NOURISH-C: Implementing a Family Based Weight Loss Intervention In A Church Community

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NOURISH-C: IMPLEMENTING A FAMILY BASED WEIGHT LOSS INTERVENTION IN A CHURCH COMMUNITY

A dissertation submitted in partial fulfillment of the requirements of the degree of Doctor of Philosophy at Virginia Commonwealth University

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Increasing rates of obesity across all race, ethnic, gender, and age groups over the past thirty years have generated significant public health concern. Black children face disproportionately higher risk for overweight and obesity compared with their White peers. Substantial evidence suggests that parent involvement improves pediatric obesity treatment outcomes. Moreover, churches are feasible and culturally congruent places to host health promotion interventions within the Black community. The current study examined the feasibility of disseminating an existing pediatric obesity intervention, NOURISH, in Black church communities. Twenty-five families participated in baseline assessment of the
NOURISH-C. Five churches hosted the intervention and eight individuals were trained to lead the sessions. It was hypothesized that parent participation in NOURISH-C would be associated with improvements in child dietary intake, quality of life, and physical activity. Significant increases in quality of life were found, but no other hypotheses related to child health outcomes were supported. Nonetheless, this study offers a unique contribution to the pediatric obesity literature through its focus on implementing a community based intervention in a primarily Black sample. Outcomes from the primary aim, which assessed feasibility, provide important guidance for future research. Specifically, barriers to and facilitators of the implementation of NOURISH-C are reviewed to inform future church based health promotion interventions. Additionally, current findings provide a framework for future community based iterations of NOURISH.
NOURISH-C: Implementing a Family Based Weight Loss Intervention In A Church Community

The prevalence of overweight and obesity among children and adolescents in the United States has tripled since 1980, generating significant concern among caregivers and health professionals (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Data from the 2012 National Health and Nutrition Examination Survey (NHANES) indicate that 16.9% of children aged 2-19 had body mass indices (BMIs) within the obese range (Ogden, Carroll, Kit, & Flegal, 2014), an increase from 11.9% in 2008 (Ogden et al., 2010). For children, overweight is defined as having a body mass index at or above the 85th percentile for one’s height, age, and gender. Obesity in children is defined by BMI levels above the 95th percentile (Barlow, 2007; Daniels, 2009).

The substantial physical and psychological consequences associated with obesity have also generated significant public health concern. Overweight and obese individuals have an increased risk of type 2 diabetes, asthma, and sleep apnea (Centers for Disease Control, 2009; Daniels, 2006). Additionally, obese children are at risk for poor cardiovascular health, and high blood pressure and cholesterol levels (Deckelbaum & Williams, 2001; Freedman, Dietz, Srinivasan, & Berenson, 1999). These health issues are likely to persist into adulthood. One longitudinal study found that 69% of obese 6 to 9 year olds, 85% of obese 10 to 14 year olds, and 77% of obese 15-17 year olds remained obese as adults (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997).

Obese children are also more likely to experience negative psychological outcomes and lower quality of life compared with their healthy weight peers (Janicke, Marciel, Ingerski, Novoa, Lowry, Sallinen, & Silverstein, 2007; Wallander, Kerbawy, Toomey,
In addition, obese children are more likely to experience social stigmatization and teasing, which can result in lower self-esteem and poor quality of life (Eisenberg, Neumark-Sztainer, & Story, 2003; Stern, Mazzeo, Porter, Gerke, Bryan, & Laver, 2006; Stern, Mazzeo, Gerke, Porter, Bean, & Laver, 2007). Additionally, overweight and obese children more frequently endorse disordered eating attitudes and engage in unhealthy weight control behaviors, compared with normal-weight peers (Lim, Gowey, & Janicke, 2014).

Increased rates of obesity are evident across all race, ethnic, gender, and age groups; however, minority individuals are at greater risk than their White peers (Ogden et al., 2012; Ogden et al., 2014). In the 2012 NHANES survey, minority individuals had the highest rates of obesity: 47.8% of Black adults and 42.5% of Hispanic adults surveyed had BMIs within the obese range. Obesity prevalence among White adults was 32.6%. Similar patterns of weight disparities were evident among U.S. children. The prevalence of obesity among Black children was 20.2%. For Hispanic children, the obesity rate was 22.4%. After controlling for sociodemographic factors, Hispanic children have the highest prevalence of obesity compared with their same aged peers (Bates, Acevedo-Garcia, Alegria, & Krieger, 2008). In contrast, 14.1% of White children have BMIs within the obese range (Ogden et al., 2014).

The purpose of emphasizing differences in obesity prevalence estimates between minority and White children is not to downplay the significance of obesity among White children, but rather to prompt questioning about the systemic sociocultural factors that might be driving these disparities (Franko & George, 2009).

Racial differences in the prevalence of childhood obesity appear to transcend socioeconomic status (SES). In general, youth from low SES families are more likely to be
overweight or obese than their middle class peers (Wang et al., 2007). However, obesity rates are higher for Black and Hispanic children than White children across all levels of SES and parent education (Delva, Johnson, & O’Malley, 2007; Gordon-Larsen, Adair, & Popkin, 2003). Cultural factors likely contribute to these disparities; this hypothesis seems plausible considering that culture shapes many obesogenic factors such as food preferences, food preparation, and attitudes toward diet and exercise (Kumanyika, 2008).

Current rates of obesity nationally suggest that obese children are likely raised in an environment in which parents and many other community members are also obese. It is thus important to consider the systems a child operates within when addressing pediatric obesity, and intervene at the family or community level rather than focusing on individual etiological factors (Harkaway, 2000; Hooper, Burnham, & Richey, 2009; Hudson, 2008; Rhee, 2008). Hooper and colleagues (2014) assert that it is especially important to consider family and community systems for ethnic and minority children. For these children, health behavior norms within their ethnic community or culture could be more salient than health norms in majority culture (Hooper et al., 2014; Kumaniyka, 2008).

Although obesity is common in many families, it remains highly stigmatized (Latner & Stunkard, 2003). It is essential that interventions disseminate health information and encourage behavior change in a non-stigmatizing way. Instead of blaming the obese individual for his or her weight, interventions can empower individuals to become agents of change and to incorporate new health behaviors. For example, Tucker and colleagues (2011) reframe their obesity interventions in terms of promoting “health-smart behaviors,” such as eating breakfast regularly or replacing sugar-sweetened beverages with water. This strengths-based approach encourages individuals to increase the frequency of existing health
promoting behaviors rather than blaming the individual for engaging in unhealthy behaviors. Obesity prevention efforts focusing on improving overall health through lifestyle changes encourage a lifelong commitment to healthy diet and exercise and discourage “quick fix” unhealthy weight loss behaviors (Schwartz & Henderson, 2009). Moreover, empowering participants with increased coping skills, knowledge, and self-efficacy gives families the tools necessary to navigate problematic health behaviors more effectively in the future (APA, 2014).

The current study aimed to examine the role of parents as agents of change in improving child physical and psychosocial outcomes. Additionally, this study explored the role of the Black faith community in facilitating health behavior change. The following review summarizes relevant literature regarding family-based obesity interventions and parent modeling of health-related behaviors and attitudes. Cultural considerations for working in predominantly Black communities are also discussed.

**Family-Based Pediatric Obesity Interventions**

Family-based interventions targeting pediatric obesity modify the diet and exercise behaviors of the entire family to change the obese child’s diet and exercise patterns. Rather than marginalizing the obese child, all family members are encouraged to make diet and exercise changes, improving the health of the entire family. Parents are effective agents of change in pediatric weight loss interventions (Carr, 2014; Golan & Crow, 2004). It is logical to involve parents in these interventions as they have the power to modify many obesogenic factors in the home, including the types of food available, the diet and exercise norms of the family, and what, when, and how much children eat (Golan & Crow, 2004; Keery, Eisenberg, Boutelle, Neumark-Sztainer, & Story, 2006; Hooper et al., 2014; Kral & Rauth, 2010;
Parental involvement is also important because parental weight is associated with child weight status (Strauss & Knight, 1999; McLoone & Morrison, 2012) and child weight loss (Hunter, Steele, & Steele, 2008). Finally, children who are most likely to lose weight in obesity interventions have parents who adhere to the treatment protocol and participate actively in the program (Golan, 2006; Heinberg, Kutchman, Berger, Lawhun, Cuttler, Seabrook, & Horwitz, 2009; Kitzmann, Dalton, Stanley, Beech, Reeves, Buscemi…Midgett, 2010). Thus, parent involvement in obesity interventions is a significant determinant of child weight and health. Healthcare providers intervening at the parent level indirectly influence child health outcomes by shaping parent behavior or providing education to parents (Barlow, 2007).

Family-based obesity interventions are also an economical way to improve the health of an entire family, not just the identified patient (Epstein, Paluch, Roemmich, & Beecher, 2007). This benefit is especially important when working with minority populations who face the highest obesity risk. One study found that parent-only interventions are more cost-effective than family-based obesity interventions with underserved (i.e., rural) populations (Janicke, Sallinen, Perri, Lutes, Silverstein, & Brumback, 2009).

Family-focused interventions can yield long-lasting health changes. In two follow-up studies of children who participated in child-parent weight loss interventions, Epstein and colleagues (1987, 1994) found significant BMI differences between children who had participated in the family-based versus child-only interventions at both five and ten year-follow-up assessments.

Existing parent-only obesity interventions use psychoeducation to teach effective parenting practices and to provide information for parents to make informed nutrition and
activity choices for their families. Weight loss programs targeting parents as the sole agent of
change are more effective at decreasing children’s BMI and increasing fruit and vegetable
intake than programs targeting children alone (Golan, 2006; Golan & Crow, 2004; Golan &
Weizman, 2001; Jansen, Mulkens, & Jansen, 2011). For example, Golan and colleagues
(2006) compared the efficacy of parent-child and parent only behavioral weight loss
interventions for children aged 6 to 11 and found that children in families assigned to the
caregiver-only condition lost more weight than children who participated with their parents.
Additionally, parents were more likely to attend sessions in the caregiver-only condition.
Further, families in the caregiver-only condition made greater reductions to the obesogenic
elements in the home compared with families in the caregiver-child condition. These findings
suggest that parent-only interventions are feasible and effective in treating childhood obesity.

Considering these studies together, there is mounting evidence supporting parent-only
interventions in the treatment of pediatric obesity. Parent-only interventions are as effective
in decreasing weight in overweight children as parent-child interventions (Boutelle, Cafri, &
Crow, 2011). Additionally, these interventions are economical (Epstein et al., 2007; Janicke
et al., 2009) and convenient because the intervention only includes one family member
(Boutelle et al., 2011). At the family systems level, parent-only interventions are preferable
because the obese child is not singled out as the identified patient (Golan, 1998). This
reduces the risk of stigmatizing obese children or inadvertently encouraging them to engage
in disordered eating to control weight (Dietz, 1993; Golan, 1998; Swartz & Henderson,
2009). The following section reviews relevant studies intervening at the parent level to effect
change in child weight.

**Targeting Parent Behavior**
It is essential to target parents in pediatric weight loss treatment and obesity prevention, because they exert considerable influence on children’s weight status by modeling dietary patterns, physical activity, and sedentary behaviors (Lindsay, Sussner, Kim, & Gortmaker, 2006). Findings from the parent modeling literature indicate that what parents do is often more important than what parents say, particularly with respect to diet and physical activity behaviors and attitudes. Childhood obesity interventions targeting parents as agents of change seek to modify several aspects of parent behavior: dietary patterns, physical activity, child feeding style, and parenting style. The following sections briefly discuss each of these behaviors and their relevance to pediatric obesity interventions.

**Dietary patterns.** Parents’ dietary intake is strongly associated with children's intake (Golan & Crow, 2004). This is logical considering that the foods parents consume are likely the same foods available to children in the home. Parents shape their child’s diet by providing food, and also by modeling food preferences and eating habits (Story, Neumark-Sztainer, & French, 2002). Additionally, parents' willingness to try new foods is positively related to children's willingness to eat novel foods (Pliner & Loewen, 1997). Family meals are one way in which children learn food preferences and dietary patterns modeled by parents (Story et al., 2002). Social Cognitive Theory (SCT; Bandura, 2004) also provides a useful framework for understanding the relation between parent modeling of diet and child dietary intake. According to SCT, exposure to parental intake of fruit and vegetables increases children’s self-efficacy to consume similar foods.

For example, one study involving 191 girls found that their fruit and vegetable intake was positively associated with parental fruit and vegetable intake and negatively associated with parental pressure to eat fruits and vegetables (Fisher, Mitchell, Smickilas-Wright, &
These findings indicate that children eat what they see their parents eat, not necessarily what their parents encourage them to eat, highlighting the importance of parental modeling of healthy dietary behaviors.

Miller and colleagues (2011) examined the association between maternal and child fruit and vegetable intake within a sample of thirty-nine primarily low-income, Black families. The researchers utilized the Diet History Questionnaire to assess the amount and frequency of daily fruit and vegetable intake. Results indicated a significant, positive association between maternal fruit and vegetable intake and child diet. The authors also noted that overweight and obese children consumed three fewer servings of fruit and vegetables per day compared with their healthy weight peers. These findings underscore the importance of parental modeling of healthy diet in a predominantly minority sample.

Moreover, Miller and colleagues (2011) concluded that family-based interventions should emphasize increasing fruit and vegetable intake rather than simply focusing on decreasing consumption of energy-dense foods. This recommendation is consistent with the work of Epstein, Paluch, Beecher, and Roemmich (2012) in which interventions increasing fruit and vegetable intake were associated with greater BMI reduction in overweight children compared with programs solely decreasing high-fat food intake. Thus, it is important for family-based studies to intervene at the parent-level to optimize parental modeling of fruit and vegetable consumption.

A discussion of parent modeling of dietary practices would be incomplete without considering the role of sociocultural influences. Parental dietary decisions are shaped by environmental factors such as the availability of healthy, affordable food in the community (Taylor, Poston, Jones, & Kraft, 2006). In addition, history and culture play a role in shaping
dietary patterns. Kumanyika (2008) noted that foods traditionally preferred in the Black community were influenced by the legacy of slavery. Specifically, calorie-dense foods high in fat or sugar were valued because they were associated with survival or because they were unaffordable in the past. Even though such foods are now readily available, (and often lower in cost), traditional preferences for high-fat or high-sugar foods have been transmitted across generations. Noting the paucity of research normed in non-majority samples, Tucker and colleagues (2011) developed and validated a scale to assess barriers to and motivators of health promoting behaviors within an ethnically diverse sample. The barriers to healthy eating that emerged included negative attitudes toward healthy foods, the perceived lack of availability of healthy foods compared with junk foods, and a perceived lack of self-control to choose healthy over unhealthy foods. Tucker and colleagues (2011) noted that in a similar study with an 87% White sample conducted by Fowles and Feucht (2004), different barriers emerged such as the inconvenience of preparing healthy foods compared with unhealthy foods and taste preferences. These findings highlight the fact that interventions promoting healthy eating using research normed on White individuals might not address barriers and facilitating factors relevant to minority individuals.

**Physical activity.** As is the case with diet, the physical and sedentary activity levels of parents are associated with those of their children (Golan & Crow, 2004). For example, one study that used accelerometers to track the relation between the daily physical activity of parents and elementary school aged children found a significant association between parent and child activity for both sons and daughters (Fuemmeler, Anderson, & Masse, 2011). Parents who support their child’s physical activity through logistic support (e.g. driving children to sports practice) or modeling of physical activity are also more likely to have
active children (Davison, Cutting, & Birch, 2003). Additionally, one study of White and Black 9-10 year old girls found that girls who perceived their parents as active were 50% more likely to be physically active than girls who perceived their parents as sedentary. Even at the ten year follow up, girls who perceived their parents as active remained more active, suggesting the long-standing effect of parent modeling of physical activity (Madsen, McCulloch, & Crawford, 2009).

Parents’ sedentary activity is also related to that of their children. McGuire and colleagues (2002) studied determinants of physical and sedentary activity in a diverse sample of adolescents participating in Project EAT (Eating Among Teens). Parents’ sedentary behavior was positively associated with television viewing in Black and Hispanic boys. These findings suggest that encouraging parents to exercise more frequently would increase the likelihood their children would engage in physical activity. One Australian study examined the relation between maternal physical and sedentary activity and child activity among a sample of 304 mother-child dyads. As hypothesized, high maternal sedentary behavior was associated with high child sedentary activity, as well as other obesogenic behaviors such as the consumption of calorie dense, low-nutrient, foods (van Rossem, Vogel, Moll, Jaddoe, Hofman, Mackenbach, & Raat, 2012). These findings suggest that parental modeling of sedentary activity is one important obesogenic factor within the home environment.

When working with Black families, it is important to consider exercise and sedentary activity within an appropriate cultural context. Kimm and colleagues (2002) tracked the physical activity levels of over 2,000 Black and White girls from ages nine to nineteen and found that physical activity declines throughout adolescence. However, rates for Black girls
declined precipitously compared with their White peers. By age nineteen, White girls were twice as likely to exercise as Black girls. The average nineteen year-old Black girl did not exercise at all. Researchers exploring factors driving these disparate activity rates must consider the cultural attitudes about physical activity and sedentary behavior modeled by Black parents. One qualitative study examining beliefs about physical activity among overweight Black mother-daughter dyads found that worries about physical appearance (e.g. broken nails or disheveled hair) were common barriers to physical activity (Boyington, Carter-Edwards, Piehl, Hutson, Langdon, & McManus, 2008).

Cogbill, Thompson, and Deshpande (2011) examined sociocultural factors associated with physical activity among 446 Black adults. These researchers found that high self-reported collectivism, which they operationally defined as the tendency to prioritize group goals over personal goals, was associated with increased physical activity for both men and women. In addition, women high in religiosity engaged in more physical activity than less religious women; however, this association was not significant for men. The researchers hypothesized that those with strong collectivist orientations might be motivated to exercise and to promote pro-exercise group norms to ensure the health of the whole community. Cogbill and colleagues (2011) concluded that more research is needed to assess the role of religion and community orientation as facilitators of physical activity in Black families.

Adkins and colleagues (2012) examined the role of parental self-efficacy to support child physical activity among fifty-two Black caregiver-daughter dyads. These researchers also examined daughters’ perceptions of caregiver support for physical activity, perceived neighborhood safety, family environment, and access to recreational facilities. This study was significant in that it focused exclusively on activity levels in Black families. Findings
suggested that parents with high self-efficacy for supporting their daughter’s physical activity were more likely to have active children. Considered together with the existing literature, these findings provide further evidence for the importance of parent modeling and support of physical activity, especially in Black families.

Related to the theme of parental role modeling, another study by St. George and colleagues (2013) examined the relation between parent-child communication, parent monitoring of child behavior, and child sedentary activity within a sample of 73 Black families. These researchers implemented a manualized, family-based obesity intervention to increase health behaviors (fruit and vegetable intake, physical activity) and decrease sedentary activity. The intervention was tailored to increase cultural relevance in Black families by incorporating interactive activities, like a “Family Walk and Talk,” during sessions. The researchers found that high levels of parent-child communication were associated with reductions in children’s sedentary activity over the course of the intervention. This study supports previous research (Wilson, 2009) highlighting the importance of family support to bolster health behaviors in racial and ethnic minority youth.

Finally, it is important to note that parent modeling of physical activity is constrained by environmental factors, such as neighborhood safety or availability of public exercise space (Kumanyika et al., 2007; Taylor et al., 2006). Interventions promoting physical activity in Black communities must consider cultural influences and environmental constraints that influence parent modeling.

**Child feeding style.** Parents’ approach to meals and parental feeding styles also has important implications for child weight and diet. Parents who pressure their children to eat or restrict specific foods might counterproductively foster overeating or increase weight gain in
their children. For example, parents may restrict access to certain foods, encourage children to finish their plate and eat in the absence of hunger, use food as a positive reinforcer, or might declare certain types of food “off-limits” in the home (Rhee, 2008). Despite parents' good intentions, the use of restrictive feeding practices is associated with unhealthy eating behaviors.

Many researchers assert that restriction is often counterproductive to the child’s weight loss goal. Parental use of restrictive feeding practices is associated with increased consumption of unhealthy foods (Fisher & Birch, 1999) and poor awareness of hunger cues in children (Davison & Birch, 2001; Rhee, 2008). Additionally, parents who utilize high levels of restriction are likely to create an environment in which children overeat “off limits” foods in the absence of hunger when the restricted foods are available (Birch, Fisher, & Davidson, 2003).

Recent research presents a more nuanced view of the relation between parental restriction and children's eating behaviors. Steele and colleagues (2014) argue that both high and low levels of parental restriction are associated with higher BMI in children. The researchers used latent growth curve modeling to assess child weight loss for 93 parents participating in a manualized family-based intervention versus a control condition. At one year follow up, children whose parents who increased their restriction from low to moderate levels actually showed decreases in BMI. Thus, some degree of parental restriction might be beneficial for child weight outcomes; however extreme levels of restriction in either direction are associated with higher child BMI.

Parents pressure their children to eat by offering them more food (e.g. “would you like seconds?”) or by prompting them to eat more (e.g. “finish your plate,” Rhee, 2008). For
picky eaters, parental pressure to try new foods is associated with low fruit and vegetable intake (Galloway, Fiorito, Lee, & Birch, 2005). Thus, the way in which parents present food to children appears to influence child weight. These results indicate that parental modeling of healthy fruit and vegetable intake might be a more effective way of improving children’s dietary intake than pressure to eat these foods.

Self-Determination Theory (Deci & Ryan, 1985) highlights the importance of allowing children to make developmentally appropriate decisions about their food choices. Parents who create the perception of choice in mealtime consumption (e.g. by asking, “do you want peas or carrots?”) increase children’s intrinsic motivation for consuming certain foods (Hendy, Williams, Camise, Eckman, & Hedemann, 2009). Within this framework, parents set the parameters for what foods children will consume while giving children the freedom to choose whether and how much to eat (Satter, 2000). Parents with permissive styles or those offering too many choices may inadvertently allow their children to have overly restricted and nutritionally poor diets (Hendy et al., 2009).

It is also important to note that parent feeding styles do not emerge in a vacuum; parent feeding practices result from an interaction of factors related to the physical and social environment. Using the framework of the Social Ecological Model, Lynch and Batal (2011) conducted a qualitative exploration of factors influencing child feeding style among caregivers. At the individual level, beliefs about child-friendly foods, nutrition knowledge, self-efficacy, and a desire to keep mealtimes stress free informed feeding behaviors. At the community level, the availability, price, and quality of foods related to feeding style. Finally, at the societal level, nutritional information from public health campaigns and obesogenic norms (e.g. omnipresent fast food advertisements) shaped feeding behaviors.
One limitation of the child feeding literature is that the majority of the research has been conducted with White families (Rhee, 2008). Additionally, the Child Feeding Questionnaire (CFQ), a frequently used measure of parent feeding style, was normed on a primarily White sample (Birch, Fisher, Grimm-Thomas, Markey, Sawyer, & Johnson, 2001). Research conducted with Black families suggests that parental feeding styles are associated with different outcomes than in White families. For example, in a sample of 296 low-income Black mothers of preschool aged children, maternal obesity modified the relation between maternal restriction and child BMI. For obese mothers, increased maternal restriction was associated with elevated child BMI; however, maternal restriction was associated with lower BMI in children of non-obese mothers (Powers, Chamberlin, van Schnaick, Sherman, & Whitaker, 2006). More research is needed to explore the relation between child feeding practices and child health outcomes in Black families.

**Parenting style.** Parenting style shapes the relation between parenting behaviors and child health outcomes (Rhee, 2008). Within the pediatric obesity literature, Baumrind’s (1971) classic typology is used to differentiate among authoritative, authoritarian, and permissive parenting approaches. Authoritative parenting is characterized by high levels of parental supervision and structure, as well as parental support and responsiveness to the child’s needs. Authoritarian parenting is characterized by high levels of demand and structure, but low responsiveness to the child’s needs. Permissive parenting is characterized by low levels of demand, structure, and discipline coupled with high levels of responsiveness. Family-based interventions can target parent behaviors by providing psychoeducation about effective parenting styles to improve children's health (Golan &
Interventions can encourage parents to utilize authoritative—rather than authoritarian—parenting styles to support child weight changes (Berge et al., 2010).

Parenting style has implications for child weight, dietary behaviors, and physical activity. Rhee and colleagues (2006) examined the relation between parenting style and child BMI among 872 mothers of first grade children. Children whose mothers used authoritarian parenting styles were the most likely to be overweight, followed by children whose mothers used permissive styles. The use of primarily authoritarian parenting is associated with low levels of child fruit and vegetable consumption (Kremers, Brug, de Vries, & Engles, 2003) and elevated child BMI (Rhee, 2008). Lytle (2003) found that the relation between parenting style and child dietary patterns varies by parent gender. Maternal use of authoritative parenting was associated with increased child fruit and vegetable intake; however paternal use of authoritarian style related to increased fruit and vegetable uptake. Finally, Eisenberg and colleagues (2014) found that mothers with more rigid rules (e.g. no television at dinner time or children must finish all food on the plate) were likely to have children with increased dietary fat intake.

Parenting style is also related to child physical activity. Schmitz and colleagues (2002) found that girls who perceived their mothers as authoritative engaged in more physical activity and less sedentary behaviors than girls who did not see their mothers as authoritative. For boys, physical activity was associated with perceived maternal authoritarian parenting. No association was found between perceived paternal parenting style and physical activity for boys or girls.

There is a significant body of cross-sectional research suggesting a relation between parenting style and child weight-related behavior. However, there is a dearth of studies
examining the impact of parenting behavior on child health outcomes longitudinally. Berge and colleagues (2010) investigated the longitudinal association between parenting style, child BMI, physical activity, and dietary intake over a five year period. Specifically, at the five year follow up, maternal use of authoritative parenting was associated with lower BMI in both male and female children. Maternal authoritarian parenting style was associated with higher BMI for boys; whereas, a permissive maternal parenting style was associated with higher BMI for girls. The strength of these associations decreased across the five year period. This finding underscores the importance of healthy parenting practices early in childhood while children are more attuned to parent behavior than peer role modeling. The researchers found no significant association between paternal parenting style and child BMI for boys or girls. Similarly, no association was found between maternal parenting style and child fruit and vegetable intake. For girls, paternal authoritarian parenting was associated with lower fruit and vegetable consumption. Findings from Berge and colleagues (2010) suggest a complex relation among these variables that varies as a function of gender differences within the parent-child dyad.

Finally, it is important to note that parenting styles vary across ethnic groups and are associated with different developmental outcomes for minority children compared with White children (Garcia-Coll, Meyer, & Brillon, 1995). Often, studies examine between group differences in parenting styles by comparing White families with low-income minority families. This design obscures the impact of community, socioeconomic status, ethnicity, and culture on parenting practices (Hill, Bush, & Roosa, 2003). For example, compared with White families, Black families tend to use “no nonsense” or authoritarian parenting strategies (Brody & Flor, 1998). However, these parenting styles are associated with positive child
outcomes within Black families, in contrast with White families. For example, Baumrind (1972) noted that Black parents’ authoritarian parenting style was associated with positive child outcomes in Black preschool girls (e.g. assertiveness, independence), which is contrary to findings in White families.

Considered together, the current body of parenting style research has yielded complicated, and at times, conflicting results. These discrepancies suggest that the relation between parenting style and child health behavior varies as a function of gender, race, and child age. Despite these varied results, research highlights the importance of appropriate structure and emotional responsiveness in the parent-child feeding relationship.

In sum, family-based pediatric obesity interventions modify parental modeling of diet and exercise behaviors, child feeding style, and parenting style with the goal of decreasing child weight and increasing physical activity. Although it is important to address the impact of child-parent interactions on child health behaviors, it is also essential to address the larger, sociocultural variables shaping health behaviors. Additionally, it is important for healthcare providers to address cultural variables related to diet and exercise to ensure culturally relevant care.

**Intervening in Black Families and Communities**

Obesity interventions targeting primarily Black samples have been criticized for using a deficit-model that emphasizes several of the less than desirable health behaviors common within the Black community. Baskin and colleagues (2001) assert that effective interventions must bolster protective factors within the Black community rather than looking to majority culture as the ideal. For example, identification with Black cultural values related to body image could be protective against the development of problematic weight control behaviors
in preadolescent girls (Beech, Kumanyika, Baranowski, Davis, Robinson, Sherwood…Thompson, 2012). Additionally, it is important for obesity interventions to address health related behaviors within their specific cultural context (Walker-Sterling, 2005). One way to capitalize upon the strengths of the Black community is to design interventions to work closely with established social support networks, such as extended family groups and churches.

Pediatric obesity interventions targeting families in Black communities must expand their conceptualization of family from the traditional idea of a nuclear family to acknowledge the importance of other members outside of the household in family functioning and childrearing (Tucker & James, 2005). Within the Black community, extended family and kin structures often function as additional means of social and financial support (Stewart, 2007). Extended family structures in Black communities include both kin (e.g. grandparents, aunts or uncles) and non-kin members (e.g. neighbors) (Jarrett, & Burton, 1999). These intergenerational extended family structures increase the availability of emotional, financial, and caregiving resources, enhancing the strength and resiliency of Black families (Dilworth-Anderson & Goodwin, 2005).

Within the Black community, terminology such as “church family,” “church home,” and “church mother” underscores the link between the church community and the family unit (Mattis, 2005). For many, Black churches function as the center of community and family life. In a 2010 poll, 55% of Black adults surveyed endorsed attending church at least once per week (Newton, 2010); additionally, spirituality and religion are more central to daily life for Black adults compared with other racial groups (Mattis, 2005). Churches serve as centers of social activism, education, and socialization for Black families, and provide economic and
social support to congregation members. In some Black communities, churches are the oldest, most stable, and most respected social institutions (Carter-Edwards, Hooten, Bruce, Toms, Lloyd, & Ellison, 2012). Moreover, within the church congregation, members provide both instrumental support (e.g. food, transportation) and emotional support to other congregation members across the lifespan (Chatters, Taylor, Lincoln, & Schroepfer, 2002). Goldman and Robertson (2004) argued that academic institutions should partner with Black churches to deliver health interventions to eliminate health disparities within this at-risk community.

Social support from church members can facilitate health behavior change. Young and Stewart (2006) identified social support from other church members as a predictor of physical activity change for women participating in a church-based exercise intervention. Additionally, religious social support within church communities was significantly associated with fruit and vegetable consumption (Debnam, Holt, Clark, Roth, & Southward, 2012).

Bogart and Uyeda (2009) recommended incorporating culturally relevant elements into community-based participatory research interventions because “without knowledge of the local context, health psychologists cannot design sustainable and cost-effective interventions that catalyze communities for change” (pg. 393). Consulting with faith leaders is an effective way to increase the cultural validity of an intervention as these individuals have intimate knowledge of the protective factors, needs, stressors, and health-related beliefs within their congregations. McFatrich and colleagues (2013) conducted a community-based participatory research study in which faith leaders in the Black community were assigned to take photographs depicting their understanding of the causes of childhood obesity in their community. The researchers used qualitative analyses to glean themes from the group
discussions of the photographs. Two main themes emerged from the study: stress related to family responsibilities and feelings of inadequacy as a barrier to help-seeking behavior. The researchers suggested that these findings can inform tailoring of future interventions targeting parent behavior to curb childhood obesity in Black faith communities.

Additionally, research suggests that many pastors are interested in collaborating with investigators on church-based health promotion projects. Carter-Edwards and colleagues (2012) conducted the Pilgrimage to Wellness study to assess pastors’ willingness to participate in research projects. Sixty-eight Black pastors in rural North Carolina completed questionnaires assessing their perceptions of health needs in the congregation and churches’ ability to host a health promotion intervention. Interestingly, 56% of the pastors surveyed reported being overweight themselves and 30% identified obesity as the greatest physical health problem in the church, second only to hypertension. Pastors saw a lack of funding, not having a health ministry, and congregants perceiving a disconnect between physical and spiritual health as the greatest barriers to the implementation of health programming. When asked what they believed would be the first action churches should take to promote health, 37% endorsed building partnerships with outside organizations. Carter-Edwards and colleagues (2012) concluded that Black pastors are aware of the need for churches to promote physical health; however, significant financial and infrastructural barriers need to be addressed to enhance the feasibility of health interventions within this setting.

Ammerman and colleagues (2003) conducted a similar study with 78 pastors of Black churches to examine their expectations about and satisfaction with the PRAISE! (Partnership to Reach African Americans to Increase Smart Eating) community-based participatory health intervention. These researchers assessed pastors’ expectations about participating in research
before the PRAISE! program began. Approximately half (52%) of the participating pastors reported feeling “somewhat ready” to form a research partnership with the university, and 70% reported feeling “extremely ready” to participate in the study. After completion of the intervention, 61% of pastors strongly agreed that participating in PRAISE! was worth their time, and 64% strongly agreed that their participation was worth the congregation’s time and effort. These findings indicate the importance of assessing buy-in from church leadership to form effective partnerships with churches.

As noted above, churches are a logical setting for health promotion interventions. Using the socio-ecological model, church-based health promotion interventions affect change at the individual, family, and community levels (Bronfenbrenner, 1977). By intervening in several levels of the ecological system simultaneously, church-based health interventions can result in long-lasting health behavior change in communities (Campbell, Hudson, Resnicow, Blakeney, Paxton, & Baskin, 2007). Additionally, church-based health interventions are an efficient way of reaching underserved populations because of the church’s central role in many communities (Peterson, Atwood, & Yates, 2002).

Considering the literature supporting the role of the family in facilitating health behavior change, it is logical to look to the church community, as an extension of the family unit, to provide social support for health behavior change within the Black community. Situating obesity interventions within congregations is both an efficient and culturally sensitive way to address health disparities and promote health behavior change in the community (Thompson, 2011). Kumanyika and colleagues (2007) specifically suggested that targeting Black church congregations is an effective means of disseminating information about childhood obesity. For many Black individuals, the belief that the body is God’s
temple is salient, which underscores the connection between physical and spiritual health (Holt & McClure, 2006). Robinson and Wicks (2012) also noted that for some religious Black individuals, God is seen as an external locus of health control, and any changes in health status are ultimately a reflection of God’s will. Interventions incorporating faith or scripture could be seen as congruent with that cultural belief. Interventionists targeting diabetes (Samuel-Hodge, Keyserling, France, Ingram, Johnson, Davis, et al., 2006), smoking cessation, (Voorhees, Stillman, Swank, Heagarty, Levin, & Becker, 1996) and cardiovascular health (Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001) have successfully partnered with Black churches to disseminate programming. The following sections review the literature related to health promotion interventions situated in church settings in the Black community, focusing specifically on training lay health educators and incorporating faith into the intervention.

