Examining Faith-Based Communities As Leverage Points For The Prevention Of Childhood And Adolescent Obesity

Caroline Glagola Dunn
University of South Carolina - Columbia

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EXAMINING FAITH-BASED COMMUNITIES AS LEVERAGE POINTS FOR THE PREVENTION OF CHILDHOOD AND ADOLESCENT OBESITY
by
Caroline Glagola Dunn

Bachelor of Arts
Auburn University, 2007

Master of Science
University of Alabama, 2011

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Accepted by:
Gabrielle Turner-McGrievy, Major Professor
Sara Wilcox, Committee Major Professor
Christine E. Blake, Committee Member
Andrew T. Kaczynski, Committee Member
Cheryl L. Addy, Vice Provost and Dean of the Graduate School
DEDICATION

This dissertation is dedicated to those to strive to improve the physical, spiritual, and emotional health of children.
ACKNOWLEDGEMENTS

I would like to acknowledge the support of my family, without whom I would not have completed this work. I would like to thank my mentors, Dr. Gabrielle Turner-McGrievy and Dr. Sara Wilcox for their guidance, feedback, constructive criticism, and encouragement in this process. I have learned so much about research and mentorship from you and am inspired by your dedication to students and your inquisitive spirits. I would also like to thank my committee members Dr. Christine Blake and Dr. Andrew Kaczynski for their patience, engagement, and understanding during this process. Thank you also, Dr. Ruth Saunders, who provided substantial guidance, input, and feedback on this project as an advisor and co-author. Thank you also to the students who assisted me in completing the research presented here: John Bernhart, Destiny Byrd, Lindsey Decker, Callie McClean, and Elizabeth Regan. Finally, I would like to thank the churches of Fairfield County, SC, the Fairfield Community Coordinating Council, and the South Carolina Conference of the United Methodist Church for their engagement and commitment to continually improving congregational health.
ABSTRACT

Faith-based research and partnerships are becoming more popular as an approach to address the health of underserved populations including racial and ethnic minorities and rural populations. Despite growing interest in faith-health partnerships, little research is available assessing faith-based interventions as potential leverage points for the prevention of childhood and adolescent obesity and the promotion of healthy behaviors. This research aimed to examine the potential for such partnerships within the context of ongoing research partnerships in South Carolina. Specifically, the first study assessed current peer-reviewed literature to determine reporting of reach, effectiveness, adoption, implementation, and maintenance (RE-AIM elements) in faith-based nutrition and physical activity interventions; the second study used qualitative interviews to explore church leaders’ perspectives on the role of the church in health promotion for children; and the final study included a content analysis of planned and implemented activities from an ongoing faith-based partnership with the potential to impact children’s health.

Findings from the systematic review of literature (n=38 interventions) show that most faith-based interventions are conceptualized and implemented at the individual/interpersonal level and few included organizational interventions such as policy or environmental change. Only three interventions included outcome measurements in children or youth. Most interventions did not provide sufficient information about RE-AIM elements for dissemination or implementation in community settings, emphasizing
the need for future faith-based interventions to report on considerations for translating such evidence-based programs into health promotion practice for all ages.

Findings from interviews (n=26) with church leaders showed that leaders identify important connections between physical and spiritual health for children, and identified several ways that churches could be involved in health promotion. Leaders were concerned about multiple health issues in children and youth and identified potential and ongoing approaches to impact health behaviors. Leaders spoke about opportunities for healthy and unhealthy behaviors in the church environment, the importance of role models, potential partnerships between the church and health experts, and the importance of tailoring health promotion programming to align with church goals.

Assessment of proposed health-promotion activities (n=1,498) from program plans suggest that churches (n=53) enrolled in an ongoing faith-based health promotion program most often plan activities to impact the entire church population, including children and youth. Fourteen percent of planned activities specifically targeted children and youth and were built in to existing church events such as Sunday School or Vacation Bible School. Ecologically-based interventions have the potential to reach children and youth. Intervention training materials should include references to this population, and churches should be encouraged to consider children and youth when planning health intervention activities.

