# A Qualitative Analysis of Formative Research Used to Develop a Pilot Digital Intervention for Improving Diet Quality and Increasing Redemption of WIC-Approved Foods

by

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Thesis submitted in partial fulfillment of
the requirements for the degree of
Master of Science in the Duke Global Health Institute
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2022

ABSTRACT

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## Abstract

Background: The prevalence of childhood obesity in the US is high; this includes young children living in low-income households. Many of these children are served by the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Digital interventions that target caregivers enrolled in WIC show potential for childhood obesity prevention. This study aims to describe 1) the formative research for developing a pilot digital intervention focused on improving diet quality and increasing redemption of WIC-approved foods, and 2) the challenges faced in developing the intervention due to the COVID-19 pandemic. Methods: In-depth interviews were conducted with 13 WIC caregivers. Interviews were recorded and transcribed. Transcripts were coded using structural themes, and analyzed using NVivo 12. A data reduction table was created afterwards and inter-coder reliability was achieved. Results: Fourteen themes clustered into four domains. The first domain centered on how caregivers perceived healthy eating. Definitions for healthy and unhealthy eating depended on the source of nutrition information and contributed to practices of healthy eating. The second domain described the caregiver's purchasing of WIC-approved foods. Fruits, vegetables, milk, cheese, and eggs were the most purchased foods, while yogurt and peanut butter were the least purchased foods. The biggest facilitator to purchasing WIC-approved foods was taste preferences, and the biggest barrier was picky eating. The third domain

described WIC's helpfulness in healthy eating promotion; caregivers believed in the latter and provided suggestions for WIC to help them further. The last domain described the text messaging preferences. It showed that WIC caregivers believed that a text messaging program would help them eat healthier. They preferred receiving text messages weekly, in the morning, and receiving recipes and tips. The COVID-19 pandemic affected implementation of the intervention through disrupting contact with stakeholders, the recruitment process, and the completion of surveys used for intervention feasibility analysis. Conclusions: Future studies should consider utilizing and documenting formative research to guide intervention development. Comprehensive protocols for contacting stakeholders, recruitment, and follow up are important proactive tools during implementation.

## Dedication

This thesis is dedicated to my family, friends, and professors who have supported me unconditionally throughout this journey. A special thank you to baba, mama, Ahmad, Mahmoud, Leen, Aammo Nasser, and Nael for their unwavering confidence in me. Thank you for making me see this adventure through to the end.

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# 1. Introduction

The prevalence of childhood obesity continues to increase, globally as well as in the United States [1-3]. It has reached epidemic levels and its prevalence in the US is estimated to be 19.3%, affecting about 14.4 million children and adolescents [4]. Childhood obesity puts children at a higher risk of developing metabolic syndrome, type 2 diabetes, kidney diseases, and cardiovascular diseases later in adulthood [5, 6]. In addition to physical health outcomes, childhood obesity is associated with stigma, depression, anxiety, ADHD, lower self-esteem, being bullied, and school absenteeism; and therefore, poorer academic performance [7-12]. Childhood obesity has direct and indirect economic effects as well, such as increased medical costs and job absenteeism, respectively [13]. This underscores the importance of preventing childhood obesity early on.

To prevent childhood obesity, it is important to understand the factors that contribute to it. Addressing the root causes of this complex condition is paramount. Genetics [14, 15], the nutritional intake of children, such as increased consumption of sugary beverages and snack foods, along with increased energy intake paired with decreased energy expenditure [16-19], socio-cultural and family factors [20, 21], and poverty and social determinants of health [22-25] are related to childhood obesity.

To address the causes of childhood obesity, several programs have been developed through school-based, child-focused, and family-based interventions [26-29].

Family-based interventions, including both parents, have shown to be successful in eliciting weight loss on the short and long term [30, 31]. Studies show that interventions targeting mothers specifically can be great facilitators of decreasing childhood obesity from the early stages of child development [32-34]. That is attributed to the critical role mothers play in their children's eating behavior, through role modeling, creating food associations, and providing access to certain types of food [35-39].

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is one of the largest federal nutrition assistance programs in the U.S. It serves millions of women, infants and children each month, including half of all infants born in the U.S. WIC helps pregnant, postpartum, and breastfeeding women, infants, and children up to age 5 living in low-income households achieve and maintain a healthy weight by providing healthy foods and nutrition education; promoting and supporting breastfeeding; and providing medical and social-service referrals [40]. WIC food packages are reviewed by the Food and Nutrition Service of the U.S. Department of Agriculture (USDA) to ensure alignment with the Dietary Guidelines for Americans. In 2009, the food packages were updated to include cash value vouchers for fruits and vegetables; reductions in the amount of juice and cheese allowed; a requirement of low-fat/skim milk after the first 2 years of life; and whole-grain instead of refined-grain products. Studies show the benefits of these changes on obesity prevalence among WIC participants, in addition to an increased consumption of whole-grain food, lower-fat

milk, and fruits and vegetables and a decreased consumption of whole milk [41-43]. Despite these positive benefits, WIC has experienced a steady decline in enrollment and retention [44]. This can be attributed to dissatisfaction with the retail experience, such as identifying WIC-approved foods at the stores or the perceived stigma associated with being a WIC participant at checkout in addition to structural barriers, such as prolonged waiting times and difficulties with scheduling appointments and transportation [45-48]. Efforts are needed to maximize program reach and effectiveness.

Smartphone ownership and use has tremendously increased over the past years in the US, reaching 85%, making digital interventions more feasible and promising than ever [49, 50]. In addition, most WIC participants have access to the internet and own cell phones [51]. Digital interventions have become more widely used and are considered scalable, effective, efficient, accessible, and confidential tools to improve health [52-54]. Digital interventions that target childhood obesity by focusing on parents' behaviors, specifically mothers, have proven to be efficacious and have a positive impact on childhood obesity [55-58].

All the aforementioned drove the development of a 3-month pilot digital intervention called Healthy Roots for caregivers receiving benefits from WIC. Healthy Roots aims to improve WIC caregivers' diet quality and increase redemption of WIC-approved foods. Prior to the development and implementation of Healthy Roots, we

conducted formative research to guide the development of the intervention congruent with the needs of WIC caregivers and nutritionists.

Formative research often involves qualitative research methods, which are essential for delving deeper into the research question at hand. It also helps reveal factors that influence decision making/opinions [59, 60]. There are several methods involved in qualitative research, including focus groups, in-depth interviews, uninterrupted observation, and document review among others [60]. In-depth interviews (IDIs) were conducted for this thesis. Although conducting IDIs is time consuming and requires careful planning, the benefits of using IDIs outweigh its limitations. IDIs help obtain information about topics that are more detailed than answers to a questionnaire/survey. IDIs, as the name implies, are interviews that are conducted to elicit a response that allows for the understanding of a topic in depth [61, 62]. IDIs also generate novel knowledge and ideas that may not have been considered previously by the researcher [62]. In addition, IDIs can be used to explore sensitive topics that cannot be discussed in focus groups, i.e. topics that individuals may not be comfortable sharing in front of other people [63, 64].

