and above

What is your race/ethnicity?

- White/Caucasian
- Black/African-American
- Asian
- American Indian or Alaska Native
- Native Hawaiian or Pacific Islander
- Spanish/Hispanic/Latino
- Multiple races

How long have you been working in the child care setting?

- 1-3 years
- 3-5 years
- 6-9 years
- 10+ years
- I do not work in the child care setting.

APPENDIX C

PRE- AND POST-TEST SURVEY

Q1 What is the recommended amount of physical activity for preschoolers in full day care?

○ 30-45 min

○ 60-90 min

○ 90-120 min

○ >120 min

Q2 Limit preschooler's screen time to _____ per week.

○ 10 min

○ 30 min

○ 1 hour

○ 2 hours

Q3 What is the best practice for how children should eat meals?

○ Family style

○ Buffet style

○ Plated

Q4 Limit 100% fruit juice to _____ per day.

○ 6-8 oz

○ 3-4 oz

○ 4-6 oz

○ 8-10 oz

Q5 What type(s) of drinks should be offered? (Select all that apply)

☐ Water

☐ Milk

☐ Sugar-sweetened beverages

☐ Fruit drinks

Q6 What type(s) of milk should be offered to children 2 and older? (Select all that apply)

- [ ] Whole
- [ ] 2%
- [ ] 1%
- [ ] Non-fat

Q7 Which of the following is not one of the food groups on MyPlate?

- ○ Grains
- ○ Protein
- ○ Fruits
- ○ Vegetables
- ○ Fats

Q8 Half of a child's plate should be made up of _____.

○ Grains

○ Protein

○ Fruits and vegetables

○ Dairy

Q9 What are some ways that you can encourage children to try new foods? (Select all that
apply)

○ Modeling by teachers

○ Making children eat a certain number of bites of food

○ Modeling by other students

○ Encourage, but don't push

○ Learning names of new foods

Q10 You should make sure children eat everything on their plate even when they say that they
are full.

○ True

○ False

Q11 You should only encourage children to drink water when they are thirsty.

○ True

○ False

Q12 What types of beverages should never be served? (Select all that apply)

○ Water

○ Soda

○ Juice drinks

○ 100% fruit juice

○ Sweet tea

○ Sports drinks

○ Milk

Q13 How can children tell if they are being physically active? (Select all that apply)

○ They are moving their whole bodies.

○ They can check their heartbeat.

○ They are sweating from the heat.

○ They are generally tired.

Q14 Why is it important for children to eat breakfast? (Select all that apply)

○ It gives them energy.

○ It prevents obesity.

○ It helps children focus.

Q15 In the next 2 weeks, how likely are you to do the following:

	Extremely unlikely	Moderately unlikely	Neither likely nor unlikely	Moderately likely	Extremely likely
	1	2	3	4	5
Increase availability of water access.			●		
Limit 100% fruit juice to 4-6 oz per day.			●		
Never offer sugar-sweetened beverages.			●		
Only serve 1% or non-fat milk.			●		
Serve meals family-style.			●		
Allow for at least 120 minutes of physical activity both indoor and outdoor.			●		
Limit screen time to no more than 30 minutes per week.			●		

FEASIBILITY SURVEY

Q1 Did you find this training easy to use?
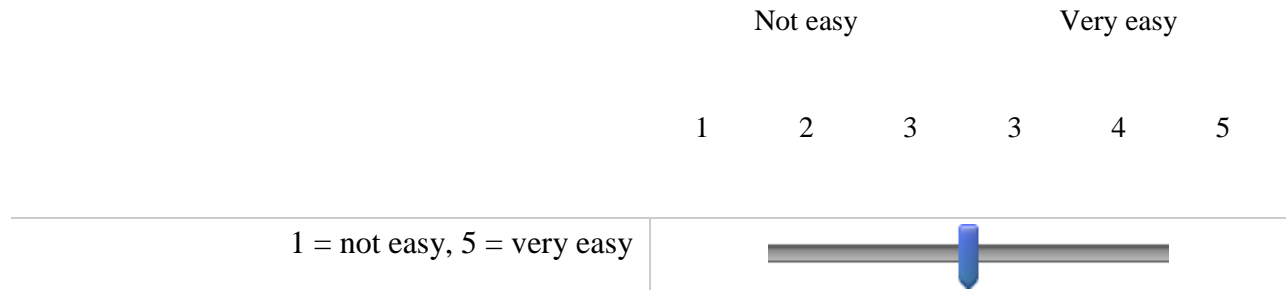
	Not easy			Very easy		
	1	2	3	3	4	5

1 = not easy, 5 = very easy	

Q2 How satisfied were you with this training?