**Training lay health educators.** Training lay health educators is an effective way to conduct public health interventions. Researchers identify and train leaders from the community, who are not required to have training or experience in health fields, to conduct interventions. For some interventions, it is preferred that lay health educators have successfully worked through similar health related issues to increase their credibility with community members, though this is not always required (Babamoto, Sey, Camilleri, Karlan, Catalasan, & Morisky, 2009). Lay health educators are often “natural helpers, individuals whom others spontaneously seek out for advice, support, and assistance” (Earp & Flax, 1999, p. 16). Having community leaders conduct interventions, rather than professionals or experts, increases participant buy-in and motivation, especially in minority communities (Yancey, Kumanyika, Ponce, McCarthy, Fielding, Leslie, & Akbar, 2004).
For example, McNabb and colleagues (1997) conducted a weight-loss program designed for urban Black women by training lay people to serve as group facilitators. Participants were recruited from three urban Black churches and randomized to either the intervention or a waitlist control group. The researchers posited that conducting the intervention in the church with lay health educators from the congregation would increase participant buy-in compared with interventions situated in medical settings led by professionals. Participants attended a 14-week group facilitated by volunteers from the church community. These volunteers completed training which reviewed the structure and content of the intervention. Additionally, members of the research team attended each session to provide group facilitators with immediate feedback on the administration of the session. At post-intervention assessment, women in the intervention group lost significantly more weight and had significantly larger decreases in waist circumference than women in the control condition. These findings suggest that using trained lay volunteers is an effective strategy for disseminating a weight-loss intervention among urban, Black women.

A related study by Quinn and McNabb (2001) also tested the feasibility of using lay health educators to deliver a 14-session behavioral health intervention in three urban Black churches. These researchers asked pastors of each of the churches to identify interpersonally skilled female members of their congregations to facilitate the intervention. Investigators identified four essential areas to consider when training lay health educators: 1) the complexity of the health behavior targeted by the intervention, 2) the degree of specialized skills required to implement the intervention, 3) the prior training and education of the trainees, and 4) the autonomy and flexibility, or lack thereof, of trainees in implementing the program. Lay health promoters were compensated for their participation. They completed
nine hours of formal training with research staff before facilitating intervention groups. This training clarified the roles of the research team and health educators, explained the philosophy of the intervention, reviewed session content and goals, and provided opportunities to role play leading groups. Participants manifested statistically significant decreases in weight from baseline to post-intervention assessments. These results suggest that it is feasible to train lay health educators from the church congregation to deliver a weight-loss intervention.

Kennedy and colleagues (2005) evaluated the efficacy of using trained church leaders as health educators using two different treatment modalities. Adults recruited from a Black, urban church were randomized to either group or individual intervention conditions; no formal control group was included in the study. Two church members were trained to conduct a six-month weight loss intervention. Participants in both the individual and group conditions lost weight between baseline and post-intervention assessment; there were no statistically significant group differences in weight loss. The researchers concluded that training lay congregation members to serve as health educators is an effective way of delivering a weight-loss intervention in both individual and group treatment modalities.

One study by Bopp and colleagues (2007) offered several recommendations to researchers based on their experiences translating a three year physical activity intervention for Black adults in 98 African Methodist Episcopal churches in South Carolina using lay health promoters. To overcome barriers associated with training group leaders from the congregation, these researchers suggested training multiple volunteer group leaders, compensating leaders for their time, and ensuring that leaders receive adequate training and recognition of their efforts.
Finally, Krukowski and colleagues (2013) wrote a review of their lessons learned from training 20 lay health educators to conduct a 12 month evidence-based behavioral weight loss intervention. These “coaches” were identified by community leaders as individuals who were responsible, organized, and strong public speakers. The majority of coaches were overweight or obese themselves. Researchers conducted approximately 26 hours of face-to-face training teaching listening and group facilitation skills, and educating the coaches about health behaviors. The researchers also conducted regular skill maintenance sessions with each coach after the initial training. Krukowski and colleagues (2013) noted that it was more difficult to teach group leaders clinical skills (e.g. active listening and group facilitation techniques) than they had anticipated. The researchers also highlighted the importance of lay health educators in recruiting potential participants given that the educators are likely already key leaders within the community. In sum, Krukowski and colleagues (2013) concluded that the use of lay health educators was a feasible, efficacious way to deliver a weight loss intervention if lay educators are given sufficient training.

Considered together, these studies suggest it is feasible to train lay health educators from the community to conduct health interventions in Black church congregations. Additionally, these studies offer suggestions for training lay health educators in church-based health promotion studies. The literature highlights many benefits of training health educators, including: capitalizing on the inherent resources and social support of communities, enhancing trust and motivation of participants, and transferring sustainable knowledge and interventions to underserved populations. Moreover, trained health promoters can continue to implement programming after the research ends, creating a sustainable approach to
intervention delivery. It is essential that lay health educators receive thorough training, adequate compensation, and are treated as collaborative partners in community interventions.

**Faith-based and faith-placed research.** Although the previously discussed studies recruited participants and group leaders from church congregations, some church-based health interventions also incorporate faith, scripture, and prayer into the session content. Including spiritual elements in the intervention bolsters culturally sensitivity by honoring the importance of spirituality in Afrocentric culture (Pittman, 2003; Thompson, 2011). In their review of the literature, Campbell and others (2007) conceptualized the two approaches as faith-based (overt spiritual component) versus faith-placed (located in a church but no overt spiritual component) interventions.

One study by Witt-Glover and colleagues (2008) conducted a three-month intervention targeting physical activity among Black adults using a single group pre- and post-test design. Intervention sessions were behaviorally based and focused on lifestyle changes to increase moderate and vigorous physical activity. Sessions also actively included religious components by beginning each session with a prayer and framing physical activity as a way of protecting God’s temple. Program participants reported significant increases in their number of steps taken per day at both four and twelve weeks post-intervention. Additionally, assessments conducted 12 weeks after the intervention identified significant increases in participants’ moderate and daily physical activity levels. One strength of this study was the active engagement of community leaders in the research design. The researchers collaborated with nine local pastors to develop the design and implementation strategy for the intervention. The pastors provided useful insight into ways of increasing participation in faith-placed interventions, including gaining buy-in and support from the
Pastor, scheduling sessions during times that do not conflict with other church activities, and integrating the intervention into the current activities of the church ministries. Pastors also identified one leader from the church congregation to serve as a logistical liaison between the congregation and the study staff to maintain intervention feasibility. These findings highlight the importance of establishing a collaborative relationship with church leadership.

Fitzgibbon and colleagues (2005) translated a 12-week behavioral weight loss intervention into a faith-based intervention designed for urban Black women with obesity. The intervention was tailored to this population by the incorporating both a relevant scripture into each session, and by discussing ways to prepare traditionally Black foods by substituting healthy ingredients. Researchers recruited participants and conducted the intervention in a hospital rather than a church. Unlike many other studies in this area, researchers included a control group to compare the efficacy of the faith-based and standard behavioral interventions. At post-intervention, there was no statistically significant difference in weight loss between the two groups. Results may have been confounded by the fact that the groups were held in a hospital setting. Ultimately, the researchers suggested that incorporating a faith component to future interventions could increase external validity of the intervention, but there was no evidence to suggest the faith-based intervention was more effective than the standard behavioral intervention.

Another study implemented a multi-site obesity intervention called Healthy Bodies, Healthy Souls in urban Black churches (Wang, Lee, Hart, Summers, Steeves, & Gittelsohn, 2013). This program provided education about physical activity, food preparation, and nutrition. The researchers emphasized the importance of incorporating participation-based activities in the intervention to maintain participant enthusiasm. For example, participants
learned about healthy foods through regular taste testings and increased self-efficacy for physical activity through aerobics classes. The researchers reported significant decreases in participants’ blood pressure, and increases in self-reported fruit and vegetable purchases at post-intervention assessment. No significant changes were found in physical activity or weight between pre- and post-assessment. In their process evaluation of the program, the researchers concluded that it was feasible to administer the program in multiple churches with moderate to high dosage and fidelity.

In their review of research conducted between 1990 and 2000, DeHaven and colleagues (2004) presented a different way of categorizing church-based interventions. The researchers conceptualized “faith-based” interventions as those acting as part of the church’s health ministry. “Faith-placed” interventions tested the efficacy of an intervention within a church setting, and “collaborative” interventions combined faith placed and faith based features. Of the studies reviewed, 25% were faith-based, 35% were collaborative, and 40% were faith-placed. The authors noted that faith-based programs were less likely to report outcome data, making it difficult to assess their efficacy.

In sum, incorporating spirituality into interventions is one way that public health professionals can respect the importance of spirituality in the Black community. Although the literature suggests that faith-based interventions are effective ways of incorporating culturally sensitive content into programming, there is no evidence to suggest that these types of programs are superior to those that are faith-placed. More research is needed to assess further the importance of religious content (faith-based) and religious environments (faith-placed) components in health behavior interventions.
Summary of recommendations from the literature. Overarching themes among studies point to several elements necessary to consider in the design of effective church-based health promotion programs. In their review of the literature, Campbell and colleagues (2007) identified five key elements of successful faith-placed programs: active partnership development and trust building with the church community, transparent recruitment strategies, active involvement of community leaders in the design and implementation of the project, incorporation and acknowledgement of the sociocultural environment, and efforts to bolster the sustainability of the program within that community. Additionally the researchers recommended capitalizing on the inherent resources of the church community (Campbell et al., 2007). For example, interventionists should consider the availability of existing services supporting health and availability of lay health educators (Peterson et al., 2002).

It is also important to consider barriers to conducting effective interventions that have been outlined in the literature. Examples include overcoming distrust of researchers, discrepancies between research agendas and religious values, and the ethical implications of using control groups (Campbell et al., 2007). Bopp and colleagues (2007) identified several frequently occurring challenges when working within a church setting: lack of motivation from the congregation, administrative instability (e.g. turnover of pastors or other leadership staff), problems related to volunteer group leaders from the congregation (e.g. other time commitments), and church-related barriers (e.g. competing church events, inadequate facilities). Awareness of these potential barriers and collaborative communication with church partners can help overcome these challenges.

One theme in the literature warranting discussion is the use of control groups in church-based health promotion studies. One such study by Witt-Glover and colleagues
(2008) justified not using a control group because many faith communities would be opposed to the idea that their members might be randomized to a non-treatment condition. Recruiting churches to participate in control groups has been identified as an ethical issue that would likely increase existing feelings of mistrust toward researchers in minority communities (Allicock, Resnicow, Hooten, & Campbell, 2013; Campbell et al., 2007). Studies without control groups evaluated the impact of their interventions by conducting t-tests comparing baseline and post-test measurements (e.g. Kennedy et al., 2005). Bogart and Uyeda (2009) assert that some researchers might view community based participatory research projects without formal control groups as having weak internal validity. However, these authors highlight the benefits of the increased external validity and generalizability of intervention-only community research by noting that such projects provide tangible evidence for the efficacy of programs in real world settings. Additionally, these interventions are not usually conducted in a church or community setting without already being tested in a more controlled setting, typically with a control group. These studies suggest that if the goal of research is to evaluate the feasibility of interventions, rather than to establish its initial efficacy, it is possible to exclude a control group without compromising the aims or methodological rigor of the investigation.

In sum, considerable literature supports the efficacy of church-based health promotion programs. The reviewed studies highlight several strategies for successful intervention within church communities. For example, utilizing lay health educators, including or excluding control groups, and conducting faith-based or faith-placed interventions. However, within this literature, no studies intervened at the parent-level to improve child health outcomes.
The Current Study

The current project aimed to evaluate the feasibility of translating an established family-based weight loss intervention, NOURISH (Nourishing Our Understanding of Role modeling to Improve Support and Health; Bean, Wilson, Thornton, Kelly, & Mazzeo, 2012; Mazzeo, Kelly, Stern, Gow, Sedar, Evans…Bulik, 2012; Mazzeo, Kelly, Stern, Gow, Cotter, Thornton, Evans, & Bulik, 2014), into a “real world” setting within a Black faith community. NOURISH targets parents as agents of change in behavioral weight loss, with an emphasis on the importance of parent role modeling. During pilot testing with primarily Black families, NOURISH was effective in decreasing child BMI percentile, and was perceived by participants as an acceptable, culturally sensitive intervention (Mazzeo et al., 2014). Because NOURISH focuses on the family unit as a means of promoting health changes, it is logical to consider extended family structures, such as the church community, when implementing this intervention within the Black community (Stewart, 2007). In the current study, NOURISH-C (C indicates the church-based component) was implemented in several Black church communities with the goal of evaluating the feasibility of disseminating the intervention using lay health educators as intervention leaders.

Grounded in Social Cognitive Theory (SCT), NOURISH addresses the ways in which environmental, social, and behavioral factors, as well as the interaction of these variables, influence health behavior choices (Baranowski, Perry, & Parcel, 1997). SCT identifies several determinants of behavior change: knowledge, perceived self-efficacy, expectations, perceived barriers to change, and observational learning (Bandura, 2004). SCT has been used successfully in health promotion interventions, including those addressing childhood obesity.
NOURISH addresses several key components of SCT: knowledge, self-efficacy, expectations, and social learning. This intervention aims to increase participants' knowledge about the risks and benefits of diet and exercise practices through psycho-education. For example, group leaders facilitate discussions about the benefits of physical activity, lifestyle activities, family meals, and portion control. Additionally, NOURISH fosters parents’ self-efficacy throughout the intervention by having parents identify individual goals each session and tracking their progress toward desired diet and exercise changes. NOURISH also addresses participants' expectations by discussing the potential costs and benefits of engaging in new health behaviors. Perceived barriers to change are addressed by identifying individual, family, and cultural level factors that inhibit diet and exercise change. Finally, SCT emphasizes the importance of social learning on behavior change. NOURISH builds upon this principle by emphasizing the importance of parental modeling of healthy diet and physical activity behaviors to facilitate the child’s own health behavior change. Group discussions also serve as a place for parents to learn vicariously from the behaviors, successes, and barriers of other participants. At the beginning of each session, parents are encouraged to share the barriers they encountered in implementing their homework from the previous session so that the group can brainstorm new ways of overcoming these challenges.

NOURISH-C utilized the much of the existing NOURISH manual, intervention structure, and assessment protocol. A key difference between NOURISH and NOURISH-C was that the latter was conducted in a church community with trained lay health promoters. Additionally, some components of NOURISH were excluded from NOURISH-C due to
funding and feasibility concerns, such as family participation in a cooking class, consultations with a registered dietician, and the use of researcher-distributed pedometers to track exercise. Overall, NOURISH-C represented a scaled down version of the NOURISH intervention using similar session content.

**Specific Aims**

The current study evaluated the following research aims:

**Aim 1.** The first aim was to evaluate the feasibility of training community members from primarily Black churches to serve as facilitators of the NOURISH-C intervention within the church community. It was hypothesized that training members of the Black community to serve as facilitators of the intervention would be a feasible and acceptable way to disseminate this intervention.

**Aim 2.** The second aim was to implement and evaluate it’s the effects of NOURISH-C on child absolute BMI. Because the current study recruited children of all weight statuses, changes in BMI were tracked descriptively over time. It would have been inappropriate to assess changes in BMI in a primarily healthy weight sample.

**Aim 3.** The third aim was to implement and evaluate the effects of NOURISH-C on child dietary intake, quality of life, and physical activity. It was hypothesized that children whose parents participated in NOURISH-C would display significant improvements in dietary intake, quality of life, and physical activity from baseline to post-intervention assessment.
Methods

Participants

This study enrolled 25 caregiver-child dyads. Participants were caregivers of children between the ages of five and eleven years. Parents, legal guardians, grandparents, and extended family members were all considered caregivers. Caregivers were recruited from primarily Black church congregations in central Virginia.

Caregivers were recruited through flyers, announcements in church bulletins, and emails distributed to the church congregation. Additionally, in person announcements were made by pastors, the principal investigator (PI), and other church leaders during church services to distribute information about the program. The PI also attended church activities (e.g. barbeques, back to school fairs, and community health fairs) at each of the churches to build community trust, distribute promotional materials, and recruit participants per recommendations from the literature (Gamble, 1997).

Eligibility criteria were assessed in person when caregivers expressed interest in participating in the program. Caregivers were required to be at least 18 years old to participate in NOURISH-C. They were also required to live in the home with the enrolled child, who was between the ages of 5 – 11 years. Only caregivers who attended the church in which the program was held could participate in NOURISH-C. If caregivers met eligibility criteria, the PI collected their contact information (phone number and email address) and offered enrollment in the study.

Unlike previous iterations of NOURISH, children did not have to be overweight to enroll in the study. The decision to remove this weight criterion was made to enhance the inclusiveness of the community-based trial, and to increase recruitment in this pilot.
Caregivers who were concerned about their child’s weight (regardless of his/her actual weight status) were eligible to participate in the program. Thus, unlike NOURISH, many children whose caregivers participated in NOURISH-C had BMI within a healthy weight range at baseline.

Caregivers who met study eligibility criteria, expressed interest in participating in the program, and provided their contact information to the PI were offered the opportunity to enroll in NOURISH-C. Fifty-two caregivers provided this information and were contacted by the PI to schedule pre-intervention testing. Caregivers who did not respond to three contact attempts, by both phone and email at varied times of the day, to schedule pre-intervention testing were considered lost to follow up. Of those caregivers offered the opportunity to enroll ($n = 52$), 25 completed pre-intervention assessment, consented to participate in the study, and were considered enrolled. Fourteen caregivers completed posttest assessment, and eight completed three-month follow up assessment. Figure 1 summarizes the flow of participants in the intervention and includes sample size at each assessment time point.
Figure 1. Summary of Participant Recruitment and Retention.
All of the caregivers attended church. The majority (88%) identified as Black, one identified as White, and two identified as multiracial. The majority (88%) of parents were female, and their mean age at baseline was 39.5 years (SD = 11.35). Nineteen caregivers identified as married, three as divorced, two as single, and one failed to complete this item. The relationship between caregiver and enrolled child was not formally assessed; it is not possible to determine how many participants were parents, grandparents, or other relatives. Overall, caregivers in NOURISH-C were highly educated, with over half reporting some form of higher education. Specifically, 35% had a bachelor’s degree and 24% had a graduate degree. More than half (52%) reported a combined family income of more than $50,000, and 28% reported a combined household income of greater than $75,000. Caregivers’ mean BMI at baseline was 30.12 kg/m² (SD = 8.14), which is in the overweight range. Specifically, 9% of caregiver had BMI in the overweight range and 45% of caregivers had BMI in the obese range at baseline.

Among the children participating in NOURISH-C, the majority (84%) identified as Black and 16% identified as multiracial; none identified as White. The majority of children (52%) were female; 48% of participants were male. Children’s mean age at baseline was 7.8 (SD = 2.17). The average child baseline BMI percentile was 79.04 (SD = 22.52). Participant demographic information is summarized in Table 1.
<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>n (% )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>--</td>
<td>--</td>
<td>12 (48)</td>
</tr>
<tr>
<td>Female</td>
<td>--</td>
<td>--</td>
<td>13 (52)</td>
</tr>
<tr>
<td>Child Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>--</td>
<td>--</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Black</td>
<td>--</td>
<td>--</td>
<td>21 (84)</td>
</tr>
<tr>
<td>Multiracial</td>
<td>--</td>
<td>--</td>
<td>4 (16)</td>
</tr>
<tr>
<td>Caregiver Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>--</td>
<td>--</td>
<td>3 (12)</td>
</tr>
<tr>
<td>Female</td>
<td>--</td>
<td>--</td>
<td>22 (88)</td>
</tr>
<tr>
<td>Caregiver Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>--</td>
<td>--</td>
<td>1 (4)</td>
</tr>
<tr>
<td>Black</td>
<td>--</td>
<td>--</td>
<td>22 (88)</td>
</tr>
<tr>
<td>Multiracial</td>
<td>--</td>
<td>--</td>
<td>2 (8)</td>
</tr>
<tr>
<td>Child age at baseline (years)</td>
<td>7.8</td>
<td>2.17</td>
<td>--</td>
</tr>
<tr>
<td>Caregiver age at baseline (years)</td>
<td>39.52</td>
<td>11.35</td>
<td>--</td>
</tr>
<tr>
<td>Child BMI %tile at baseline</td>
<td>79.04</td>
<td>22.52</td>
<td>--</td>
</tr>
<tr>
<td>Caregiver BMI at baseline (kg/m²)</td>
<td>30.12</td>
<td>8.14</td>
<td>--</td>
</tr>
<tr>
<td>Caregiver’s Highest Level of Education Attained</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>--</td>
<td>--</td>
<td>2 (8)</td>
</tr>
<tr>
<td>High school diploma</td>
<td>--</td>
<td>--</td>
<td>2 (8)</td>
</tr>
<tr>
<td>Some college</td>
<td>--</td>
<td>--</td>
<td>4 (16)</td>
</tr>
<tr>
<td>College degree</td>
<td>--</td>
<td>--</td>
<td>9 (36)</td>
</tr>
<tr>
<td>Some graduate school</td>
<td>--</td>
<td>--</td>
<td>1 (4)</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>--</td>
<td>--</td>
<td>6 (24)</td>
</tr>
<tr>
<td>Combined Family Income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $10,000/year</td>
<td>--</td>
<td>--</td>
<td>3 (12)</td>
</tr>
<tr>
<td>$10,000-$19,999/year</td>
<td>--</td>
<td>--</td>
<td>1 (4)</td>
</tr>
<tr>
<td>$20,000-$29,999/year</td>
<td>--</td>
<td>--</td>
<td>3 (12)</td>
</tr>
<tr>
<td>$30,000-$39,999/year</td>
<td>--</td>
<td>--</td>
<td>3 (12)</td>
</tr>
<tr>
<td>$40,000-$49,999/year</td>
<td>--</td>
<td>--</td>
<td>2 (8)</td>
</tr>
<tr>
<td>$50,000 - $74,999/year</td>
<td>--</td>
<td>--</td>
<td>4 (16)</td>
</tr>
<tr>
<td>Greater than $75,000/year</td>
<td>--</td>
<td>--</td>
<td>7 (28)</td>
</tr>
</tbody>
</table>

Note. Percentages may not total to 100% in cases where participants neglected to report the demographic item.
Procedure

The following section reviews the study design and NOURISH-C intervention structure. Group leader characteristics and training are also summarized.

**Study design.** The current study aimed to conduct a version of NOURISH within a primarily Black faith community using a one group pretest-posttest and follow up design. Assessments were administered at baseline, posttesting, and three month follow up time points.

No formal control group was included. Recruiting churches to participate in control (i.e., non-intervention) groups is considered an ethical issue (Allicock et al., 2013, Campbell et al., 2007, Witt-Glover et al., 2008). Moreover, recruiting participants for both control and intervention groups from the same church community would have raised validity concerns due to the threat of contamination. Similarly, the integrity of a wait-list control group would have been weakened by contamination if both waitlist and intervention participants were recruited from the same church community. The lack of a formal control group is consistent with previous research suggesting that a no- or low-attention control group would be poorly received by Black communities and would be counterproductive to building trust with researchers (Corbie-Smith, Thomas, & St. George, 2002).

**Study sites.** Five churches agreed to host the program. Table 2 summarizes relevant information about the partnering churches. Four were located in Richmond, VA and one was located in Charlottesville, VA. Three churches were located in urban settings (i.e. located within city limits) and two were located in a suburban area. Of the five churches, the two churches in suburban locations were located in zip codes with the highest median household
income ($71,461 and $44,601 respectively; US Census Bureau, 2013). Three churches identified as Baptist, one as a United Holy Church (a Pentecostal denomination), and one as a Seventh Day Adventist Church. Only one church had a Health and Wellness ministry dedicated to implementing wellness programming. Each church was led by a Black pastor and served a primarily Black congregation. Pastor education is included in Table 2 based on research stating that pastors with higher education are more likely to participate in research studies (Odulana, Kim, Green, Taylor, Howard, Godley, & Corbie-Smith, 2014). The following section reviews relevant information for each partner church.
<table>
<thead>
<tr>
<th>Church</th>
<th>Location</th>
<th>City</th>
<th>Denomination</th>
<th>Pastor Education</th>
<th>Health Ministry</th>
<th>Average Income in Church’s Zip Code&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Number of Group Waves</th>
<th>Total Number of Participants</th>
<th>Number of Participants Participating in Individualized Waves</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Suburban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>PhD</td>
<td>Yes</td>
<td>$71,461</td>
<td>2</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Urban</td>
<td>Richmond</td>
<td>United Holy</td>
<td>PhD</td>
<td>No</td>
<td>$40,496</td>
<td>1</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>Urban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>PhD</td>
<td>No</td>
<td>$40,496</td>
<td>3</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>D</td>
<td>Urban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>PhD</td>
<td>No</td>
<td>$40,496</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>E</td>
<td>Suburban</td>
<td>Charlottesville</td>
<td>Seventh Day Adventist</td>
<td>MDiv</td>
<td>No</td>
<td>$44,601</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

<sup>a</sup>. Median household income between 2009 – 2013
Church A was a suburban Baptist church. It was located in the zip code with the highest income of all the partnering churches. This congregation was led by a husband and wife team of two pastors who both held doctoral degrees. The PI had pre-existing professional relationships with both pastors. The pastors introduced the PI to the Health and Wellness Ministry leaders to coordinate the implementation of the program. Church A was the only church of those that partnered with NOURISH-C to have a Health Ministry dedicated to wellness programming.

Church B was an urban United Holy Church. The congregation was led by a female pastor who held a doctoral degree. The PI was introduced to this pastor through a professional contact.

Churches C and D were two locations of the same church. Church C represented the primary church location and Church D was a smaller satellite location within the same city. Both churches had a Small Groups Ministry that coordinated Bible studies and hobby interest groups throughout the year. The PI had no pre-existing relationship with leadership in that church. She worked with the coordinator of the Small Groups Ministry to implement NOURISH-C.

Church E was located in a suburban location and was the only partnering church in Charlottesville, Virginia. This church was led by a male pastor with a Master’s of Divinity. The PI did not have a pre-existing relationship with leadership from this church.
NOURISH-C intervention. Eight waves of NOURISH-C sessions were conducted between 2012 and 2015. Caregivers participating in the intervention attended weekly sessions. One or two trained leaders at each site facilitated the sessions, which focused on topics related to childhood overweight including parental role modeling, nutrition, sedentary behavior and lifestyle activity, emotional eating, parenting style, and the influence of the media and teasing on body image. Using an SCT framework, each session focused on identifying barriers to health behavior change and brainstorming solutions. At the end of each session, caregivers identified goals to practice between sessions to ensure that the skills discussed were translated into their daily lives. Goals were discussed at the beginning of the subsequent session to help caregivers overcome barriers to achieving their diet and physical activity goals through observational learning. Session content focused on the caregiver and his or her relationship with the entire family, rather than exclusively targeting the enrolled child. Healthy refreshments were provided at each session to introduce caregivers to different nutritious foods. Childcare for children older than two years of age was also provided by trained undergraduate research assistants.

Anthropometric and psychosocial assessments were conducted at baseline, post-intervention, and three month follow up. Trained advanced graduate student interviewers administered assessments to the caregiver and enrolled child. Caregivers were compensated for their participation with gift cards at each assessment point ($20 for completing baseline assessments, $25 for post-intervention, and $30 for three month follow up). Incentive amounts increased at each time point to improve retention throughout the intervention and to encourage participants to complete the follow-up assessment (Campbell et al., 2007).
Table 3 provides a timeline of the intervention and summarizes the church location and attendance for each wave. The first seven waves of NOURISH-C were implemented as a group based program. Twenty-one caregivers participated in group waves. In four of those waves, there was only one participant enrolled in the “group.” Thus, the intervention effectively became an individualized program. To increase recruitment and improve program feasibility, the PI began conducting individual sessions in January 2015. The use of individualized waves is consistent with other versions of NOURISH implemented in specialized samples (e.g., childhood cancer survivors; Stern, Ewing, Davila, Thompson, Hale, & Mazzeo, 2015) and with other faith-placed interventions (Kennedy et al., 2005). The eighth wave of the program included the four participants who participated in individual sessions. Individual sessions were facilitated by a volunteer leader from the PI’s research lab and lasted for sixty minutes. Participants in both the group and individual sessions were provided the same content and handouts.
Table 3.

*Intervention Timeline*

<table>
<thead>
<tr>
<th>Time</th>
<th>Wave Number</th>
<th>Study Site</th>
<th>Type of Session</th>
<th>Baseline Attendance</th>
<th>Posttesting Attendance</th>
<th>3 Month Follow Up Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 2013</td>
<td>1</td>
<td>A</td>
<td>Group</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Fall 2013</td>
<td>2</td>
<td>A</td>
<td>Group</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Spring 2014</td>
<td>3</td>
<td>B</td>
<td>Group</td>
<td>6</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Summer 2014</td>
<td>4</td>
<td>C, D&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Group</td>
<td>1, 4</td>
<td>1, 3</td>
<td>0, 1</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>5</td>
<td>C</td>
<td>Group</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Winter 2014</td>
<td>6</td>
<td>C</td>
<td>Group</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Winter 2014</td>
<td>7</td>
<td>E</td>
<td>Group</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Spring 2015</td>
<td>8</td>
<td>A</td>
<td>Individual&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

<sup>a</sup> Churches C and D consisted of two different locations within the same church. Attendance at each location is listed separated by commas.

<sup>b</sup> Four individual sessions were conducted in this wave.
Considering the previously outlined research on faith-based interventions, prayer and scripture readings were incorporated into the intervention if deemed appropriate by the group leaders. Following recommendations of the community-based participatory health research literature, the PI actively consulted with the group leaders to ensure that the intervention honored norms in their church community (Bogart & Uyeda, 2009). Only one church (church B) elected to incorporate prayer at the beginning and end of the sessions. None of the churches altered the intervention’s content to incorporate scripture.

**NOURISH-C leaders.** In the original NOURISH intervention, groups were facilitated by two advanced psychology graduate students. Sessions in the current study were led by volunteers trained by the PI. Whenever feasible, volunteers from each individual church in which NOURISH-C was implemented were trained to deliver the program, because church members are likely to be motivated to participate in an intervention led by respected congregation members, increasing participant buy-in, facilitating trust with researchers, and enhancing program participation (Campbell et al., 2007).

Eight individuals were trained by the PI to facilitate NOURISH-C; seven of these leaders were female. Six NOURISH-C leaders identified as Black and two identified as White. Leaders came from a variety of occupational backgrounds, including three teachers, a group exercise instructor, three psychology undergraduate students, and one psychology graduate student.

Four leaders were members of the church in which they implemented the program. Each of these four leaders was identified by the pastor as someone respected within the congregation. Pastors also selected these leaders based on their interest in promoting health
within the Black community. As teachers and an exercise instructor, the leaders had experience facilitating groups.

The other four leaders were not members of the partner churches; these leaders were members of the PI’s research lab. These four leaders were originally included in the study to facilitate waves in one church (site C in Table 3) at the suggestion of church leadership. Leaders from that church encouraged the PI to provide her own leaders from her research lab because of chronic difficulty finding leaders to facilitate other small groups within that church. Even though the use of non-community member research assistants is counter to the literature on lay health educators, the student leaders were included in NOURISH-C to improve feasibility. Each of these leaders had prior experience administering assessments for NOURISH. The two White leaders were undergraduate students. One White student led sessions with a Black graduate student to ensure that at least one leader was Black. The other White leader facilitated an individual session by herself. Two leaders from the research lab (one White female and one Black female) facilitated the individual waves. Leader age, weight status, socioeconomic status, and education were not formally assessed. Table 4 summarizes leader demographic information.
Table 4.

*Leader Demographic Information*

<table>
<thead>
<tr>
<th>Leader</th>
<th>Gender</th>
<th>Race</th>
<th>Occupation</th>
<th>Church Member</th>
<th>Type of Session Facilitated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>Black</td>
<td>Teacher</td>
<td>Yes</td>
<td>Group</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>Black</td>
<td>Teacher</td>
<td>Yes</td>
<td>Group</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>Black</td>
<td>Teacher</td>
<td>Yes</td>
<td>Group</td>
</tr>
<tr>
<td>4</td>
<td>Female</td>
<td>Black</td>
<td>Exercise Instructor</td>
<td>Yes</td>
<td>Group</td>
</tr>
<tr>
<td>5</td>
<td>Female</td>
<td>Black</td>
<td>Graduate Student</td>
<td>No</td>
<td>Group</td>
</tr>
<tr>
<td>6</td>
<td>Male</td>
<td>Black</td>
<td>Undergraduate Student</td>
<td>No</td>
<td>Group</td>
</tr>
<tr>
<td>7</td>
<td>Female</td>
<td>White</td>
<td>Undergraduate Student</td>
<td>No</td>
<td>Individual</td>
</tr>
<tr>
<td>8</td>
<td>Female</td>
<td>White</td>
<td>Undergraduate Student</td>
<td>No</td>
<td>Both</td>
</tr>
</tbody>
</table>
**Leader training.** NOURISH-C leaders were trained by the PI following recommendations in the literature related to training community members to serve as interventionists (e.g. Bopp et al., 2007; Witt-Glover et al., 2008). Specifically, NOURISH-C leaders participated in a one-on-one, two hour training session led by the PI reviewing session content, intervention policies, and the objectives of each session. The first hour of the training consisted of an overview of study protocol and assessment measures. The PI also reviewed each session of the program manual (see Appendix 9) with the leaders. Leaders used this time to ask questions about specific content in the manual. In the second hour of training, the PI taught group leaders basic group facilitation skills adapted from an introductory clinical skills textbook (Hill, 2009). The PI taught leaders reflective listening skills, strategies for managing challenging interpersonal styles (e.g. silent or monopolizing group members), and information on open-ended questions. Training materials provided to group leaders are included in Appendix 10 and 11.

This training also offered opportunities for group leaders to practice delivering session content and for the PI to model group facilitation skills. Following the recommendations of Quinn and McNabb (2001), training incorporated role playing activities to provide trainees with opportunities to practice scenarios that would likely occur in the group, such as fielding difficult questions, managing talkative group members, and helping participants with appropriate goal setting. NOURISH-C leaders were given a manual with discussion prompts for each session (included in Appendix 9. The PI also met with the leaders after each session to debrief and to answer questions about program implementation.
Measures

All measures are included in the Appendix. Table 5 summarizes the assessment protocol schedule at each time point.

Table 5.

Assessment Schedule

<table>
<thead>
<tr>
<th>Measure</th>
<th>Completed By</th>
<th>Time Point</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Anthropometrics</td>
<td>Both</td>
<td>X</td>
</tr>
<tr>
<td>ASA 24\textsuperscript{a}</td>
<td>Both</td>
<td>X</td>
</tr>
<tr>
<td>CFQ\textsuperscript{b}</td>
<td>Caregiver</td>
<td>X</td>
</tr>
<tr>
<td>Demographics</td>
<td>Caregiver</td>
<td>X</td>
</tr>
<tr>
<td>Exit Interview</td>
<td>Caregiver</td>
<td>X</td>
</tr>
<tr>
<td>FEEB\textsuperscript{c}</td>
<td>Caregiver</td>
<td>X</td>
</tr>
<tr>
<td>PAR\textsuperscript{d}</td>
<td>Both</td>
<td>X</td>
</tr>
<tr>
<td>PedsQL\textsuperscript{e}</td>
<td>Child</td>
<td>X</td>
</tr>
<tr>
<td>SSBFI\textsuperscript{f}</td>
<td>Child</td>
<td>X</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Automated Self-administered 24-hour Dietary Recall  
\textsuperscript{b} Child Feeding Questionnaire  
\textsuperscript{c} Family Eating and Exercise Behaviors  
\textsuperscript{d} Physical Activity Recall  
\textsuperscript{e} Pediatric Quality of Life Inventory  
\textsuperscript{f} Sugar Sweetened Beverage and Fast Food Intake
The following measures were completed by caregivers:

**Demographic questionnaire.** Demographic data were collected at baseline assessment. Caregivers reported race, age, and gender for themselves and their enrolled child. Caregivers also reported their highest level of completed education and family income.