Again, Healthy Roots is a digital behavioral intervention for WIC caregivers and aims to improve the mother's diet quality through the redemption of WIC-approved foods, as mothers are often gatekeepers of food in the home and heavily influence their infant and child's intake [65]. While the primary purpose of Healthy Roots is to assess its

feasibility and acceptability, the main aim of this thesis is to describe the formative research conducted to guide the development of the Healthy Roots intervention. Since the COVID-19 pandemic had a major impact on the implementation of health programs, since the beginning of the outbreak in 2019 [66, 67] and Healthy Roots is no exception to this disruption in research, another aim of this thesis is to describe the impact of COVID-19 on the implementation of the Healthy Roots intervention and methods to mitigate it.

# 2. Methods

## 2.1 Setting

Initial recruitment plans focused on recruiting participants from Piedmont Health Services, Inc. (PHS). PHS is a network of federally qualified health centers that also serves WIC participants in Hillsborough, Carrboro, Prospect Hill, Moncure and Siler City, North Carolina. The research team has a long-standing partnership with PHS. Thus, the formative research focused on WIC caregivers attending PHS clinics located in Hillsborough (n=11) and Carrboro (n=2). The participants came from those specific two sites, because the WIC nutritionists at those sites were the most engaged and provided the most contact information for interested participants.

## 2.2 Participants

WIC caregivers were told about the study during their appointment with WIC nutritionists and were asked if they were interested. When participants expressed interest, WIC nutritionists recorded their name and phone number on a secure Duke box folder. Following that, the research team would follow up with the interested caregivers. If they were still interested, the research team assessed eligibility. If eligible, the caregivers filled out an online consent form, and the research team helped them complete an online baseline survey, and scheduled a date and time for the interview.

We enrolled 13 caregivers receiving WIC benefits to guide the development of the intervention. Prior work supports our decision to recruit a sample size of at least 10

participants. For example, a study conducted by Guest et al. showed that for understanding common perceptions and experiences among relatively homogenous groups, 12 interviews would be enough [68]. Although ideally we would want more than a sample size of 13 participants, recruiting just 13 participants was feasible given the recruitment challenges faced due to the COVID-19 pandemic which will be discussed under aim 2. Recruitment occurred from May 2020 through August 2020. The flow of participants through the Healthy Roots' formative research is presented in figure 1.

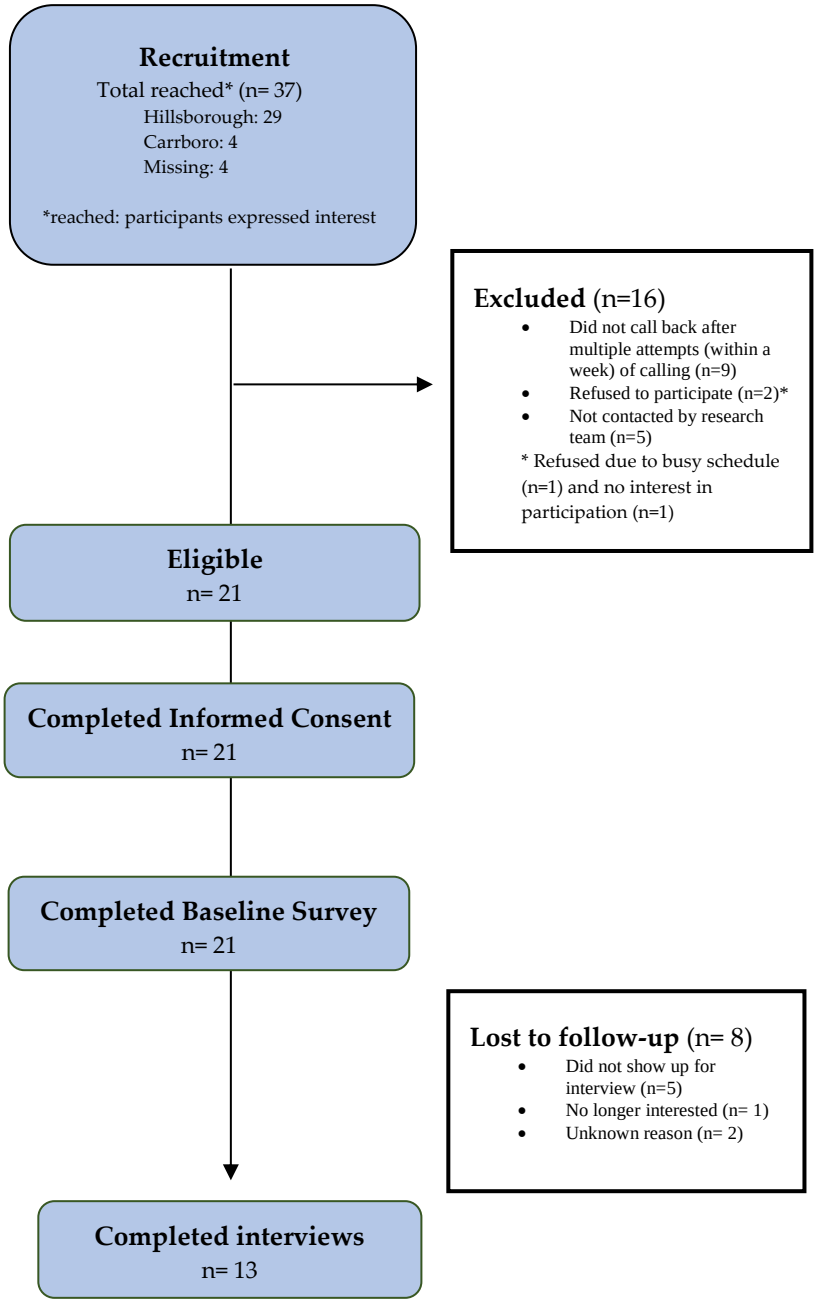


**Figure 1: Consort diagram describing flow of participants through the formative research**

The participants were interviewed if they were eligible according to the following criteria: caregivers with a child who is 2-years old or younger and receiving benefits from WIC, have a cell phone that can receive text messages, and are English speakers.

## 2.3 Procedures

The original research plan included conducting several focus groups. However, due to stay-at-home orders associated with the COVID-19 pandemic, IDIs were conducted instead. In addition, the formative research begun during the beginning of the pandemic, when Zoom and other platforms were not readily used, so conducting an online focus group would have been difficult for WIC caregivers. Additionally, the information sought can be considered sensitive and participants may prefer sharing information privately instead of sharing this information with a group. As such, the pros of IDIs outweighed those of focus groups for our research question, given the resources and time of implementation.