Faith-based organizations have been acknowledged as important partners in health promotion efforts and are uniquely positioned to address childhood health behaviors such as healthy eating and physical activity, which may reduce childhood
obesity. This dissertation highlights interest from and opportunities in faith-based settings to address children’s health behaviors. These results also provide a foundation for future research and public health interventions through a theoretically-framed examination and support the need to expand intervention and evaluation efforts for children and youth in faith-based health promotion.
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LIST OF ABBREVIATIONS

CDC ................................................................. Centers for Disease Control and Prevention
D&I ............................................................................ Dissemination and Implementation
FAN........................................................................ Faith, Activity, and Nutrition Program
FBOs ........................................................................................... Faith-based Organizations
HE ......................................................................................................... Healthy Eating
PA .............................................................................................................. Physical Activity
PRC ........................................................................................... Prevention Research Center
USC ......................................................................................... University of South Carolina
CHAPTER 1
INTRODUCTION

Childhood obesity is a critical issue with negative life-long health consequences. Poor dietary intake and low rates of physical activity (PA) are key contributors to high rates of childhood obesity. Despite the well-known benefits of a diet high in fruits and vegetables and low in added sugars and fats coupled with the benefits of regular PA, a substantial portion of U.S. children and youth do not meet healthy eating (HE) or PA recommendations.

As rates of childhood overweight and obesity have increased, so have efforts to reverse this trend. Organizational partnerships with schools, child-care facilities, preschools, afterschool and faith-based organizations (FBOs) have been suggested as integral to improving health behaviors and reducing obesity risk among children. To date, much of the research conducted exploring childhood obesity prevention has focused on school-based interventions. However, a comprehensive approach to preventing childhood obesity should consider additional community settings as potential leverage points for programs and partnerships.

The purpose of this dissertation was to examine FBOs as a potential leverage point for the control of childhood obesity. FBOs have a long history of involvement in health, both disease treatment and disease prevention. Recently, the faith-based sector has been identified as a key strategic partner in health promotion, including HE and PA. Health promotion and disease prevention efforts have been successful at
delivering health information to congregants and community members through a variety of mechanisms. Several of these programs have moved beyond individual or interpersonal interventions and have added aspects focusing on creating organizational and environmental changes that support HE and PA.\textsuperscript{28–31} While these programs are often broad reaching, they tend to focus on changing behaviors among adult congregants, and health outcome measures are usually reported for adults only.\textsuperscript{17,27} However, FBO attendance remains high among families with children and adolescents, as FBOs are considered to play a key role in child development.\textsuperscript{32,33} Therefore, FBO settings represent a potential leverage point in health promotion among children and youth.

1.1. Preliminary Studies

This project built on the dissemination and implementation (D&I) of the Faith, Activity, and Nutrition (FAN) Study, funded by a Centers for Disease Control and Prevention (CDC) Research Award (PI: Wilcox) to the University of South Carolina (USC) Prevention Research Center (PRC). This trial aimed to understand strategies for the D&I of an evidence-based program\textsuperscript{28,34} in underserved, under-resourced communities. The FAN program was developed through a partnership between the 7th Episcopal District of the African Methodist Episcopal (AME) Church and researchers at USC, the Medical University of South Carolina, Clemson University, and Allen University. Based on Cohen’s structural model of health behavior,\textsuperscript{35} FAN encourages churches to create an environment that encourages HE and PA by increasing opportunities, creating guidelines, engaging pastors, and creating and disseminating health messages. The FAN D&I study is carried out in two phases. Phase 1, a partnership with the Fairfield Community Coordinating Council (FCCC), represents an approach to the FAN program focusing on a
community or coalition partnership where 54 churches (n=35 early; n=19 delayed) participated in the program over a 2-year period. Phase 2 represents a partnership between the USC PRC and the South Carolina Conference of the United Methodist Church to examine hierarchical denominational structures on program dissemination. The overall goals of the FAN D&I trial are to examine adoption, reach, implementation fidelity, and organizational maintenance of the FAN program using the reach, efficacy/effectiveness, adoption, implementation, and maintenance (RE-AIM) framework, and factors influencing them using the Consolidated Framework for Implementation Research. A secondary aim of the FAN D&I trial is to measure the effectiveness of the FAN program among adults attending Phase 1 churches.

This dissertation expanded on the FAN D&I study by examining the conceptualization of child health initiatives and programs in the context of a faith-based setting within a subsample of participating and non-participating Phase 2 churches and by assessing the implementation of the FAN program as it relates to children’s health in Phase 1 churches. Few faith-based nutrition and PA interventions target youth or measure health outcomes in populations under 18 years old. This dissertation contributes to the field of community health research by providing insight into an as-yet underutilized sector with the potential to provide what the Committee on Prevention of Obesity in Children and Youth describe as innovative approaches outside of currently available organizational options.