	Not satisfied			Very satisfied		
	1	2	3	3	4	5

1 = not satisfied, 5 = very satisfied	

Q3 How engaging was the training?

	Very un-engaging			Very engaging		
	1	2	3	3	4	5
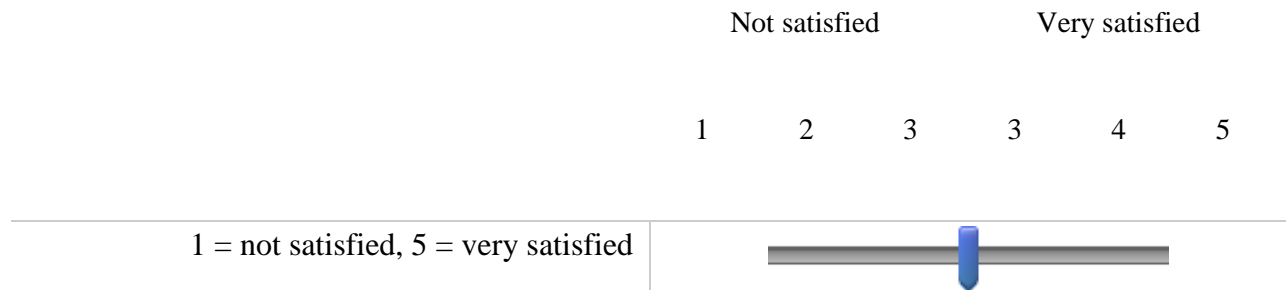
1 = very un-engaging, 5 = very engaging	
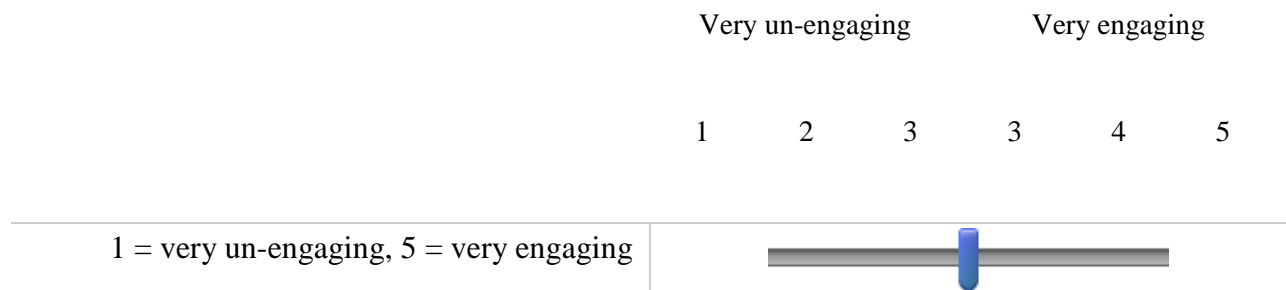
Q4 Was the length satisfactory?