The interviews were in-depth, semi-structured interviews that allowed for probing. The interview guide was developed by MCK, with input from stakeholders such as WIC nutritionists and content experts in qualitative research. The interview guide consisted of mostly open-ended questions, and some close-ended questions, related to the participants' redemption of WIC-approved foods received in their packages and the methods of cooking them; participant's thoughts about healthy eating

and their practice of it; and WIC's helpfulness – or not – in the promotion of healthy eating. Other questions included participant's thoughts about digital interventions. The interview guide can be found in Appendix A. Table 1 also outlines the topics included in the interview guide.

**Table 1: Topics included in the interview guide**

| |
|---|
| Participation in WIC |
| Foods liked by participant |
| Foods disliked by participant |
| Foods mostly purchased |
| Foods least purchased |
| Healthy Eating |
| Definition of healthy eating |
| Cooking methods |
| WIC's helpfulness in healthy eating promotion |
| Source of nutrition information |
| Text Messaging |
| Helpfulness of text messaging |
| Frequency of receiving text messages |

Digitally audio-recorded telephone interviews (n=13) lasting between 13 and 39 minutes, with the average of 25 minutes, were conducted between June and September 2020. MCK, the principal investigator (PI), who has experience conducting qualitative interviews, conducted the first interview and reviewed the subsequent 12 interviews, conducted by two clinical research coordinators, for reliability. The participants received a $25 Walmart gift card after the interview, as an appreciation of their time and input. All interviews were transcribed by a professional transcription agency, Rev.com, in January 2021. The author then verified the accuracy of all the transcripts.

Prior to the implementation of Healthy Roots, we conducted a rapid analysis of the interviews using the Rapid Identification of Themes from Audio Recordings (RITA) method. RITA is a pragmatic, speedy, easy, non-verbal information retaining procedure used to analyze qualitative data [69]. This provided us with a quick summary of the interviews and helped in the development of the intervention according to our results. However, for this thesis, I conducted an in-depth thematic analysis of the interviews to better capture the essence for future intervention development to improve WIC redemption. This also allows us to compare the effectiveness of using RITA vs. an in-depth thematic analysis when developing interventions. All study procedures were approved by the ethical review board at Duke University.

## 2.4 Analysis

We used an in-depth thematic approach to data analysis, which is an accessible and flexible approach used to identify, analyze, and report themes, i.e. patterns, within the data [70, 71]. NH repeatedly read the transcripts and explored the participants' thoughts and experiences regarding healthy eating and thoughts about the development of a text messaging program designed to improve their food choices. Structural codes, with an emergent code, were used to create a codebook which contains 14 themes clustered into four domains based on the similar concepts they discuss. Consultation with the qualitative methods consultant at the Duke Global Health Institute occurred frequently, to discuss the development of the codebook. NH and MCK each

independently coded the 13 interviews using NVivo12 [72, 73]. Intercoder reliability (ICR) was conducted to improve the quality and credibility of the coding process by improving its systematicity, communicability, and transparency [74, 75]. The initial ICR conducted had an overall kappa of 0.60. Any individual code level that had a kappa below 0.81 [76, 77] was reviewed as a team and every discrepancy was discussed and corrected. Such discussions and corrections were feasible given the small sample size. Agreement was met on every code and the overall kappa improved to 0.96. A data reduction table was created using the common coding. Salient quotes were used to illustrate each theme.

# 3. Results

## 3.1 Aim 1

Aim 1: Findings of the formative research to guide the development of the Healthy Roots digital intervention.

### 3.1.1 Description of the sample

The characteristics of the 13 female caregivers who completed the interviews are included in Table 2. These women had at least one child who was 2-years old or younger and was receiving assistance from WIC. With a mean age of 31 years (range 23 - 45), just under two thirds of participants (n=8) identified as white, with one of those participants identifying as white and Hispanic/Latina. The remaining five participants identify as Black. Most participants (n=11) were recruited from the Orange County Health Department in Hillsborough. About half the participants (n=7) had some college education or obtained a college degree, with five participants graduating from high school.

**Table 2: Characteristics of the participants (n=13)**

| | | |
|---|---|---|
| **Age, mean in years (range)** | | 31.4 (23.0-45.0) |
| **Community Health Center, % (n)** | **Hillsborough** | 84.6 (11) |
| | **Carrboro** | 15.4 (2) |
| **Race/Ethnicity, % (n)** | **Black** | 38.5 (5) |
| | **White only** | 53.8 (7) |
| | **White and Hispanic/Latina** | 7.7 (1) |
| **Education, % (n)** | **Some high school** | 7.7 (1) |
| | **High school** | 38.5 (5) |
| | **Some college** | 30.8 (4) |
| | **≥ College degree** | 23.0 (3) |
| **Married, % (n)** | | 30.8 (4) |
| **Employed*, % (n)** | | 38.5 (5) |

*Both part-time (n=2) and full-time employment (n=3)

### 3.1.2 Qualitative findings

The qualitative findings are presented below. Domain 1 is in relation to healthy eating. This is followed by findings on the purchase of foods found in the participants' food packages (Domain 2). Then, there is a presentation of the findings on WIC's role in promoting healthy eating and ways WIC can help participants eat healthier (Domain 3). Lastly, participants' thoughts about a text messaging program designed to improve participants' healthy eating behavior, its content, and frequency of receiving text messages, are discussed (Domain 4). Quotations are used to illustrate the findings.

## Domain 1: (Un)healthy Eating

Participants defined healthy and unhealthy eating, from their perspectives. They also reported their sources of nutrition information, which helped form those perspectives. In addition, they also mentioned the way they practiced healthy eating, given their definitions.

### Healthy eating definitions

Healthy eating has different definitions according to different individuals. Of the participants who responded to our question about what healthy eating means to them (n=11), just over half (n=6) reported eating fruits and vegetables on a daily basis and adding them to daily meals. Other definitions of healthy eating according to the participants included proper portion control, moderation, balance and variety of foods when eating, eating fresh, unprocessed, organic and/or whole foods, eating proteins and whole grain foods, eating foods that help with digestion, and staying hydrated.

**Supporting quotes:**

> *If you know how to control it and you don't intake too much junk food. It is not hard to have a healthy diet and enjoy some junk foods every once in a while.*
> - *29-year-old, white mother*

> *I think healthy is the less that you have to do to it [unprocessed], to me, the healthier it is.*
> - *31-year-old white mother*

> *If you get organic, you know that they're not getting all of them hormones in it [meat].*
> - *45-year-old, white grandmother*

## Unhealthy eating definitions

Participants were asked to specify definitions of foods or behaviors that are not included under healthy eating and are considered unhealthy. Most participants who responded (10/12) mentioned high sugar foods or foods containing added sugars as unhealthy, such as ice cream, cakes, chocolate, sodas, juice, brownies, and candies. As a 34-year-old Black mother said, "Things that I like ... Like cake, ice cream, chocolate." This definition of unhealthy eating contributes, according to participants, to their negative health effects on the body like the effect of sugary beverages on one's dental health.