**Automated Self-Administered 24-Hour Dietary Recall (ASA-24).** The ASA-24 is a free, web-based software tool developed by the National Cancer Institute that allows participants to self-report 24 hour dietary recalls (Subar, Kirkpatrick, Mittl, Zimmerman, Thompson, Bingley…Potischman, 2012). Parents completed this measure at baseline, post-testing, and three month follow up to provide (for both themselves and their child) a detailed account of the foods and beverages consumed for the day prior to each assessment. This measure requires approximately 20-30 minutes to complete. Administration time varies as a function of participant literacy and computer knowledge (NCI, 2015). A trained interviewer was available at the time of the assessment answer participants’ questions and to ensure accuracy of the recall. ASA-24 software calculated the total calories, as well as protein, fat, cholesterol, and sugar consumption for each dietary recall.

This measure required an internet connection and computer to complete. At some churches \((n = 2)\), internet access was not available. Additionally, some participants did not have adequate literacy or computer knowledge to complete the self-administered measure. In these cases \((n = 7)\), participants completed a written 24-Hour Food Record form and their food recall was subsequently entered (by the PI) into the ASA-24 program for analysis.

The ASA-24 is comparable to more expensive interviewer-recall methods and has been used in a variety of research, teaching, and academic settings (Subar et al., 2012). One study evaluated the ASA-24’s criterion validity (Kirkpatrick, Subar, Douglass, Zimmerman,
Thompson, Kahle…Potischman, 2014). The researchers invited 83 men and women to consume three meals in a research lab and return the following day to complete a dietary recall. Some participants were randomized to complete an interviewer administered recall and the remainder completed the self-administered ASA-24. Researchers also completed observational recordings of the volume and type of food consumed by the participants as a “true intake” comparison value. Both the ASA-24 and the interviewer administered recall captured approximately 80% of the foods that the researchers observed the participants consume. There were no significant differences between the data reported on the two recall measures. Thus, participants were able to report their consumption in a valid manner using the online measure without prompting from a trained interviewer. The researchers concluded that using the ASA-24 instead of a trained nutritionist to administer recalls yields significant savings to researchers without threatening the accuracy of the nutritional data (Kirkpatrick et al., 2014).

Thompson and colleagues (2014) also found that the ASA-24 performed similarly to standard interviewer-administered dietary recalls in a sample of 1,081 adults. The researchers compared the ASA-24 to the Automated Multiple-Pass Method (AMPM) interviewer-administered recall utilized by the National Health and Nutrition Examination Survey. Thompson and colleagues (2014) compared the recall of 20 nutrient and food groups using both recall methods, and found that 87% of the ASA-24 intakes were equivalent to those collected using AMPM. The researchers asserted that the ASA-24 can be feasible for small scale studies because it removes the cost of trained interviewers. However, the authors also identified access to high speed internet and literacy as barriers to ASA-24 use.
**Child Feeding Questionnaire (CFQ).** Parental feeding style was assessed with the Child Feeding Questionnaire at baseline, post-intervention, and three-month follow up (CFQ; Birch, Fisher, Grimm-Thomas, Markey, Sawyer, & Johnson, 2001). The CFQ contains 31 items representing two domains: parental use of control in feeding activities and parental perceptions and concern regarding the child’s weight and feeding behaviors. The parental control domain consists of three subscales: restriction (8 items), pressure to eat (4 items), and parental monitoring of eating (3 items). The parental perceptions and concerns domain represents four subscales: responsibility for feeding (3 items), perceived weight of the parent, past and current, (4 items), perceived weight of the child, past and current, (6 items), and parental concern about child weight (3 items). All items in the CFQ are presented on a 5-point scale. Sample CFQ items include: “How often are you responsible for deciding if your child has eaten the right kind of foods?” and “How concerned are you about your child becoming overweight?”

In their analysis of the internal consistency of the CFQ, Birch and colleagues (2001) reported alpha levels of 0.88 (perceived responsibility), 0.71 (perceived parent weight), 0.83 (perceived child weight), 0.75 (concern about child weight) 0.70 (pressure to eat), 0.73 (restriction), and .92 (monitoring). Although the CFQ was normed on a predominately young, White sample, there are conflicting recommendations in the literature regarding its use with minority families. Some studies support its use with Black families (Spruijt-Mertz, Lindquist, Birch, Fisher, & Goran, 2002). However, one study evaluating the psychometric properties of the CFQ with low-income Black and Hispanic parents of pre-school aged children suggested modifying some items to maintain validity (Anderson, Hughes, Fisher, & Nicklas, 2005). Specifically, these authors recommended dropping five items from the
Restriction subscale and omitting items asking parents to provide their evaluation of their child’s past weight in favor of focusing on parents’ current perceptions of child weight. Additionally, Cardel and colleagues (2012) found that CFQ responses vary by race/ethnicity, with Hispanic families endorsing higher restriction than Black or White families. Due to the conflicting results in the literature, this study utilized the existing CFQ measure and did not modify the items. This facilitated comparisons between the results of the current study and published norms, including findings from previous versions of NOURISH (Mazzeo et al., 2014).

**Family Eating and Exercise Behaviors (FEEB).** Parents reported the frequency of family meals, fast food consumption, and consumption of fruits, vegetables, and sugar sweetened beverages. Parental encouragement of healthy food consumption, physical activity, and dieting were also assessed. Example questions from this measure include “In my family, eating brings people together in an enjoyable way” and “In my family, there are rules at mealtimes that we are expected to follow.” Participants respond using a 4-point scale with response options ranging from strongly disagree to strongly agree.

FEEB items were adapted from a measure used in prior research examining the relation between family meals and child eating behaviors (Neumark-Sztainer, Eisenberg, Fulkerson, Story, & Larson, 2008). In their study, Neumark-Sztainer and colleagues (2008) only used one question from this measure (“During the past 7 days, how many times did all, or most, of your family living in your house eat a meal together?”). The researchers scored the item by dichotomizing responses into high and low frequency behavior for the purpose of their analyses.
Exit questionnaire. Parents completed an exit questionnaire at post assessment to assess aspects of program feasibility and acceptability, including: what participants liked and disliked about the intervention, thoughts about the duration, frequency, and number of sessions, perceived benefits and barriers to implementing the intervention goals, comfort with group leaders and members, overall satisfaction, and suggestions for improvement. This measure consisted of 13 questions (rated on a 5-point scale with responses ranging from strongly disagree to strongly agree) and 14 open-ended questions assessing the strengths and weaknesses of the intervention, relevance of program material to Black families, and suggestions for future programs. A sample ordinal-level item is: “I would recommend this group to another parent who is concerned about her/his child’s health.” A sample open-ended item is: “How has what you learned in this group affected the way in which you feed your child?”

Semi-structured phone exit interviews were administered to participants who completed individual sessions within one week of post-testing. This survey was used because the majority of the group-based questions from the other feasibility survey were not relevant to those who participated in the individual sessions. Completing the follow up survey on the phone, versus in person, increased the likelihood of their completion, as participants did not have to travel to the church. Phone interviews included 28 questions assessing barriers to group participation and feasibility of implementing NOURISH-C. A trained interviewer read the statements aloud and participants indicated whether the statement applied “not at all, somewhat or a lot” for their family. Sample items include: “Meeting at the church was convenient for me” and “My church has too many other programs going on.” Phone interviews also included five open-ended questions soliciting feedback and suggestions for
future groups. An example is: “How do you think we can run this program better in your church?” and “What do you think would help families attend this program?”

The following measures were completed by the enrolled child (at baseline, posttesting, and three month follow up)

**Child Sugar Sweet Beverage and Fast Food Intake (SSBFI).** This measure was completed by children at baseline, posttesting, and three month follow up to assess frequency and types of sugar-sweetened beverages consumed weekly, frequency of family meals, and frequency of fast food consumption. Trained research assistants read items on this measure to children as needed. Items on this measure were adapted from existing assessments of child dietary intake (Neumark-Sztainer et al., 2008). Information from this measure was used to measure the frequency of sugar sweetened beverages to assess the third aim of the study.

The SSBFI consists of 13 questions. Six of these required children to indicate “yes” or “no” to questions assessing their consumption of certain beverages and fast food. For example, one item asked “Do you drink sweet tea?” and another asked “Do you drink energy drinks?” Children who indicated “yes” to an item also reported their weekly consumption of that beverage. Three items required children to indicate how often they eat meals with family or eat at fast food restaurants. For example, one item asked “How often do you eat dinner with your parents/brothers/sisters?” Children responded on a 7-point scale with responses ranging from “Never (0 days per week)” to “All the time (7 days per week).”

**Pediatric Health-Related Quality of Life (PedsQL4.0; Varni, Seid, & Kurtin, 2001):** The enrolled child completed the PedsQL at baseline, post-assessment, and three-month follow up to assess his or her perceptions of how health affects his or her daily functioning. This measure contains 23 items divided into four Generic Core Scales: Physical
(8 items), Emotional (5 items), Social (5 items), and School functioning (4 items). A general quality of life score is also generated. Several versions of the PedsQL have been created to correspond to the child’s developmental level. The young child (ages 5 -7) and child (ages 8 -12) versions were used in this study, depending on the age of the enrolled child. A sample item from this measure is “It is hard to keep up when I play with other kids.” Participants respond using a 5-point scale with response options ranging from “0 = Never a Problem” to “4 = Almost Always a Problem.” For participants using the young child self-report version, item stem wording is simplified and response options are weighted with cartoon faces ranging from happy to sad to facilitate participant comprehension. Trained interviewers read items of the PedsQL to children as necessary.

The PedsQL was normed on a sample of 963 children, ages 5 -18 years, recruited from inpatient and outpatient populations, and 1,629 parents of children aged 2-18 years. Within the child normative sample, 36.5% were White, 39.8% were Hispanic, 7% were Black, 2.9% were Asian, 1.1% were American Indian, and 5.9% identified as Other. The child sample also included chronically ill (40.7%), acutely ill (12.3%), and healthy (43.5%) participants. Evidence for the reliability of this measure is strong. For the child self-report version, estimates of internal consistency reliability are high: .88 (Total Score), .88 (Physical Health), .73 (Emotional Functioning), .71 (Social Functioning), and .68 (School Functioning). Although this measure was validated with a predominantly White sample, its internal consistency in a sample of predominantly Black treatment seeking obese adolescent girls was estimated at .91 (Stern et al., 2007).

The following measures were completed by both the caregiver and child (at baseline, posttesting, and three month follow up):
**7-day Physical Activity Recall (PAR).** Physical activity was assessed using the 7-Day Physical Activity Recall at baseline, post-assessment, and three month follow up (PAR; Sallis, 1997). A trained interviewer read the PAR to children and caregivers. This structured interview assesses the frequency and duration of physical activity during the seven days prior to the interview. Participants also listed physical activities performed during the morning, afternoon, and evening of each day in the seven day period, as well as the duration of each activity. Each discrete physical activity occurrence was recorded in increments of 15 minutes. Information about the intensity of the activity was also recorded; participants were asked to identify whether they considered the activity moderate, hard, or very hard. Moderate physical activities were defined as those the participant perceived to be as intense as walking at a normal pace. Very hard activities are defined as activities the participant perceived to be significantly more strenuous than walking at a normal pace, such as running.

The estimated reliability of this measure is strong. One study by Gross and colleagues (1990) trained twenty-one volunteers to conduct the PAR and the test-retest reliability was estimated at .99, supporting the use of this measure with trained interviewers.

**Anthropometric measures.** Caregiver and child height, measured to the nearest 0.1cm, and weight, measured to the nearest 0.1kg, were assessed by trained research staff at the baseline, post-intervention, and 3-month follow up data collection points to calculate BMI in kg/m². BMI percentile, rather than absolute BMI or z-score, was used to assess weight change in children.

The following measures assessed feasibility and acceptability:

**Measures of retention feasibility.** Feasibility of retaining an adequate sample was assessed via detailed tracking of recruitment efforts and attendance at each session. As
previously mentioned, group members also completed a written exit questionnaire at post-testing and participants in the final wave (individual sessions) completed a semi-structured phone exit interview.

**Measures of intervention feasibility.** Feasibility was also assessed via NOURISH-C leaders' self-report. At the end of each group/series of individual sessions, leaders completed a survey assessing the feasibility of delivering the intervention material, the appropriateness of the wording and format of the material, cultural appropriateness of the content, and suggestions for future implementation efforts. This survey consisted of 13 ordinal-level items and 10 open ended questions. Sample items included: “I think that participating in this group helped make group members more active” and “I enjoyed leading each NOURISH-C session” (based on a five point scale with responses ranging from strongly disagree to strongly agree). Sample open-ended items include “What would you change about the program to make it more relevant to Black families?” and “What would help or get in the way of continuing a group like this at your church?” For the group-based waves, leader feedback was anonymous to prevent demand characteristics from weakening the validity of their responses. For the individually administered wave, it was possible to identify the leaders because only two leaders facilitated the individual sessions. One leader referenced previous experience leading a NOURISH-C group in her feedback about the individualized implementation. However, the other leader only had experience facilitating NOURISH-C with individuals.

**Analyses**

The first aim assessing the feasibility of training two church leaders to conduct the NOURISH-C intervention in a Black church congregation was assessed using descriptive
analyses. Specifically, the number of churches contacted and the percentage of those agreeing to host NOURISH-C provided evidence for the feasibility of translating NOURISH into the community. Recruitment, attrition, and session attendance also provided data regarding program feasibility. Finally, the participants’ responses on the open ended questions assessing treatment acceptability were examined.

For the second research aim, descriptive analyses assessed trends in child BMI over time. Because the majority of children participating in NOURISH-C had BMIs within the healthy range, using a repeated measures mixed model to assess changes in BMI over time would not have been appropriate.

To evaluate the third research aim, separate repeated measures mixed model analyses were conducted with child dietary intake, quality of life, and physical activity as outcome variables. For each of these analyses, time with three levels was the within-subjects factor. Because the third research aim only evaluated the effect of the intervention in one group, no interaction terms were included in the models. All analyses were conducted using an intent-to-treat approach. Using this approach, participants’ most recent data values were carried forward in the event that s/he did not complete an assessment (Hulley, Cummings, Browner, Grady, Hearst, & Newman, 2001; Spiker, 1991). For example, if participants did not complete the post-assessment then their baseline score was carried forward.

Results

Descriptive Statistics

Descriptive statistics indicated that, at baseline, 13% of children were overweight and 25% were obese. However, the majority of children were at a healthy weight, with a mean BMI percentile (at baseline) of 79.04 (SD = 22.52). This value is below the cut off for
overweight (BMI > 85\textsuperscript{th} percentile). Descriptive statistics for BMI, quality of life, physical activity, sleep, and dietary intake at each assessment point are summarized in Table 6. The following paragraphs compare baseline values for each outcome reported in the current study to published norms. It is important to note that there is considerable variability in outcome measures at each time point. This is due to relatively small sample sizes ($n$’s = 25, 14, and 8 respectively) and changes in the composition of the sample at each time point. Changes in outcome measures over time should be interpreted with caution.
Table 6.

Descriptive Summary of Child Outcome Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline Mean (SD)</th>
<th>Post-assessment Mean (SD)</th>
<th>3-month Follow Up Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n = 25 )</td>
<td>( n = 14 )</td>
<td>( n = 8 )</td>
</tr>
<tr>
<td>BMI (kg/m(^2))</td>
<td>19.99 (5.03)</td>
<td>19.49 (5.69)</td>
<td>18.64 (6.07)</td>
</tr>
<tr>
<td>BMI Percentile</td>
<td>79.04 (22.52)</td>
<td>80.33 (24.78)</td>
<td>70.80 (19.60)</td>
</tr>
<tr>
<td>PEDSQL General(^a)</td>
<td>79.51 (11.44)</td>
<td>85.37 (11.85)</td>
<td>88.04 (8.28)</td>
</tr>
<tr>
<td>PEDSQL Physical</td>
<td>84.94 (12.41)</td>
<td>92.79 (7.48)</td>
<td>91.88 (10.27)</td>
</tr>
<tr>
<td>PEDSQL Emotional</td>
<td>73.81 (17.78)</td>
<td>78.46 (22.67)</td>
<td>98.00 (4.47)</td>
</tr>
<tr>
<td>PEDSQL Social</td>
<td>83.18 (21.13)</td>
<td>78.46 (26.41)</td>
<td>69.00 (31.30)</td>
</tr>
<tr>
<td>PEDSQL School</td>
<td>75.77 (17.84)</td>
<td>81.92 (16.14)</td>
<td>90.00 (14.14)</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>5.74 (6.67)</td>
<td>7.27 (6.22)</td>
<td>6.45 (5.36)</td>
</tr>
<tr>
<td></td>
<td>(hours/week)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleep (hours/week)</td>
<td>61.82 (8.36)</td>
<td>65.50 (8.10)</td>
<td>60.50 (11.99)</td>
</tr>
<tr>
<td>Total Calories(^b)</td>
<td>1698.95 (399.9)</td>
<td>1026.72 (287.97)</td>
<td>1514.01 (133.10)</td>
</tr>
<tr>
<td>Total Fat (g)</td>
<td>63.14 (25.37)</td>
<td>33.19 (10.10)</td>
<td>55.86 (1.82)</td>
</tr>
<tr>
<td>Protein (g)</td>
<td>63.08 (30.13)</td>
<td>33.30 (10.80)</td>
<td>62.38 (9.87)</td>
</tr>
<tr>
<td>Sugar (g)</td>
<td>95.30 (53.83)</td>
<td>60.15 (48.30)</td>
<td>96.81 (22.26)</td>
</tr>
<tr>
<td>Fiber (g)</td>
<td>16.01 (5.91)</td>
<td>7.69 (2.98)</td>
<td>15.66 (4.69)</td>
</tr>
<tr>
<td>Soda(^c)</td>
<td>2.57 (4.51)</td>
<td>2.54 (4.31)</td>
<td>2.60 (2.70)</td>
</tr>
<tr>
<td>Sweet Tea</td>
<td>.81 (1.03)</td>
<td>1.17 (1.03)</td>
<td>.60 (.55)</td>
</tr>
<tr>
<td>Sweet Coffee</td>
<td>.63 (1.71)</td>
<td>.08 (.28)</td>
<td>.00 (.00)</td>
</tr>
<tr>
<td>Juice</td>
<td>3.76 (3.46)</td>
<td>3.50 (4.03)</td>
<td>5.00 (2.74)</td>
</tr>
<tr>
<td>Energy Drink</td>
<td>.23 (.75)</td>
<td>.54 (1.33)</td>
<td>1.40 (3.13)</td>
</tr>
<tr>
<td>Sports Drink</td>
<td>.76 (1.26)</td>
<td>2.08 (3.17)</td>
<td>2.80 (3.03)</td>
</tr>
</tbody>
</table>

\(^a\) PEDSQL (Pediatric Quality of Life Inventory)
\(^b\) Total calories, fat, protein, sugar, and fiber data obtained from ASA-24
\(^c\) Soda, sweet tea, sweet coffee, juice, energy drink, and sport drink data obtained from SSBFI. Data represents drinks consumed per week.
**Quality of life.** Scores on this measure ranged from zero to 100, and higher scores on the PEDSQL indicate better health related quality of life. Children reported average total PEDSQL scores of 79.51 \((SD = 11.44, n = 22)\) at baseline, 85.37 \((SD = 11.85, n = 13)\) at posttesting, and 88.04 \((SD = 8.28, n = 5)\) at three month follow up. Table 7 compares NOURISH-C PEDSQL subscale scores to those in the normative sample (Varni et al., 2001) and to a sample of 1,456 children between the ages of 9 – 12 years (Williams, Wake, Hesketch, Maher, & Waters, 2005).

Varni and colleagues (2003) recommend interpreting scores one standard deviation below the published norms as evidence of a severe chronic health condition. Children in NOURISH-C reported scores both higher and lower than those in the normative sample, and all scores were within one standard deviation of the published means. Additionally, children in NOURISH-C reported higher quality of life scores (indicating higher health related quality of life) than overweight children in Williams and colleague’s (2005) sample with the exception of the School Functioning subscale. All NOURISH-C baseline PEDSQL scores were higher than those of obese children in that sample.
### Table 7.

**Comparison of Pediatric Quality of Life Scores Descriptive Statistics**

<table>
<thead>
<tr>
<th>Subscale</th>
<th>NOURISH-C Baseline ($n = 22$)</th>
<th>NOURISH-C Posttesting ($n = 13$)</th>
<th>NOURISH-C 3 Month Follow up ($n = 5$)</th>
<th>Varni et al., 2001 ($n = 963$)</th>
<th>Williams et al., 2005 Healthy Weight ($n = 1099$)</th>
<th>Williams et al., 2005 Overweight ($n = 294$)</th>
<th>Williams et al., 2005 Obese ($n = 63$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$ ($SD$)</td>
<td>$M$ ($SD$)</td>
<td>$M$ ($SD$)</td>
<td>$M$ ($SD$)</td>
<td>$M$ ($SD$)</td>
<td>$M$ ($SD$)</td>
<td>$M$ ($SD$)</td>
</tr>
<tr>
<td>PEDSQL General$^a$</td>
<td>79.51 (11.44)</td>
<td>85.37 (11.85)</td>
<td>88.04 (8.28)</td>
<td>79.62 (15.26)</td>
<td>80.5 (12.2)</td>
<td>79.3 (12.8)</td>
<td>74.0 (14.2)</td>
</tr>
<tr>
<td>PEDSQL Physical</td>
<td>84.94 (12.41)</td>
<td>92.79 (7.48)</td>
<td>91.88 (10.27)</td>
<td>80.19 (19.30)</td>
<td>85.7 (12.4)</td>
<td>83.5 (13.0)</td>
<td>77.5 (17.9)</td>
</tr>
<tr>
<td>PEDSQL Emotional</td>
<td>73.81 (17.78)</td>
<td>78.46 (22.67)</td>
<td>98.00 (4.47)</td>
<td>78.10 (20.66)</td>
<td>73.2 (17.5)</td>
<td>72.6 (17.7)</td>
<td>68.6 (18.5)</td>
</tr>
<tr>
<td>PEDSQL Social</td>
<td>83.18 (21.13)</td>
<td>78.46 (26.41)</td>
<td>69.00 (31.30)</td>
<td>84.09 (18.50)</td>
<td>82.7 (16.7)</td>
<td>80.2 (16.6)</td>
<td>72.6 (18.2)</td>
</tr>
<tr>
<td>PEDSQL School</td>
<td>75.77 (17.84)</td>
<td>81.92 (16.14)</td>
<td>90.00 (14.14)</td>
<td>75.87 (19.71)</td>
<td>77.1 (15.4)</td>
<td>78.3 (15.5)</td>
<td>75.0 (14.5)</td>
</tr>
</tbody>
</table>
Physical activity. Children reported exercising an average of 5.74 hours per week ($SD = 6.67, n = 20$) at baseline, 7.27 hours ($SD = 6.23, n = 11$) at posttesting, and 6.0 hours ($SD = 5.36, n = 5$) at three month follow up. It is recommended that children engage in at least 60 minutes of exercise per day, most days of the week (Center for Disease Control, 2015). Thus, children in NOURISH-C exercised at a level consistent with national guidelines.

Sleep. Children in NOURISH-C reported sleeping 61.82 hours per week at baseline ($SD = 8.36, n = 18$), 65.50 hours ($SD = 8.10, n = 12$) at posttesting, and 60.50 hours ($SD = 11.99, n = 5$). The Centers for Disease Control and Prevention (CDC, 2013) recommend that children between the ages of five and eleven years sleep at least ten hours per day. Thus, this sample is sleeping less than the recommendation of 70 hours per week.

Dietary intake. Children in NOURISH-C reported consuming an average of 1,698 ($SD = 399.9, n = 14$) calories at baseline. Female children consumed an average of 1,629.39 calories at baseline ($SD = 303.47, n = 8$) and male children consumed 1,791.71 ($SD = 518.46, n = 6$). The United States Department of Agriculture (USDSA, 2010) reported that moderately active children between four and eight years old require 1,400 – 1,600 calories per day. Moderately active female children between nine and thirteen years old require 1,600 – 2,000 calories and male children of the same age and activity level require 1,800 – 2,200 daily calories. Thus, at baseline, calorie consumption for children in NOURISH-C was within recommended levels. Table 6 summarizes dietary intake at each time point.

Table 8 provides a summary of caregivers’ BMI, dietary intake, exercise, sleep, and responses to the Child Feeding Questionnaire. The following section compares caregiver responses on each outcome to published norms.
Table 8.

*Descriptive Summary of Caregiver-Reported Measures*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline Mean (SD) n = 25</th>
<th>Post-assessment Mean (SD) n = 14</th>
<th>3-month Follow Up Mean (SD) n = 8</th>
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</thead>
<tbody>
<tr>
<td>BMI (kg/m²)</td>
<td>30.12 (8.14)</td>
<td>28.39 (6.88)</td>
<td>30.64 (6.71)</td>
</tr>
<tr>
<td>CFQ Concern⁠a</td>
<td>2.88 (1.01)</td>
<td>2.31 (1.43)</td>
<td>2.67 (1.27)</td>
</tr>
<tr>
<td>CFQ Pressure</td>
<td>2.85 (1.01)</td>
<td>2.96 (1.77)</td>
<td>3.38 (1.04)</td>
</tr>
<tr>
<td>CFQ Monitoring</td>
<td>3.58 (1.14)</td>
<td>3.59 (1.02)</td>
<td>3.46 (1.07)</td>
</tr>
<tr>
<td>CFQ Restriction</td>
<td>3.39 (.94)</td>
<td>3.32 (1.10)</td>
<td>3.47 (1.13)</td>
</tr>
<tr>
<td>CFQ Responsibility</td>
<td>4.10 (1.10)</td>
<td>4.36 (1.89)</td>
<td>4.00 (1.94)</td>
</tr>
<tr>
<td>CFQ Parent Weight</td>
<td>3.33 (.47)</td>
<td>3.05 (.37)</td>
<td>3.14 (.45)</td>
</tr>
<tr>
<td>CFQ Child Weight</td>
<td>3.12 (.33)</td>
<td>2.83 (.39)</td>
<td>3.29 (.39)</td>
</tr>
<tr>
<td>PAR Exercise⁠b</td>
<td>6.0 (7.84)</td>
<td>5.58 (6.61)</td>
<td>4.10 (3.86)</td>
</tr>
<tr>
<td>Sleep (hours/week)</td>
<td>51.32 (10.07)</td>
<td>49.58 (8.82)</td>
<td>51.79 (8.45)</td>
</tr>
<tr>
<td>Total Calories</td>
<td>1625.54 (650.15)</td>
<td>1430.61 (705.56)</td>
<td>1551.04 (849.69)</td>
</tr>
<tr>
<td>Total Fat (g)</td>
<td>67.23 (32.44)</td>
<td>61.28 (40.04)</td>
<td>63.12 (37.14)</td>
</tr>
<tr>
<td>Sugar (g)</td>
<td>68.02 (48.89)</td>
<td>55.14 (38.32)</td>
<td>106.52 (112.54)</td>
</tr>
<tr>
<td>Protein (g)</td>
<td>67.95 (24.78)</td>
<td>73.01 (53.31)</td>
<td>60.49 (42.27)</td>
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<tr>
<td>Fiber (g)</td>
<td>15.67 (9.92)</td>
<td>10.32 (7.41)</td>
<td>14.38 (7.16)</td>
</tr>
</tbody>
</table>

a. CFQ (Child Feeding Questionnaire)
b. PAR (Physical Activity Recall)
Child Feeding Questionnaire. Scores on items of the CFQ range from one to five; higher scores represent greater parental use of each feeding practice. Table 9 compares baseline CFQ subscale scores to those published in the normative sample (Birch et al., 2001) and in a sample of 101 Black caregivers of healthy and overweight children (Anderson et al., 2005). Of note, caregivers in NOURISH-C reported lower levels of two feeding strategies (restriction, monitoring) compared to published norms (Birch et al., 2001). Additionally, caregivers participating in NOURISH-C reported higher levels of concern for their child’s risk for overweight and perceived responsibility for child feeding compared with published norms (Birch et al., 2001).

Table 9.

Comparison of Child Feeding Questionnaire Descriptive Statistics

<table>
<thead>
<tr>
<th>Subscale</th>
<th>NOURISH-C</th>
<th>NOURISH-C Post</th>
<th>NOURISH-C 3 Month</th>
<th>Birch et al., 2001</th>
<th>Anderson et al., 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td></td>
<td>(n = 22)</td>
<td>(n = 14)</td>
<td>(n = 8)</td>
<td>(n = 394)</td>
<td>(n = 101)</td>
</tr>
<tr>
<td>Responsibility</td>
<td>4.10 (1.10)</td>
<td>4.36 (.89)</td>
<td>4.00 (.94)</td>
<td>3.4 (0.95)</td>
<td>4.61 (0.67)</td>
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<tr>
<td>Parent Weight</td>
<td>3.33 (.47)</td>
<td>3.05 (.37)</td>
<td>3.14 (.45)</td>
<td>3.1 (0.78)</td>
<td>N/A a</td>
</tr>
<tr>
<td>Child Weight</td>
<td>3.12 (.33)</td>
<td>2.83 (.39)</td>
<td>3.29 (.39)</td>
<td>2.9 (0.50)</td>
<td>2.92 (0.58)</td>
</tr>
<tr>
<td>Concern</td>
<td>2.88 (1.01)</td>
<td>2.31 (1.43)</td>
<td>2.67 (1.27)</td>
<td>2.3 (1.15)</td>
<td>2.06 (1.15)</td>
</tr>
<tr>
<td>Pressure to Eat</td>
<td>2.85 (1.01)</td>
<td>2.96 (.77)</td>
<td>3.38 (1.04)</td>
<td>2.5 (0.95)</td>
<td>3.57 (0.86)</td>
</tr>
<tr>
<td>Restriction</td>
<td>3.39 (.94)</td>
<td>3.32 (1.10)</td>
<td>3.47 (1.13)</td>
<td>4.0 (0.78)</td>
<td>4.31 (0.84)</td>
</tr>
<tr>
<td>Monitoring</td>
<td>3.58 (1.14)</td>
<td>3.59 (1.02)</td>
<td>3.46 (.87)</td>
<td>3.6 (0.91)</td>
<td>4.27 (0.98)</td>
</tr>
</tbody>
</table>

a. Perceived parent weight dropped from the model in this study
**Physical activity.** The CDC (2015) recommends that adults exercise 150 minutes, or 2.5 hours, per week. Caregivers in NOURISH-C reported exercising an average of 6 hours ($SD = 7.84, n = 23$) per week at baseline, 5.58 hours ($SD = 6.61, n = 10$) at posttesting, and 4.10 hours ($SD = 3.86, n = 7$) at three month follow up. Caregivers exceeded adult exercise recommendations at each time point.

**Sleep.** The CDC (2013) recommends that adults sleep between seven and eight hours per day. Caregivers in NOURISH-C reported sleeping an average of 51.32 hours per week ($SD = 10.07, n = 21$) at baseline, 49.58 hours ($SD = 8.82, n = 10$) at posttesting, and 51.79 hours ($SD = 8.45, n = 7$) at three month follow up. This is within the 49 to 56 hours per week recommended by the CDC.

**Dietary intake.** The USDA (2010) recommends that moderately active women between the ages of 31-50 years consume 2,000 calories per day. Men of the same age range and activity level should consume 2,600 – 2,800 daily calories. In NOURISH-C, caregivers consumed an average of 1,625.54 daily calories at baseline ($n = 14$, $SD = 650.15$). Female caregivers consumed an average of 1,620.32 calories ($n = 12$, $SD = 769.80$) and men consumed 1,807.99 calories ($n = 2$, $SD = 246.85$). Table 8 summarizes caregiver dietary intake at each assessment point.
**Family eating and exercise behaviors.** Caregivers \( n = 23 \) also completed the FEEB to assess the frequency of healthy eating behaviors within the home. Frequencies of responses on the ordinal-level items at baseline were reviewed. One item asked caregivers to report how frequently their family ate meals together in the past seven days with response ranges from zero to seven. One caregiver reported eating zero meals with his/her family. Four caregivers (16%) reported eating one to two meals, five (20%) reported eating three meals, four (16%) reported eating four to five meals, four (16%) reported eating six to seven meals, and five (20%) reported eating seven meals with the entire family in the past week. A similar item asked caregivers how many days in the past week a family meal was purchased at a fast food restaurant. One caregiver reported eating one meal, 13 (52%) reported eating one to two meals, four (16%) reported eating three meals, three (12%) reported eating four to five meals, one (4%) reported eating six to seven meals, and one (4%) reported eating more than seven meals purchased from a fast-food restaurant in the past week.

Three questions assessed the availability of certain foods in the home with five possible responses ranging from “always” to “never.” Over half \( n = 16 \) indicated that sugar sweetened beverages were either rarely or never available in the home. Many parents (65%, \( n = 15 \)) responded “always” to the item “How often do you have frozen or fresh fruits available in the home?” and 16 (70%) parents reported that they always had frozen or fresh vegetables available.

The FEEB also contained 15 items assessing the frequency of various eating and exercise behaviors. For each item, caregivers chose between four responses ranging from strongly agree to strongly disagree. Table 10 summarizes the responses of caregiver responses for each of the 15 items. Of note, 18 caregivers either agreed or strongly agreed
with the item “In my family, it is important that the family eat at least one meal a day together.” Finally, 14 (61%) parents strongly agreed with the statement “I encourage my child to engage in regular physical activity.” The remaining caregivers somewhat agreed and no one disagreed with that item. Twenty caregivers (87%) either strongly or somewhat agreed with the item “I encourage my child to consume healthy foods.” Additionally, twenty caregivers (87%) strongly or somewhat disagreed with the item “I encourage my child to diet.”
### Table 10.