○ Too long

○ Just right

○ Too short

Q5 The topics covered were relevant to you.
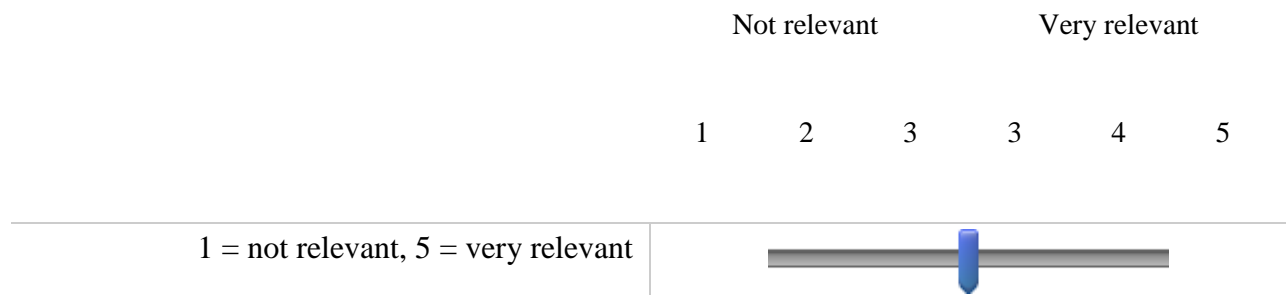
	Not relevant			Very relevant	
1	2	3	3	4	5

1 = not relevant, 5 = very relevant	

Q6 The content was organized and easy to follow.

	Strongly disagree			Strongly agree	
1	2	3	3	4	5

1 = strongly disagree, 5 = strongly agree	

Q7 This information will be useful.

	Strongly disagree			Strongly agree	
1	2	3	3	4	5

1 = strongly disagree, 5= strongly agree	
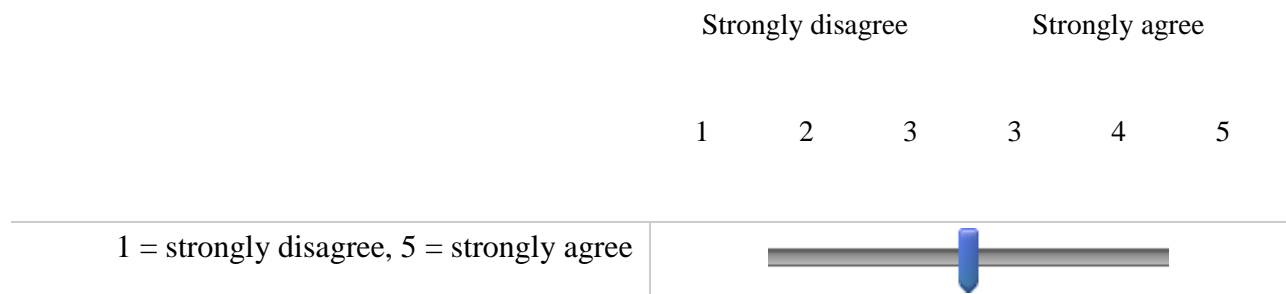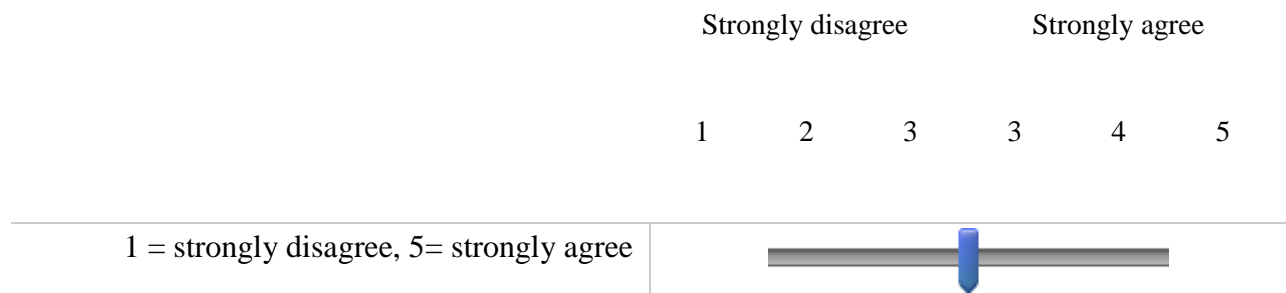
Q8 What did you like best about this online training?

_____

Q9 How can this online training be improved?

_____

Q10 Do you have any additional comments?