Half of the participants (n=7) also considered high sodium foods and processed foods to be unhealthy, such as canned foods, chips, macaroni and cheese, and hotdogs. For example, a 30-year-old, white and Hispanic/Latina mother, who said "Canned food is very high in sodium. Sodium is not good for your body. Fast food is very greasy, and it's not good for your body, either."

Other examples of unhealthy food definitions included fast foods (n=4), and overconsumption of any foods (n=2). One 45-year-old, white grandmother reported whole wheat foods to be unhealthy, believing it raises blood glucose and insulin levels: "We think whole wheat's not healthy because my husband does all this stuff with healthy eating and he's done a lot of research and study on it and he's found that the whole wheat actually raises your glucose and your insulin levels." Another participant

reported foods that are labeled as "light" as unhealthy because of their aspartame content.

### Source of nutrition information

Participants refer to different sources to get information about nutrition, including healthy eating and meal preparation information. The credibility of this information depends on the credibility of the source of this information. Almost all participants (7/8) who answered this question reported obtaining their nutrition information from online resources, i.e. resources that require the internet, such as using Google, YouTube, Pinterest, and Facebook. Most participants (5/8) also referred to WIC nutritionists to get nutrition information; the nutritionists at WIC would talk to the participants about healthy eating during their appointments or refer them to online resources that help with meal preparation such as Pinterest. Other cited sources of nutrition information included recipes, friends and family members, food labels, partners, cooking shows, and research. One participant also mentioned that she is her own source of information because she relies on her common sense.

**Supporting quotes:**

> *[The WIC nutritionist] just broadened my horizon as far as things to do.*
> - *34-year-old, Black mother*

> *It might be the weather guy from Channel 11 News. He has been sharing some recipes, and if I like them, I'll save those as well.*
> - *39-year-old, Black mother*

## Healthy eating practices

Participants reported their healthy eating behaviors, given their definitions of healthy and unhealthy eating and the sources of nutrition information that help them form those definitions. Half of the participants who answered the question regarding their healthy eating practices (6/12) reported trying to include fruits and vegetables with all their – and their children's – meals on a daily basis, avoiding high salt foods and processed foods such as frozen meals, and avoiding high sugar foods and beverages. Other practices of healthy eating included finding healthier ways to prepare meals such as grilling and baking instead of frying, avoiding junk food, using cast iron pans, eating in moderation, following certain eating patterns such as intermittent fasting, eating organic foods, comparing food labels, eating fresh foods instead of canned or frozen foods, avoiding foods labeled as "light" due to their aspartame content, avoiding supermarkets that sell in bulk in order to avoid buying unhealthy foods such as cakes in bulk, diluting juices, and sticking to routines.

**Supporting quotes:**

> *I thought that I was getting something healthy because it was a little snack bar for my son and then I looked at the sugar and it was like 25% of your daily value and it was just such a small little snack bar. And I was like, "Oh my gosh, this is really bad."*
> - *27-year-old, white mother*

> *Go to the event and if there's food there, you want to eat, eat it, but eat small portions of it.*
> - *45-year-old, white grandmother*

*So, if I go ahead and write up my calendar on what I plan to fix, that way I'm not fixing the same thing so close together, it helps me to organize what I need to get from a grocery store.*

- *27-year-old, Black mother*

## Device used to get information about healthy eating

When 11 participants were asked if they use their phone, computer, or tablet to get information about healthy eating, almost all participants who responded (7/8) mentioned that they use their phones to get information about healthy eating for convenience and ease. Some participants (4/8) mentioned using their computers, along with their phones, to get such information, except for one participant who reported using her computer exclusively. Only one participant mentioned using a tablet, along with her phone and computer.

**Supporting quotes:**

*Yeah, it's just convenient. I can just easily pull it up, search in what I'm looking for and there's always something that's going to pop up, more than one option.*

- *27-year-old, Black mother*

*I just strictly use my phone. Yeah, I just use my phone for everything… Yeah, it's just easier, it's right in your hand.*

- *29-year-old, white mother*

The rest of the participants (3/11) did not provide a clear response. They just responded by Yeah or I do, which shows that they used at least one of those items to get information about healthy eating, but did not specify which ones.

## Domain 2: Purchase of WIC-approved foods

Participants reported the least and most purchased WIC-approved foods, and the barriers and facilitators, respectively, affecting these purchasing behaviors.

### Most purchased foods and Facilitators to these purchases

Out of 13 participants, participants cited the following foods as their most purchased foods among their WIC packages in the order presented in table 3.

**Table 3: Most purchased WIC-approved foods (n=13)**

| Foods most purchased | Number of participants who reported these foods |
|---|---|
| Fruits | 12 |
| Vegetables | 11 |
| Milk | 11 |
| Cheese | 11 |
| Eggs | 8 |
| Bread | 8 |
| Cereal | 7 |
| Peanut butter | 6 |
| Juice | 5 |
| Yogurt, Fish, Beans | <5 |

The most cited reason for purchasing these foods, according to all 13 participants, is that the foods are used or liked by the children and/or themselves. Other reasons include that the foods are healthy, tasty, and free, and that there are a lot of options that are provided such as lactose free milk and soy milk. As a 30-year-old, white and Hispanic/Latina mother said, “Because it's healthier eating for me and my kids.”

## Least purchased foods and barriers to these purchases

Out of 12 participants, the following have been reported as the least purchased foods among the participants' WIC packages in the order presented in table 4.

**Table 4: Least purchased WIC-approved foods (n=12)**

| Foods least purchased | Number of participants who reported these foods |
|---|---|
| Yogurt | 6 |
| Peanut butter | 3 |
| Bread | 3 |
| Cereal, Beans, Fish, Milk, Juice, Eggs, Brown Rice, Canned Foods, Specific Fruits (such as Cantaloupe and Watermelon), Specific Vegetables (such as Broccoli) | <3 |

The biggest barrier for purchasing WIC-approved foods, according to most participants (8/12) is that their children are picky eaters and dislike the foods. Only 2 participants out of 12 reported not purchasing WIC-approved foods because they personally dislike those foods. Other barriers mentioned by the participants included the low amount of money allocated for purchasing fruits and vegetables; participants' trouble finding WIC-approved foods in stores because the labels are too small in certain stores, such as Walmart, as compared to other stores such as Food Lion; the big sizes of foods which would lead to food waste; children's health conditions; the limited options of WIC-approved foods participants can purchase; the knowledge of the negative health

effects of some of WIC-approved foods (such as juice); and the lack of knowledge about how to cook certain foods.