**Summary of Caregiver Responses on the Family Eating and Exercise Behavior Questionnaire**

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Disagree n (%)</th>
<th>Somewhat Disagree n (%)</th>
<th>Somewhat Agree n (%)</th>
<th>Strongly Agree n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I enjoy eating meals with my family.</td>
<td>0 (0)</td>
<td>2 (8)</td>
<td>4 (16)</td>
<td>17 (68)</td>
</tr>
<tr>
<td>2. In my family, eating brings people together in an enjoyable way.</td>
<td>1 (4)</td>
<td>5 (20)</td>
<td>17 (68)</td>
<td>17 (68)</td>
</tr>
<tr>
<td>3. In my family, mealtime is a time for talking with other family members.</td>
<td>0 (0)</td>
<td>2 (8)</td>
<td>9 (36)</td>
<td>12 (48)</td>
</tr>
<tr>
<td>4. In my family, dinner time is about more than just getting food, we all talk with each other.</td>
<td>0 (0)</td>
<td>4 (16)</td>
<td>9 (36)</td>
<td>10 (40)</td>
</tr>
<tr>
<td>5. In my family, it is important that the family eat at least one meal a day together.</td>
<td>2 (8)</td>
<td>3 (12)</td>
<td>6 (24)</td>
<td>12 (48)</td>
</tr>
<tr>
<td>6. I am often just too busy to eat dinner with my family.</td>
<td>10 (40)</td>
<td>4 (16)</td>
<td>7 (28)</td>
<td>2 (8)</td>
</tr>
<tr>
<td>7. In my family, different schedules make it hard to eat meals together on a regular basis.</td>
<td>12 (48)</td>
<td>2 (8)</td>
<td>4 (16)</td>
<td>5 (20)</td>
</tr>
<tr>
<td>8. In my family, it is often difficult to find a time when family members can sit down to a meal together.</td>
<td>12 (48)</td>
<td>2 (8)</td>
<td>4 (16)</td>
<td>5 (20)</td>
</tr>
<tr>
<td>9. In my family, we are expected to be home for dinner.</td>
<td>4 (16)</td>
<td>4 (16)</td>
<td>8 (32)</td>
<td>7 (28)</td>
</tr>
<tr>
<td>10. In my family, there are rules at mealtimes that we are expected to follow.</td>
<td>3 (12)</td>
<td>3 (12)</td>
<td>8 (32)</td>
<td>9 (36)</td>
</tr>
</tbody>
</table>

Table 10 continues
<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Disagree n (%)</th>
<th>Somewhat Disagree n (%)</th>
<th>Somewhat Agree n (%)</th>
<th>Strongly Agree n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. In my family, it is OK for a child to make something else to eat if he/she doesn’t like the food being served.</td>
<td>9 (36)</td>
<td>8 (32)</td>
<td>4 (16)</td>
<td>2 (8)</td>
</tr>
<tr>
<td>12. In my family, a child should eat all the foods served even if he/she doesn’t like them.</td>
<td>5 (20)</td>
<td>8 (32)</td>
<td>8 (32)</td>
<td>2 (8)</td>
</tr>
<tr>
<td>13. Manners are important at our dinner table.</td>
<td>0 (0)</td>
<td>2 (8)</td>
<td>6 (24)</td>
<td>15 (60)</td>
</tr>
<tr>
<td>14. In my family, we don’t have to eat meals at the kitchen/dining room table.</td>
<td>10 (40)</td>
<td>3 (12)</td>
<td>7 (28)</td>
<td>2 (8)</td>
</tr>
<tr>
<td>15. In my family, we often watch television while eating dinner.</td>
<td>6 (24)</td>
<td>7 (28)</td>
<td>8 (32)</td>
<td>2 (8)</td>
</tr>
<tr>
<td>16. I encourage my child to consume healthy foods.</td>
<td>0 (0)</td>
<td>1 (4)</td>
<td>6 (24)</td>
<td>16 (64)</td>
</tr>
<tr>
<td>17. I encourage my child to engage in regular physical activity.</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>9 (36)</td>
<td>14 (56)</td>
</tr>
<tr>
<td>18. I encourage my child to diet.</td>
<td>11 (44)</td>
<td>6 (24)</td>
<td>5 (20)</td>
<td>1 (4)</td>
</tr>
</tbody>
</table>
Preliminary Analyses

Preliminary analyses were computed to assess correlations between variables of interest. Results indicated several significant relations between variables. Correlations between the scales and items examined in the study are summarized in Table 11.

Of note, several significant correlations were found between child BMI and PEDSQL subscales. When examining these correlations, it is important to note that only five participants completed the PEDSQL at three month follow up. Total PEDSQL scores were negatively correlated with child BMI at baseline \((r(16) = -.64, p < .01, n = 18)\), posttesting \((r(9) = -.72, p < .05, n = 11)\), and three month follow up \((r(3) = -.94, p < .05, n = 5)\). Baseline scores on the Physical Functioning subscale of the PEDSQL were also negatively correlated with child BMI at baseline \((r(16) = -.65, p < .01, n = 18)\), posttesting \((r(9) = -.87, p < .01, n = 11)\), and three month follow up \((r(3) = -.98, p < .01, n = 5)\). Baseline scores on the Social Functioning subscale of the PEDSQL were also negatively correlated with child BMI at baseline \((r(16) = -.49, p < .05, n = 18)\), posttesting \((r(9) = -.67, p < .05, n = 11)\), and three month follow up \((r(3) = -.98, p < .01, n = 5)\).

Additionally, baseline duration of child weekly exercise was positively correlated with several baseline subscales of the PEDSQL, including total scores \((r(18) = .56, p < .01, n = 20)\), Social Functioning \((r(18) = .57, p < .01, n = 20)\), and School Functioning \((r(18) = .57, p < .05, n = 20)\). Significant correlations between child exercise at three month follow up and subscales of the PEDSQL were also found, including total scores \((r(3) = -.99, p < .01, n = 5)\), Physical Functioning \((r(3) = -.96, p < .01, n = 5)\), and Social Functioning \((r(3) = -.97, p < .01, n = 5)\).
Significant correlations were also found between child dietary intake and other outcomes. Of note, total calories consumed at baseline was negatively correlated with baseline total PEDSQL scores ($r(11) = -.58$, $p < .05$, $n = 13$) and Physical Functioning ($r(11) = -.67$, $p < .05$, $n = 13$). Baseline caloric intake was also positively correlated with child BMI at baseline ($r(11) = .65$, $p < .05$, $n = 13$) and posttesting ($r(7) = .75$, $p < .05$, $n = 9$).
### Table 11.

**Intercorrelations Between Baseline Scales and Child Outcomes**

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<th>Variable</th>
<th>1</th>
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<tbody>
<tr>
<td>1. Parent BMI</td>
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<td>.58*</td>
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Table 11 continues
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<th>18</th>
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<tbody>
<tr>
<td>15. Child Protein Baseline</td>
<td>-.03</td>
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<td>-.44</td>
<td>-.48</td>
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<td>.11</td>
<td>-.60*</td>
<td>.60*</td>
<td>.65</td>
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<td>-.32</td>
<td>-.26</td>
<td>-.38</td>
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<td>16. Child Fat Baseline</td>
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<td>.87**</td>
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<td>17. Child Sugar Baseline</td>
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<td>-.27</td>
<td>-.11</td>
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<tr>
<td>18. Child Fiber Baseline</td>
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<td>.07</td>
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<td>-.16</td>
<td>-.80</td>
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<td>.04</td>
<td>-.14</td>
<td>-.38</td>
<td>.59*</td>
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</table>

*Note.* *p* < .05, **p* < .01; Pearson correlations
Aim 1

The first aim of this study was to evaluate the feasibility of training community members from primarily Black churches to facilitate NOURISH-C. It was hypothesized this would be a feasible and acceptable manner of disseminating the intervention. The following section summarizes results of recruitment efforts, measures of attrition and attendance, and post-program feedback from participants and leaders.

**Summary of recruitment efforts.** The PI contacted 17 churches in Central Virginia regarding the possibility of hosting NOURISH-C. Churches were identified via online searches of local Black churches, recommendations from local individuals, and existing professional contacts. The PI contacted church leadership via phone and email. Nine of the contacted churches were located in Richmond, VA; eight were in Charlottesville, VA. The churches represented varied demographics in terms of location (i.e. urban versus suburban) and denomination. Table 12 summarizes relevant information for churches contacted by the PI. Median household income by zip code is listed based upon statistics from the U.S. Census Bureau (2013) between 2009 – 2013. Table 12 also summarizes how the PI was introduced to the church (e.g. cold contact, peer referral, previous contact). Church response to the offer to host and church reasons for declining participation are also listed.
Table 12.

*Summary of Churches Recruited*

<table>
<thead>
<tr>
<th>Church</th>
<th>Location</th>
<th>City</th>
<th>Denomination</th>
<th>Median Income per Zip Code[^a]</th>
<th>Participation Decision</th>
<th>Introduction Method</th>
<th>Reason for Declining</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Suburban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>$71,461</td>
<td>Accept</td>
<td>Previous Relationship</td>
<td>--</td>
</tr>
<tr>
<td>B</td>
<td>Urban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>$40,496</td>
<td>Accept</td>
<td>Cold Contact</td>
<td>--</td>
</tr>
<tr>
<td>C</td>
<td>Urban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>$40,496</td>
<td>Accept</td>
<td>Cold Contact</td>
<td>--</td>
</tr>
<tr>
<td>D</td>
<td>Urban</td>
<td>Richmond</td>
<td>United Holy</td>
<td>$40,496</td>
<td>Accept</td>
<td>Peer Referral</td>
<td>--</td>
</tr>
<tr>
<td>E</td>
<td>Suburban</td>
<td>Charlottesville</td>
<td>Seventh Day Adventist</td>
<td>$44,601</td>
<td>Accept</td>
<td>Cold Contact</td>
<td>--</td>
</tr>
<tr>
<td>F</td>
<td>Urban</td>
<td>Richmond</td>
<td>Evangelical</td>
<td>$40,496</td>
<td>Decline</td>
<td>Peer Referral</td>
<td>Competing Programming</td>
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<tr>
<td>G</td>
<td>Urban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>$40,496</td>
<td>Decline</td>
<td>Peer Referral</td>
<td>Leadership Turn Over</td>
</tr>
<tr>
<td>H</td>
<td>Urban</td>
<td>Charlottesville</td>
<td>Baptist</td>
<td>$44,601</td>
<td>Decline</td>
<td>Cold Contact</td>
<td>Not Interested</td>
</tr>
<tr>
<td>I</td>
<td>Urban</td>
<td>Charlottesville</td>
<td>Episcopal</td>
<td>$44,601</td>
<td>Decline</td>
<td>Cold Contact</td>
<td>Not Interested</td>
</tr>
<tr>
<td>J</td>
<td>Urban</td>
<td>Charlottesville</td>
<td>Evangelical</td>
<td>$44,601</td>
<td>Decline</td>
<td>Cold Contact</td>
<td>Not Interested</td>
</tr>
<tr>
<td>K</td>
<td>Suburban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>$70,387</td>
<td>Lost to Follow Up</td>
<td>Cold Contact</td>
<td>--</td>
</tr>
<tr>
<td>L</td>
<td>Urban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>$40,496</td>
<td>Lost to Follow Up</td>
<td>Cold Contact</td>
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</tr>
</tbody>
</table>

[^a]: Median income values are approximate and may vary based on latest available data.

Table 12 continues
<table>
<thead>
<tr>
<th>Church</th>
<th>Location</th>
<th>City</th>
<th>Denomination</th>
<th>Median Income per Zip Code&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Participation Decision</th>
<th>Introduction Method</th>
<th>Reason for Declining</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Urban</td>
<td>Richmond</td>
<td>Baptist</td>
<td>$40,496</td>
<td>Lost to Follow Up</td>
<td>Cold Contact</td>
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</tr>
<tr>
<td>N</td>
<td>Urban</td>
<td>Charlottesville</td>
<td>Baptist</td>
<td>$44,601</td>
<td>Lost to Follow Up</td>
<td>Peer Referral</td>
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<tr>
<td>O</td>
<td>Urban</td>
<td>Charlottesville</td>
<td>Baptist</td>
<td>$44,601</td>
<td>Lost to Follow Up</td>
<td>Peer Referral</td>
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<tr>
<td>P</td>
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<td>Charlottesville</td>
<td>Baptist</td>
<td>$44,601</td>
<td>Lost to Follow Up</td>
<td>Cold Contact</td>
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<tr>
<td>Q</td>
<td>Suburban</td>
<td>Charlottesville</td>
<td>Evangelical</td>
<td>$44,601</td>
<td>Lost to Follow Up</td>
<td>Cold Contact</td>
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</tbody>
</table>

<sup>a</sup> Median household income between 2009 – 2013
All churches were known in the community for serving primarily Black congregations. The majority (14 churches) were located in urban areas. The average household income by zip code for the churches was $46,008 ($D = $9,587). The two suburban churches in Richmond, Virginia were located in zip codes with the highest median income ($71,461 and $70,387). The majority of the churches contacted ($n = 11$) were Baptist. Churches located in Charlottesville, Virginia were less likely to participate in NOURISH-C; only one of eight churches contacted in Charlottesville agreed to host the program. Additionally, all three churches that declined to participate due to lack of interest were located in Charlottesville.

Table 12 also summarizes the relationship between church and PI at the initial point of contact. The PI had a pre-existing relationship with leadership at one of the churches before the study began. For five churches, the PI was referred to the church site through professional contacts who attended the church. The PI contacted the remaining 11 churches without pre-existing relationships or referrals from congregants (i.e. cold contact). Churches were identified through online searches for churches serving primarily Black congregations in the two cities of interest.

Of the 17 churches contacted, five agreed to host NOURISH-C, five declined, and seven were considered lost to follow up after three unreturned email or phone outreaches. Churches declined to participate for varied reasons, including: turn over in church leadership such that there would be no one in authority at the facility to manage the program (one church), perceived lack of need for wellness programming in the congregation (three churches), and too many other competing church programs (one church). As previously noted, each of the three churches that declined due to lack of need for such programming were located in Charlottesville, Virginia. It is
possible that the PI’s outsider status as someone affiliated with VCU, rather than the local university, negatively impacted recruitment with those churches.

**Measures of attrition and attendance.** Across the five churches that agreed to host NOURISH-C, a total of 52 individuals were recruited for the study. Any prospective participant who met study criteria, expressed interest in participating in the program, and provided contact information (phone number and email address) to the PI was considered "recruited." Of the recruited participants, 25 completed baseline assessments, 14 completed post-testing, and eight completed 3-month follow up. Thus, 48% ($n = 25$) of those who expressed interest in the program attended baseline. Slightly over half (56%, $n = 14$) of participants who completed baseline assessments completed post-testing.

Treatment feasibility was also assessed via session attendance. NOURISH-C participants attended an average of 4.44 of six sessions ($SD = 2.16$). Approximately half ($n = 14$) attended all six intervention sessions. Additionally, 24% ($n = 6$) attended only one session and did not return. Thus, the interval between session one and two appears to represent a critical period for retention. Participants who returned for session two were likely to complete the program.

Attendance was highest at one church (site B in Table 2) because one group leader provided transportation for all group members in her personal vehicle for each session. For that church, six caregivers attended baseline assessment, four attended posttesting, and five attended three month follow up assessment. At baseline assessment, five of the six caregivers from that church reported earning less than $25,000 per year -- less than the average household income of NOURISH-C participants. These findings highlight the importance of providing transportation when working with low income families.
Attendance was also low for sessions led by the research assistants from the PI’s research lab. This finding could be confounded by factors specific to the church congregation. Church leadership in the site that utilized the research assistants (site C in Table 2) anecdotally reported consistent low attendance in all of their small group programming. Thus, it is not possible to attribute this pattern of attendance to the fact that the leaders were not members of the church community.

Changes made to the intervention. Over the course of the project, changes were made to the format of the intervention to adapt the NOURISH-C program to the culture of each partnering church to improve its feasibility and ecological validity. These changes were also consistent with recommendations from the literature. In their review of lessons learned from facilitating church-based health promotion interventions, Campbell and colleagues (2007) encouraged researchers to tailor their programs to the specific needs and resources of the churches with whom they partner. The researchers cautioned against the “one size fits all” mentality that would assume that an intervention that worked well in one Black church would succeed in all Black churches. Table 13 summarizes the changes made over the course of the intervention.
Table 13.

*Summary of Changes Made to the Intervention*

<table>
<thead>
<tr>
<th>Time</th>
<th>Wave Number</th>
<th>Study Site</th>
<th>Change Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 2013</td>
<td>1</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Fall 2013</td>
<td>2</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Spring 2014</td>
<td>3</td>
<td>B</td>
<td>Prayer before and after session</td>
</tr>
<tr>
<td>Summer 2014</td>
<td>4</td>
<td>C, D(^a)</td>
<td>60 minute session, no grocery store tour</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>5</td>
<td>C</td>
<td>60 minute session, no grocery store tour</td>
</tr>
<tr>
<td>Winter 2014</td>
<td>6</td>
<td>C</td>
<td>60 minute session, no grocery store tour</td>
</tr>
<tr>
<td>Winter 2014</td>
<td>7</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>Spring 2015</td>
<td>8</td>
<td>A</td>
<td>Individual sessions (n = 4)</td>
</tr>
</tbody>
</table>

\(^a\) Churches C and D consisted of two different locations within the same church
At one location (sites C and D, representing two locations of the same church), sessions were held at the same time as Children’s Choir practice to capitalize on the group of parents who would already be at the church during that time. To accommodate the choir practice schedule, sessions were shortened to sixty minutes. At that same church, participants did not complete the grocery store tour because it was not feasible to travel to the store, conduct the tour, and return to the church within sixty minutes when choir practice ended. Those participants received the same educational handouts as those in other waves who completed the grocery store tour; information was reviewed in session rather than in the grocery store.

Additionally, at that same church (sites C and D in Table 13), graduate research assistants facilitated the group sessions per the recommendation of church leadership due to systemic difficulty recruiting group leaders for similar programs. This church was large enough that church leadership did not think members would have known a volunteer recruited from the church congregation.

At another location, (site B in Table 13) group leaders led a prayer at the beginning and end of each session to respect the culture of the church. This change was consistent with recommendations in the literature about the importance of incorporating spirituality into health promotion interventions (DeHaven et al., 2004).

Finally, one significant change made to the intervention was the introduction of individual sessions in the last year of the program. Previously, some waves consistently had one participant despite efforts to recruit a group. To increase feasibility and bolster recruitment, the researcher offered individual sessions of the intervention. The use of individual sessions is consistent with other versions of NOURISH implemented in specialized populations (e.g., childhood cancer survivors, Stern et al., 2015). As previously mentioned, participants in the
individual sessions received the same content and handouts as those in the groups. Sessions were shortened to sixty minutes because there was no time needed to accommodate group discussions. The three participants who completed individual sessions spoke positively of their experience in the exit survey. Participants also noted that the individual sessions were convenient because scheduling could fit the unique needs of their family. The one group leader who led both individual and group sessions, however, noted in her exit feedback that group waves provided a richer experience compared to individual sessions. Overall, individual sessions improved recruitment in NOURISH-C.

**Post program feedback.** Participants in NOURISH-C groups completed an exit survey at posttesting which assessed their satisfaction with the program, as well as perceived barriers to and facilitators of their participation. Additionally, participants who completed NOURISH-C in individual sessions were interviewed by phone about their perceptions of the program after posttesting. Responses from these assessments provided additional information about the feasibility of completing NOURISH-C within a church setting.

Eight participants completed exit surveys regarding group-based implementation of NOURISH-C. Responses to items on this measure ranged from strongly disagree to strongly agree. Overall, these participants were satisfied with the intervention. At posttesting, five (of 8, 62.5%) participants strongly agreed with the statement “I enjoyed attending each NOURISH-C session” and the remainder moderately agreed. Participants also endorsed feeling comfortable in the program; six participants (75%) strongly agreed with the statement, “I felt comfortable in the group setting.” Additionally, six participants (75%) strongly agreed with the statement “I felt comfortable sharing/participating in the group.” Members also enjoyed working with the group leaders; five (62.5%) strongly agreed with the statement “I felt comfortable with the group leaders;
leaders” and the remainder moderately agreed. Participants were likely to recommend NOURISH-C to others; six (75%) strongly agreed with the statement “I would recommend this group to another parent who is concerned about his/her child’s health.” Additionally, five participants (62.5%) moderately disagreed with the item “There were too many sessions.”

Participants provided both positive and constructive feedback via the open-ended items on the exit questionnaire. Overall, feedback about the session content and group environment was positive (see Table 14). Regarding the critical feedback, some participants raised specific concerns that were likely relevant to the unique needs of their family. For example, one caregiver requested more information on creating meal plans. This information is covered in one session; however, that particular caregiver may have felt s/he received insufficient information to meet his or her family’s needs. One participant lamented the low group attendance. Another participant noted that the intervention was too long. Table 14 provides a summary of participant responses to the open-ended questions on the exit questionnaire.
Table 14.

**Participant Feedback on Exit Questionnaire**

<table>
<thead>
<tr>
<th>Positive Feedback</th>
<th>Constructive Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I have become more aware of what I need to do for my son’s diet.”</td>
<td>What did you think about the length and number of sessions? “Too long.”</td>
</tr>
<tr>
<td>“I loved it. It allowed me to hear different ideas about healthy living.”</td>
<td>“I want to talk more about calorie counting...how many calories are acceptable for my body weight and activity.”</td>
</tr>
<tr>
<td>“I feel like it introduced a new opportunity for me to make better and healthy choices for my family”</td>
<td>“I wish we learned how to make a daily meal plan.”</td>
</tr>
<tr>
<td>“The topics were very interesting and created a lot of discussion.”</td>
<td>“I wish more people could have attended”</td>
</tr>
<tr>
<td>“I really felt empowered to eat better and make the right decisions for my family (shopping for specific foods).”</td>
<td>“Least helpful [aspect] were the forms.”</td>
</tr>
<tr>
<td>“I enjoyed learning how to eat smaller portions.”</td>
<td>How has this group affected your daily life at home? “It hasn’t.”</td>
</tr>
<tr>
<td>What aspect of the group was most helpful to you? “Tasting the food and eating it slowly.”</td>
<td>Do you have any others suggestions for groups like this one? “Meet on time.”</td>
</tr>
<tr>
<td>“I loved it. It allowed me to hear different ideas about healthy living.”</td>
<td>Do you have any others suggestions for groups like this one? “Show us how to play, interact with child physically.”</td>
</tr>
<tr>
<td>What aspect of the group was most helpful to you? “The healthy snacks. Knowing that taste was a factor I learned that great taste can come in healthy snacks.”</td>
<td>How did you feel about the group setting? “It was ok.”</td>
</tr>
</tbody>
</table>
Three individuals (of four) who completed NOURISH-C in individual sessions participated in a semi-structured phone interview within one week of post-testing. One participant dropped out of the individual intervention because of competing family obligations and did not complete the phone interview. These participants completed a separate exit survey because many of the items from the original exit survey were group-related and therefore did not apply to the individual sessions.

Items on the phone exit survey assessed barriers and facilitators of group attendance. Overall, the intervention was acceptable to these participants. Each indicated that the treatment length was “not at all” an issue for their family. Additionally, each participant indicated that the intervention content adequately addressed the causes of their family’s health problems. Of note, all three participants had children with BMIs within the healthy range. All three participants responded with “no” to the item “I wish the program was delivered to my child instead of me.” All participants also reported that travel to the church and transportation were not barriers to their attendance.

Items on the survey also assessed acceptability of the program. Each of the participants indicated that the group leaders were acceptable and none of the participants identified other characteristics she would have preferred to see in a group leader. On the phone surveys, the critical feedback was related to the assessment measures. One participant “somewhat” agreed with the statement “I did not like completing the questionnaires.” Another agreed “a lot” with the statement “My child and I did not like completing the physical assessment.”

Some participants in the individual waves perceived a natural fit between NOURISH-C and existing efforts in their church. Two agreed “a lot” with the item, “My church promotes the physical health of its members,” and the item, “It makes sense for my church to run a group about health.” Participant responses to the open-ended items on the phone survey are summarized in Table 15.
Table 15.

*Participant Feedback on Exit Questionnaire for Individual Waves*

<table>
<thead>
<tr>
<th>Was there anything about the program that you felt made it easier to attend?</th>
<th>What would help families like yours from your church attend this intervention?</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Leaders were approachable, knowledgeable.”</td>
<td>“If you made more announcements [about the program starting].”</td>
</tr>
<tr>
<td>“Staff was flexible.”</td>
<td>“If they saw a video testimony because I didn’t associate eating with emotions [referring to the mindful eating session].”</td>
</tr>
<tr>
<td>“You let me pick a day and time that was convenient for my family.”</td>
<td>“If I didn’t see you in person, I wouldn’t have signed up.”</td>
</tr>
<tr>
<td>“I would already be at the church anyway.”</td>
<td>“If you gave a link to a website.”</td>
</tr>
<tr>
<td>“Homework was no pressure to complete.”</td>
<td>“Have additional check in meetings.” [Referring to the phone exit survey. Mentioned by two participants]</td>
</tr>
<tr>
<td>“The meeting time could fit my schedule.”</td>
<td>“If you ran it through the Wellness ministry.”</td>
</tr>
<tr>
<td>“It was convenient for me to attend.”</td>
<td>“Keep it the way it is.”</td>
</tr>
<tr>
<td>“Individual meetings so the time could fit my schedule.”</td>
<td>“Having a less busy lifestyle.”</td>
</tr>
</tbody>
</table>
NOURISH-C leaders also completed feasibility surveys at the end of each group at post-testing. Seven group leaders completed the surveys. One leader was absent at post-intervention testing and failed to respond to the PI’s efforts to invite her to complete the survey at a later time. Five of these leaders facilitated NOURISH-C groups, one facilitated only individual sessions, and one facilitated both group and individual sessions.

The following section summarizes the responses of the leaders of both the group and individual sessions to the feasibility questions. Responses to items on this measure ranged from strongly disagree to strongly agree. Overall, leaders were satisfied with their experiences facilitating the group. For example, all strongly agreed with the statement, “I enjoyed leading each NOURISH-C session.” All seven of the leaders surveyed either strongly or moderately agreed with the statement, “I felt prepared to lead each NOURISH-C session.” Most of the leaders ($n = 6$) strongly agreed with the statement “I felt comfortable with the research coordinator [referring to the PI].” The remaining leader indicated that she neither agreed nor disagreed with that statement. As is noted below, demand characteristics might have influenced these responses; thus they should be interpreted with caution.

Group leaders were satisfied with the content of NOURISH-C. For example, five (of seven, 71.4%) strongly agreed with the statement, “I think that group members appeared to enjoy participating in the group” and the remainder moderately agreed. Five leaders (71.4%) strongly agreed with the statement “I think that group members incorporated what they learned from the NOURISH-C group into their life,” and the remainder moderately agreed with that item. On the item “I think that participating in this group helped group members eat healthier,” five leaders (71.4%) strongly agreed and the remainder moderately agreed.

Group leader feedback was almost uniformly positive; however, there were some mixed opinions about program’s efficacy. Only half of the group leaders strongly agreed with the statement “I think that participating in the group helped members be more physically active.”
Additionally, four (50%) of the leaders strongly disagreed with the statement “There were too many sessions” and the remaining indicated that they neither agreed nor disagreed.

NOURISH-C leaders also responded to the open-ended questions on the feasibility survey. Many reported a positive experience leading the program indicated they were satisfied with the format. The open-ended responses were congruent with the generally positive feedback to the ordinal-level survey questions. One open-ended question asked whether group leaders thought it would be possible for their church to continue the NOURISH-C program; all leaders responded affirmatively.

The two leaders of the individual NOURISH-C sessions provided more mixed feedback on the open-ended exit survey questions. One leader only conducted individual sessions. She offered positive feedback, “The length of time allotted for the sessions was actually perfect… the participant and I expanded in depth about all topics enabling us to think critically about each.” The other leader had experience with both the group and individual formats. She commented that “groups allow for a richer experience” and noted that NOURISH-C was “definitely a better program when taught in groups.”

Constructive feedback from leaders generally identified specific nutrition topics that could be addressed in greater detail in future programs. Only one leader expressed regret that more of her church members did not attend the program; but she did not identify any strategies to improve attendance. One open-ended question asked leaders how the program could be changed to enhance its relevance for Black families; no suggestions were identified. Table 16 summarizes positive and constructive feedback from group leaders.
Table 16.

*Group Leader Feasibility Feedback on End of Group Questionnaire*

<table>
<thead>
<tr>
<th>Positive Feedback</th>
<th>Constructive Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I enjoyed it! I felt like we were really making a difference.”</td>
<td>“The least helpful [aspect] was the lack of other group members.”</td>
</tr>
<tr>
<td>“Very comfortable – both my co-leader and the group members were very welcoming.”</td>
<td>“The only thing I would change would be the assessments at the beginning. There were too many questions for the adults and children. The children should have 3-5 questions to answer.”</td>
</tr>
<tr>
<td>“The most helpful [aspect] for our participant was having the space to talk about her personal areas of struggle and barriers. She particularly liked the mindful eating lesson”</td>
<td>“Seems that the body image material did not really resonate with the participants…the majority of the women were fairly body positive.”</td>
</tr>
<tr>
<td>“The topics were very interesting and created a lot of discussion.”</td>
<td>“Incorporating an exercise session/portion in which the participants physically participate in a family work out or two.”</td>
</tr>
<tr>
<td>“Excellent! Feasible and practical.”</td>
<td>“I would have a session dedicated to eating out or fast foods.”</td>
</tr>
<tr>
<td>“I think it’s a wonderful step in the right direction reaching out to families with these specific intervention needs.”</td>
<td>“To make it more relevant [to Black families] I would include the struggles their children could possibly face in terms of racism and stereotyping and how parents and/or guardians could counteract that.”</td>
</tr>
<tr>
<td>“All topics were covered in detail. There were no topics that I would have spent less time on.”</td>
<td>“More sessions that included the children in the actual session.”</td>
</tr>
<tr>
<td>“The topics were excellent in breadth and depth. There was a broad spectrum of relevant issues covered.”</td>
<td>“It would be good to talk about how to have difficult conversations with partners about bringing in unhealthy foods.”</td>
</tr>
</tbody>
</table>

Table 16 continues
<table>
<thead>
<tr>
<th>Positive Feedback</th>
<th>Constructive Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>What was the most helpful aspect of the group to the participants? “Nutrition portion.”</td>
<td>“It would be useful if a researcher could partner with a respected church member as a co-leader.”</td>
</tr>
<tr>
<td>“The length and number of sessions were sufficient to participants”</td>
<td></td>
</tr>
<tr>
<td>What other topics would you like to have seen addressed? “Material is already fairly exhaustive.”</td>
<td></td>
</tr>
</tbody>
</table>
It is likely that demand characteristics influenced the responses of the group leaders. Each leader had weekly contact with the PI, setting up the groups and debriefing after sessions. Group leaders from the churches knew that this program was supported by their pastor. Leaders may have felt pressure to respond in an overly positive manner to support a program hosted by their church.

**Aim 2**

The second aim of the study examined change in child BMI across assessment time points. The majority of children in the study had BMI percentiles within a healthy weight range at each assessment point. Thus, change in children’s BMI percentile over time was not an appropriate outcome. Instead, descriptive measures of BMI percentile over time reflect a more accurate picture of participants’ weight trends. As previously noted, the average baseline child BMI percentile was 79.04 ($n = 19$, $SD = 22.52$), 80.33 ($n = 11$, $SD = 24.78$) at posttest, and 70.80 ($n = 5$, $SD = 19.60$) at three month follow up. It is important to note that the variability across time points is likely due to changes in the sample size and composition at each assessment time point.

Due to the small sample size, individual trends were tracked across data points. Individual trends were examined for the 11 children who reported BMI at baseline and posttesting. Seven of these children had BMI percentiles in the healthy range, one child was overweight, and three children were obese. Figure 2 illustrates individual BMI percentile trends for healthy weight children in this subsample. The average BMI percentile for healthy children was 60.40 ($SD = 21.58$) at baseline and 70.86 ($SD = 27.11$) at posttesting. Four children (labeled A, B, C, and F) reported increased BMI percentiles between time points, and all four children
remained in the healthy weight range at posttesting. Variability in BMI in these children could be attributed to natural fluctuation in weight over time.

*Figure 2.* Changes in BMI Percentile for Healthy Weight Children Between Baseline and Posttesting.

Individual trends in BMI percentile were also examined for the four overweight/obese children in this subsample (see Figure 3). The average BMI percentile at baseline was 95.50 ($SD = 4.04$) and 96.90 ($SD = 1.43$) at posttesting. Two children (labeled J and K) reported increased BMI percentile between assessment time points. One child’s (labeled I) BMI percentile remained the same across time points. One child (labeled H) reported deceased BMI percentile between baseline (99th percentile) and posttesting (95th percentile); of note, child H’s BMI was approaching the overweight range.
**Figure 3.** Changes in BMI Percentile for Overweight and Obese Children Between Baseline and Posttesting.

Figure 4 contains a line graph illustrating the BMI percentile for the five children who completed anthropometric measures at each time point. Within that subsample, the average baseline BMI percentile was 70.80 ($SD = 19.60$), 74.80 ($SD = 15.7$) at posttesting, and 78.40 ($SD = 11.61$) at three month follow up; all average BMI percentiles were in the healthy range. Examining trends at the individual level reveals varied changes in weight status between assessment points. At baseline, four children (labeled A, B, D, and E) were within a healthy weight status and one was obese (labeled C). Because only one child was obese in this subsample, only one line graph was created to display individual trends in BMI over time. Two children (labeled B and E) had decreased in BMI percentile between assessment points, and both remained in the healthy weight range. Three children reported increased BMI over time. Two of those children (labeled A and D) remained in the healthy weight range, and one child (labeled C) remained obese.
Figure 4. Individual Trends in BMI Percentile Across All Assessment Time points

Aim 3

For the third aim, it was hypothesized that children whose parents participated in NOURISH-C would display significant improvements in dietary intake, quality of life, and physical activity from baseline to post-intervention assessment. Repeated-measures mixed-model analyses were fitted for each outcome. For each analysis time with three levels (baseline, post-intervention, and three month follow up) was added to the model as a within subjects factor. All analyses were conducted using an intent-to-treat approach. Cohen’s $d$ was calculated to estimate effect size and provide information about the practical significance of changes over time in reported health outcomes (Cohen, 1988; Sullivan & Feinn, 2012).

Results of the repeated-measures analyses should be interpreted with caution given the small sample size and considerable attrition at each time point. Even with an intent to treat approach, testing for significant changes over time would not be appropriate in this small sample. The following section summarizes the results of the repeated-measures analyses for each outcome measure for descriptive purposes only. These significance tests do not provide
meaningful results given the small sample size. Individual trends across time points are also presented to provide a more meaningful summary of changes in outcome measures across each assessment point.

**Dietary intake.** Changes in dietary intake were assessed across time points. The responses on the ASA-24 were influenced by incomplete dietary recall. Specifically, data about dietary intake could not be computed when participants did not provide sufficient information about the type, amount, or preparation method of the food consumed; these factors affected five families (out of 25). Thus, findings on this outcome variable should be interpreted with caution given these recall challenges and the low sample size.