_____

APPENDIX E

SCREENSHOTS FROM ONLINE TRAINING

Healthy Child Care of Georgia

RESOURCES

Knowledge Check

Read the following statements and select the correct statement(s)
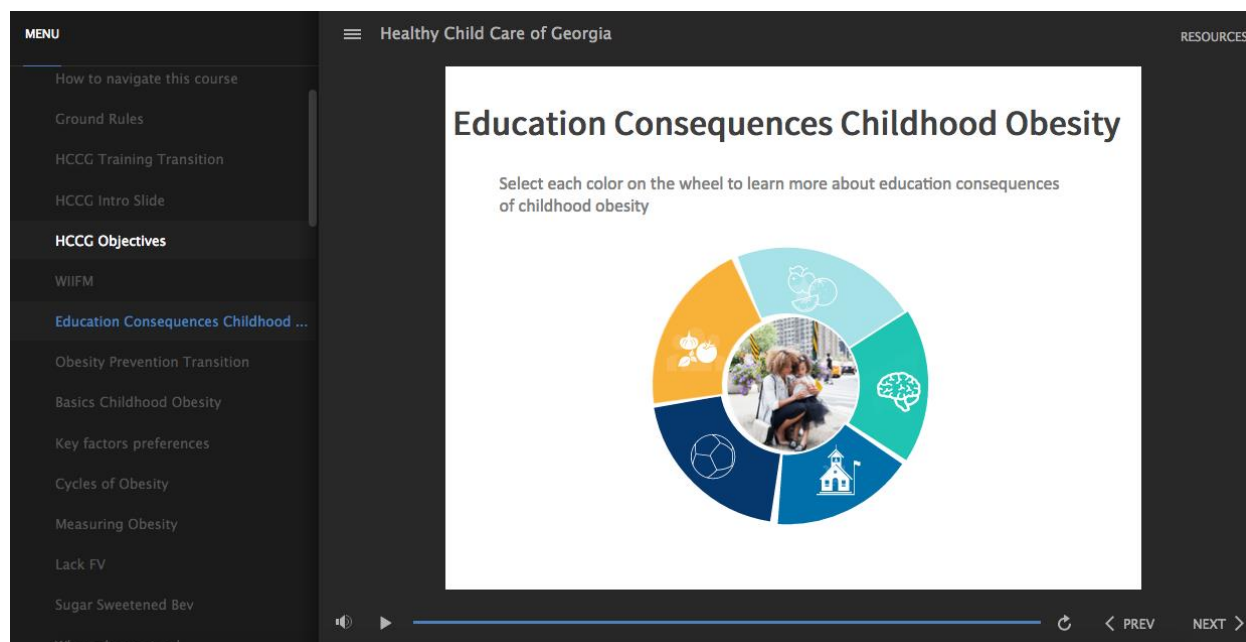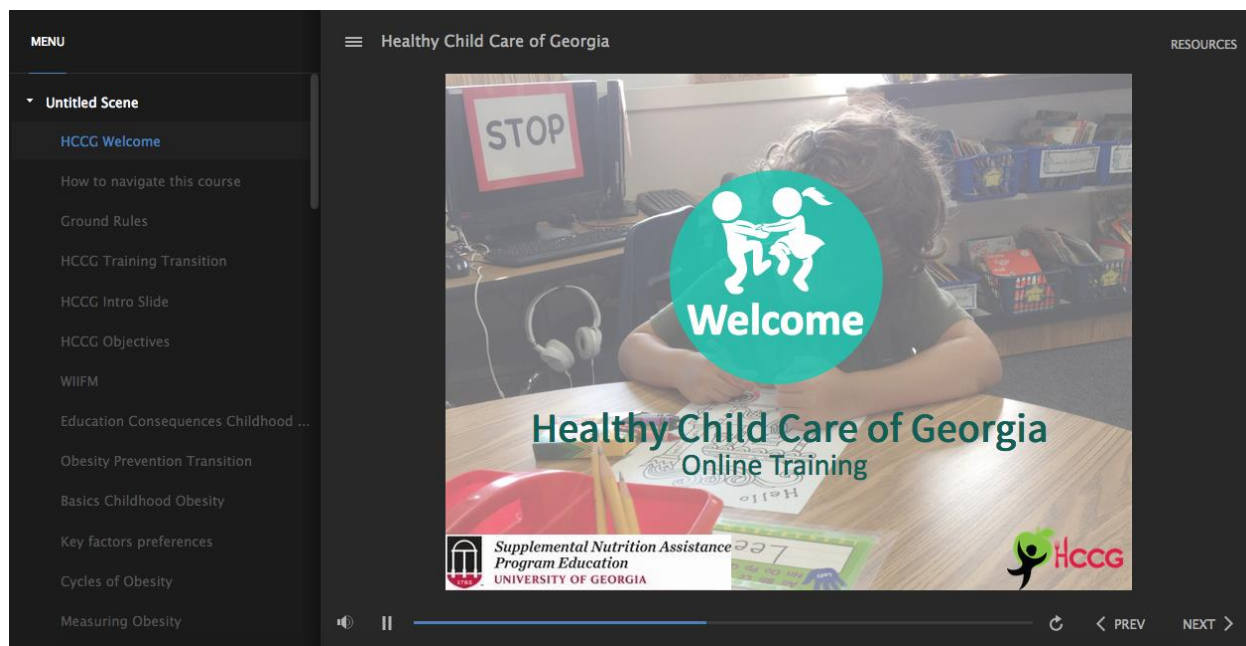
HCCG Objectives
WIIFM
Education Consequences Childhood ...
Obesity Prevention Transition
Basics Childhood Obesity
Key factors preferences
Cycles of Obesity
Measuring Obesity
Lack FV
Sugar Sweetened Bev
Where do we stand
Knowledge Check
Building Blocks Healthy Habits
Building Blocks Map