**Supporting quotes:**

> *They [children] see me pulling something out of the can, they be like, "Hold on. That looks like a vegetable. I hope you know I'm not going to eat that.*
> - *27-year-old, Black mother*

> *That's why I don't give it [juice] to 'em, because it's bad on their teeth and everything.*
> - *45-year-old, white grandmother*

> *Sometimes I have trouble figuring out what brands of tortillas and other whole wheat stuff places are participating in WIC with because only Food Lion will put up the WIC signs and I haven't seen WIC signs in other stores. Like, Walmart is closer to us and they don't have their signs.*
> - *27-year-old, white mother*

## Domain 3: WIC's role in healthy eating

When asked about the role WIC plays in promoting healthy eating, participants presented a variety of ideas about how WIC helps achieve that and how WIC also helps with matters other than healthy eating. They also presented ways that WIC can help them eat healthier.

### WIC's helpfulness in promoting healthy eating

All participants reported that they believe that WIC helps them eat in a healthier way, as a response to the question "Do you think the WIC program helps you eat healthy?" The main reason provided behind this belief is that WIC provides them with

only healthy foods within their food packages, that they would not be able to purchase otherwise.

> *It gives access to some healthy items that we need daily.*
> - *29-year-old, white mother*

Another reason reported is that the WIC nutritionists are incredibly nice and helpful; they are a great source for credible nutrition information about healthy eating and they sometimes help refer participants to other resources that can provide them with recipes, snack ideas, and physical activity recommendations.

> *Y'all have great people working for you. I've never met anybody that was not that nice and did not sit there and listen to me and hear me out. You got great people working for you.*
> - *29-year-old, white mother*

The third most commonly cited reason is WIC's resources, including educational pamphlets and brochures, shopping guide, and MyPlate and food models which help them with portion control. Other reasons include that WIC allows participants to try new food items such as soy milk and lactose-free milk that they wouldn't buy otherwise, and WIC provides the best brand for foods.

> *Yes, because it [WIC] gives you a lot of information and a lot of resources if you have questions. So, yes. I think it's helpful.*
> - *29-year-old, Black mother*

A couple of participants (2/13) shared that although they consider WIC to be helpful in promoting healthy eating, they also think WIC can do better. That is because although WIC offers healthy foods, one participant said that they do not offer guides to

help them cook or use these foods. This 34-year-old, Black mother went on to share that nothing can help one eat healthy unless they are willing to: "It's just a mind over matter thing for me as far as how I'm going to eat healthy because I can eat healthy without WIC or with it, you know what I'm saying? So, that's just me." Another participant believes that WIC does not offer healthy foods as she believes that whole wheat and whole grain foods are not healthy.

### Other benefits of WIC

Few participants (3/13) mentioned that WIC is helpful in ways others than just promoting healthy eating. That is, WIC has helped the participants by providing them with formula which is expensive, offering breastfeeding classes, and helping them with their children's picky eating or feeding transitions.

> *That [Formula] is definitely a blessing to me because a can of milk is expensive… But also the lady [WIC nutritionist] that I go to, she gives me like different eating habits and when to know how to transition from the bottle to the sipping cup. So, those are helpful.*
> - *34-year-old, Black mother*

### WIC's material vs General online material

Six of the participants commented on the comparison between the material WIC offers (including its website, physical material such as brochures, and appointments with WIC nutritionists) and online material (such as Google). Two of these participants could not make a comparison, because they don't use WIC's material.

*I haven't really explored it [WIC's website] to even understand it may have recipes on there or it may have other things that I could use for dinner.*
- *34-year-old, Black mother*

Two believe that WIC is more helpful than online material because you can get more answers during your appointment with WIC nutritionists rather than just looking up your questions online and because WIC focuses on more healthy food items compared to Google.

*I guess some of the stuff that a nutritionist does, I could also just look up online on different blogs for toddlers and babies. So it's not really that different but it's a little more helpful to have a conversation with someone.*
- *27-year-old, white mother*

Two believe that online information is better, because although WIC provides healthy foods, online sources provide information on how to utilize such foods.

*They give me just the staple foods, whereas online would give me a little bit more information on how to make things, portion sizes, stuff like that.*
- *23-year-old, white mother*

### Ways WIC can help

Around half of the participants who responded to the question that asked them to mention ways WIC can help them eat healthier (5/12) said they wish WIC could provide them with more money for fruits and vegetables because what they are currently getting is not enough. More money would help them have fruits and vegetables that last for the entire month. Of note, during the pandemic, but after these

interviews were collected, WIC increased the amount of fruits and vegetables CVV (Cash-Value Voucher) from $7-11 to $24-47 [78].

> *With my WIC package, I only get $9 for fruits and vegetables. And I mean, in this day and age, that's not really a lot to do with what fruits and vegetables you can get.*
> - *27-year-old, white mother*

Around half of the participants (n=5) also said that WIC can help by providing more options for foods such as providing almond milk or vegetable smoothies and healthier cereal options. Other wishes from participants were that WIC could send recipes to parents, update the pamphlets they hand out to participants, offer organic food options, focus more on parents and not only on children, offer smaller sizes of foods (such as small tubs of yogurt instead of a big one and slices of cheese instead of the whole block), tailor packages according to the health conditions of the participants (and their household members), offer proteins such as chicken, and instruct stores to have bigger labels to indicate which foods are WIC approved foods.

**Supporting quotes:**

> *WIC could offer some type of weekly or monthly healthy recipe little sheet or something. Maybe once a month, they could pick up a recipe and send it out through emails or something.*
> - *29-year-old, white mother*

> *[WIC should] not just have ideas for babies and finger foods and what things you can feed your children. I think they should include the parents as well.*
> - *39-year-old, Black mother*

*I don't understand why they do it like that because honestly I think it's a waste, because we don't eat a whole lot of yogurt, so it just sits in my refrigerator and then goes bad I throw it out and when it's in that big container… They have a one size fits all deal, and that just doesn't work when you're talking about food and different people's body types and what their health condition and what's going on in their bodies.*

- *45-year-old, white grandmother*

## Domain 4: Text Messaging Program to improve healthy eating

When discussing a text messaging program aimed at improving healthy eating, participants generally had positive feedback about the development of such a text messaging program. Participants shared their ideas about what the text messaging program could include and when they prefer to receive these text messages.

### Thoughts about the Program

Most participants (11/13) believe that developing a text messaging program aimed to improve intake among WIC caregivers such as themselves is a good idea, as long as it is helpful and provides non-repetitive information.

*I think it will definitely help a lot of us improve the way that we eat and selecting our food.*

- *30-year-old, white and Hispanic/Latina mother*

A participant also said that it is a good idea, as long as it gives participants the option to opt out.

*Maybe they work from home and they use their phone for work. And if they're already getting a lot of emails and texts about work or something else, they may feel like it's overwhelming, but I think it would be a good idea.*

- *39-year-old, Black mother*

Two participants compared receiving text messages to emails, and believe that receiving texts is much easier than emails.