Children consumed an average of 1698.95 calories \((n = 14, SD = 399.9)\) at baseline, 1026.72 calories \((n = 6, SD = 287.97)\) at post-testing, and 1514.01 calories \((n = 3, SD = 133.10)\) at three month follow up. There were no significant changes in total calories consumed over time \((F(1, 27) = 2.75, p = .11)\). Changes in specific nutritional sources were also analyzed and no significant results were found. Protein \((F(1, 27) = .001, p > .05)\), fat \((F(1, 27) = 2.76, p = .11)\), sugar \((F(1, 27) = .007, p > .05)\), and fiber intake, \((F(1, 27) = 2.82, p = .11)\) did not vary significantly over time. Although none of these findings indicated statistically significant changes, it is worth noting that changes in total calories, fat, and fiber approached significance and might have been significant with a larger sample size (all d’s > .6). No differences were found in baseline caloric intake between healthy weight and overweight/obese children \((F(1, 9) = .307, p > .05)\). Given the small sample size, these results should be interpreted with caution. Variation within the means of each component of dietary intake is likely due to changes in the composition of the sample at each time point.
The Schofield Equation (Schofield, 1985) was calculated to assess potential underreporting of child energy intake. This equation predicts daily caloric intake needs based on age, gender, height, and weight (Schofield, 1985). The average predicted daily caloric intake for the 14 children who reported their caloric intake at baseline was 1128.15 (SD = 284.56), which is less than the average of 1698.95 (SD = 399.9) actually reported. A ratio of predicted caloric intake to reported caloric intake was calculated to assess potential underreporting. At baseline, the average ratio of predicted intake to reported intake was .50 (SD = .17, n = 14) suggesting that child reported caloric intake at baseline was actually higher than their expected intake. The average ratio of predicted intake to reported intake was 1.05 (SD = .32, n = 6) at posttesting and .67 (SD = .12, n = 3) at three month follow up. As previously noted, variability in this data is likely due to the small sample size and considerable differences in the composition of the sample at each assessment point. Both healthy weight and overweight/obese children reported higher caloric intake than was predicted by the Schofield Equation.

Individual trends in intake across time points were analyzed due to the small sample size. Three month follow up data were not analyzed because of high attrition (n = 3) at that time point. Figure 5 summarizes individual trends in total calorie consumption across time points. Figures 6–9 summarize individual trends in dietary intake across time points (protein, fat, sugar, and fiber respectively). Only one child (labeled Child A in each figure) had a BMI percentile within the obese range and the other children had BMIs within the healthy range. Because only one child had a BMI percentile within the obese range, separate graphs for healthy weight and overweight/obese children were not created.

Total caloric intake decreased for all six of the children who reported dietary intake at pre- and posttesting. Children consumed an average of 1,462.31 calories (SD = 164.22) at
baseline and 1,026.72 calories ($SD = 287.97$) at posttesting. For these six children, decreases between average baseline and posttesting consumption were also found for all other dietary outcomes. Average protein consumption decreased from 46.21g ($SD = 9.80$) to 35.70g ($SD = 9.59$), fat consumption decreased from 52.21g ($SD = 13.35$) to 35.29g ($SD = 9.26$), sugar decreased from 84.45g ($SD = 43.97$) to 69.39g ($SD = 45.64$), and fiber decreased from 15.95g ($SD = 8.12$) to 7.90g ($SD = 3.21$).

Examining individual trends revealed variability in child intake over time. Five children reported decreased protein consumption. One child (labeled B) reported an increase in protein intake from 28.84g to 39.11g. Similarly, five children reported decreases in fat consumption. One child (labeled A), with a BMI percentile in the obese range, reported an increase in fat intake from 31.69g to 38.52g. Changes in sugar consumption were the most variable. Three children (including child A, the one child with a BMI percentile in the obese range) reported increases in sugar consumption and three reported decreased consumption between time points. Finally, five children reported decreased fiber consumption over time. One child (labeled A), with a BMI percentile in the obese range, reported an increase from 8.76g to 8.9g across time points. Considered together, these individual trends suggest that dietary intake decreased across assessment time points for children with BMI percentiles in the healthy range. Dietary intake was more varied for the one child (labeled A) with a BMI percentile in the obese range. That child reported an overall decrease in calories consumed between baseline and posttesting, and an increase in grams of sugar and fiber consumed between time points.
Figure 5. Changes in Daily Calorie Consumption Between Baseline and Posttesting

Figure 6. Changes in Daily Protein Consumption Between Baseline and Posttesting
Figure 7. Changes in Daily Fat Consumption Between Baseline and Posttesting

Figure 8. Changes in Daily Sugar Consumption Between Baseline and Posttesting
Figure 9. Changes in Daily Fiber Consumption Between Baseline and Posttesting
Dietary intake was also assessed with the SSBFFI. Specifically, this measure assessed the number of sugar sweetened beverages consumed per week. As previously noted, average weekly sugar sweetened beverage consumption at each time point is summarized in Table 2. No changes were found in soda ($F(1, 42.94) = .077, p > .05$), sweet tea ($F(1, 40.98) = .00, p > .05$), sweet coffee ($F(1, 44.3) = 2.75, p > .05$), juice ($F(1, 42.44) = .01, p > .05$), energy drink ($F(1, 43.66) = 3.43, p > .05$), or sports drink ($F(1, 41.53) = 3.34, p > .05$) consumption over time. Cohen’s effect size value suggested small to medium effect sizes (all $d’s < .6$).

Individual trends in each sugar sweetened beverage category were examined. Figures 8 – 13 outline individual changes in weekly beverage consumption over time for the five children who reported beverage consumption at each time point. Due to variability in the participants at each time point, it is not possible to directly compare the children in this subsample to the previously reviewed summary of changes in individual dietary intake between baseline and posttesting. Four children in this subsample had BMI percentiles in the healthy range at baseline and one child (labeled child C) had a BMI percentile was in the obese range. Because only one child had a BMI in the obese range, separate graphs for children within the healthy weight and overweight/obese ranges were not created.

In this subsample, average weekly soda consumption increased across time points (see Figure 10). One child (labeled B) reported a large increase in soda consumption, from zero to 14 sodas, between baseline and posttesting, and then a decrease to zero sodas at three month follow up. The remaining children also reported increased soda consumption across time points. The one child (labeled C) with a BMI percentile in the obese range reported one soda per week at baseline and posttesting, and seven sodas per week at three month follow up.
Children in this subsample reported relatively low sweet tea consumption (see Figure 11). Two children reported decreases in consumption and two children maintained relatively low levels of consumption. One child (labeled B) reported an increase from zero sweet teas per week to one tea at posttesting, and a decrease to zero teas at three month follow up. The one child with a BMI percentile in the obese range (labeled C) reported a decrease from two sweet teas per week at baseline to one tea per week at both posttesting and three month follow up.
Most children did not report drinking sweet coffee over the course of the intervention (see Figure 12). The one child with a BMI percentile in the obese range (labeled C) reported drinking 6 sweet coffees per week at baseline and then reported zero coffee consumption at subsequent time points.

Figure 11. Changes in Sweet Tea Consumption Across All Time Points

Figure 12. Changes in Sweet Coffee Consumption Across All Time Points
Five children reported increased juice consumption between baseline and posttesting (see Figure 13). One child (labeled B) reported a significant increase in weekly juice consumption from zero to 14 at baseline, and a decrease to one juice per week at three month follow up. The other three children reported increased juice consumption at each assessment. The one child with a BMI percentile in the obese range (labeled C) reported consuming one, three, and seven juices per week at each respective assessment time point. One child (labeled A) reported an overall decrease in juice consumption over time.

![Figure 13: Changes in Juice Consumption Across All Time Points](image)

Most children did not report drinking energy drinks (see Figure 14). One child with a BMI percentile in the obese range (labeled C) reported an increase from two energy drinks at baseline to seven drinks per week at three month follow up.
Finally, sport drink consumption varied across time points (see Figure 15). One child (labeled A) maintained sport drink consumption (one drink per week) across each time point. Two children (labeled B and D) reported increased sport drink consumption across time points, but maintained relatively low levels of consumption (no more than one drink) across the intervention. Child E consumed one sport drink per week at baseline and posttesting, and consumed five drinks at three month follow up. The one child with a BMI percentile in the obese range (labeled C) reported a large increase from two sports drinks to ten sports drinks per week at posttesting, and seven sports drinks at three month follow up.
Physical activity. Participants also self-reported duration of weekly physical activity at each time point. Children exercised an average of 5.75 hours ($n = 20$, $SD = 6.67$) per week at baseline, 7.27 hours ($n = 11$, $SD = 6.22$) at post-testing, and 6.45 hours ($n = 5$, $SD = 5.36$) at three month follow up. There were no significant changes in child physical activity hours per week over time ($F(1, 39.61) = .69$, $p > .05$). Cohen’s effect size value suggested a small practical significance between both baseline and post-assessment ($d = -.24$) and between post-assessment and three month follow up ($d = .14$). No differences were found between healthy weight/overweight children in baseline physical activity, $F(1, 13) = 1.55$, $p > .05$. As previously noted, changes over time in this outcome should be interpreted with caution due to the small sample size at each assessment point.

Individual trends over time were examined for the eleven children who reported physical activity at pretesting and possetting. Three month follow up data was not examined due to relatively high attrition at that time point ($n = 4$). Figure 16 summarizes changes in physical activity between each time point. Five children had BMI percentiles within a healthy range at
baseline, two had BMI percentiles in the overweight range, and three had BMI percentiles in the obese range. Healthy weight children reported exercising an average of 4.92 hours ($SD = 4.40$) per week at baseline and 7.0 hours ($SD = 5.06$) at posttesting. Overweight and obese children reported exercising an average of 5.15 hours ($SD = 8.10$) at baseline and 7.60 hours ($SD = 8.03$) at posttesting. Figure 16 depicts individual trends in physical activity for healthy weight children. All overweight/obese children (Figure 17) reported increased physical activity between baseline and posttesting.

**Figure 16.** Changes in Physical Activity in Healthy Weight Children Between Baseline and Posttesting
Figures 17 and 18 summarize changes in physical activity levels over time for overweight and obese children. The graphs show individual trends for five children who reported physical activity at pretest, posttest, and three-month follow-up. Children’s physical activity levels varied considerably across time points. Three children increased their activity at each time point, while one child (labeled B) decreased their activity over time (9.5, 4.5, and 1.25 hours per week respectively). One child (labeled D) reported a large increase in physical activity between pretest and posttest (increasing from 7 to 16.75 hours) and a decrease to 3.5 hours at three-month follow-up. This child was within a healthy weight status at each time point.
Figure 18. Changes in Weekly Hours of Physical Activity Across All Time Points

Quality of life. Quality of life was assessed at each time point. The average total PEDSQL score was 79.51 ($n = 22$, $SD = 11.44$) at baseline, 85.37 ($n = 13$, $SD = 11.85$) at post-testing, and 88.04 ($n = 5$, $SD = 8.28$) at three month follow up. No differences were found between baseline total quality of life scores between healthy weight and overweight/obese children ($F(1, 14) = 2.98, p > .106$)

Significant changes in quality of life were found in total PEDSQL scores over time ($F(1, 43) = 4.32, p < .05$). Cohen’s effect size value ($d = -.51$) suggested a medium practical significance between baseline and post-assessment and a small practical significance ($d = -.26$) from post-assessment to three month follow up. Changes in the PEDSQL subscales over time were also analyzed. A significant change over time was found in the Physical Health Functioning subscale ($F(1, 43) = 6.29, p < .05$). Cohen’s effect size value ($d = -.77$) suggested moderate practical significance between baseline and post-assessment and a small practical significance ($d = -.10$) from post-assessment to three month follow up. A significant change over time was found in the Emotional Functioning subscale ($F(1, 43) = 5.61, p < .05$). Cohen’s effect size value
(\(d = -0.23\)) suggested small practical significance between baseline and post-assessment and a large practical significance (\(d = -1.2\)) from post-assessment to three month follow up. No significant change over time was found in the Social Functioning subscale (\(F(1, 43) = 0.029, p > 0.05\)). Small effect sizes were found between baseline and posttesting (\(d = 0.2\)) and between posttesting and three month follow up. Finally, significant changes over time were found in the School Functioning subscale, \(F(1, 43) = 4.6, p < 0.05\). Cohen’s effect size value suggested moderate practical significance from both baseline to post-assessment (\(d = -0.30\)) and post-assessment to three month follow up (\(d = 0.53\)). As previously noted, these results are presented for descriptive purposes only and should be interpreted with caution given the small sample size.

Individual trends in quality of life were examined for the 11 children who completed this measure at baseline and posttesting (see Figure 19). Eight children in this subsample had BMI percentiles in the healthy range at baseline, one was overweight, and four were obese. Healthy weight children reported average total quality of life scores of 84.54 (\(SD = 9.39\)) at baseline and 81.11 (\(SD = 13.54\)) at posttesting. Scores at both time points were higher than those published in the PEDSQL normative sample (\(M = 79.62, SD = 15.26;\) Varni et al., 2001). Overweight and obese children reported average total quality of life scores of 75.00 (\(SD = 17.96\)) at baseline and 92.17 (\(SD = 2.48\)) at posttesting. Baseline scores for overweight/obese children were below those of the normative sample and posttest scores were higher than scores reported in the normative sample (Varni et al., 2001). Figure 15 presents individual trends for total quality of life scores for healthy weight children and Figure 20 presents the same information for overweight/obese children. Quality of life scores varied between time points for healthy weight children, and all overweight/obese children reported improved quality of life between time points.
Individual trends in Physical Functioning were examined for healthy weight and overweight/obese children. Healthy weight children reported average scores on this subscale of 91.41 ($SD = 8.80$) at baseline and 91.41 ($SD = 8.64$) at posttesting. These scores were greater
than the average of 80.19 ($SD = 19.30$) reported in the normative sample (Varni et al., 2001). Figure 21 depicts individual trends on this subscale among healthy weight children. All but one child (labeled B) reported improved Physical Functioning subscale scores across time points.

![Graph showing changes in Physical Functioning in Healthy Weight Children Between Baseline and Posttesting](image)

*Figure 21. Changes in Physical Functioning in Healthy Weight Children Between Baseline and Posttesting*

Overweight and obese children reported average scores of 76.88 ($SD = 18.96$) at baseline and 95.00 ($SD = 5.23$) at posttesting (see Figure 22). Baseline scores were below the average of 80.19 ($SD = 19.30$) reported in the normative sample, but posttest scores were above those reported in the normative sample (Varni et al., 2001). All overweight and obese children reported improved Physical Functioning between time points.
Figure 22. Changes in Physical Functioning in Overweight and Obese Weight Children Between Baseline and Posttesting

On the Emotional Functioning subscale, healthy weight children reported average scores of 81.13 ($SD = 16.22$) at baseline and 71.25 ($SD = 25.46$) at posttesting (see Figure 23). Baseline scores were above the average of 78.10 ($SD = 20.66$) reported in the normative sample (Varni et al., 2001). Posttest scores were below those reported in the normative sample but this difference did not reach clinical significance. Half of the children in this subsample reported decreased scores on this subscale between time points. The average decrease was skewed by child F, who reported a score of 80 at baseline and 30 at posttesting.
Figure 23. Changes in Emotional Functioning in Healthy Weight Children Between Baseline and Posttesting

Overweight and obese children reported baseline scores of 71.00 (SD = 20.12) at baseline on the Emotional Functioning subscale and 90.00 (SD = 11.73) at posttesting (see Figure 24). Baseline scores were below those reported in the normative sample (78.10, SD = 20.66; Varni et al., 2001), and posttest scores were above those in the normative sample. All but one child (labeled M) reported increased scores on this subscale between time points.
Healthy weight children reported average scores of 88.13 (SD = 13.08) on the Social Functioning subscale at baseline and 81.88 (SD = 17.10) at posttesting (see Figure 25). Baseline scores were above the average of 84.09 (SD = 18.50) reported in the normative sample, and posttest scores were below those reported in the normative sample (Varni et al., 2001). Four children reported decreased scores across time points. Of note, three of those children had reported the highest possible score (100) at baseline.
Changes in Social Functioning in Healthy Weight Children Between Baseline and Posttesting

Overweight and obese children reported average scores of 72.00 (SD = 38.34) on the Social Functioning subscale at baseline and 73.00 (SD = 38.99) at posttesting (see Figure 26). These scores were below the average of 84.09 (SD = 18.50) reported in the normative sample (Varni et al., 2001). Average scores were skewed by one child (labeled J) who reported low scores (10) on this subscale at each time point.

*Figure 25. Changes in Social Functioning in Healthy Weight Children Between Baseline and Posttesting*
Healthy weight children reported an average of 73.38 ($SD = 22.29$) on the School Functioning subscale at baseline and 76.25 ($SD = 17.47$) at posttesting (see Figure 27). Baseline scores were below the average of 75.87 ($SD = 19.71$) reported in the normative sample, and posttest scores were above those reported in the normative sample. Four children reported decreased scores across time points, one child reported the same score at each time point, and three children reported improved scores between assessments.

*Figure 26. Changes in Social Functioning in Overweight and Obese Children Between Baseline and Posttesting*
Overweight and obese children reported average scores of 79.00 ($SD = 8.94$) on the School Functioning subscale at baseline and 91.00 ($SD = 8.94$) at posttesting (see Figure 28). These scores were greater than the average score of 75.84 ($SD = 19.71$) reported in the normative sample (Varni et al., 2001). Four children reported improve scores on this subscale across time points, and one child (labeled L) reported decreased scores.

**Figure 27.** Changes in School Functioning in Healthy Weight Children Between Baseline and Posttesting
Figure 2. Changes in School Functioning in Overweight and Obese Children Between Baseline and Posttesting

Trends in changes in quality of life over time were also examined for the five children who completed the quality of life measure at each time point (see Figures 29-33). Only one child in this subsample had a BMI in the obese range (labeled A) and the remaining children had healthy weight. Four children reported a decrease in quality of life scores from pretesting to posttesting, and then an increase in scores from posttesting to three month follow up. Two of those children also gained weight between pre- and posttesting, but remained within a healthy weight status across time points. Their decreases in quality of life could be related to increased weight. The other two children who reported a decrease in quality of life at posttesting lost weight between baseline and posttesting; they both remained within a healthy weight status across the intervention. One child (labeled A) reported an increase in quality of life between baseline (48.91), posttesting (89.13), and a decrease at three month follow up (73.91). That child remained obese over the course of the intervention.
Physical Functioning varied across time points for each of the five children (see Figure 30). Two children reported improved physical functioning across each assessment. One of those children gained weight across the intervention despite the self-report of improved physical functioning. The other child who reported increased physical functioning lost weight over the course of the intervention. One child who reported the lowest physical functioning at baseline reported an increase from baseline to posttesting, and then a decrease from posttesting to three month follow up.
Three children reported decreases in emotional functioning between pretesting and posttesting, and each child reported an increase from posttesting to three month follow up (see Figure 31). All five children reported relatively high emotional functioning at three month follow up (scores ranging from 90 – 100).
Social functioning displayed the most variability in scores between the three children (see Figure 32). One child (labeled C) consistently reported low scores on this subscale. Of note, that child’s BMI percentile was in the obese range at each assessment point. The other four children all had BMI percentiles within the healthy range and each reported higher social functioning than child C.

![Figure 32. Changes in Social Functioning Across All Assessment Time Points](image)

Finally, scores on the school functioning subscale increased across time points for each of the five children (see Figure 33). Scores did not appear to vary by weight status. The child with the lowest scores on this subscale had a BMI percentile in the healthy range at each assessment.
This study evaluated the feasibility of translating an established intervention, NOURISH, into a Black church community. Churches are a logical setting for health promotion interventions given their integral role in many Black communities (Allicock et al., 2013; Campbell et al., 2007; Carter-Edwards et al., 2012; Goldmon & Roberson, 2004). This study was informed by previous research investigating church-based health promotion, and incorporated recommendations from this literature into the recruitment of participants, training of leaders, and implementation of the intervention. Moreover, the design of this study is consistent with the recommendations of Nation and colleagues (2003) who propose that interventions be theory driven, developmentally appropriate, and culturally relevant. The following discussion reviews the results of the study, as well as strengths and limitations of the NOURISH-C intervention, and recommendations for future research.

**Feasibility**
The primary aim of this study was to evaluate the feasibility of translating an existing intervention into a community setting. Findings from this pilot attempt to disseminate NOURISH in churches indicated that the intervention could be feasible if certain challenges are addressed. Conducting the NOURISH-C program was dependent on several complex individual and systemic factors. Although some factors were unique to the church (e.g. group leader providing transportation for members, chronic difficulties filling group programming) others were unique to the participants (e.g. literacy, barriers to attendance). The barriers encountered in the current study were similar to those reported in the literature (Bopp et al., 2007). The following section reviews several of these challenges, including partnership building, recruitment and attrition, and treatment length. Recommendations for future faith-placed interventions are also provided.

Building community partnerships. Identifying churches to host NOURISH-C was a significant challenge throughout the implementation of this program. As previously mentioned, 29% of the churches the PI contacted agreed to host the intervention. It is recommended that researchers conducting similar programs contact three times more churches than they anticipate partnering with given this participation rate. Once churches agreed to host NOURISH-C, intervention set up was typically quite time consuming. For example, several churches required the researcher to have a series of meetings with church leadership before obtaining final approval to host the program. Some churches agreed to host NOURISH-C, but could only do so during certain times of the year because of a busy schedule of other programs and services. Researchers conducting similar programs in the future would benefit from contacting churches as early as feasible before starting the intervention to accommodate the amount of time needed to build relationships with church partners.
For NOURISH-C, the PI contacted the first host church 11 months before data collection started to establish a relationship and discuss the logistics of hosting the intervention. It became evident in September 2013 after running two waves in the first church location that additional church sites were needed to facilitate the intervention and expand recruitment efforts (see Table 3 for a timeline of the intervention). At that point, the PI contacted two additional churches to run recruitment simultaneously and one church agreed to host the intervention. Over the course of recruitment, the PI contacted church sites at least three months before the data collection began to schedule planning meetings and leader training. Data collection and recruitment of new church sites occurred simultaneously and was ongoing. The PI contacted eleven new churches while simultaneously collecting data at existing church locations between September 2013 and January 2015. In spring 2014, the PI expanded recruitment efforts to Charlottesville, Virginia. After January 2015 the PI recruited exclusively from one church for the individual waves.

The small number of churches that agreed to host NOURISH-C can be attributed to a variety of factors. Consistent with previous research (Bopp et al., 2007), logistical barriers within several churches prevented some congregations from participating. For example, some churches experienced a turnover in leadership or administrative staff, whereas others were already committed to running different programs. At a larger societal level, perceived mistrust of research likely influenced the low response rate. The legacy of exploitation of the Black community by research and medical authorities, for example in the Tuskegee syphilis study, has left some in the Black community wary of participating in research (Gamble, 1997). Additionally, some pastors may have been hesitant to participate in the program for fear of being treated as “guinea pigs” by researchers (Campbell, 2007).
The person and identity of the PI can be a facilitator or barrier to gaining church buy-in. In the current study, the PI held both insider and outsider identities. She identified as Black but was not a member of any of the faith communities with whom she collaborated, nor was she a member of any faith community. The PI’s identity seemed to hinder recruitment efforts. Church leadership might be wary of researchers they perceive to be outside of their faith communities. Even within those churches that agreed to facilitate the PI’s introduction to their leadership, her personhood was often questioned. For example, many church leaders asked the PI about her religious background and inquired about her church attendance. One church leader expressed concern that the PI was not a member of any church; that church was lost to follow up and did not host the intervention. Conversely, researchers who attend local churches, identify with the same denomination, or have a similar cultural background as the church congregation are likely to be perceived as trustworthy.

Additionally, the acceptability of the PI might have also been impacted by church members’ perception of her research institution. None of the churches in Richmond, VA gave direct feedback about VCU. However, the three churches that declined interest because church leadership did not perceive childhood obesity to be an issue in their congregation were all located in Charlottesville, Virginia. It is possible that the PI’s outsider status as someone from a university in a different city weakened the church’s trust in the program. Churches might have had previous negative experiences participating in research or partnering with the local university, which could make them wary of participating in the current study. Conversely, pastors with positive research experience may have been more likely to participate in the program. For example, the pastor of one of the churches that hosted the program held a doctoral degree. She shared that one reason she wanted her church to participate in NOURISH-C was to
assist a fellow researcher. Considered together, the personhood of the PI has an important impact on recruitment. In the current study, it appeared to negatively affect recruitment efforts.

Future studies can overcome this barrier by nurturing trusting and transparent relationships with church leadership (Corbie-Smith et al., 2002). Campbell and colleagues (2007) note that this trust building process is continual, and may take years. Unfortunately, this gradual process is often not feasible for projects with funding deadlines or other time constraints. Campbell and colleagues (2007) also suggested that research teams maintain continuous contact with churches before, during, and after interventions. For example, researchers could offer to hold workshops or consult on health issues to maintain relationships with churches between data collection time points. Allicock and colleagues (2013) recommended that researchers strengthen relationships by taking steps to understand the culture of the churches with whom they partner. For example, researchers might request that a pastor orient the research team to the organizational structure, belief system, and social teachings of the church. Researchers could also attend church services and read the church bulletin to learn the church’s culture and values. Implementing these strategies would have improved recruitment efforts in the current study.

**Participant recruitment and attrition.** Additional challenges to the feasibility of this study were participant recruitment and retention. A variety of recruitment strategies were employed (e.g. email announcements, flyers, announcements during services by pastors and the researcher) with modest success.

Of the 52 participants enrolled in the study, 25 competed baseline assessment measures. Thus 48% of interested participants were lost in the interval between signing up for NOURISH-C and attending the first session. Prior versions of NOURISH also reported participant drop out at that time point. Mazzeo and colleagues (2014) reported that many participants (74 out of 235
eligible families) dropped out between screening and baseline intervention. Attrition in the current study could have been influenced by factors specific to NOURISH-C; for example, some participants might have enrolled in the study because they felt it was recommended by their pastor, but they were not sufficiently motivated to attend. Alternatively, individuals might have been ambivalent about making health changes, and enrolled in the program, but subsequently changed their minds about participating. The PI did not assess weight or demographic information for caregivers who were offered enrollment but did not attend baseline assessment. It is not possible to assess any differences between caregivers offered enrollment that did and did not attend baseline.

It is important to note that selection bias likely affected the results of this study. Overall, many caregivers who participated in NOURISH-C were highly educated and most reported earning over $50,000 per year. These participants had higher income and levels of education than participants in previous iterations of NOURISH (Mazzeo et al., 2014), and as such may have had greater access to nutrition and other health support resources. As previously noted, most participants did not have children who met criteria for overweight or obesity. Anecdotally, several group leaders commented that participants in NOURISH-C were highly knowledgeable about nutrition at baseline. It is possible that those who volunteered for the program were already highly motivated to eat well and exercise, and were knowledgeable about health. Some caregivers may have dropped out of the program if they realized that the sessions delivered content they already knew.

Attendance at sessions and assessment was also a challenge to the feasibility of this trial. As previously mentioned, 24% (n = 6) of NOURISH-C participants who completed baseline assessment did not return after the first session. The week between sessions one and two
represents an important time for bolstering program attendance. It is recommended that researchers contact participants at least once between the first and second session, in addition to the usual reminder call about the next session, to increase participants' commitment to the program. This was not implemented in the current study and doing so may have improved participant retention. Such contact could occur via phone, email, or text message. Researchers could send participants psychoeducational material about parent role modeling of diet and exercise to reinforce content covered in the first session. Also, group members could identify “buddies” in the first session who could support their regular attendance by sharing transportation, and enhance their commitment to completing homework by partnering in exercise activities and “checking in” with one another between sessions. Group cohesion has been associated with increased fruit and vegetable consumption in a health promotion intervention with Black and Hispanic women (Lee, O’Connor, Smith-Ray, Mama, Medina, Reese-Smith…Estabrooks, 2012).

Moreover, as previously noted, 44% (n = 11) of participants who attended baseline assessments did not attend post-intervention testing. Additionally, only 32% (n = 8) of participants who attended baseline assessment completed three month follow up testing. In NOURISH-C, attrition could be attributed to a variety of factors. Transportation was likely a barrier for participation, especially for families from lower socioeconomic statuses. Participants might have also dropped out of the program due to the time commitment required. This issue of participant drop out within NOURISH-C is not surprising, given that high attrition rates are well documented in pediatric obesity studies. For example, in their review of the literature, Skelton and Beech (2011) estimated that attrition rates ranged from 13% to 73% with a mean of 46% of
participants dropping out of treatment. Thus, NOURISH-C’s 44% attrition rate (from baseline to post-testing) is consistent with this literature.

Bopp and colleagues (2009) also reported issues with attendance in their eight-week faith-based intervention promoting physical activity among Black adults. Like the current study, Bopp and colleagues reported a drop in attendance from session one to session two; however the researchers also noted a steady decline in attendance across the intervention. In the current study, however, attendance did not steadily decline across the intervention. Bopp and colleagues also noted that attrition occurred in both the intervention and control groups. They were unable to identify a reason for the poor attendance, and found no significant differences between regular and irregular group attendees.

Banks and colleagues (2014) assessed the biopsychosocial correlates of attrition in a family-based childhood obesity program and identified three primary factors to consider. First, child and parent buy-in is critical to foster in early sessions. Families who did not believe the program was helpful, or included children who did not want to participate, were more likely to have poor attendance and adherence to program recommendations. Similarly, if the program did not meet parents’ expectations (e.g. parents wanted a medical intervention rather than a behavioral one) then families were more likely to drop out. Finally, attrition was more common among families who perceived the program as not adequately tailored to their unique needs. Considering the attrition rate in the current study in light of these findings suggests that it is essential to adequately prepare parents for participation in the program to manage expectations and increase the likelihood of treatment completion.

Drawing from organizational change theory, Odulana and colleagues (2014) asserted that researchers should assess the pastor’s readiness to participate in research to gauge the likelihood
of church members enrolling. These researchers found a significant association between pastors’ age and education, and the likelihood of church members’ research participation. Specifically, churches led by young, highly educated pastors were the most likely to participate in health promotion studies. This, however, was not the case in the current study. Churches led by young, highly educated pastors also declined interest in participating in NOURISH-C. Nevertheless, future programs in this area would benefit from assessing the pastor’s motivation to collaborate on studies before initiating recruitment efforts.

**Intervention length.** One challenge of community based research is determining an intervention length that is appropriate for addressing the presenting issue, but also acceptable to participants (Janicke et al., 2008; Mazzeo et al., 2012). In their parent-only weight loss intervention, Janicke and colleagues (2008) suggested that a four month intervention with follow up assessment is an acceptable treatment length to participants, but may not provide enough time for participants to implement and maintain significant behavioral changes. It is possible that the current study did not provide enough time for participants to implement behavioral changes. Additionally, previous research with primarily Black, obese adolescents participating in a multidisciplinary weight loss intervention did not find significant decreases in BMI over a six month intervention (Evans, Franco, Stern, Wickham, Bryan, Herrick...Laver, 2009). Thus, it is important for researchers to find a balance between the number of sessions required to see health related changes versus the number of sessions participants are willing to attend.

Attrition over the course of NOURISH-C suggests that six weeks might be too long of a time commitment for this sample. Previous faith-placed research has found significant decreases in weight with longer interventions with programs ranging from 14 weeks (McNabb et al., 1997; Quinn & McNabb, 2001), to six months (Kennedy et al., 2005), and 12 months (Krukowsky et
al., 2013). These studies all focused on adult weight loss, and participants may have been more motivated to attend sessions for their own benefit compared to participants in NOURISH-C.

In the original version of NOURISH, all enrolled children were required to have a BMI within the overweight range to enroll in the study, and some participants were recruited through pediatrician referrals. Given the severity of those children’s weight concern and potential significance of a physician referral, a six week intervention might have felt acceptable for caregivers participating in NOURISH. The current study, however, did not use the same inclusion criterion or recruitment practices because recruitment took place in a community setting. Recruiting solely overweight and obese children from the community would have required additional time and resources, and would have been outside the scope of the current feasibility study. Additionally, given the inclusive setting of a church congregation, the PI did not recruit exclusively overweight children to prevent some children from feeling singled out or excluded. Despite national data on high rates of childhood overweight and obesity in Black communities, the majority of child participants in the current study had BMIs within the healthy range. Caregivers self-selected to participate in NOURISH-C based on their concern about their child’s eating and exercise habits and current or future weight. For this reason, the intensity of the intervention might not have matched caregivers’ perceived concern regarding these issues if their children were within a healthy weight status.

Offering NOURISH-C intervention as a drop-in workshop might have been more effective for recruiting caregivers. This format might improve overall attendance; however, identifying, training and retaining sufficient personnel to staff irregularly scheduled workshops would be difficult. Moreover, it would be extremely difficult to assess intervention dosage if it was offered irregularly. Future studies could examine the feasibility and efficacy of offering the
NOURISH-C program as a series of drop-in workshops rather than a six week group intervention. Although this design poses many challenges to assessment, it would be possible to assess changes in health outcome over time. Additionally, attendance data could provide important information about which topics within NOURISH are most appealing to families. Tracking the number of families who attended multiple sessions of the workshops might also provide information about the length of treatment that acceptable to families. These data could then be used to tailor future church based interventions.

**Child Health Outcomes**

It was hypothesized that children whose caregivers participated in NOURISH-C would have improved health outcomes. Specifically, it was hypothesized that caregiver participation would be associated with improved dietary intake, quality of life, and physical activity in children from baseline to post-intervention assessment. The following section reviews the findings of the current study, relates them to those yielded by previous versions of the NOURISH, and offers recommendations for future studies.

**BMI.** Most children participating in NOURISH-C did not meet criteria for overweight or obesity at baseline. Thus, it would have been inappropriate to assess changes in BMI over time as an outcome. Descriptive measures of weight indicated that, on average, children remained within a healthy weight status over time. As previously noted, it is difficult to assess changes in weight status over time given the small sample size at each assessment point. Tracking individual trends in BMI percentile indicated variability in weight; however, most children’s weight status remained consistent over time. With the current study design (i.e., absence of a control group and random assignment), it is not possible to determine whether the program helped children maintain their BMI status or if there would have naturally been no changes in
children’s BMI percentile during that time period. Future studies could utilize a formal comparison group to determine whether caregiver participation in NOURISH-C is associated with maintenance of healthy weight status over time.

Because child participants in NOURISH-C were predominately in the healthy BMI range, it is not meaningful to compare current findings to those from other trials of NOURISH. Yet, it is worth noting that children whose caregivers participated in the pilot test of NOURISH had significant reductions in BMI percentile over the course of six weeks between pre and post-assessment points, compared with a control group (Mazzeo et al., 2014). Future iterations of NOURISH-C could recruit exclusively overweight and obese children to compare the effect of caregiver participation in a community-based program to effects reported in previous implementations of NOURISH.

**Dietary intake.** No significant changes were found in child caloric intake, protein, fat, fiber, or sugar consumption. It is not surprising that no significant changes were found over time because the sample size was very limited at each time point. Although these results were not statistically significant, it is worth noting that changes in total calories, grams of fat, and grams of fiber did approach significance. The estimates of effect sizes suggested a large practical effect; the observed changes in dietary intake might have been statistically significant with a larger sample size. Additionally, individual trends in dietary intake over time suggested a trend in which dietary consumption decreased across assessment time points.

Dietary intake data should be interpreted with caution. Caregivers and children completed the ASA-24 on their own without a trained interview to prompt for accurate recall data. Previous research found that underreporting of caloric intake was positively correlated with increased weight in a sample of overweight adolescents (Singh, Martin, Teegarden, Campbell, Craig,
Schoeller, Kerr & Weaver, 2009). This was not the case in the current study; both healthy weight and overweight/obese children reported higher caloric intake than was expected based on their height, weight, age, and gender. Bean and colleagues (2011) also found that underreporting of caloric intake was not a significant threat to results within their sample of 187 predominately Black obese adolescents.