Less than 25% of American children consume sugar sweetened beverages (e.g. sweet tea, fruit punch, soda) each day.

Twenty percent of American children are overweight or obese before they enter kindergarten.

Most American children meet the current recommendations for vegetable intake.

Body Mass Index in children is measured by the ratio of weight to height and compared to other children of the same age and sex.

PREV   NEXT

MENU

Healthy Child Care of Georgia

RESOURCES

Eat Healthy Be Active Hands On Activities

Select each icon to view each week's activity. Each time you have reviewed a week you will be brought back to this page to select another week.

Screen time best practices
Building Blocks Food
Foods best practice
Why limit fried food
Family Style Video
Action Planning
Knowledge Check
Curriculum Activities Trans
Eat Healthy Be Active Goals
Eat Healthy Be Active Curriculum Feat...
Incorporate Activites
Eat Healthy Be Active Hands On Activi...
Transition Slide Wk 1
Week 1 Videos

Week 1
Eat a Variety of Foods

Week 4
Stop Eating When You're Full

Week 2
Be Physically Active

Week 5
Eat a Variety of Foods

Week 3
Eat Breakfast

Week 6
Drink Water

Thesis   PREV   NEXT

RECRUITMENT FLYER

Calling All Preschool Teachers!

The UGA Department of Foods and Nutrition is looking for teachers:

You can enter a drawing for a $50 e-gift card!
Note: Participation is not required to enter the drawing. To enter, use the number below.

- **Who work with children 3-5 years old (preschool)**
- **Who work in Georgia**
- **Who have access to a computer**
- **Who have never participated in the Healthy Child Care Georgia project**

This is a part of a research study.

Contact

Email: childobesityprevFDNS@uga.edu
Text: HCCG to 833-222-2261

Foods & Nutrition
College of Family and Consumer Sciences
UNIVERSITY OF GEORGIA
1785

COME
JOIN US

Are you interested in participating?

**Contact Taylor
at childobesityprevFDNS@uga.edu
or by texting HCCG to 833-222-2261 to
receive the link for the eligibility survey.**

**We are looking for preschool teachers in
Georgia who have access to a computer.
The eligibility survey will take about 5
minutes of your time.**

**If selected, your participation in this
research study will take a total of about 1.5-
2 hours of your time to complete all steps.
You will complete an online training (1 hour)
and pre- and post-test surveys (20-40
minutes total).**

What do you get out of this?