> *A lot of times people don't check their emails so I feel the texts would be more accessible.*
> - *27-year-old, Black mother*

### Content of the program

Most participants (8/13) reported wanting recipes as the content of the text messages. Some specifically mentioned wanting healthy, inexpensive, and quick recipes or recipes for foods in season. The second most common content reported is tips and nutrition suggestions for both kids and their parents (6/13). Other ideas included giving examples of the health benefits and nutritional value of the foods provided in WIC food packages, healthy eating habits that parents can follow, portion control, moderation, balance in meal preparation, motivational messages, research, and anything that is considered informational.

**Supporting quotes:**

> *Because sometimes with a limited selection of things, it's hard to come up with new ideas of what to make with the food.*
> - *27-year-old, white mother*

> *Maybe just if you give like a tip of the day, being like, "Hey, I don't know if you've tried this or not." Or I don't know, it's just kind of hard to... Yeah, text messages and tips, they would be helpful, yes.*
> - *29-year-old, white mother*

> *I think it would help people to know different things, ways of eating to be healthy.*
> - *45-year-old, white grandmother*

### Frequency of receiving text messages

When asked about their thoughts about the frequency of the text messages, most participants (n= 10) reported preferring to receive text messages once a week. Few participants suggested twice a week (n=1), every other day (n=1), or biweekly (n=1). Once a week was the most preferred frequency due to several reasons, such as participants are continuously reminded of the program and frequencies more than once might get overwhelming.

**Supporting quotes:**

> *Once a week, because sometimes people run out of ideas and then you send a text saying, have you thought about this type of meal and then they'll, Oh yeah, well, okay, I could do that.*
> - *45-year-old, white grandmother*

> *Once every week would probably be right in the middle, perfect spot.*
> - *29-year-old, white mother*

> *Because like I said, a lot happens during the week and you may try one idea, one day. And then you need something else for the next. So every other day would be good for me.*
> - *38-year-old, Black mother*

As for when receiving text messages during the day, around half of the participants (5/13) suggested the morning time. That is because it's a reference for the participants if they want to go grocery shopping later during the day or to get ideas for what to cook for dinner. They can also read the messages while they're on their way to

work. Other suggestions included anytime during the day, anytime between 9 am and 5 pm, and afternoon or evening.

**Supporting quotes:**

> *Just because I'm up. I have to work. So, I am constantly doing things. I may not have time to even talk, but I can look at my phone and read an article ahead of time versus at night, taking care of her. It's more of a downtime.*
> - *34-year-old, Black mother*

> *So I have time to think about during the day and then I'd be able to think about a dinner plan.*
> - *23-year-old, white mother*

## 3.2 Aim 2

Aim 2: Presentation of the challenges faced during the Healthy Roots digital intervention implementation during the COVID-19 pandemic.

### 3.2.1 Implementation of Healthy Roots

Healthy Roots is a 12-week pilot digital intervention offered to caregivers enrolled in WIC to improve their diet quality and increase the redemption of WIC-approved foods. Although the implementation will be described briefly in this paper, it will be described in great detail in another publication. The recruitment for the intervention began in March 2021 and ended in June 2021 and the implementation was completely remote. Interested WIC caregivers completed an eligibility screener. If eligible, they signed the consent form and provided us with their contact information and their availability. Next, they completed 3 baseline surveys: the first asking about their demographic

information and the second and third surveys are ASA24 dietary recalls, one representing their intake on weekdays and the another representing their intake on weekends. After all these steps were completed, participants started receiving text messages over 12 weeks to help them meet 6 overall behavior change goals. These goals were aimed at an increased intake of (1) fruits, (2) vegetables, (3) greens and beans, (4) whole grains, (5) nuts and peanut butter, and (6) dark green vegetables. A tracking survey was sent every week to check-in with the participants in relation to their goals. Tailored feedback messages were sent as a response to their answers to this tracking survey. After these 12 weeks, participants were asked to complete another 2 ASA24 dietary recalls (weekday and weekend recalls) and a post-satisfaction survey. The study was finished in December, 2021. Although 162 participants expressed interest, 54 participants were enrolled in the study; 47 of which completed the study, 2 withdrew, and 5 were lost to follow up.

### 3.2.2 Challenges faced while implementing Healthy Roots during the pandemic

The World Health Organization declared COVID-19 a pandemic in March 2020 [79]. Recruitment for the IDIs began in May 2020 and recruitment for the Healthy Roots pilot study began in March 2021. The academic research enterprise was impacted by COVID-19 [80], and Healthy Roots was no exception. Below are the challenges faced by Healthy Roots that can be attributed fully (Contact with WIC nutritionists and Recruitment) or partially (Completion of Surveys) to the pandemic:

## I. Contact with WIC nutritionists for recruitment

Prior to the pandemic, the plan was to have in-person meetings with the WIC nutritionists, the primary recruiters, from Piedmont Health Services Inc. (PHS), which is a private, non-profit health system that operates Federally qualified community health centers in North Carolina that also administer WIC benefits. We could not have those in-person meetings due to the physical distancing precautions and quarantine restrictions that were imposed to prevent the spread of COVID-19 [81-83]. The research team relied on emails and phone calls to communicate with the nutritionists to ensure proper and continuous recruitment for the pilot study. To orient the PHS WIC team to the project and plans for the formative research and the pilot study, the PI gave an online presentation where she elicited feedback on the interview guide and proceeded to do so continuously until the interview guide was finalized. The PI also had a zoom meeting with the WIC nutritionists in order to discuss the recruitment procedures for the pilot study. Feedback was solicited from them, in the form of a Qualtrics survey. It included questions about the work of nutritionists with WIC participants, type of foods that are in the WIC package, and thoughts about Healthy Roots and suggestions to improve it.

## II. Recruitment

Recruitment was halted due to the inability of WIC nutritionists to conduct in-person recruitment. An initial plan was for WIC nutritionists to hand out flyers, including a QR code that would direct participants to Healthy Roots, in their offices

during appointments. Because everything went remote, we could not do that. To combat this issue, we developed a comprehensive follow up protocol to contact interested WIC participants via phone and text in an effort to support recruitment for the pilot study. In addition, although the initial protocol included only WIC participants from Piedmont Health Services, we decided to open the study up to all WIC participants in the state of North Carolina due to a difficulty in meeting the recruitment timeline. We partnered with the WIC office in Wake County, the 2nd most populated county in North Carolina. However, the only way of recruitment through Wake County was mailing brochures to new WIC caregivers. The Nutrition Services Branch within the North Carolina Division of Public Health, which implements the WIC program for North Carolina, also alerted all WIC directors in North Carolina about Healthy Roots via email.

## III. Completion of Surveys

The participants were asked to complete the consent, baseline survey, four ASA24 surveys, and post-satisfaction survey on their own, online. These surveys are important because they help assess the feasibility of the intervention and its success in improving the diet quality of participants. However, some participants could not complete the surveys by themselves, due to many reasons including the pandemic fatigue. To combat this, we developed a thorough follow up protocol to remind and/or help the participants complete the surveys until a maximum number of contact attempts

was reached. Helping the participants complete the surveys included verbally asking them the survey questions while recording their responses.