In previous versions of NOURISH, parental participation in the intervention was associated with improved dietary outcomes. Bean and colleagues (2012) assessed changes in dietary intake for 96 families in either NOURISH or a control condition across baseline, post-test, and six month follow up assessments. Relatively few differences were found between families in the two conditions; however both groups displayed improvements in dietary intake. Specifically, improvements were seen in the diet of parents who participated in the intervention group and children whose parents were in the control condition. For the intervention group, both children and parents maintained improvements from posttesting to follow up assessment in protein, carbohydrate, and sugar intake, as well as decreases in total calories consumed. It is important to note that all children from this iteration of NOURISH were all overweight, unlike those in the current study.

Additionally, no changes were found in children’s consumption of sugar sweetened beverages over time. Consumption of sugar sweetened beverages has been associated with childhood obesity (Ludwig, Peterson, & Gortmaker, 2001), and researchers have recommended that community interventions teach children to avoid sugar sweetened beverages at home and school (Bea, Jacobs, Waits, Hartz, Martinez, Standfast…Misner, 2015; Dodd, Briefel, Cabili, Ander, & Crepinsek, 2013). Han and Powell (2013) found that children with highly educated parents (defined as those with at least a college degree) were less likely to consume sugar
sweetened beverages compared with their peers with parents with less education. Given the relatively educated and high income sample in NOURISH-C, the absence of statistically significant changes in sugar sweetened beverage consumption could be attributed to the fact that children were already consuming a small amount of sugar sweetened beverages at baseline. Thus, the frequency of their beverage consumption would be less amenable to change over time. Also, the sample is very small and it is not surprising that no statistically significant changes were found over time. Examining individual changes in sugar sweetened beverage consumption over time suggested that children with higher BMI percentiles consumed more sugar sweetened beverages per week compared to healthy weight peers.

Overall, results regarding dietary intake in the current study are consistent with the findings of Bourke and colleagues (2014) in their meta-analysis of pediatric obesity interventions targeting fruit and vegetable intake for children ages 4-12. After reviewing the extant literature, the authors noted that few studies create sustainable increases in fruit and vegetable consumption in children with obesity. Further, the most successful interventions implemented changes at multiple levels. For example, one study by Wright and colleagues (2012) introduced dietary changes in home, school, and community settings. Additionally, Berge and colleagues (2014) found stronger associations among the family environment, child BMI, and child fruit and vegetable consumption in neighborhoods with “healthy” built environments; (i.e., those with low fast food to supermarket ratios). Bourke and colleagues (2014) concluded that public health interventions need to address the microsystem level by intervening to create neighborhood-wide changes. Considering both these findings and those of the current study, it seems important to mobilize school and community resources, in addition to parents, to foster sustainable behavioral change in child dietary patterns. Intervening within multiple systems and involving a multitude
of environments within which children spend time also makes sense given the multitude of caregivers and authority figures children interact with throughout the day (Bean et al., 2012).

**Physical activity.** Finally, caregiver participation in NOURISH-C was not associated with significant changes in child physical activity over time. The lack of significant results may be attributed to the small sample size and drastic variability in sample composition across time points. Individual trends in physical activity across time points also suggested variability across assessments. Trends in the physical activity of overweight and obese children suggested increased activity between baseline and posttesting. Of note, children participating in NOURISH-C were already active. It is recommended that children exercise 60 minutes per day most days of the week (Centers for Disease Control, 2015). Children in NOURISH-C exercised an average of approximately five hours per week at baseline. Thus, many children were already meeting exercise requirements. Sedentary behavior (e.g. hours spent watching television or on a computer) was not measured in this study. Future interventions should evaluate both sedentary and physical activity as indicators of health.

Physical activity outcomes should also be interpreted with caution. Caregivers and children reported relatively high levels of physical activity; many participants met or exceeded national recommendations for weekly exercise. It is likely that NOURISH-C participants overestimated their weekly hours of physical activity. Watkinson and colleagues (2010) asserted that individuals are likely to overestimate physical activity, especially moderate activity (e.g. walking). NOURISH-C participants may have overestimated their physical activity by counting non-exercise lifestyle activities (e.g. household chores) as exercise. Unlike dichotomous health behaviors (i.e. smoking versus abstaining from cigarette use), individuals may have difficulty estimating the frequency and duration of habitual lifestyle activities (Watkinson, Van Slujs,
Sutton, Hardeman, Corder, & Griffin, 2010). NOURISH-C participants may have overestimated the amount of time they actually engaged in moderate physical activity. Additionally, Warner and colleagues (2013) found that self-reported physical activity became less accurate as weight increased for Black adults. Thus, it is likely that the high levels of physical activity reported by NOURISH-C participants can be attributed to error in participant recall.

The lack of significant physical activity findings in the current study is consistent with the work of Bopp and colleagues (2009). These researchers conducted an eight-week faith-based intervention targeting physical activity in Black families. The authors did not find significant changes in physical activity levels between pre and posttesting, and concluded that an eight week intervention was too short to produce meaningful behavior change in this area. Nonetheless, these authors concluded that changes in physical activity and calories burned per day were clinically significant given the fairly sedentary baseline of the participants.

**Quality of life.** In the current study, self-reports of pediatric quality of life improved over the course of the intervention. Examining individual changes in quality of life over time suggested a trend in which scores increased across assessment time points for overweight and obese children, indicating improved quality of life. It is possible that health related changes caregivers made as a result of participating in NOURISH-C improved child health related quality of life without creating related changes in other child health outcomes. Of note, the children who completed the three month follow up assessment reported relatively high quality of life scores. Those children had also reported high scores at baseline and posttest assessments. Thus increases in quality of life average scores across time points should be interpreted with caution.

The Social Functioning subscale was the only indicator of quality of life that did not change significantly over time. This is likely due to the fact that most child participants were in a
healthy weight range and might not have experienced social stigmatization related to their weight. Additionally, children in the current study were also young on average and may not have been stigmatized as much as adolescents. Again, it is important to interpret this finding with caution given the small sample size included in the analysis.

Within the pediatric obesity literature, health related quality of life is negatively associated with weight in children (Williams, Wake, Hesketh, Maher, & Waters, 2005) and adolescents (Swallen, Reither, Haas, & Meier, 2005; Riazi, Shakoor, Dundas, Eiser & McKenzie, 2010). Health related quality of life reported by children in NOURISH-C was consistent with those reported by healthy weight children in a sample of 1943 children of varying weight statuses (Williams et al., 2005). Additionally, children in NOURISH-C reported higher quality of life scores than those reported by children of varying health statuses in the normative sample for the PEDSQL (Varni et al., 2003).

In the pilot of 84 families who participated in NOURISH, parental participation was not associated with any significant changes in children’s quality of life; however, changes in that domain trended toward significance (Mazzeo et al., 2014). It is important to note that all children in that study all met criteria for overweight or obesity. Previous studies have found that obese children and adolescents report lowered scores on the PEDSQL compared with healthy weight peers (Wille, Erhart, Peterson, & Ravens-Sieberer, 2008). For this reason, children in the NOURISH pilot would have likely reported worse quality of life outcomes, which might have proven less amenable to change over the course of a six week intervention.

**Strengths of the Current Study**

The current study makes a unique contribution to the pediatric obesity literature by examining the feasibility of a community-based health promotion intervention conducted with a
predominantly Black sample. Relatively little research has evaluated family-based obesity interventions within ethnic minority samples implemented in community settings (Wilson, 2009; Wilson & Kitzman-Ulrich, 2008). Additionally, the current study adds to the literature on church-based health promotion interventions. The following section highlights these strengths and contributions.

A noteworthy strength of the current study is that it implemented an existing, effective intervention (NOURISH) in a community at risk for obesity and other health disparities by building upon knowledge from the church-based health promotion research. Becker and colleagues (2009) noted that community-based methodology can help bridge the gap between science and practice by translating existing interventions into community settings. Additionally, some researchers have criticized the emphasis on evidenced-based practice at the expense of practice-based evidence within the behavioral health literature (Glasgow, Green, Klesges, Abrams, Fisher…Orleans, 2006; Mason, Fleming, Thompson, Haggerty, & Snyder, 2013). The feasibility findings and lessons learned from the current study can inform future efforts to translate NOURISH into diverse settings such as after school programs, public housing developments, or other community organizations.

An additional strength of NOURISH-C is its potential sustainability. Training church members to conduct the intervention offers a feasible and sustainable way for the church community to continue to promote healthy behaviors after the discontinuation of data collection. This mutually beneficial, collaborative relationship between the church congregation and the research team is consistent with the spirit of community-based participatory research (Bogart & Uyeda, 2009).
Finally, findings from the current study are noteworthy because NOURISH-C represents an effort to promote health related behavior within a predominately healthy weight community. Although the majority of child participants in the current study were not overweight, the current study provided both primary and secondary prevention efforts to address pediatric overweight and obesity (Timothy, 1997; Nammi, Koka, Chinnala, & Boini, 2004). Black children are at greater risk for overweight and obesity than their White peers (Ogden et al., 2014), and participants in the current study still face significant for overweight despite their current healthy weight status. Barlow (2007) emphasized the importance of health providers counseling parents to increase healthy lifestyle behaviors to prevent future obesity even for families with children with healthy BMIs. In this way, parent participation in NOURISH-C could empower caregivers with knowledge and skills to promote their children's health, hopefully preventing the onset of childhood obesity later in development (APA, 2014). Although the majority of children in the current study were within a healthy BMI status, the average BMI percentile was still relatively high (79%). Although these children were not technically overweight, it remains important for caregivers to monitor their children’s health status. It is possible that participation in NOURISH-C increased caregiver awareness of child obesity and gave caregivers tools to promote healthy child weight.

**Limitations of the Current Study**

It is also important to consider the limitations of NOURISH-C when generalizing these results to those of other community-based programs. The following paragraphs review these limitations and provide suggestions for ways future studies can address these issues.

A significant limitation of the study was the small sample size. NOURISH-C was a pilot program focused on feasibility; however, statistically significant changes in the outcome
measures might have been identified with a larger sample. Future studies could attempt to disseminate this type of intervention to larger samples of families in the Black community by partnering with schools or other community organizations in addition to churches. It was necessary to partner with multiple churches to bolster recruitment efforts. Recruitment in this study was hindered by the fact that the PI started the study with one church and waited six months before partnering with additional churches. This represents a significant lesson learned in the study because recruitment efforts would have been strengthened by partnering with multiple churches from the start of the study. Future church-based research would benefit from running multi-site, simultaneous waves throughout the course of the trial. One way for researchers to extend their network of church contacts is to ask pastors and church leaders to assist with networking. Pastors are connected to other churches in the area, and could potentially identify other congregations interested in participating in a family-based health promotion program.

The use of students from the PI’s research lab as program facilitators is also a significant limitation of this study. As previously noted, four of the eight of the leaders were not members of the church in which they facilitated the intervention. One church had recommended that the PI provide her own program leaders due to chronic difficulty finding volunteers to facilitate other small groups within the church. This decision was contrary to the original aim of using lay health educators to facilitate NOURISH-C in the community, but ultimately improved the feasibility of implementing NOURISH-C within that congregation. Previous research has found that it is feasible to use lay health educators to deliver interventions in church community (McNabb et al., 1997; Quinn & McNabb, 2001; Yancey et al., 2004; Bopp et al., 2007; Krukowski et al., 2013); however, this was not the case in the current study.
An additional limitation was the fact that the internal validity of the feasibility results was likely impacted by social desirability bias. Participants and group leaders responded very positively to the exit surveys and treatment acceptability measures, and might have been motivated to do so to help the researcher run the program. Group leaders had weekly contact with the researcher before and after each session and participants knew that NOURISH-C had been promoted by their pastors. Thus, they might have felt pressure to respond positively to the acceptability measures. Ammerman and colleagues (2003) reported similar desirability biases in their PRAISE! intervention conducted in Black churches. They received overwhelmingly positive responses from pastors about their experience in PRAISE!, despite the well-documented skepticism towards research in the literature. These researchers emphasized the importance of creating collaborative relationships with church partners to facilitate authentic communication between researchers and community partners. The current study could have limited demand effects by ensuring that the group leaders had contact with research assistants and not the PI. In the current study, the PI had frequent contact with group leaders to provide consultation on group facilitation issues. Future studies could train research assistants to provide such consultation so that the PI would not need to have direct interaction with group leaders.

The measures used to assess health related behaviors might have also confounded the outcomes of the study. Specifically, dietary intake (assessed via the ASA-24) could not be computed if participants did not provide sufficient information about specific foods consumed or their quantities. The ASA-24 provides an option for participants to respond “I don’t know” when prompted to report the details about the food consumed. If this option was selected frequently, data are insufficient to generate a report. This occurred with five participants in the current study. Additionally, the measure assessing sugar sweetened beverage consumption required children to
self-report the number of beverages consumed per week. Specific nutritional information could not be calculated from this information.

In their review of assessment measures commonly used to assess child and adolescent dietary intake in obesity interventions, Magarey and colleagues (2011) posed several questions relevant to the current study. Specifically, they encouraged researchers to consider the level of literacy and cognitive demand associated with dietary assessment measures. For the current study, literacy in some congregations was a barrier to the accurate completion of this measure. Additionally, Margarey and colleagues (2011) raised concerns with 24-hour recall measures similar to the one utilized in this study. Their primary hesitation with such measures was inaccurate participant memory and recollection of portion size. For children and adolescents, the researchers suggested using multiple adult proxy reports especially for children who spend their day with multiple caregivers. This would not have been feasible for the current study, nor would it be feasible for most studies to include multiple proxy reports of dietary intake.

A related limitation of the current study is that it assessed change in the quality of the family’s diet, but did not provide specific nutritional counseling. Individual consultations with a dietician were outside of the scope of this project; however, some nutritional information was incorporated in the grocery store tour and the family meal planning sessions. In exit surveys, both group participants and leaders expressed interest in additional nutritional counseling tailored to the needs of families in the program. Future iterations of NOURISH-C could place more emphasis on specific nutrition guidelines for families. Barlow (2007) recommends that obesity prevention programs teach parents to feed their children foods rich in calcium, fiber, and balanced macronutrients. Incorporating more nutrition counseling in future programs would
address concerns raised by group participants and leaders in the feasibility and acceptability measures.

Finally, the current study shares some of the limitations common to other community-based research models. Specifically, such studies can be time consuming to implement; it can take years to build the necessary relationships with community partners needed to run the program effectively (Becker, Stice, Shaw, and Woda, 2007). The latter limitation was problematic for NOURISH-C given the time-limited nature of the project. In particular, it was time-consuming to meet with gatekeepers in church administration. However, this step was essential, as church administrators were the only individuals who could provide the PI permission to meet with senior church leadership. It often took months from the point of initial contact with the church to gain approval from leaders to begin the project. Reifsnider and colleagues (2010) reported a similar time-consuming process of establishing contact, building rapport, and collaborative identifying program goals when conducting community-based participatory research in faith communities. Boutain and McNees (2013) assert that it is possible to create sustainable, systemic changes within church congregations. However, they note that this process can be time consuming and is best facilitated by public, consistent support from church leadership.

**Recommendations for Future Studies**

In addition to the previously outlined suggestions for overcoming barriers experienced in the current study, there are several ways that future programs can build upon the findings from NOURISH-C. In particular, the current study could have been strengthened by the inclusion of a measure assessing parents' readiness to change at baseline. Barlow (2007) cautions that even the best pediatric obesity interventions will be ineffective if parents do not perceive their child’s
weight as a problem. Assessing parental motivation could help group leaders tailor the sessions to meet participants where they are with respect to readiness for change. Similar research with primarily Black, obese adolescents participating in a multidisciplinary program has found that motivational interviewing interventions can decrease participant attrition (Bean, Powell, Quinoy, Ingersoll, Wickham, & Mazzeo, 2014). Within an inclusive church setting, excluding some families based on self-reported motivation would likely cause feelings of exclusion. Future studies could evaluate the efficacy of a motivational interviewing pre-intervention for individuals in pre-contemplative stages of change on subsequent program adherence and attrition.

Future community-based programs in this area should also assess the targeted community’s readiness to change. Edwards and colleagues (2000) proposed a stage-based model of community readiness building on Prochaska and DiClemente’s (1991) transtheoretical model. Group readiness to change is more complicated than individual readiness to change because these models must also include group dynamics, within and between group variance, and leadership factors (Edwards, Jumper-Thurman, Plested, Oetting, & Swanson, 2000). The researchers provided several strategies for engaging with communities to bolster motivation to change. Specifically, assessing church community readiness to change before implementing a program like NOURISH-C might improve participant recruitment and retention.

Attrition and recruitment also proved to be significant challenges to NOURISH-C and limited the feasibility of the program. Future studies could use phone or internet-based administration to decrease logistical barriers to treatment attendance such as transportation or participant scheduling issues. Advances in smart-phone technology present a novel means of intervention and assessment (Kazdin & Blase, 2011). For example, smart phone applications could prompt participants to record dietary intake or physical activity for the day, rather than
relying on participant recall at assessment points. Text-messaging could also provide psychoeducation or prompt participants to monitor progress toward behavioral goals in between sessions. Participants would be recruited from churches but would not need to travel to the church to participate in the group. In this way, online interventions could be a way to reach a larger number of home-bound, rural, remote, or otherwise underserved populations (Colon & Stern, 2010; Davis, Sampilo, Gallagher, Landrum, & Malone, 2013). Recent studies have estimated that approximately two-thirds of American adults own smart phones and utilize them to access the internet (Pew Research Center, 2015). However, phone and internet-based interventions also prevent unique challenges. For example, researchers must take additional steps to ensure that participant data remains confidential when transmitted electronically (Childress, 2000).

Finally, it is recommended that future work in this area systematically assess the barriers evident in this study by interviewing community church leaders, treatment completers, and participants who dropped out of the intervention. This is consistent with methodology used in recent childhood obesity intervention studies. Banks and colleagues (2014) conducted semi-structured interviews with 15 obesity intervention completers and 17 non-completers and identified child buy in, family engagement, and unmet parent expectations as barriers to treatment completion. Completing similar interviews would provide valuable data to increase the feasibility for future interventions within Black church communities.

**Conclusion and Summary**

The current study contributes to the pediatric obesity literature by evaluating the feasibility of implementing an existing family-based intervention in a Black church setting. This investigation demonstrated that it is feasible to train volunteer group leaders to implement
NOURISH within a church congregation, with certain caveats. Several significant challenges to program implementation were identified. Addressing these challenges in future studies will strengthen the feasibility of disseminating NOURISH in community settings.
List of References
List of References


Bean, M.K., Powell, P., Quinoy, A., Ingersoll, K., Wickham, E.P. III., & Mazzeo, S.E. (2014). Motivational interviewing targeting diet and physical activity improves adherence to paediatric obesity treatment: Results from the MI Values randomized controlled trial. *Pediatric Obesity, 10*(2) 118-125.


Parental cultural perspectives in relation to weight-related behaviors and concerns of African American girls. *Obesity Research, 12*, 7S-19S.


*Journal of Medical Internet Research, 2*(1), e5.


Appendix A

Demographics Questionnaire

Date of Birth: __ __/__ __/__ __ __ __

Ethnicity (circle one): Hispanic/Latino or Not Hispanic/Latino
Race (circle one):
1. American Indian/Alaska Native
2. Asian
3. Native Hawaiian or Other Pacific Islander
4. Black or African American
5. White
6. Other/More than one race
   Specify:_____________________________

Gender: Male____ Female____

How many children do you have? __

<table>
<thead>
<tr>
<th></th>
<th>Date of Birth</th>
<th>Gender</th>
<th>Hispanic Ethnicity?</th>
<th>Race(same options for Parent race info)</th>
<th>If other race, specify</th>
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<tbody>
<tr>
<td>Enrolled Child 1</td>
<td></td>
<td>M/F</td>
<td>Yes/No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrolled Child 2</td>
<td></td>
<td>M/F</td>
<td>Yes/No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrolled Child 3</td>
<td></td>
<td>M/F</td>
<td>Yes/No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Marital Status: ____

What is your current weight? ____ lbs
What is your current height? ____ inches
What has been your lowest weight at your current height? ____ lbs
   How old were you at that time? __________
What has been your highest weight at your current height (Excluding pregnancy)? ____ lbs
   How old were you at that time? ____

Highest level of completed education:
  ____Less than high school diploma
  ____High School diploma
  ____Some college
  ____Some graduate school
  ____College degree
  ____Graduate School
<table>
<thead>
<tr>
<th>Approximate household income</th>
<th>$15,000 - $ 59,999</th>
</tr>
</thead>
<tbody>
<tr>
<td>__ Less than $15,000</td>
<td>__ $45,000 - $ 59,999</td>
</tr>
<tr>
<td>__ $15,000 - $ 24,999</td>
<td>__ $60,000 - $ 74,999</td>
</tr>
<tr>
<td>__ $25,000 - $ 34,999</td>
<td>__ Greater than $75,000</td>
</tr>
<tr>
<td>__ $35,000 - $ 44,999</td>
<td></td>
</tr>
</tbody>
</table>
Appendix B

7 Day Physical Activity Recall

<table>
<thead>
<tr>
<th>Participant ID</th>
<th>Date</th>
<th>Day of Week</th>
<th>Interviewer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Were you employed in the last seven days? 0: No, 1: Yes
2. How many days of the last seven did you work? ____________ days
3. How many total hours did you work in the last seven days? ____________ hours last week
4. What two days do you consider your weekend days? ____________
5. What opportunities did you have for structured physical activities (e.g., sports, dance) in the past seven days? ____________

<table>
<thead>
<tr>
<th>DAYS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>SLEEP</td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hard</td>
<td>Very Hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afternoon</td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hard</td>
<td>Very Hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evening</td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hard</td>
<td>Very Hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Min per Day</td>
<td>Strength</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Worksheet Key
Rounding: 10-22 min = 25 23-37 min = 50 38-52 min = 75 53-67 min = 100 68-122 min = 125
*denotes a work-related activity ~A squiggly line denotes a weekend day

Totals
Moderate: ______  Hard: ______
Very Hard: ______  Avg (hard=very hard): ______
Versions 2
Appendix C

Child Feeding Questionnaire

Please answer the following questions using the scales below. Circle the number that best reflects what you think. Answer each question as honestly as you can. There are no right or wrong answers, just your answers. Thank you so much for your time.

1. When your child is at home, how often are you responsible for feeding him/her?
   Never 1 Seldom 2 Half the time 3 Most of the time 4 Always 5

2. How often are you responsible for deciding what your child’s portion sizes are?
   Never 1 Seldom 2 Half the time 3 Most of the time 4 Always 5

3. How often are you responsible for deciding if your child has eaten the right kind of foods?
   Never 1 Seldom 2 Half the time 3 Most of the time 4 Always 5

4. Which of the following best describes your weight as a child:
   Very underweight 1 Underweight 2 Normal 3 Overweight 4 Very overweight 5

5. Which of the following best describes your weight as an adolescent:
   Very underweight 1 Underweight 2 Normal 3 Overweight 4 Very overweight 5

6. Which of the following best describes your current weight:
   Very underweight 1 Underweight 2 Normal 3 Overweight 4 Very overweight 5

7. Which of the following best describes your child’s weight in his/her first year of life:
   Very underweight 1 Underweight 2 Normal 3 Overweight 4 Very overweight 5

8. Which of the following best describes your child’s weight as a toddler:
177

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Which of the following best describes your child’s weight as a preschooler:</td>
<td>Very underweight 1, Underweight 2, Normal 3, Overweight 4, Very overweight 5</td>
</tr>
<tr>
<td>10. Which of the following best describes your child’s weight from Kindergarten through second grade:</td>
<td>Very underweight 1, Underweight 2, Normal 3, Overweight 4, Very overweight 5</td>
</tr>
<tr>
<td>11. Which of the following best describes your child’s weight from 3rd through 5th grade:</td>
<td>Very underweight 1, Underweight 2, Normal 3, Overweight 4, Very overweight 5</td>
</tr>
<tr>
<td>12. Which of the following best describes your child’s weight from 6th through 8th grade:</td>
<td>Very underweight 1, Underweight 2, Normal 3, Overweight 4, Very overweight 5</td>
</tr>
<tr>
<td>13. How concerned are you about your child eating too much when you are not around him/her?</td>
<td>Unconcerned 1, A little concerned 2, Concerned 3, Fairly concerned 4, Very concerned 5</td>
</tr>
<tr>
<td>14. How concerned are you about your child having to diet to maintain a desirable weight?</td>
<td>Unconcerned 1, A little concerned 2, Concerned 3, Fairly concerned 4, Very concerned 5</td>
</tr>
<tr>
<td>15. How concerned are you about your child becoming overweight?</td>
<td>Unconcerned 1, A little concerned 2, Concerned 3, Fairly concerned 4, Very concerned 5</td>
</tr>
<tr>
<td>16. I have to be sure that my child does not eat too many sweets (for example, candy, ice cream, cake or pastries).</td>
<td>Disagree 1, Slightly disagree 2, Neutral 3, Slightly agree 4, Agree 5</td>
</tr>
<tr>
<td>17. I have to be sure that my child does not eat too many high-fat foods.</td>
<td>Disagree 1, Slightly disagree 2, Neutral 3, Slightly agree 4, Agree 5</td>
</tr>
<tr>
<td>18. I have to be sure that my child does not eat too much of his/her favorite foods.</td>
<td>Disagree 1, Slightly disagree 2, Neutral 3, Slightly agree 4, Agree 5</td>
</tr>
</tbody>
</table>
19. I intentionally keep some foods out of my child’s reach.
Disagree Slightly disagree Neutral Slightly agree Agree
1 2 3 4 5

20. I offer sweets (for example, candy, ice cream, cake or pastries) to my child as a reward for good behavior.
Disagree Slightly disagree Neutral Slightly agree Agree
1 2 3 4 5

21. I offer my child his/her favorite foods in exchange for good behavior.
Disagree Slightly disagree Neutral Slightly agree Agree
1 2 3 4 5

22. If I did not guide or regulate my child’s eating, he or she would eat too many junk foods.
Disagree Slightly disagree Neutral Slightly agree Agree
1 2 3 4 5

23. If I did not guide or regulate my child’s eating, he or she would eat too much of his/her favorite foods.
Disagree Slightly disagree Neutral Slightly agree Agree
1 2 3 4 5

24. My child should always eat all the foods on his/her plate.
Disagree Slightly disagree Neutral Slightly agree Agree
1 2 3 4 5

25. I have to be especially careful to make sure my child eats enough.
Disagree Slightly disagree Neutral Slightly agree Agree
1 2 3 4 5

26. If my child says, “I’m not hungry,” I try to get him/her to eat anyway.
Disagree Slightly disagree Neutral Slightly agree Agree
1 2 3 4 5

27. If I did not guide or regulate my child’s eating, he or she would eat much less than he/she should.
Disagree Slightly disagree Neutral Slightly agree Agree
1 2 3 4 5

28. How much do you keep track of the sweets (for example, candy, ice cream, cake or pastries) that your child eats?
Never Rarely Sometimes Mostly Always
1 2 3 4 5

29. How much do you keep track of the snack food (for example, potato chips, Doritos, cheese puffs) that your child eats?
How much do you keep track of the high-fat foods your child eats?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Mostly</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

30.
Appendix D

Family Eating and Exercise Behaviors Questionnaire

1. During the past seven days, how many times did all, or most of your family living in your house eat a meal together?

never 1-2 times 3 times 4-5 times 6-7 times more than 7 times

2. I enjoy eating meals with my family.

Strongly Disagree Somewhat Disagree Somewhat Agree Strongly Agree

3. In my family, eating brings people together in an enjoyable way.

Strongly Disagree Somewhat Disagree Somewhat Agree Strongly Agree

4. In my family, mealtime is a time for talking with other family members.

Strongly Disagree Somewhat Disagree Somewhat Agree Strongly Agree

5. In my family, dinner time is about more than just getting food, we all talk with each other.

Strongly Disagree Somewhat Disagree Somewhat Agree Strongly Agree

6. In my family, it is important that the family eat at least one meal a day together.

Strongly Disagree Somewhat Disagree Somewhat Agree Strongly Agree

7. I am often just too busy to eat dinner with my family.

Strongly Disagree Somewhat Disagree Somewhat Agree Strongly Agree

8. In my family, different schedules make it hard to eat meals together on a regular basis.

Strongly Disagree Somewhat Disagree Somewhat Agree Strongly Agree
9. In my family, it is often difficult to find a time when family members can sit down to a meal together.

Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

10. In my family, we are expected to be home for dinner.

Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

11. In my family, there are rules at mealtimes that we are expected to follow.

Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

12. In my family, it is OK for a child to make something else to eat if he/she doesn’t like the food being served.

Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

13. In my family, a child should eat all the foods served even if he/she doesn’t like them.

Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

14. Manners are important at our dinner table.

Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

15. In my family, we don’t have to eat meals at the kitchen/dining room table.

Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

16. In my family, we often watch television while eating dinner.

Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

17. In the past week, how many times was a family meal purchased from a fast-food restaurant (e.g., take-out food), and eaten either at the restaurant or at home?

never  1-2 times  3 times  4-5 times  6-7 times  more than 7 times

18. What are the 3 places you are most likely to purchase fast-food or take-out food?

1. _______________________
2. _______________________
3. _______________________

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19. How many sugar-sweetened beverages do you drink in a typical day? This includes sodas, sweet teas, sweetened coffee drinks, juice, energy drinks, sports drinks such as Gatorade and Vitamin Water)?
   ________ total per typical day

20. What are your three most frequently consumed sugar-sweetened beverages?
   1. __________________________
   2. __________________________
   3. __________________________

21. How often are sugar-sweetened beverages available in the home?
   Always  Often  Sometimes  Rarely  Never

22. What are the three most frequently available fruits in your home?
   1. __________________________
   2. __________________________
   3. __________________________

23. How often are frozen or fresh fruits available in the home?
   Always  Often  Sometimes  Rarely  Never

24. What are the three most frequently available vegetables in your home?
   1. __________________________
   2. __________________________
   3. __________________________

25. How often are frozen or fresh vegetables available in the home?
   Always  Often  Sometimes  Rarely  Never

26. I encourage my child to consume healthy foods.
   Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

27. I encourage my child to engage in regular physical activity.
   Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree

28. I encourage my child to diet.
   Strongly Disagree  Somewhat Disagree  Somewhat Agree  Strongly Agree
Appendix E

Child Sugar Sweetened Beverage and Fast Food Intake

*(if <1/week, indicate monthly)*

1. Do you drink soda? □ Yes □ No
   a. How many do you think you drink each week? ____

2. Do you drink sweet tea? □ Yes □ No
   a. How many do you think you drink each week? _____

3. Do you drink sweet coffee? □ Yes □ No
   a. How many do you think you drink each week? _____

4. Do you drink juice (e.g., Kool-Aid, Capri Sun, or juice in a box)? □ Yes □ No
   a. How many do you think you drink each week? ______

5. Do you drink energy drinks? □ Yes □ No
   a. How many do you think you drink each week? ______

6. Do you drink sports drinks, like Gatorade or Vitamin Water? □ Yes □ No
   a. How many do you think you drink each week? ______

*if child appears to be struggling with these questions, have him/her think about yesterday, and what they drank then*

7. What are your three favorite types of drinks (not including milk or water)?
   a. ______________________
   b. ______________________
   c. ______________________

8. Do you usually eat breakfast? □ Yes □ No

9. How often do you eat breakfast with your parents/brothers/sister?

   □ Never (0 days per week)
   □ Rarely (<1 day per week)
   □ Sometimes (1-2 days per week)
   □ About half the time (3-4 days per week)
   □ Almost Always (5-6 days per week)
   □ All the time (7 days per week)
10. Do you usually eat dinner? ☐ Yes  ☐ No

11. How often do you eat dinner with your parents/brothers/sister?

☐ Never (0 days per week)
☐ Rarely (<1 day per week)
☐ Sometimes (1-2 days per week)
☐ About half the time (3-4 days per week)
☐ Almost Always (5-6 days per week)
☐ All the time (7 days per week)

12. How often do you eat fast-food (e.g., McDonald’s, Taco Bell, Pizza) or food from a restaurant?

☐ Never (0 days per week)
☐ Rarely (<1 day per week)
☐ Sometimes (1-2 days per week)
☐ About half the time (3-4 days per week)
☐ Almost Always (5-6 days per week)
☐ All the time (7 days per week)

13. What are your 3 favorite restaurants for fast-food or take-out food?

a. ____________________________
b. ____________________________
c. ____________________________
Appendix F

Pediatric Quality of Life Inventory

_PedSQL 2_

_In the past ONE month, how much of a problem has this been for you..._

<table>
<thead>
<tr>
<th>ABOUT MY HEALTH AND ACTIVITIES (problems with...)</th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is hard for me to walk more than one block</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. It is hard for me to run</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. It is hard for me to do sports activity or exercise</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. It is hard for me to lift something heavy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. It is hard for me to take a bath or shower by myself</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>6. It is hard for me to do chores around the house</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>7. I hurt or ache</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. I have low energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ABOUT MY FEELINGS (problems with...)</th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel afraid or scared</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. I feel sad or blue</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. I feel angry</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. I have trouble sleeping</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. I worry about what will happen to me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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</tbody>
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<table>
<thead>
<tr>
<th>HOW I GET ALONG WITH OTHERS (problems with...)</th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have trouble getting along with other kids</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Other kids do not want to be my friend</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Other kids tease me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. I cannot do things that other kids my age can do</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. It is hard to keep up when I play with other kids</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
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<table>
<thead>
<tr>
<th>ABOUT SCHOOL (problems with...)</th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is hard to pay attention in class</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. I forget things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. I have trouble keeping up with my schoolwork</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. I miss school because of not feeling well</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. I miss school to go to the doctor or hospital</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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</table>
Appendix G

Group Member Exit Survey – Group Waves

Please circle one response for each item.

1. I enjoyed attending each NOURISH+ session.

   1 Strongly Disagree  2 Moderately Disagree  3 Neither Disagree nor Agree  4 Moderately Agree  5 Strongly Agree

2. The NOURISH+ session topics addressed my concerns about my child.

   1 Strongly Disagree  2 Moderately Disagree  3 Neither Disagree nor Agree  4 Moderately Agree  5 Strongly Agree

3. There were too many sessions.

   1 Strongly Disagree  2 Moderately Disagree  3 Neither Disagree nor Agree  4 Moderately Agree  5 Strongly Agree

4. Participating in this group has helped me be a better parent.

   1 Strongly Disagree  2 Moderately Disagree  3 Neither Disagree nor Agree  4 Moderately Agree  5 Strongly Agree

5. I felt comfortable in the group setting.

   1 Strongly  2 Moderately  3 Neither Disagree  4 Moderately  5 Strongly
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>6. I felt comfortable sharing/participating in the group.</td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Neither Disagree nor Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>7. I felt comfortable with the other group members.</td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Neither Disagree nor Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>8. I felt comfortable with the group leaders.</td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Neither Disagree nor Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>9. I would recommend this group to another parent who is concerned about her/his child’s health.</td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Neither Disagree nor Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>10. Participating in this group helped me eat healthier.</td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Neither Disagree nor Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>11. Participating in this group helped me be more physically active.</td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Neither Disagree nor Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>12. I incorporated what I learned from the NOURISH+ group into my life.</td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Neither Disagree nor Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
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</table>
13. How much of the handouts did you read outside of the group?