- Opportunity to participate in an interactive online training
- Increased nutrition knowledge
- Suggestions to make healthy changes to your classroom environment
- Certificate of completion
- Receive a $15 Walmart e-gift card for completion of all parts of the study and entry into an additional drawing for a $50 e-gift card

Contact
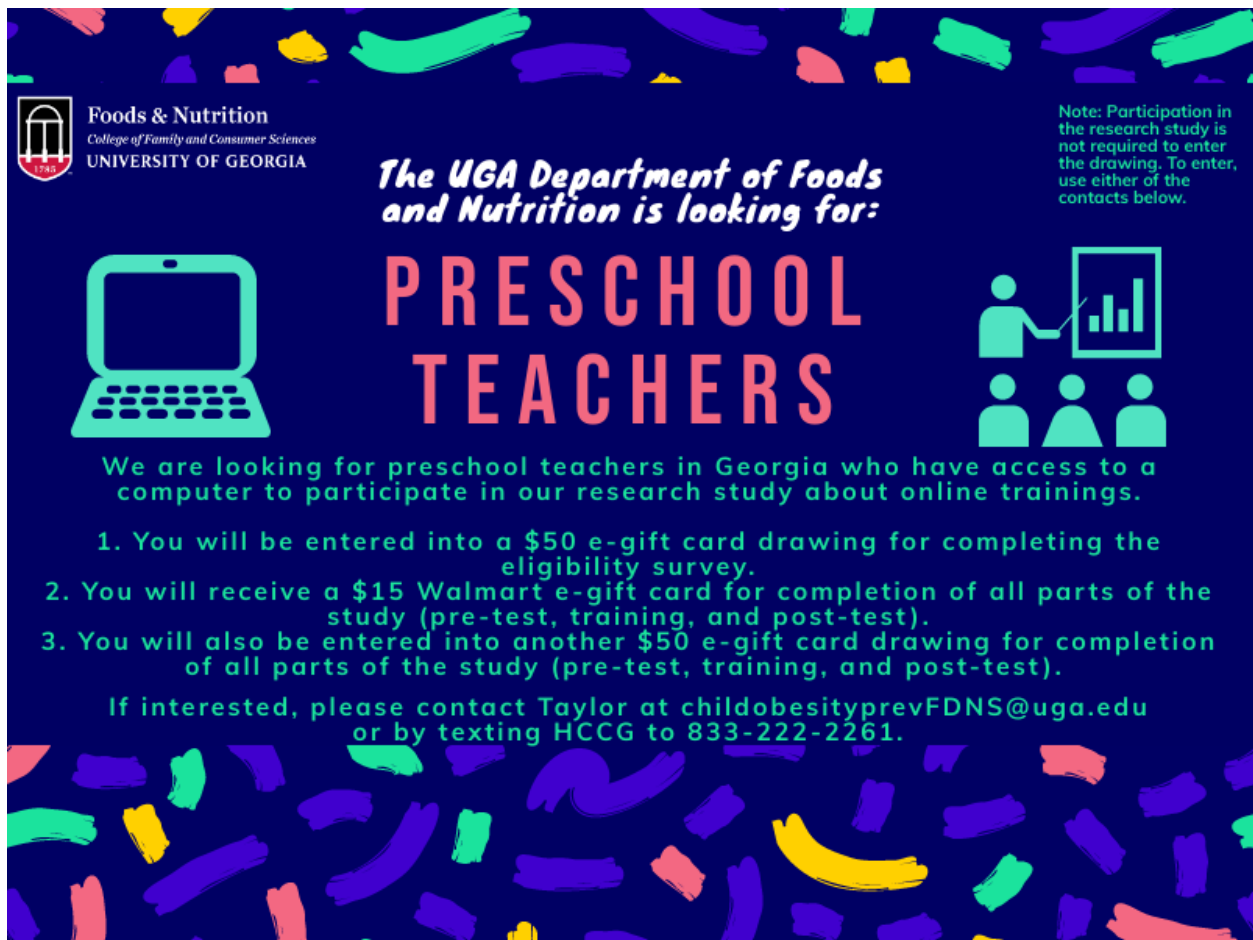
Email: childobesityprevFDNS@uga.edu
Text: HCCG to 833-222-2261

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APPENDIX G

RECRUITMENT SOCIAL MEDIA GRAPHIC