# 4. Discussion

The results show that there is no one universally accepted definition for healthy and unhealthy eating among individuals, and it also depends on their source of nutrition information which also varies among individuals. These results confirm previous research and show that understanding these definitions will help in creating and delivering messages to inform the necessary changes in promoting healthy eating [84, 85]. These definitions also contribute to individuals' practices of healthy eating as supported by previous research [85, 86].

The most and least purchased foods reported would help determine what WIC foods should be focused on upon the intervention development, i.e. focusing on least purchased foods to help promote them. The most purchased food items identified are fruits, vegetables, milk, cheese, and eggs. The biggest facilitator for purchasing these foods is the preference of children and caregivers. The least purchased foods are yogurt and peanut butter. Contrary to the facilitators of purchasing WIC-approved foods, the biggest barrier is the preference of children only, i.e. most of the children were picky eaters. A study conducted in 2014 showed that the foods redeemed the most were infant formula, milk, fruits and vegetables, and eggs and the foods with the lowest redemption rates included jarred baby meats, beans/peanut butter, infant cereal and jarred fruits and vegetables, and whole grains [87]. Our findings confirm the results of this study, where fruits and vegetables, milk, and eggs were included in both studies as the most

redeemed foods and peanut butter as the least redeemed food. Our study added cheese as another most redeemed food and we included yogurt as one of the least purchased foods as opposed to whole grains. Since our study focused on the foods WIC caregivers purchased for themselves only, the foods we listed did not include infant foods.

The barriers to the full redemption of WIC-approved foods identified in this study include children's picky eating behaviors, caregivers' dislike of some foods, insufficient fruits and vegetables benefits, small in-store 'WIC-approved' labels, receiving excess amounts of certain foods, inflexibility to accommodate children's health conditions, limited variety of food options, and not knowing how to prepare certain foods. These findings align with those identified in recent studies assessing the barriers to full redemption of WIC benefits [88, 89]. Another barrier to be considered is in-store grocery shopping during the COVID-19 pandemic; online grocery shopping has increased tremendously during the pandemic as a way to decrease transmission and adhere to safety precautions [90, 91]. However, there is no equitable access to online grocery shopping for WIC participants and future efforts are needed to make it more accessible to participants and optimize their experience as well [92, 93]. The "Click & Collect" online ordering model, that could be adapted by WIC, has been shown to be feasible and well-accepted by WIC participants; it allows WIC participants to place an online order and then pay and pickup their WIC benefits at the store [94].

In addition, since the most cited barrier was that children were picky eaters, this affected their caregivers' consumption of certain WIC-approved foods, and therefore, their redemption. This underscores the importance of addressing this reoccurring child behavior, which is characterized by food selectivity and refusal to try new foods (neophobia) or foods based on certain sensory features [95, 96]. An expert panel report by the Healthy Eating Research national program shows that the following approaches would help address picky eating. These approaches are, but not limited to, parental modeling (including both parents) of healthy consumption, the availability of healthy foods in the house, having family meals, and promoting food acceptance through repeated exposures to foods, which have shown to be beneficial for developing child healthy eating behaviors [97]. WIC can help by providing education about these aforementioned barriers and how to overcome them via educational material, communication during appointments with WIC nutritionists, raising awareness about these barriers with providers who refer people to WIC, incorporating tips through the WICShopper application, and making structural changes to their application to promote and optimize the participants' online grocery shopping experience.

The findings also show that WIC plays an important role in promoting healthy eating among its adult participants and helps caregivers with breastfeeding and their children's feeding behaviors and transitions. WIC can further help promote healthy eating by providing more money allocated towards purchasing fruits and vegetables

and providing a larger variety of foods. The American Rescue Plan Act enacted in March 2021 includes investments in WIC by temporarily increasing the participants' benefits for the purchase of fruits and vegetables in order to increase access to fruits and vegetables which aims to improve the health, food security, and financial stability of WIC participants during the COVID-19 pandemic [98, 99]. Future research should assess the perceived value of this increase in access to fruits and vegetables.

Most individuals use their phone to get information about healthy eating, making it a great device to reach out to participants with, upon intervention planning and design. A text messaging program could be a great way to improve healthy eating and improve WIC food redemption and is well accepted by individuals. The content of these text messages should mostly focus on recipes and nutrition tips and suggestions. Similarly, the study done by Biediger-Friedman et al. has shown that texting is the most referenced feature that is used by WIC participants in Texas who were participating in their study to improve their health behaviors [100]. In addition, the Lactation Advice Through Texting Can Help (LATCH) intervention has shown to be successful in improving early post-delivery contact and exclusive breastfeeding rates among WIC mother who receive peer counselling [101, 102]. Our digital intervention similarly utilizes the text messaging feature but fills in the gap about healthy eating behaviors for WIC caregivers. More digital interventions targeting the latter should be assessed and developed.

The comparison between RITA (results presented elsewhere) and the in-depth qualitative analysis method shows that RITA is useful when time is a limited resource [103]. That being said, in-depth analysis reveals more details and allows for a deeper understanding of the participants' responses that RITA does not allow for. For instance, for all the themes presented above, RITA did not present information that was mentioned by just a few participants or justifications for the answers provided by the participants as opposed to the in-depth analysis method. However, that does not indicate that RITA is inferior as the results would not have been used differently using any of the 2 methods. Although the intervention was based off of the RITA method's results, it didn't have a different conclusion than that of the in-depth analysis; hence, there was no negative impact on the intervention development. Although RITA, as a rapid technique in qualitative research, is important for reducing time, cost, and reducing interpretation bias [104], it cannot replace in-depth analysis as the latter presents rich information that RITA does not present. Our results are similar to those presented by Neal et al., 2015 [69] which show that RITA should not replace traditional methods of coding which offer more understanding of participants' experiences, but rather should be viewed as a supplemental approach to provide rapid feedback during evaluation or research studies. More studies using RITA vs in-depth analysis are needed to validate the findings of this study and the Neal et al. study.

## 4.1 Study strengths and limitations

The strengths of the present study reside in the analysis and the implementation. Firstly, the duality of coding by two different researchers underscores the credibility of the results presented, leaving less room for error. Secondly, the study shows great adaptivity and flexibility with our recruitment and retention strategies to accommodate the limitations of the COVID-19 shut down.

This study has several limitations. First, two members of the research team were responsible for conducting most of the interviews. Although they both received guidance and training from MCK, an inconsistency in data collection was observed when going over the interviews. Another limitation is the misunderstanding between the interviewer and interviewees. Some questions were not answered/asked properly, and no technique was used to clarify that misunderstanding, which is why there are some missing information. Finally, the small sample size, with only 13 total participants, led to less generalizable but more conservative results. That is, because most participants came from urban settings and immigrant groups were not represented.