1.2 Present Study

The present study is part of a field of research focusing on policy, systems, and environmental change in churches to increase HE and PA in underserved populations. To
better understand how the physical and social environments of FBO settings can be used to positively influence nutrition and PA practices among children and youth, this dissertation addressed the following specific aims:

**Specific Aim 1: Systematic Review**

Conduct a systematic review of published peer-reviewed literature to determine participant demographics, reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) of HE and PA health promotion programming in FBOs, with a focus on how these programs may impact children and youth.

**RQ1:** What are characteristics of nutrition and PA health programming in FBOs (e.g., *program scope*: congregation, community, region, city, etc; *target population*: race, income, age [adult/child], gender; *outcomes measured*: weight, activity, nutrition intake, screening; *Socioecological model level of intervention*: level 1 [intra- or interpersonal], level 2 [environmental or policy], or combined [incorporating elements of both levels]; *geographic setting*; etc)?

**RQ2:** To what extent do interventions report reach, effectiveness, adoption, implementation, and maintenance model (RE-AIM) indicators?

**RQ3:** How are program outcomes measured and at what rate do HE and PA health programs in FBOs demonstrate significant positive outcomes?

**RQ4:** In intervention studies, what recommendations have been made for nutrition and PA health promotion in FBOs, specifically including recommendations for the inclusion/measurement of child and adolescent (birth to 18 years old) health?
Specific Aim 2: Conceptualization

Examine understandings, interpretations, meanings, and perceived opportunities associated with the role of FBOs in promoting HE and PA in child and youth populations among a sample of United Methodist Churches (n=20) in South Carolina.

RQ5: How do church and key lay leaders view health promotion efforts, HE and PA partnerships, and health promotion programs in the broader context of the mission of FBOs?

RQ6: What opportunities (settings, programs, social structures, policies, and activities) do church and key lay-leaders identify as important to the promotion of HE and PA for children and youth?

RQ7: What role do church and key lay leaders play in HE and PA promotion in FBOs related child children and youth?

Specific Aim 3: Implementation

Examine opportunities, programs, messages, and social structures or policies related to improving HE and PA for children and youth implemented or planned in FBOs (n=53) during Phase 1 of a two-phase dissemination and implementation study of a faith-based PA and nutrition intervention (FAN).

RQ8: What types of opportunities, programs, messages, and social structures or polices were planned and/or introduced in churches participating in the FAN program that reached children and youth?

RQ9: Of those opportunities, programs, messages, and social structures/policies planned and/or implemented in churches, what is the typology of those that impact children and youth (e.g. targeted specifically for child/youth populations
or a result of environmental changes with potential impact on children/youth because this population operates in the FBO environment)?

**RQ10:** What are characteristics of churches that reported planning and implementation opportunities, programs, messages, and social structures or policies that reached children and youth during program implementation?

In summary, this dissertation provides meaning and understanding to the potential role that FBOs may play in the prevention and treatment of childhood overweight and obesity by examining how social, physical, and programmatic features of the church environment may be and have been used to influence child health.
CHAPTER 2
BACKGROUND AND SIGNIFICANCE

This section highlights the importance of organizational settings in the prevention of childhood overweight and obesity. It focuses on the role that faith-based organizations (FBOs) have played in community health partnerships and obesity prevention programs, and the potential that these organizations have as leverage points to influence child and adolescent health. Literature focused on childhood obesity prevention including healthy eating (HE) and physical activity (PA) programming in FBOs is limited; therefore, the scope of this literature review has been expanded to include the role of other organizational environments in youth health and broad information about the history, variety, and impact of FBO health interventions among adult populations.

2.1 BACKGROUND

Youth Obesity

Among children and adolescents aged 2-19, overweight and obesity are defined by body mass index (BMI) in comparison to population-based growth charts for sex and age maintained by the CDC.\(^1\) Overweight is classified as BMI at or above the 85\(^{th}\) percentile and below the 95\(^{th}\) percentile, obese is classified as a BMI at or above the 95\(^{th}\) percentile for sex and age, and healthy weight status is measured between the 5\(^{th}\) and 85\(^{th}\) percentile for sex and age.\(^1,39\) No recommendations are currently in place for the identification of obesity in children under 2, but excess weight has been defined as
weight for recumbent length at or above the 95th percentile on sex-specific weight for recumbent length growth charts.¹,⁴⁰,⁴¹