<table>
<thead>
<tr>
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<th>1</th>
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<tbody>
<tr>
<td>None</td>
<td>A little</td>
<td>About half</td>
<td>A lot</td>
<td>All</td>
</tr>
<tr>
<td>0%</td>
<td>(10-30%)</td>
<td>(40-60%)</td>
<td>(70-80%)</td>
<td>(90-100%)</td>
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</tbody>
</table>

Please respond to the following questions in the space provided.

14. Have you talked to anyone (outside of your group members or co-leaders) who was also enrolled in the NOURISH+ program?

   a. If so, do you know if they attended a group like yours, or one slightly different?

15. How did you feel about attending the group sessions?

16. What did you think of the topics covered?

17. What aspect of the group was most helpful to you? Least helpful?

18. What other topics would you like to have seen addressed?

19. What did you think about the length and number of sessions?

20. How has what you learned in this group affected your approach to parenting?

21. How has what you learned in this group affected the way in which you feed your child?

22. How has it influenced your relationship with your child?

23. How has it affected your daily life at home?

24. How has it influenced your own eating and weight behaviors?

25. How did you feel in the group setting?

26. Were there any topics that were not addressed that you wish had been? If so, what are they?

27. Are there any topics that were not covered in enough detail? Any topics that you wish we had spent less time on?

28. Do you have any other suggestions for future groups like this one?
Appendix H

Phone Exit Interview – Individual Waves

Interviewer

We are contacting you because you recently participated in the NOURISH-C study.

We found that a lot of people that started our program had a hard time completing the study or coming to all of the meeting times. This is a problem that a lot of studies find when working with families.

We are interested in understanding some of the issues/barriers/problems people face when trying to attend interventions/treatments. We are also interested in understanding some of the issues/barriers/problems people face when running these programs in churches in the community.

We are asking families to complete a quick 10-15 minute questionnaire over the phone to help us understand barriers to completing NOURISH-C and ways that we can improve for future families who participate. Your feedback would be very helpful.

Are you willing to complete the brief questionnaire?

This questionnaire is voluntary and you can stop participating at any time.

Interviewer

Next we are going to ask you a few questions about some reasons that people find it hard to participate and/or complete studies like NOURISH.

We are going to ask you to what extent each of these statements about NOURISH were true for you. Or what extent you agree with the statement

We are going to ask you to give you answers on a 0-2 scale

0 – Not at all

1 – Somewhat

2 – A lot

You can just say this applies to you “not at all”, “some” or “a lot” if you don’t want to use the numbers
| 1. I did not like completing the questionnaires | 0 | 1 | 2 |
| 2. My child and I did not like completing the physical assessment | 0 | 1 | 2 |
| 3. The program did not deal with the causes of my family’s problems | 0 | 1 | 2 |
| 4. The program focused too much on me instead of my child | 0 | 1 | 2 |
| 5. I would have preferred a one-on-one program | 0 | 1 | 2 |
| 6. The program had too many sessions | 0 | 1 | 2 |
| 7. The topics of the sessions were not relevant to my family | 0 | 1 | 2 |
| 8. The leaders did not seem to have enough qualifications | 0 | 1 | 2 |
| 9. I did not feel comfortable talking about my family in the group | 0 | 1 | 2 |
| 10. I was nervous about taking part in the program | 0 | 1 | 2 |
| 11. I did not think my child had a problem | 0 | 1 | 2 |
| 12. I wasn’t ready to make the changes that the group discussed | 0 | 1 | 2 |
| 13. I would have preferred the program was given directly to my child instead of me | 0 | 1 | 2 |
| 14. Getting to the sessions was difficult because of transportation | 0 | 1 | 2 |
| 15. I had a long way to travel to sessions | 0 | 1 | 2 |
| 15b. How long did you have to travel? _______________ mins | 0 | 1 | 2 |
| 16. Session times were not convenient | 0 | 1 | 2 |
| 16b. What times would have been better _______________ | 0 | 1 | 2 |
| 17. My family responsibilities interfered with coming to sessions | 0 | 1 | 2 |
| 18. My work schedule interfered with coming to sessions | 0 | 1 | 2 |
| 19. My family had too many other problems occurring at the same time | 0 | 1 | 2 |
| 20. There were too many pressures going on around me | 0 | 1 | 2 |
| 21. I did not want to participate because the program interfered with other aspects of my life | 0 | 1 | 2 |
| 22. My church has too many other programs going on | 0 | 1 | 2 |
| 23. It made sense for my church to run a group about health | 0 | 1 | 2 |
| 24. I stopped coming because I felt like I missed too many sessions | 0 | 1 | 2 |
| 25. Meeting at the church was convenient for me | 0 | 1 | 2 |
| 26. The topics we discussed were relevant to African American families | 0 | 1 | 2 |
| 27. I would attend more groups like this at my church | 0 | 1 | 2 |
| 28. My church promotes the physical health of its members | 0 | 1 | 2 |
Interviewer
Now we have just a few questions that you can answer any way you like. Don’t worry about the scale. We just want to get an idea of some of the things you liked and didn’t like about the program so we can see what things we should change about our program.

Free Response:
1. What would you say was the issue that made it the most difficult to attend the sessions?

2. Was there anything about the program that you felt made it easier to attend?

3. What do you think would help families like yours from your church to attend this intervention?

4. How do you think we can run this program better in your church?
   a. What aspects of the program would you change to fit better with your church?

5. What about the leaders? Would you have liked them to be different in any way?
   a. What characteristics would you have preferred in a group leader?
Appendix I
Leader Feasibility Survey

Please circle one response for each item.

1. I enjoyed leading each NOURISH+ session.

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<tr>
<td></td>
<td>Strongly</td>
<td>Moderately</td>
<td>Neither Disagree</td>
<td>Moderately</td>
<td>Strongly</td>
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<tr>
<td></td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
<td>Agree</td>
<td>Agree</td>
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2. I felt prepared to lead each NOURISH+ session.

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<tr>
<td></td>
<td>Strongly</td>
<td>Moderately</td>
<td>Neither Disagree</td>
<td>Moderately</td>
<td>Strongly</td>
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<tr>
<td></td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
<td>Agree</td>
<td>Agree</td>
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3. There were too many sessions.

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<tr>
<td></td>
<td>Strongly</td>
<td>Moderately</td>
<td>Neither Disagree</td>
<td>Moderately</td>
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<td></td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
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<td>Agree</td>
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4. I felt comfortable with my co-leader.

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<tr>
<td></td>
<td>Strongly</td>
<td>Moderately</td>
<td>Neither Disagree</td>
<td>Moderately</td>
<td>Strongly</td>
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<tr>
<td></td>
<td>Disagree</td>
<td>Disagree</td>
<td>nor Agree</td>
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5. I felt comfortable with the research coordinator (Ms. Woods).

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<tr>
<td></td>
<td>Strongly</td>
<td>Moderately</td>
<td>Neither Disagree</td>
<td>Moderately</td>
<td>Strongly</td>
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</tbody>
</table>
6. I would recommend participating in this group to a parent who is concerned about her/his child’s health.
   1 2 3 4 5
   Strongly Moderately Neither Disagree Moderately Strongly
   Disagree Disagree nor Agree Agree Agree

7. I think that participating in this group helped group members eat healthier.
   1 2 3 4 5
   Strongly Moderately Neither Disagree Moderately Strongly
   Disagree Disagree nor Agree Agree Agree

8. I think that participating in this group helped group members be more physically active.
   1 2 3 4 5
   Strongly Moderately Neither Disagree Moderately Strongly
   Disagree Disagree nor Agree Agree Agree

9. I think that group members incorporated what they learned from the NOURISH+ group into their life.
   1 2 3 4 5
   Strongly Moderately Neither Disagree Moderately Strongly
   Disagree Disagree nor Agree Agree Agree

10. My group leader and I were able to cover all of the material in the manual in 90 minutes.
    1 2 3 4 5
    Strongly Moderately Neither Disagree Moderately Strongly
    Disagree Disagree nor Agree Agree Agree

11. I think that the topics covered in each session were relevant to the group members.
    1 2 3 4 5
    Strongly Moderately Neither Disagree Moderately Strongly
    Disagree Disagree nor Agree Agree Agree

12. I think that group members appeared to enjoy participating in the group.
13. I think that group members understood the content.

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<th>5</th>
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<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Neither Disagree nor Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

194
Please respond to the following questions in the space provided.

14. How did you feel about leading the group sessions?

15. What did you think of the topics covered?

16. What aspect of the group do you think was the most helpful to the participants? Least helpful?

17. What other topics would you like to have seen addressed?

18. What did you think about the length and number of sessions?

19. What would you change about the program to make it more relevant to African American families?

20. Are there any topics that were not covered in enough detail? Any topics that you wish we had spent less time on?

21. Do you have any other suggestions for future groups like this one?

22. Do you think it would be possible for your church to run a group like this again in the future? What would help or get in the way of continuing a group like this?

23. What other comments or thoughts would you like to share about the NOURISH program?
Session 1

GOALS

1. Foster an open, supportive group.
2. Establish group norms.
3. Increase parents’ motivation for participating and promoting healthy eating and weight attitudes.
4. Identify parents’ own beliefs and feelings about health behaviors.
5. Introduce the problem of pediatric obesity and associated factors.
6. Present parents’ role in encouraging healthy eating, exercise, and body image attitudes.

BACKGROUND

The goal of the first session is to orient members to the group by helping parents get to know the leaders and other participants in order to feel comfortable participating in the course. Parents will be given an overview of the program. The focus of the first session is to introduce the problem of pediatric overweight/obesity and help parents understand their role in increasing healthy behaviors and attitudes in an unhealthy environment. The essential components of the course will be introduced briefly in this session and expanded throughout the remainder of the course. The components include:

SUMMARY OF SESSION 1 ACTIVITIES

<table>
<thead>
<tr>
<th>Estimated Time</th>
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<tbody>
<tr>
<td>Introductions</td>
</tr>
<tr>
<td>Game for Group Members to Meet</td>
</tr>
<tr>
<td>Overview of the Program</td>
</tr>
<tr>
<td>Establish Group Guidelines</td>
</tr>
<tr>
<td>Introduce the topic of childhood eating problems and parents’ role in prevention</td>
</tr>
<tr>
<td>Review the Toxic Environment</td>
</tr>
<tr>
<td>Discussion</td>
</tr>
<tr>
<td>Discuss Pedometer use</td>
</tr>
<tr>
<td>Explain homework assignment</td>
</tr>
</tbody>
</table>
Preview Next Week’s Session  5 Minutes
Concluding Comments  3 Minutes
Total:  90 Minutes

ROOM PREPARATION/CHECKLIST
☐ Chairs  ☐ Attendance/Sign-in sheet
☐ Pens  ☐ Handouts for session

I. Introductions
A. Introduce self (first facilitator).
   • Welcome! We’d like to thank everyone for coming. I’m glad all of you are here to participate in this group, NOURISH-C. My name is _______________, and I’ll be your facilitator over the next six weeks.

B. Introduce Second Facilitator.
   • With me today is _______________________ who will be co-leading throughout the program.
   • Second facilitator introduces self. We expect this will be a collaborative experience; we will all learn from each other.

C. Explain the Purpose of the Program.
   • NOURISH stands for Nourishing Our Understanding of Role Modeling to Improve Support and Health. We recognize that it is very difficult with all the pressures and demands of everyday life to always make healthy choices about eating and exercise.
     o Also, kids are exposed every day to so many media influences, including celebrities in magazines, and numerous advertisements for unhealthy food.
     o Yet, as parents, you play the most important role in your children’s lives. You are their most important role model of how to be healthy—despite all of these other influences.
     o So, our goal in this group is to make it easier for you to make healthier choices for yourself and your children.

   • We want to provide you with a do-able parenting strategy that is based on scientifically sound information—not just the opinion of someone on the internet or TV. We will ask you to take a close look at your own strengths, weaknesses, and beliefs and apply the information that you think will work for you to improve the health of your whole family.

   • We will also talk about the fact that “children are sponges.” As you all know, children are remarkably perceptive. If you say one thing and do another—there is no question that your actions speak louder than your words. Therefore, NOURISH
places a lot of emphasis on parents as role models in life in general as well as in areas that are related to eating and weight.

II. Activity to Introduce Group Members

A. Have group members go around the circle introducing themselves and telling their child(ren)’s ages and what they would like to get out of the group. Start listening for and identifying goals and potential barriers for each individual and incorporate as appropriate.

III. Overview of the Program

A. Review program schedule.

1. Dates, Times, and Contact Information
   *We’ve listed the dates for each session. With the exception of next week, the remaining sessions (3 to 6) will be held here. The 2nd session will take place at a grocery which we’ll explain in a moment. Our contact information is also at the bottom of this page. We will let you know if any changes are made.*

   **Attendance Policy**
   *Because each session builds on the previous session, you’ll get the most out of the program if you are able to come every time. However, if you are ever unable to attend, please call and let us know. Also, you should not hesitate to return the following week.*

B. Review individual sessions.
   *Please read along with us while we review the topics that will be covered in the 6 sessions (each session does not need to be read word-for-word).*

   **Session 1 – Overview of Childhood Eating Problems, Toxic Environment, and Becoming an Empowered Parent**

   *The rest of today’s session will focus on the issue of childhood eating problems, the toxic environment, and your role as a parent to raise healthy children in an unhealthy world.*

   **Session 2 – Nutrition & Grocery Store Tour**
   *Next week, we will meet at a grocery store, [Food Lion or Kroger], located [at xxx] for a tour of the grocery store as we learn to read food labels, moderate portion sizes, get the most nutritional “bang for your buck,” and increase your family’s fruit and vegetables.*

   **Session 3 – Increasing Physical Activity and Reducing Barriers**

   **Session 4 – Emotional Eating and Eating Mindfully**

   **Session 5 – Parenting Style, Family Meals, & Role Modeling Healthy Behaviors**

   **Session 6 – Body Image, Media, and Teasing- How to Help Your Child Cope**
C. **Questions:** Do you have any questions about the program so far?

IV. **Establishing Group Guidelines**

A. **Introduce group guidelines.**
   - In a group like this it is helpful to set some group guidelines.
   - The goal is for everyone to feel safe sharing or not sharing personal information about themselves or their child.
   - Please share as much or as little as you feel comfortable.

B. **Review suggestions with the group.**

**Group Guidelines**

**Confidentiality**

- Knowing that personal information will not be shared will help maintain a safe, supportive environment for discussion.

⇒ **Make sure you state the following bullets in your discussion of confidentiality:**

- Anything shared in this group should stay inside this room. Please do not discuss names of group members or their personal information outside of this group.

- There are a few exceptions to confidentiality. These include, for example, if someone tells us about a child or elderly person in danger, or if you are in danger of hurting yourself. We will make every effort to talk to you first before we take any steps to help the person in danger; however, we may need to disclose the information to protect the people involved.

**You Can Always Pass**

- People can voluntarily share information about themselves, but no one should be “put on the spot” or required to give information.

**Show Respect**

1. Show respect for ideas.
   - All thoughts, feelings, ideas, and opinions are to be respected here.
   - Be respectful even if you hear something you don’t agree with or don’t like.
   - We come from different backgrounds; we have different values and different beliefs, so try to be open.

2. No offensive language or comments.

3. Please give everyone the opportunity to share their thoughts.

**Ask Questions and Participate**
• There are no stupid questions. Everyone has questions they need answered, and someone else will probably learn from your question. Also, everyone is encouraged to participate. People who participate usually learn best.
• Have Fun!

C. Get group agreement to guidelines and ask group for suggestions (VERY IMPORTANT)
• Do you have any other suggestions for guidelines that would make you feel more comfortable?
• Okay. Does anyone have any questions? Does everyone agree to follow these guidelines? (Look for confirmatory nods and take any questions that come up.)

CHILDHOOD EATING PROBLEMS AND PARENTS’ ROLE IN PREVENTION

Distribute session 1 handouts.

• I’m sure all of you are aware that rates of overweight and obesity in children are on the rise. In fact, these rates have tripled since the 1970’s and currently about one out of every three children is overweight or obese.

• When we talk about obesity, we use the term BMI, or Body Mass Index, a lot. In children, a BMI at the 85th percentile or above is considered overweight, and at the 95th percentile or above is considered obese. You might recognize these terms from when you’ve taken your child to the doctor.

• What we are going to focus on in this program is not weight specifically, but how your whole family can be healthier and how you, as a parent, have a major impact as a role model of healthy eating, exercise, and self-acceptance. Making these changes may lead to weight loss, but this is not a weight loss group. We are focused on helping you promote healthy behaviors that you and your children can sustain throughout your lives.

• What are your biggest concerns about these issues for your family?

Try to facilitate discussion and include the following points if not raised by participants.

• We do know, from research, that overweight children are very likely to become obese adults and to have health problems associated with obesity, such as Type II Diabetes, high blood pressure, and asthma.

• And kids who are overweight are more likely than others to have lower self-esteem.
• Many parents have a hard time watching their children struggle with their weight. It is common for parents to blame themselves for the situation and feel helpless.

• Research and our previous experience in these groups tell us that parents with overweight children also frequently say that they feel:
  
  • Blamed and criticized for their child being overweight
  • Guilt, anger, and frustration because they don’t know how to help their child lose weight
  • Pressure and judgment from others if their child fails to lose weight

• These feelings can be triggered by family, friends, and health professionals.

• Do any of you experience similar feelings? In what settings? How do you deal with them? How does it affect how you view your overweight child, yourself, and the efforts you are making?

**Leaders: Empathize with these feelings through reflection and processing. Our goal is to eventually challenge the thoughts behind these feelings and encourage a balanced view of health behaviors, body image, etc.

TOXIC ENVIRONMENT

• Part of what makes parenting so difficult these days is that there are a lot of things in our environment that make it very challenging to maintain a healthy lifestyle. We live in what is often called a “toxic environment” which means that there are numerous environmental influences that make it challenging for everyone in our society to eat healthy and stay active.

• What do you see as the “toxic” things in our environment that contribute to overweight and obesity problems? **Give group a chance to respond.**

• As you’ve noted (if applicable)--Some characteristics of the “Toxic Environment” include:

  1. Food Choices
     
     Unhealthy Foods
     
     Healthy Foods
     
     Highly accessible
     
     Less accessible
     
     Convenient
     
     Less convenient
Tasty  Worse tasting (?)
Heavily advertised  Not advertised
Inexpensive  More expensive

Greater accessibility and low cost of unhealthy food choices

- Research shows that people eat foods that are most easily accessible.
- Children tend to eat the foods that are most familiar to them.
- What foods are most accessible in your home?
- What influences your decision to purchase one food over another? (e.g., shelf life, cost, reactions from family?)

2. Eating more meals out
- 50% of meals eaten outside of the home are at fast food restaurants
- 5.8 million people eat fast food every day
- Restaurant foods are higher in calories and fat
- When it comes to choosing foods to eat, at times it can seem easier to make an unhealthy choice. Why do you think unhealthy foods are chosen more often? What makes these foods so popular?

3. Increased portion sizes
   - Both children and adults eat more food when served larger portions, even if they’re not really hungry

4. Decreased activity (e.g., computer, video games)
   - When we’re less active, we eat more, we burn less calories because we’re sitting for a long time, and we miss out on opportunities to be more active. So, it is not surprising that the increases in TV, video game and internet use are all associated with the increase in overweight in the U.S.

5. Media (e.g., advertisements for unhealthy foods)
   - What is the biggest challenge related to the toxic environment in your life?

Facilitate brief discussion.

Role Modeling

- So, with all of these factors related to the “toxic environment” working against us, let’s talk about how you as parents can fight back.

- There really is a lot you can do as parents to help your children. Despite all the other influences in the world, parents really are the most important people in young children’s
lives. When it comes to healthy eating and exercise, you are your children’s most important role models. That is one reason why we included the term “role modeling” in the NOURISH+ title.

- We know from years of research that what parents do when it comes to eating and exercise is even more important than what they say. Have you noticed this to be true (generate discussion; review examples if necessary)? What are some ways you think you could be a healthy role-model for your children?

- For example, we know that:
  - Parents who exercise are much more likely to have active children.
  - The best predictor of children's fruit and vegetable consumption is their parent’s fruit and vegetable consumption (not how much parents encourage their children to eat fruits and veggies).
  - Eating and activity habits developed by adolescence are typically continued in adulthood.

- The health benefits of nutritious diet and exercise are most helpful when these habits begin by adolescence; that’s why we are targeting children your kids’ ages.

- When you think about yourself as a role model of healthy eating and exercise for your children, what things do you feel like you are doing pretty well?

- What are your challenges or barriers as a role model of healthy eating and exercise for your kid(s)?

**Barriers, Goals, and Problem-solving**

- Some of you have already mentioned barriers you face with helping your family be healthier (if true). Let’s take a few minutes to go around and identify the biggest challenge we each face and think about how we can start working on this in the upcoming week (e.g., competing values-homework, meals, bedtime routines, schedules, picky eaters, etc). Facilitate a discussion to begin problem-solving for each person. Identify one step they could take in the upcoming week to make a small improvement towards their goal. Remind that we will be addressing a lot of these barriers in greater detail in future sessions. Also, this discussion can be fluid throughout the entire session as barriers arise for participants.

**WEEKLY GOALS**
• We encourage setting weekly goals. We would like you to make an individual goal each week. We do this because we think you will get the most out of the group by working on the skills we discuss during our meetings in your daily life.

• We will ask everyone to share something about their goals each week. We all learn from finding out about what strategies have helped others. We also can learn from what others have struggled with, as we may have similar concerns.

1. **Individual goal.** On this page in your notebook are some examples of goals that people in this group have set in the past. Feel free to use one of these or come up with your own. Have participants write down in notebook. Also, group leaders take notes in order to check in next week on goals.

• Have participants share individual goal and a leader take notes of goals to check in next week. Help participants ensure goals are realistic, clear, measurable. Give examples if needed.

*Thank you all for attending and we look forward to seeing you again next week at the grocery store! You can still bring your children for child care in this building.*
Session 2
Grocery Store Tour

No script for leaders
Session 3

Increasing Physical Activity and Reducing Barriers

GOALS

1. Discuss the importance of regular physical activity
2. Discuss how parents are role models of activity for children
3. Discuss how to talk to children about being active in a healthy way (without shaming).
4. Discuss physical activity guidelines (including appropriate frequency, intensity, time and progression)
5. Identify barriers to regular physical activity and how to promote increased physical activity in children and adults
6. Discuss the increasingly sedentary lifestyle of adults and children and how this impacts health
7. Introduce the concept of lifestyle physical activity
8. Identify strategies to help incorporate lifestyle physical activity into your family’s daily schedule
9. Discuss how to minimize a sedentary lifestyle in you and your child
10. Complete a scheduling activity and make “exercise appointments.”

- I’m sure you already know a lot about physical activity. What are some of the benefits of physical activity for adults and children? **Allow time for responses and then summarize.**
  - increased life expectancy
  - helps reach or maintain a healthy weight
  - lower risk of heart disease, diabetes and some cancers
  - stronger bones and greater muscle strength
  - overall physical, psychological and social benefits, such as have more self-confidence, higher self-esteem, and better mood
  - active children are more likely to become active adults
  - reduce your blood pressure
  - increase your HDL ("good") cholesterol

**BRIEFLY REVIEW GUIDELINES (5 minutes):**

- **So, how much physical activity should we all get? Take a look at this handout for children.** Distribute “Physical Activity Guidelines” handout.
- As you can see, children and teenagers should get at least 60 minutes of physical activity most, preferably all days of the week.
• Of course, children’s exercise doesn’t look the same as adults’ exercise. For kids, this may include playing outside for 30-45 minutes after school, plus some activity at school during recess, plus maybe walking to and from school.

• Do you have any other thoughts about how you could increase your children’s activity levels? Help them understand that we’re not trying to put their kids on a treadmill. Emphasize making it fun, playful, and natural.

• On the handout, you’ll also see that adults should get at least 30 minutes of moderately intense physical activity, preferably all days of the week.

• Above the recommendations you will see some examples of what exercises qualify as moderate or vigorous. For example, walking is a moderate activity, while race walking or running is a vigorous activity.
  
  ☐ We also have included information for the “talk test” which can help you figure out your exercise intensity level. As you look over this information, do you have any questions?

• We are also giving you a Physical Activity Pyramid (distribute “Physical Activity Pyramid”) with some ideas for how much of the different activities adults need, including strength and flexibility training.

• Despite the known benefits of and recommended guidelines for physical activity, most Americans are still sedentary, or inactive.

• There are a lot more opportunities to be inactive now than there used to be. As a result, children and adults are less healthy (e.g., decreased cardiovascular fitness).

• Obviously, when we’re sitting down, we’re not being active. And, over a whole day, all of the small things we do add up to help move us closer or farther away from being healthy. This can be good and bad news because small changes, such as engaging in lifestyle activities, can make a big impact.

LIFESTYLE ACTIVITIES (10 minutes)

• Have you heard of the term “lifestyle activity”? If so, what do you think this means? If not said, review: Lifestyle activities are ways to incorporate physical activity
into your daily routine. Lifestyle physical activity includes leisure, job, or household-related activities that are part of your daily life.

- Did you know that lifestyle activity can have health benefits, such as weight loss and cardiovascular fitness?

- Plus, lifestyle activity does not require any special equipment.

- Finally, lifestyle activities can become a part of your daily routine fairly easily because they do not have to happen all at one time, but instead can fit into what you’re already doing each day.

- What are some examples? Review as needed:
  - Taking the stairs.
  - Walking to a co-worker’s office instead of calling/e-mailing.
  - Parking your car further away from your destination.
  - Playing with your kids.
  - Walking the dog.
  - Doing yard work (e.g., raking).
  - Vacuuming, dusting, etc.
  - Hiding the TV remote and get up to change channels.

**ACTIVITY (15 minutes)**

- Now, here is a list of some more of these ideas. **Distribute “Lifestyle Activities” handout.** Let’s take a few minutes and each place a check next to the things you are already doing and a star next to3 things you could try on your own and/or with your family. Also, feel free to add other ideas that aren’t on the list.

  - After a few minutes, ask: What are you already doing? What are some of the new things you think you could try?

  - How easy or difficult will it be to start doing some of these in the next week?

**ACTIVITY: BARRIERS TO PHYSICAL ACTIVITY (20 minutes)**

- We are not collecting these quizzes, but we want you to use them to better understand what your biggest barriers to exercise are.
Handout the “Barriers to Exercise Quiz” to help participants recognize their biggest barriers. Give them a few minutes to complete on their own. Then reconvene the group and discuss:

- According to the quiz, what are your biggest barriers to physical activity? Review list if necessary.
  - Not enough time (too busy!!!!)
  - No place to exercise
  - Inconvenience
  - Don’t like exercising
  - Lack motivation
  - Have an injury or pain issue
  - Don’t have anyone to exercise with

Summarize discussion:

- Sounds like you all have a lot of common barriers to exercise. It can be really challenging to fit yet another thing into your packed schedules. But, as we’ve discussed, it is a really important thing to do for yourself (use participants’ words here to refer to how physical activity fits with values).

- Finally, if you show your child that this is an activity that is a priority for you, you are increasing the chances that she will see it as a priority as well, and become an active person for life.

- What is it like to think about exercise in this way? Have you ever thought of it this way before? Try to communicate that it is both a self-care and role modeling activity.

ACTIVITY: PHYSICAL ACTIVITY SCHEDULE (10 minutes)

It sounds like all of you are making efforts towards being more active on a regular basis (if true). One thing that can often make it difficult for people to meet their exercise goals is a lack of time.

- One strategy that can help with this is to make exercise appointments with yourself.
- It can be challenging to think of a time when you can fit in exercise.
- Sometimes seeing our whole schedule in front of us reminds us that, yes, we can fit this in.

- Make a schedule of one day out of the week. Be sure it is a day that is relatively consistent week-to-week, usually a week day. Make sure you include work, child care, and all other regular activities. Distribute “Physical Activity Schedule” handout.
  - Then, identify times when you could exercise.
  - Remember you want your total exercise time to equal at least 30 minutes, five
times a week.
  o If it works better for you, some of these 30 minute blocks can be broken up into smaller blocks (e.g., two 15 minute walks). **Wait for group to complete the schedule.**
  o Consider this a priority. You wouldn’t cancel other appointments on your schedule without rescheduling them or without a really important reason.
  o Try to consider these exercise appointments just as important as others.
  o Make it realistic (e.g., if you are not a morning person, don’t schedule physical activity at 5:30 AM).
  o Try to include your whole family as much as possible.
  o What is it like to think about exercise as an actual appointment, something you include in your schedule?
  o Use this schedule as a way to role model consistent exercising as an important part of self-care.
    ▪ Have you noticed that your involvement in activity influences your child’s activity level?

  ▪ Summarize participants’ responses and include the following if not mentioned:
    • Parents are extremely important role models for their children’s activity patterns
    • Parents who exercise are much more likely to have active children.
    • Their children are also more likely to stay active as they grow up.
    • Saying it isn’t enough; your children will follow your actions.

**BARRIERS TO PHYSICAL ACTIVITY: REDUCING SCREEN TIME**

• As mentioned, too much “screen time” is a barrier to exercise for both children and adults. Is this something that you have noticed in your family? Is it something you’d like to change?

• **What are some ideas for reducing “screen time?”** Have them brainstorm and suggest the following if not mentioned:
  o Limit TV, video game, computer use to 2 hours
  o Put a timer on the TV, video game, computer systems (even an egg timer)

• This will be challenging at first. Your children may become upset and bored, and come to you for something else to do. Remember, although you can give them some ideas, you are not a one-person entertainment committee. Kids are more creative when they have unstructured time that doesn’t involve television. **Note that most of their child’s day is structured.**
Ok, so you’ve all come up with some really great ideas.

CHANGING BEHAVIORS WITHOUT USING GUILT OR SHAMING (15 minutes)

- It is important that you talk to your children about these behavior changes (e.g., setting limits on watching TV); otherwise, they might view them as punishment.

- First, try to make the other options (e.g., family activities) sound as exciting as watching TV or playing video games. Give examples.

- However, talking to people about changing their eating and exercise habits can be difficult and uncomfortable. This can be especially true for children because they are more likely to be sensitive/vulnerable and look to their parents for approval.

- There are ways that these conversations can be approached that can make children feel good about themselves and making changes, and there are ways in which these conversations could be more difficult for children to hear.

  - For example, suppose I’m a mom, and I say: “Trevon, if you don’t stop playing video games so much you’ll never lose weight.”

- What do you think might be a problem with this approach? Note that it could make the child feel badly about what he’s doing, but doesn’t help him come up with alternatives.

- What other ways could this be approached? Ask group for ideas and then suggest the following:

  - “Trevon, let’s [go for a walk tonight/play kickball/basketball/tag/check on the garden] after dinner. I want to hear all about how your XX class went today.”

- If the child doesn’t seem interested, talk about the limits you have decided to set and reiterate why you are doing this.
“I really want us to spend more time together as a family. When we watch TV, we don’t really get to talk to each other. Also, it would give us both a chance to be outside after a long day. Sitting so much all the time is not as healthy as getting up and doing something more active. Plus, I really do want to hear more about your day.”

- What do you think about this example? Think about how you might personalize this for your family.

- Have ever talked about this with your child? How did it go?

- So, as you can see from the example, it is really important to talk to your children about being healthy and strong, not losing weight, and to talk about re-connecting with them emotionally. Try to personalize a definition of “healthy” for your child, based on the things they like to do and what is important to them (e.g., hitting the ball further, running faster, jumping higher, etc.).

- When you do an activity together, it’s about a lot more than burning calories. It’s about maintaining and increasing your connection with each other.

- We have some other ideas to promote healthy physical activity attitudes to look over. Distribute “Promoting Healthy Exercise Activities” handout.

- Ask participants: “What other things could you say to your children to promote these positive attitudes and behaviors?”

  - Make activities fun and talk about physical activity in a positive way (not dreaded). “I had a lot of fun walking tonight.”
  - Involve the whole family in exercise, not just the overweight child. “Let’s all play kick ball outside together.”
  - Not every kid is an athlete, but it is important that everyone is physically active. Make sure your child knows they don’t have to be a superstar athlete to be active. Find ways to involve kids in regular activities that are fun even if not part of an organized sports team.
  - Be a good role model. Be proud of how your body is getting stronger through physical activity instead of focusing on your physical flaws. “Every time I exercise, I feel like I can go a little bit longer without getting tired.”
• Focus on feeling good about what your body can do, not on what it looks like or performance. “I’m so happy that I have more energy and feel less tired since we’ve been walking every day.”
• Model regular and healthy exercise routines.
• Focus on the fun of sports instead of pressuring your child to excel. “You seemed to have a great time playing basketball today.”
• Give your child lots of encouragement and praise. “You’re working very hard at running fast.”
• Teach kids to be proud of the challenges they’ve faced, and not just the trophies they’ve won. “Even though you didn’t come in first place, you were brave enough to try and you gave it your best shot.”

Goals
Session 4 – Emotional and Mindful Eating

GOALS

1. Discuss why emotional eating is problematic.
2. Discuss how to identify triggers that cause people to eat in response to negative emotions (parents can also identify these behaviors in children).
3. Discuss what can be done to combat emotional eating and discuss alternative means to deal with negative emotions.
4. Introduce mindful eating as a control strategy.

EMOTIONAL EATING [15 minutes]

Distribute “Session 4 Key Points” handout.

- Today we are going to talk about emotional eating. What do you think the term “emotional eating” means? Generate discussion. Try to pull the ideas below from the group’s comments.

- As several of you have mentioned (if appropriate), sometimes we eat because we feel badly, like when we’re stressed, angry, frustrated, lonely, or bored.

- Emotional eating can also happen when we feel happy or excited and we want to reward ourselves or feel like we deserve a treat.

- What makes this type of eating different from the rest is that we are not eating because we are physically hungry. Instead, we are eating to address an emotional need.

- Can any of you relate? Wait for responses; be nonjudgmental, nonblaming, and empathic.

- What kinds of foods do we tend to eat in these situations? Wait for group to respond; note similarities, and then if not explicitly noted already, sum up by saying: We often eat what we feel are our own “comfort foods.”

- What are your comfort foods? Do you have a sense of what your child’s comfort foods are? Give each person a chance to respond.
The foods you’ve all mentioned are a lot people’s comfort foods. We have positive memories associated with them (like birthdays, holidays, etc.). They taste really good, and we may have a habit of eating them at certain times. But, the downside is that these foods typically are high in fat and calories and low in nutrients. There’s nothing wrong with having some of these foods sometimes. Also, sometimes, it can be a fun and ok thing to eat because you’re celebrating.

But, when do you think emotional eating or comforting yourself with food might be a problem? Discuss as a group. Try to note that emotional eating is a problem if it occurs so often that people start to lose awareness of when they’re actually physically hungry or whether they’re just eating for emotional reasons.

IDENTIFYING YOUR TRIGGERS [15 minutes]

What triggers your emotional eating? How about your child’s? Facilitate discussion.