## 4.2 Implications for policy and practice

The results of the formative research show the importance of communicating with the target audience of a research study before implementing an intervention to ensure that it is relevant and targeted to their needs. The formative findings can be used to develop the intervention, coupled with previously published formative research and

the literature about previous interventions. Using qualitative data is effective to gather interests from the participants and fill in gaps about their needs. Based on our findings, an intervention aimed at improving WIC caregivers' healthy eating habits and improving their redemption of WIC approved foods, would include text messages, sent weekly in the morning, that include recipes and healthy eating tips. The findings also help inform WIC changes that can address barriers to WIC-approved foods redemption and improve caregivers' diet quality. These changes include tailoring educational material to these topics, raising awareness about these topics with WIC nutritionists and providers who refer people to WIC, and making structural changes to the WICShopper application to promote and optimize the participants' online grocery shopping experience along with raising awareness about such topics to its users, i.e. WIC participants.

## 4.3 Implications for further research

Future studies should consider utilizing and documenting formative research prior to intervention planning and development. This formative research, i.e. using in-depth interviews, has helped develop the intervention at hand successfully. Previous studies have also shown that formative research, including surveys, focus groups, and/or interviews, is useful in creating interventions, and documenting it helps guide other groups to develop their own interventions [105-107]. In addition, our study reflects

the importance of being flexible and creative when recruiting for and implementing research studies. Future research studies should be adaptable to imminent obstacles.

# 5. Conclusion

In conclusion, formative research is essential prior to planning and developing interventions and should be documented in order to guide intervention development for other researchers as well. Although in-depth qualitative analysis provides more detail compared to RITA, the latter is still useful and recommended when time is limited. Finally, the COVID-19 pandemic might affect intervention implementation through limiting contact with the stakeholders, halting the recruitment process, and affecting the completion of surveys necessary for analysis of intervention feasibility. To combat this, researchers should find ways to communicate with stakeholders remotely and regularly and develop comprehensive follow up protocols to ensure proper recruitment and to help participants complete the necessary study tasks.

# Appendix A

## Interview Guide

*ID Number:*

*Date/Time of Interview:*

**"**Hi (participant name), my name is ____ and I am a part of the team at Duke that is developing the Healthy Roots program. How are you doing today? How have things been for you over the past few weeks, especially with the coronavirus still around?

Well, thank you so much for agreeing to talk with me today, especially with all that is going on right now. I really appreciate it. I want you to know that if at any moment you need to stop or have to call me back that is OK. I'm used to being on calls and hearing little voices that need help, so don't worry.

I think the clinical research coordinator told you a little about Healthy Roots, but as a reminder, we are developing a program to support parents and caregivers participating in WIC with food choices. I'm excited to talk to you today and hear your thoughts on the foods in WIC and how you make your decisions around what to eat. This information will be used to create our Healthy Roots program. There are no right or wrong answers to the questions I ask. I am really just interested in hearing your thoughts and experiences. Our call should take about 45 minutes.

As a reminder, taking part in this interview is voluntary. You can refuse to answer any questions and you can also stop the interview at any point if you change your mind.

At the end of the interview, I will get your email address or mailing address so I can to send you a $25 gift card to Walmart in appreciation for your time.

All of the information described to you earlier for keeping you and your information private and confidential remains the same. This means we will not use your name or any information that can identify who you are when we tell others about the results. We will keep your information in secure locations, where only approved Healthy Roots research staff members can access.

What questions do you have for me about this study or anything else? **"**

*[Research staff addresses questions and/or concerns]*

**"**If you don't have any other questions, I will begin recording this conversation.**"**

*[Begins audio recording]*

Semi-Structured Interview Guide

I. First, let's start out with a few questions about your participation in WIC. Let's talk about the type of foods that you can get in your WIC package. As a reminder, the WIC food packages can include milk, Cheese, Tofu, Yogurt, Juice, Cereal, Bread, Brown Rice, Tortillas, Whole Wheat Pasta, Peanut Butter, Legumes, Eggs, Fish, Fruits and Vegetables.

1. Of these foods, which ones are you most likely to buy with your WIC benefits?
    a. Probe: Why do you choose these foods?
    b. Probe: What do you use those foods for?/How do you cook/eat them?
2. Of those foods which ones are you least likely to buy with your WIC benefits?
    a. Probe: Why don't you chose those foods?
    b. Is there anything the WIC program could do to make you more likely to purchase them?

II. Now I'd like to talk with you about healthy eating. Most of us hear that we're supposed to eat healthy. But eating healthy means different things to different people.

3. For you, how would you describe healthy eating?
    a. *Probe:* What kind of foods are included? Why did you mention those foods?
    b. *Probe:* What kind of foods are not included? Why did you mention those foods?

4. Tell me some of the things you do, if any, to make healthy choices when it comes to choosing the foods you and your family eat
    c. *Probe*: Do you cook meals at home? How often?
        i. How do you decide what to cook?
            1. Do you use recipes? If so, where do you get them from?
    d. *Probe*: How do you decide what to buy at the grocery store?

5. Do you think the WIC program helps you eat healthy? If so, how? If not, why not?
    e. *Probe:* Which WIC materials do you find most helpful? How are these materials helpful?
    f. Is there anything WIC provides that is not helpful when it comes to healthy eating?
    g. What else could WIC could do to help you to eat healthy?

Now I'd like to talk about how you get your information about food, nutrition and what to eat.

6. Where do you get information about choosing what to eat?
    a. *Probe*: This can be things like grocery shopping or cooking tips, recipes, food labels, calorie information, ingredients, etc.
7. What online sources do you use? What sources (websites, apps, etc.) do you find most helpful?
        i. When searching online, do you use a phone, tablet or computer?
8. How is the information you look for similar to what WIC provides, if at all?
    b. *Probe: How is the information different from what WIC provides, if at all?*

We are thinking of sending texts to parents and caregivers like you to help improve food choices, but we do not know if this would be a good idea or not. I'd like to hear what you think.

9. Do you think it would be a good idea or not a good idea to send texts to parents and caregivers about how to improve their food choices?
    a. What makes you feel that way?
    b. What are your thoughts about receiving texts to help improve food choices?
        *Probe:* What kind information would you like to receive when trying to choose healthy foods for you and your family?

10. How often would you prefer to receive texts? Weekly? Every few days? Every day?

    c. *Probe:* What times throughout the day would be most convenient for you to receive texts (morning, afternoon, evening)?

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Well, that's all I have for today. Was there anything else you wanted to add? Do you have any questions?

*[Stops audio recording]*

❝*"Thank you so much for your time*. That was really helpful. Would you prefer to receive your gift card via email or in the mail?

*Please tell me your email address so I can send you your $25 Walmart online gift card*

*or*

*Please tell me your mailing address so I can send you your $25 Walmart gift card"*❞

*[Research staff records email or address in REDCap]*

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