As you all mentioned, sometimes we eat in response to negative emotions and other times we eat because we are happy.

Sometimes it is difficult to determine what triggers negative or positive emotional eating.

However, if you can learn to identify your triggers, you can make more active choices about whether or not you want to eat in a certain situation.

We all will eat sometimes for reasons other than physical hunger (e.g., a birthday party, Thanksgiving).

But, we will feel best and be healthiest if we eat in response to physical hunger most of the time.

AN INTRODUCTION TO MINDFUL EATING [25 minutes]

One way to decrease emotional eating is to eat more mindfully. Is anyone familiar with the concept of “eating mindfully?” Wait for response.

That’s right (if applicable)! Mindful eating is eating with awareness. It is awareness of when you are hungry, when you are full, and of what you truly want to eat.
Group Discussion:

- So why is mindful eating so difficult? Why don’t we eat mindfully a lot of the time?

Discuss each of these if not brought up:

- We’re too busy—multitasking
- We’re taught to “clean our plates,” and “not waste.”
- Portion sizes are way too big
- We use food for non-nutritive reasons, like rewarding ourselves.
- We’ve been eating this way for so long, we’re not even sure when we’re hungry or full.
- We eat too fast to recognize fullness.

- Let’s do a couple activities that focus on mindful eating.

I. First, we’ll start with the “Basic Mindful Bite.” All the other strategies will build on this one. Have each participant choose 1 craisin [preferably, a solid food with some texture that needs to be chewed a few times. This also works well with junior mints, resee’s cups, or dried mangos]. Read these directions aloud as participants mindfully eat the craisin.

- Pick up the craisin and hold it in two or three fingers.

- As you bring the craisin to your mouth, slow down and become aware of how you’re moving.

- Put the food in your mouth and hold it there. Then, clear your hands. Put any remaining food down.

- Chew this bite with your mind in laser-sharp focus on the process. Concentrate on the taste of the food and the movement of eating. Don’t do anything else while you’re chewing.

- Simply chew and pay attention. Keep chewing until the food is uniformly smooth. Use this consistency of the food as a signal to swallow.

- After you swallow, but before you bring more food to your mouth, rest for a few seconds, inserting a pause into your eating.
What did you notice about this basic mindful bite? Generate discussion.

2. Next, we’ll learn how to “Arrive” at food. This is a strategy that prepares you to eat, so don’t eat the food in front of you. Have each participant choose their food for the next strategy (1 chocolate truffle or candy works best—something that can be smelled and that melts).

- When you arrive at food, you become aware before a meal or snack that food has come into your personal space. Some people do this when they eat with their families, like if they say grace or wait for someone to cut the meat or serve food to everyone.

- Food is so abundant in our society that we’re scarcely aware of it. We can be eating and not even know that we’ve made a choice to eat.

- Getting in a “mindful” state, even before a meal begins, helps you to slow down, appreciate your food more, and eat only what you really need.

- Before you begin eating any meal or snack, become silent for 30 seconds.

  During this time:
  - Take a close look at the food. Notice colors, shapes and arrangements.
  - Name to yourself all the foods you see.
  - Notice textures.
  - Smell the food and enjoy the aromas.
  - Imagine yourself eating each food attentively and on purpose.

- This process sets the stage for you to continue your mindfulness during your eating.

- What did you notice when you were preparing yourself to eat? Generate discussion.

3. Our third strategy is called “Awakening.” For this technique, we’ll use the [chocolate truffle] you already have in front of you (same food as #2).

- Awakening to food means that we pay attention to all aspects of the food—things we usually take for granted, like taste, change of flavors, texture, and aromas.

- Unwrap the chocolate. Pick it up and feel the chocolate in your fingers. Notice if it melts slightly.
• Before eating the chocolate, look at it. Notice its shape, color, shading, texture. Smell the chocolate and enjoy its aroma.

• Imagine yourself eating this chip in a mindful way.

• Now, eat this chocolate with basic mindfulness. Take your time and be aware of each chew.
  
  o Notice the flavor; chew it slowly and carefully. Pay attention to the tastes you experience. Notice the chocolate flavor.

  o Notice the texture and pay attention to how it changes. What was the texture when you first put it in your mouth? How did it change? Notice how your chewing creates new edges, new textures. Chew slowly and thoroughly.

  o Listen to how it sounds. Chewing creates noises. Hear the sound of chewing and how that sound changes. Even when the food is thoroughly chewed, there is still some sound.

  o Keep chewing until it’s completely chewed up, and then swallow.

  o Notice the aftertaste. Is there any texture left?

• There is a lot to pay attention to, isn’t there? Let’s try the “Awakening” strategy again with craisins, try to pay attention to something different than you did with the chocolate. Have each participant take 3 more craisins (or another chocolate).

• What did you notice when you were “Awakening” to food? **Generate discussion. Make sure to cover, focusing on food (not body):**
  
  o Sight
  o Taste/ flavor
  o Texture
  o Chewing
  o Sound
4. Our final strategy is "Tuning In." Have participants pick up a dixie-cup full of chex mix [other foods that work are chips, dry cereal, or pirate booty popcorn].

- Tuning in refers to paying attention to your body as you eat. When you tune in, you will notice the movement of muscles, limbs, fingers, lips, teeth, and tongue. You will notice your levels of hunger and fullness. You will also be in touch with need for food and when you can stop eating.

- When you tune in, you take basic mindful bites. This means that your mouth is completely clean before you take the next bite.

- For this strategy, we’re going to take five bites, so make sure you have enough food!

- The first bite is a normal sized bite. Count the number of times you chew.

- The second bite is a small bite. Make it smaller than the bite you would usually take. Remember, this is a mindful bite. Notice the bite before you eat it, notice the process of eating and swallowing.

- The third bite is a large bite. Make it larger than the bite you would normally take. Again, this is a mindful bite. Did the larger bite taste different? What else did you notice? Generate discussion. Focus on the body (and the food to a lesser extent).

- The fourth bite should be a normal size, but is a fast bite. Chew it twice as fast as you normally chew.

- The fifth bite is also a normal size, but is a slow bite. Chew it twice as slowly as you normally chew. Did the slower bite taste different? Feel different? What else did you notice? Generate discussion. Focus on the body (and the food to a lesser extent).

- Summarize: Remember, tuning in is about paying attention to your body as you eat. What did you notice about the movement of muscles, limbs, fingers, lips, teeth, and tongue? What did you notice about hunger or fullness? Wanting to continue or stop eating? Generate discussion (if not covered already). Focus on the body (only).

AVOIDING EMOTIONAL EATING [10 minutes]
Now that we’ve all practiced eating more mindfully, let’s spend some time talking about the other specific steps you can take to avoid emotional eating and increase mindful eating.

Group Discussion: Distribute “Strategies for Eating Mindfully” handout. Review each item on list with group and generate discussion of ideas. Ask group if they can think of any other ideas.

Additional Group Discussion:
- What are your reactions to mindful eating?
- Will you be able to implement these strategies while eating?
- Do you think your children will be able to learn these strategies?
- What do you think you could do to help your child eat more mindfully?

Some ideas:

1. Talk to your child about what is causing his/her negative emotions. Find something for them to do alone or with you to make them feel better.
2. Teach children to respond to negative emotions in more adaptive ways, (eg., take a walk, read, etc.)
3. Limit access to junk foods. Remember, children will only eat what is available to them.
Session 5
Helping Your Child Develop a Healthy Relationship with Food

GOALS

1. Describe parenting styles (passive, authoritarian, authoritative)
2. Discuss the advantages and disadvantages of each parenting style
3. Have participants examine their own parenting techniques
4. To present mothers with information on avoiding power struggles over eating; managing junk foods, and making family meals a priority.
5. Discuss normal child eating behaviors
6. Discuss strategies to promote healthful eating in children and regular family meals.

PARENTING STYLES [15 minutes]

- In today’s session we will be talking about the 3 most common parenting styles, or the way you relate to your child.
- Few parents fit neatly into one style, but most parents tend to use one style more often than the others.
- The goal of today is to discuss how to set boundaries with your children while also giving them freedom and choices. Relate this goal to examples parents have mentioned in previous sessions.

- Authoritarian Parenting
  - Think about this example. Jordon is 7 and overweight. The rule in her house is that she may have 1 snack after school. One day, Jordon has an extra snack. Her mom yelled at her. The next day, she didn’t eat her vegetables at dinner. Her mom was very angry and said, “no dessert for you this week!” A few days later, Jordon was at her friend’s house and was offered some cookies. Jordon told her friend how mad her mom would be if she ate some. Jordon’s friend said “Why don’t you just eat some and not tell your mom?” Jordon thought this was a good idea.
  - What are your immediate thoughts about this situation? Discuss briefly.
  - The parenting style used in the example is usually called “authoritarian parenting.”
  - It may be easier to remember it as the “giving orders” style. Parents who use this style are very strict, make a lot of rules, and expect children to follow rules perfectly at all times.
    - Point out that the punishment for not eating vegetables was extreme (e.g., a whole week with no dessert).
    - She used yelling immediately for something relatively minor.
    - Make sure the group understands the extremeness involved in authoritarian parenting.
What are the advantages and disadvantages of this strategy? What do children learn in this approach?

Generate discussion about the advantages and disadvantages of an authoritarian style of parenting.
- **Advantages:** Children may listen and follow the rules, especially in the short run.
- **Disadvantages:** Rules are followed to avoid conflict or punishment. Over time, children may fear and/or resent the parent, lose trust in parent, and rebel against the restrictive parent. Also, they may not learn to think for themselves and instead turn to others (peers, media, etc) for guidance which isn’t always safe. If children are yelled at or hit instead of spoken to with calm words, they learn that this is the way to solve problems with others as well.
- **Bottom line:** This style doesn’t build trust and doesn’t offer choices/freedom.

Show empathy and validate authoritarian moments that parents share.

We want to emphasize that we all have “giving orders” or authoritarian moments. It is difficult to be a parent, and sometimes, the only thing that will get your child to behave is a specific, clear rule. All parents act authoritarian sometimes.

Parents concerned about their child’s health, may feel an even greater urgency to find a quick solution and respond immediately.

It can be hard to realize that this approach actually wastes a lot of time in the long run and may damage your relationship with your child.

- **Permissive/Passive parenting**
  
  Now here’s another example. Imagine that your child asks you for a candy bar while you’re cooking dinner. You refuse but she starts crying so you let her have it.

  This is the “giving in” style and is technically referred to as permissive or passive parenting.

  Parents who use this style show a lot of emotional warmth, but set few limits and/or often change the limits they set.

  Parents may be concerned that if they express limits, they could damage their relationship with their child or make the child feel badly about him/herself. Setting limits can be particularly difficult with eating and exercise.

  What are the pros and cons of the permissive style of parenting?
Group leaders facilitate discussion about the pros and cons of a permissive parenting style. Highlight that freedom without limits often results in problems for everyone. Children with no limits have trouble learning responsibility and interacting with others (e.g., following rules at school). Having limits helps children learn how to make choices.

Validate permissive/passive moments

All parents have permissive moments. When we are tired or uncertain, we may choose the path of least resistance.

- Sometimes people may also fall into this parenting style if they are in a public place and don’t want their child to throw a huge tantrum in front of everyone.
- Using this approach sometimes is okay. We love our children and want them to be happy, so saying “no” can be difficult.
- But, like the authoritarian parenting style, over-relying on this approach can result in long term problems.

Authoritative parenting: the NOURISH+ approach

Here’s one more situation. Your son Trey wants to play video games with his friend Friday afternoon for a couple hours. He also wants to go to a movie later that night. Your family rule is 1 hour of screen time during the week and 2 hours on the weekend. You say, “It’s really nice to spend time with friends, but four hours of videos and movies is too much. You may either play video games or go see a movie. You choose.”

This is the “giving choices” approach or formally called authoritative parenting.

It balances freedom and limits. Parents set limits and allow children to make choices within those limits.

- They encourage children to make some (age-appropriate) decisions alone. This parenting style shows warmth, firmness, precise communication of expectations, and consistency in the implementation of rules and consequences.
- Also, providing children with some choices helps them learn how to make decisions and deal with their consequences. Like adults, young children feel better when they have more of a say in what happens to them.

Most importantly, parents show love and acceptance and avoid provoking shame or guilt when children make mistakes. This style is what we aim for most of the time.

Let’s take a few minutes to more closely examine our own parenting styles. Review “Parenting Style Discussion Questions” handout as a group.

FOOD REGULATION
Children generally react negatively to new foods but will usually accept them with time and experience. It can take between 10-20 times before they accept it. **Note that this doesn’t mean child needs to actually TASTE it each time. Simply being exposed to it and seeing others eat it is enough.**

So, don’t stop trying to offer your child a new food after a few attempts! If you limit your child’s diet to only those foods that she readily accepts, she likely will not get enough nutritional variety.

Parents can help this process along by continuously exposing children to a variety of foods; encouraging them to try the foods, without pressuring them to finish it all or eat more of it than they want.

Start them off with small portions. Especially at first, it doesn’t matter how much of a new food your child tries. The point is that she tried it. Reinforce small steps.

Another strategy that often works is to encourage your child to try a new food at the beginning of the meal. That way, it’s not the last taste she has in her mouth (especially if she doesn’t like it). Also, you’re not fighting over it during the entire meal and the meal doesn’t become about trying that new food.

Remember, limiting the menu to the few foods your child likes puts the least-capable person in charge of the family’s nutrition!

*In particular, the issue of what to do with a child who refuses consistently to try a new food is likely to arise. (In this case, alternative strategies could include: mixing it with another food or condiment that the child likes; role modeling eating it; once they take a bite, feel free to take the rest of the portion off the plate).*

**RESTRICTION**

- In addition to having concerns about getting their children to eat more of certain foods (in particular, those high in nutritional value), many parents are concerned about how much “junk foods” their children are eating.

- To deal with this concern, some parents severely limit their children’s intake of these foods, or even prohibit them from eating them under any circumstances. How do kids respond to this type of restriction?
• **It is particularly important to allow children to have a variety of foods.** No food, even junk food, should be completely off limits. If children are not allowed to eat a food, they are more likely to:

  ▪ Become preoccupied with the food.
  ▪ Overeat and sneak eat they get a chance.
  ▪ Not learn how to self-regulate their food intake.
  ▪ On the other hand, if you let them eat these foods all the time, they will be missing out on nutritious foods and a balanced diet.

• **All foods can fit, in moderation.** By giving your child the opportunity to eat a variety of foods, you help her learn skills for tuning in to her sense of fullness, even when dealing with so called “junk foods."

• **Ironically, studies of children’s weight gain often find that it increases after their diets are restricted.**

• A classic study in this area looked at a group of preschoolers. After lunch, the preschoolers were offered the opportunity to eat as much of what most of us would probably think of as “junk foods” as they wanted.

  ▪ What they found was the kids who ate the largest amount of the junk foods were those whose mothers restricted their intake of these foods the most. FYI…Fathers weren’t assessed in this study; but subsequent studies have found that fathers’ influence is very important as well.

• **What do you think about these findings?** Promote discussion if necessary.

• **This story really struck a chord in us, because we see a lot of children who “sneak eat” candy or other snack foods when they are away from home, because these foods are not allowed, or are very restricted, in their homes.** What do you think about this issue?

• **Sum up as appropriate:** Basically, what we know is that if children don’t know when they’re going to be fed (that is, if meal and snack times are inconsistent), or they don’t know if they will be able to eat all they want of a given food, they will overeat when they have a chance.

• **If there is a forbidden food available, they’ll eat a lot of it because they don’t know when or if they’ll ever get it again.**
• So, it is key to make no foods off-limits, but to balance this by only allowing eating to occur at set and consistent times.

PRESSURE TO EAT

• Another common mealtime issue is that many parents grew up being members of the “clean plate club” and find it difficult to support their children’s own decision-making process about how much food is enough.

• Children who are forced to eat lose awareness of their sense of hunger and fullness; they lose the ability to eat mindfully.

• Were any of you members of the clean plate club? How have you addressed this issue with your children?

• Now let’s talk about using food as a reward. Everyone does this sometimes, but when it becomes a pattern, that can be a problem.
  o The foods that we tend to use as rewards are already rewarding (e.g., ice cream).
  o When we use them as rewards, they become even more special and desirable in the eyes of your children.
  o And, the strategy backfires when the special food is used as a bribe because the food you want your child to eat becomes less desirable.

• Try to remember the strategies we talked about to encourage your child to try a new food and try to think of other ways to reward your child and yourself at special times. What are some other ways you reward your child?

FAMILY MEALS (35 minutes)

• Now let’s shift from talking about eating in general to focusing on the actual experiences of mealtimes.

• It is important that parents make the timing of family meals and snacks predictable and a priority. This will help your child be secure in the fact that she will be fed; it’s not something for her to worry or even think about.

• One way to make mealtimes a priority is to make mealtimes special.
  o Set the table.
  o Give your full attention to your family at each meal.
  o Avoid multi-tasking (e.g., texting, talking on the phone, watching TV) at mealtimes. It is important for you to be fully engaged, and use this as a time to reconnect in a special way with your children.
Family meals will be memories that your children will have forever. Think about the family meal legacy that you are creating.

What childhood family mealtimes stand out the most in your mind? What do you want your kids to remember? Facilitate discussion. Try to get group members to highlight both things they liked and things they would want to change based on their own experiences.

Why do you think family meals are so important? Distribute “Family Meal Benefits” handout (5.3) and discuss. Note that mealtimes are about so much more than food. They communicate connection, love, and support.

How easy or difficult is it for your family to eat together most of the time? What makes it difficult? Try to review the following points if group doesn’t mention them. Empathize with the challenges involved in planning, preparing, and actually having consistent family meals.

Barriers to Family Mealtimes
- Not enough time—over-scheduling.
- Not having the right foods in the house.
- Feeling overwhelmed by the task of cooking after a long day.
- Everyone has a different opinion about what s/he wants to eat.

Activity: Family Meals Plan

What can you do to make family meals easier? We’re each going to make a plan for the week using this form. We’ll all help each other with ideas for planning your shopping trip and mapping out your meals for the week. Pass out “Family Shopping and Meal Planning” & “Family Meals Suggestions” handout and review with group.

It is important to remember that you can please all of the eaters some of the time. You can please some of the eaters all of the time. But you can’t please them all, all of the time.

Give up trying to get everyone to like everything in every meal. Rather, try always serving something that you know your children will eat even if they don’t want anything else—like bread—at each meal.

Do not force them to eat the other foods, but, also do not let them eat anything else outside of a regular meal or snack time.
Session 6
Promoting a Healthy Body Image and Dealing with Teasing

GOALS

1. Discuss how the media try to influence our perceptions of reality concerning appearance
2. Examine media influence in marketing to parents and children
3. Examine media influence in food marketing specifically
4. Discuss potential ways to start early to raise a media savvy child
5. Help parents become aware of how they feel about their own bodies.
6. Facilitate body self-acceptance
7. Stress importance of role modeling body acceptance to one’s children
8. Discuss how parents can promote healthy body image in children
9. Discuss weight-related teasing and its effects on children.
10. Identify some strategies for coping with teasing

WEEKLY GOALS REVIEW [10 minutes]

- Check-in about individual goals (refer to leader notes from last session on goals)

Here are some questions to stimulate discussion (select a few):

- After observing your own parenting style, what did you learn about where on the parenting continuum you fall?

- Did you notice situations where you could give your child more choices (within limits) than you do now? How did it go?

- Were you able to make your family’s mealtimes significant? How so? How did it feel?

- Were you able to establish regular snack times?

- What did you notice were your biggest barriers preventing you from having family meals as often as you would like? How did you begin to overcome these barriers?

BODY IMAGE (10 minutes)
• Now we want to transition to talk about the topic of body image. So far in this group, we’ve talked a lot about how you role model healthy eating and exercise to your children.

• However, we haven’t spent as much time talking about how you also model attitudes about weight, appearance, and your own body. Just like with eating and exercise, your kids hear how you talk about yourself and others’ appearance.

• Our society promotes an “ideal body type.” What messages do we get about how the “perfect woman” should look? (i.e. thin, but curvy in the right places, and attractive; have a perfect body; look like the girls in music videos, white and straight teeth, bigger lips, long and relaxed hair, tan or not really dark skin tone)

• Your own ideal body type can be influenced by the family you grew up in, your culture, age, and many other factors.

• Now let’s think about your own body image. What Do YOU Say When You Look in the Mirror?

• Facilitate discussion about these messages briefly. Try to get a response from group first. Why do you think these ideas are important?

• Because, as we’ve talked about before, kids are sponges. If you are complaining about a part of your body, they will pick up on that, and it may affect how they feel about and take care of their own bodies.

IMPROVING YOUR BODY IMAGE

• Sometimes we can get into “thinking traps” which make us feel bad about our bodies. Examples of such thinking traps are:

  o Focusing all of your attention on the things about your appearance that you dislike, and paying much less attention to things about your appearance that you like.

  o Spending a lot of time thinking that you don’t like they way you look, and noticing only people who look the way you want to look, and compare yourself negatively.

  o Thinking that everything in your life would be better if you lost weight/had a flat stomach/had more curves in the right places, or putting things off until you reach that ideal weight/body type. Discuss.
Do you notice yourself doing any of these things?

- Obviously the reason we are talking about how you feel about your own body is because these feelings are communicated to your child both verbally and nonverbally. This is one of the most important factors influencing your child’s body image. In addition to modeling body acceptance, what else can you do to promote a healthy body image in your kids?

- Why do you think these behaviors might be a problem for kids’ body image? Try to generate discussion about each point. See if they can come up with any others.

- What can you do to break free from these traps?

- Distribute “Promote a Healthy Body Image in Your Children” handout. Generate discussion of each suggestion and see if participants can develop other suggestions.

THE MEDIA AND APPEARANCE (15 MINUTES)

- So we have been talking a lot today about different factors that influence both your own and your child’s attitude about body and appearance. We want to transition now to talk in more detail about how the media also affects how we view our body.

- Basically, we think it’s important that everyone realizes that the vast majority of images we see in the media are false or not realistic.

- A lot of us think that ‘we know better’ and that these images don’t bother us. However, there is a lot of evidence to suggest that the media have a bigger influence on us than we realize.

- We definitely don’t believe that the media causes eating or weight problems, but we do think that paying too much attention to false media images can certainly help trigger unhealthy eating behaviors and low self-esteem for some people.

- That’s one of the reasons why we think it’s so important to start early to help your children realize when they are being targets of advertising. It’s a skill that will help them throughout their lives.
FOOD MARKETING (10 MINUTES)

- There are several different areas where you and your children are bombarded by media influences. Now let’s talk for a little while about food marketing in particular.

- Food companies spend roughly $15 billion dollars per year marketing to American children. The budget for promoting healthy eating (i.e., the Five A Day campaign) was 9.55 million. Is that surprising to anyone?

- Some of this marketing is obvious, while some is not so obvious. Distribute “Food Marketing Tricks Aimed at Children.” This handout lists some examples. Go over handout and generate discussion. Are there any others you can think of?

- Here are some other examples of sneaky marketing techniques (review as time allows):
  - Food placement in super markets
  - Promise of weight loss (or help in achieving the perfect body), or looking more sexy consuming it; similarly, suggestions that the food is healthy when it may not actually be (e.g., snickers being a healthy option if you need something quick because it has peanuts in it); using celebrities to drive home these messages
  - Others include companies paying big bucks to have your favorite TV stars or reality TV personalities eat certain foods or use certain products on their TV show, popping up on Facebook and asking you if you want to be their friend, and encouraging you to go to their website for prizes
  - What’s even more disturbing is that advertisers have started to target people from specific racial and ethnic groups. Fast food companies, and other companies who sell high fat and high sugar foods, have been identified as specifically trying to get African American and Hispanic families to eat their food. Also, TV shows that are popular among African Americans run a greater number of food commercials than others, and they focus on low-cost, energy-dense, low-nutrition foods—snack foods which are full of salt, sugar and fat. Promote discussion about how it feels to be targeted in this way.

- Unfortunately, this stuff works. Food advertisements aimed at children increase how much they request those advertised foods and in general, calories and snacking go up. In fact, some people have suggested that new laws should be made to stop companies from being able to advertise unhealthy foods to youth.

HOW TO LAY THE FOUNDATION FOR RAISING A MEDIA SAVVY CHILD (10 MINUTES)
• Being aware of and critical of media advertising is the first step to developing immunity to the media’s distorted messages.

• Here are some strategies to use with your child:
  o Point out how unrealistic media images are. (Remember the video we just watched!)
  o Talk back to the TV (or magazine, etc.) when you see messages about beauty that are unrealistic or negative -- or turn it off!
  o Help your child distinguish between when one of their favorite characters is being entertaining and when he or she is being used to try to sell something. Children just see their favorite character—they can’t distinguish between when that character is on a show versus on a commercial. That is precisely why child-focused marketing is so effective!
  o Explain the marketing tricks that we talked about previously.
  o Teach your child that she has to become an ‘advertising spy’ (e.g., in the grocery store when are kids attracted to characters on juice bottles or cereal boxes)- on the lookout for people trying to trick her into buying something she doesn’t need.

• Here are some helpful ‘talking points’ that may be particularly useful as your children get older. Distribute “Talking to Your Child about Advertising” handout and discuss.

• While we’ve already talked about the fact that media images are everywhere, it is still a good idea to minimize your child’s media exposure. Here are some suggestions:
  o Reduce overall TV time and schedule times in advance.
  o Eliminate TV watching during meals and snacking.
  o Set media time limits (includes TV, internet, video games).
  o Choose media that are age-appropriate.
  o Keep TVs, video games, and computers out of children’s rooms.

• It’s OK, and even important, to give children ‘down time’ without any formal form of entertainment. This helps them develop their creativity as they grow. And for a great entertainment choice when you have the time, it’s always a good idea to read to your children!

WEIGHT STIGMATIZATION (10 minutes)

• As we have touched on, there are standards for how people should look in our society which are often unrealistic. We also want to talk about attitudes that are held toward people who are overweight or obese.
Every parent wants their kids to feel good about themselves. However, although you love and accept your child unconditionally, it can be difficult at times to help him feel good about his appearance, because, unfortunately, many people in our society still have negative attitudes about people who are overweight.

“Thin is in,” and there is real prejudice against overweight adults and children. We are not trying to pretend that these negative stereotypes don’t exist.

However, all of us need to decide if we want to believe these stereotypes, or if we want to think differently.

Just like you would not want your child to become racist or sexist, part of promoting a healthy body image in them is rejecting what is known as “fattism”, or negative stereotypes about overweight individuals.

Talk to your children in an age-appropriate way about fattism, just like you would talk to them about other forms of discrimination. Discuss with them why this is not consistent with your family’s values.

How might you address fattism in your everyday life with your kids?

Try to get group to generate examples. Here are a few if they get stuck:
  - speak up when someone else makes fattist comments, including family members
  - write complaint letters to TV programs or other media that present overweight people negatively.
  - be aware of how you talk about all people, both overweight and non-overweight; be careful not to express any stereotypes yourself (e.g., lazy, too skinny).

TEASING (10 minutes)

Fattism is everywhere, and often sets the stage for the teasing that so many overweight children experience.

Appearance is the #1 reason children are teased! Surveys have found that children are most commonly teased by their peers and their family.
• Family can include siblings, extended family (grandparents, cousins, aunts, uncles), and parents.

• Surveys have also found that children who are criticized about their weight by family and peers:
  o have negative attitudes toward sports
  o report lower physical activity levels
  o feel badly about themselves

• We know that parents want the best for their children. However, sometimes, parents aren’t sure what to do.

• As the examples on the handout show, teasing can be a very difficult experience for kids. But, we do know that children can learn coping strategies to manage teasing. That is what we are going to focus on today.

• The first step in helping your child manage experiences of teasing is to know if your child is actually being teased. Distribute “Signs of Teasing” handout.

• Take a couple of minutes to look over the signs and think about your child.

• Of course, children can sometimes show some of these signs without being teased. But, if you do see any of these signs in your child, it is important to talk to him or her about their experiences.

• After group has reviewed handout, try to generate discussion. Have any of you noticed any of these signs in your child? What has s/he told you about teasing s/he has experienced? If parents do not acknowledge that their kids have been teased, emphasize that most kids are teased eventually and these tips can be used to prepare them.

• It is heartbreaking for any parent to hear that his/her child has been teased. And, most of us don’t know what to do as a parent if our child is being teased or bullied because of his or her weight. Many parents feel so badly for their child that they either avoid discussing the issue or they become over-protective.
• However, although it can be so difficult to talk about this situation, parents need to talk to their child about the problem. Avoiding the issue or becoming over-protective may lead a child to believe that they deserve to be teased.

• As a parent, it is important to communicate to your child that teasing is never acceptable, regardless of whether the teasing is directed at appearance, weight, skin color, etc.

• It may be tempting to want to help your child lose weight, especially if you know that is the reason they are being teased, but doing so can be harmful and may make them feel bad about themselves.

• Remember: The child who is doing the teasing is the problem in this situation, not your child!

• So, when you do talk to your child about being teased, keep the issue of “weight loss” separate from the conversation about teasing. They are different issues with different solutions.

HELPING YOUR CHILD COPE (10 minutes)

• So now let’s focus on the best ways you can help your child cope with teasing so that it does not damage their self-esteem. The next handout reviews some things you can do to help your child.

• Distribute the “Steps Parents Can Take” handout. Give parents a minute or two to read, and then discuss each of the suggestions in detail. Get group to discuss what they think about these suggestions.

• It is also important to know specific strategies you can teach your children to help them respond effectively when they are teased. It is important to note that not all techniques work for every child. The goal is to fill your child’s toolbox with as many tools (or techniques) as you can, and hope they will find ones that work for them. The next handout discusses these.

• Distribute “Specific Strategies Kids Can Use to Manage Teasing” handout and allow the parents a few minutes to read it over. Remind the parents that rehearsing and role-playing teasing situations is important and comparable to any crisis situation (e.g., responding to a fire alarm). Often times when children are bullied, it feels like a crisis situation. Practicing these scenarios with your children will help them learn to respond in a safe and appropriate manner.

• This last handout gives you some additional ideas about how to manage teasing. Distribute “How to Talk to Your Child about Weight Bias” handout.

BRING THE GROUP TO A CLOSE (5 minutes)
We want you to know that we have really valued spending these sessions with all of you. This is a very special time in your lives, and we feel honoured to have gone through some part of it with you. So thank you for trusting us and allowing us to be a part of your group.
Appendix K

Leader Training Materials

NOURISH-C Group Leader Training

Overview of NOURISH-C

1. NOURISH-C versus previous programs

2. Describe group enrollment process
   - Caregivers of children aged 5-11
   - No weight criteria, designed for parents concerned about their children’s
     (over)weight
   - Caregivers must be at least 18 years old, live in the home with the enrolled child

3. Describe incentives
   - Caregivers will be compensated $20 for baseline assessment, $25 for post-
     intervention, and $30 for 3 month follow up

4. Describe group
   - 90 minutes
   - 15-20 caregivers, 2 group leaders
   - Snacks provided for adults

5. Review manual
   - Be flexible, make it interactive, and have fun!
   - Suggestions for preparing and splitting up co-leader roles

6. Administrative tasks
   Group Leader Responsibilities
   1. Arrive 15 minutes early before each session
   2. Meet with Jackie to go over how the session went, ask any questions
   3. Provide handouts to participants who missed session

   Jackie/undergrad assistant’s responsibilities
   1. Provide group leaders with manual, handouts
   2. Provide payment for participants
   3. Provide snacks for participants
   4. Conduct reminder calls for participants prior to session

3. Leading a Group versus Teaching a Class
1. Overview of Social Cognitive Theory/modeling

2. Review Working with Feelings handout

3. Difficult Group situations
   - Monopolizing Group Member
   - Oversharing group member
     - Contain!
     - Provide therapy referrals if necessary (see handout)
   - Silent Group Member

4. Next steps
   1. Recruitment
   2. Logistics – reserving meeting space, etc

5. Questions?
Working with Feelings
(adapted from Hill, 2009)

I. Reflections of Feelings
   a. Definition: statement that explicitly labels the client’s feelings
      i. Phrased tentatively, “You seem frustrated”
      ii. Or directly, “That made you frustrated”
   b. Emphasize the feeling OR the feeling and the reason for the feeling
      i. “You feel _____ because _____.”

II. Why Reflect Feelings?
   a. Help clients identify, clarify, and experience emotions on a deeper level
   b. Enables clients to better solve problems
   c. Opens clients up to new feelings & experiences
   d. Acceptance of emotion
   e. Enables behavioral change

III. Benefits of Reflecting
   a. Validates client’s experience
   b. Helps client identify and label emotions
   c. Clarification – when clients hear a reflection they can reexamine and assess

IV. Empathy
   a. If delivered appropriately a reflection of feeling can be an expression of empathy
   b. Can be unempathic if delivered inappropriately
   c. Other skills are at times more empathic
      i. E.g. challenging, noting discrepancies

V. How to Reflect Feelings
   a. Basic format
      i. “You feel _____”
      ii. “You feel ___ because ____”
   b. Stems
      i. “I wonder if you’re feeling ____?”
      ii. “Perhaps you feel ____”
   c. Gently and with empathy
   d. Reflect most salient emotions
   e. Match the intensity
   f. Focus on feelings in the moment
   g. Mirror client’s verbal and nonverbal communication
   h. Remain supportive and understanding
      i. Be “in the ballpark”

VI. Sources of Reflections
   a. Client’s expression of feelings
   b. Verbal content
c. Nonverbal behavior
d. Your own feelings – ask yourself how you might feel in that situation

VII. When to Focus on Feelings
   a. Lack of awareness of feelings is leading to unhealthy behavior
   b. When a client feels stuck and does not know what to say

VIII. Do Not Reflect If…
   a. The relationship is not strong
   b. Client feels emotionally overwhelmed
   c. Client is experiencing severe emotional crisis
   d. Client is not able to regulate emotions
   e. Client has a strong resistance
   f. There is not enough time to work through
   g. You are not experienced with emotionally distraught clients
   h. Provide referral sources for client to further explore their feelings in counseling

IX. Difficulties in Reflecting Feelings
   a. Dealing with intense emotions
   b. You may feel guilt when clients cry
   c. May have difficulty accepting intense emotions in themselves and/or in clients
   d. Capturing most salient emotion
   e. Separating own emotions
   f. Stating feelings words too definitively
Jacqueline Diana Woods was born on December 13, 1987 in Alexandria, Virginia, and is an American citizen. She graduated from Stone Bridge High School, Ashburn, Virginia in 2005. She received her Bachelor of Arts in Psychology and History from the College of William and Mary, Williamsburg, Virginia in 2009. Jackie received her Master of Science in Psychology from Virginia Commonwealth University, Richmond, Virginia in 2012. Her master’s thesis examined the family system correlates of adolescent weight loss in a multidisciplinary weight management intervention. Jackie has specific research interests in health promotion and weight management in Black families. Additionally, Jackie began her clinical pre-doctoral internship at University of Virginia Counseling and Psychological Services in August 2014. She has strong clinical interests in group therapy, affect focused brief dynamic therapy, and feminist theory.