Current estimates are that 8.1% of infants (0-2 years) in the US had a high recumbent weight for length, and 31.8% of youth (2-19) were considered either overweight or obese, with the highest rates of obesity among Hispanic (38.9%) and non-Hispanic black (35.2%) youth.¹ Youth in South Carolina are at an increased risk of overweight and obesity compared to a national population, with 35.1% of youth aged 2-17 considered either overweight or obese (15.2% overweight, 19.9% obese) and with black (43.8%) and Hispanic (40.1%) children again among those at highest risk of high BMI for age and sex.⁴²

Overweight or obesity in childhood is a critical issue with lifelong health consequences.¹–³,⁴³ Children and adolescents who are overweight or obese are more likely to face health problems early in life as well as in adult years including metabolic syndrome, cardiac abnormalities, sleep disorders, and mental health issues.¹–⁹ Moreover, overweight adolescents, without intervention, have a 70% chance of becoming overweight or obese adults.⁴³–⁴⁵

*The Role of the Environmental Factors in Child Health*

The rise in childhood overweight and obesity has encouraged researchers and practitioners to look beyond personal behaviors and individual factors that may influence child weight status, and towards the inclusion of physical and social environmental factors in models of obesity causes and prevention.³⁵,⁴⁶ Several conceptual models, largely based on the socioecological model (SEM),⁴⁷ have been proposed to guide interventions to reduce childhood obesity.³⁸,⁴⁶,⁴⁸,⁴⁹ These, like other conceptual models
for interventions to improve health, envision elements of intrapersonal, interpersonal, environmental, and policy level change within organizations and communities as important leverage points for creating improving health. Figure 2.1 provides an example of one such ecological model depicting factors associated with child weight status.48

In this model, child weight status (the center of the model) is a result of the combination of elements at each level of the framework.48,50 This model identifies both inherent factors (e.g., age, gender, familial susceptibility to weight gain) and modifiable proximal factors (e.g., child eating behaviors, PA, sedentary behaviors) as important to influencing child health. Characteristics of family/home and community or societal environments, both social and physical, can have strong impacts on modifiable proximal factors and are depicted in the outer rings of the figure.48

Parenting/caregiver styles and household characteristics have been shown to impact child behaviors and weight status. Within the home, children learn a great deal about food, are exposed to new foods, and learn about eating styles and preferences from caregivers and peers (e.g., siblings);51 children are also strongly impacted by the type and amount of food available in the home environment.52 Caregiver and peer PA patterns may impact child PA and sedentary time as well.53,54 Caregiver weight status is also likely to impact child weight status. Overweight caregivers may be more likely to adopt household or parenting practices that put their children at risk of obesity than normal-weight parents and these adult figures are more likely to misperceive the weight status of children and fail to intervene to reduce risk factors for childhood overweight and obesity.48,55 Potential intervention strategies targeting these factors should include improving household diet quality, increasing PA, and decreasing sedentary time for all household members by
modifying environmental factors related to these behaviors. Modifying environmental factors in addition to caregiver behavior should be considered as an approach to impacting child weight status and should include increasing opportunities and access to resources for healthy behavior and decreasing opportunities and access to resources for unhealthy behavior.

Increasingly, children spend more time outside of the home and in settings where they are exposed to additional adult caregivers or role models (e.g., pre-school, daycare, school, afterschool, clubs, church, sports programs). Dietary approaches to modify childhood obesity in these settings may be similar to those strategies applied within the home. Interventions may include changing child feeding practices, increasing nutritional knowledge, altering media messages that impact the development of food preferences, changing caregiver and role model dietary intake, improving primary shopper food preferences, and altering types of foods available to a child in the home or organizational environment. Modifying elements within a household or organization to encourage PA could focus on increasing activity time and decreasing sedentary time, and may include caregiver encouragement of PA, caregiver or role model activity patterns, positive media messages about PA, improving TV viewing habits inside the home and other community or organizational settings, and limiting screen time.

Community, demographic, and societal characteristics may also play a large role in shaping environmental impacts on childhood obesity. Such factors include socioeconomic status, accessibility of recreational facilities, family leisure time activities (e.g., where and with whom families spend time outside of the home), school lunch programs or community feeding programs, neighborhood safety, school physical
education policies, and the accessibility of healthy and unhealthy foods.\(^{48,50}\) The combination of child characteristics, home and community environments, and societal characteristics found in ecological models of childhood obesity help to illustrate the multifaceted nature of the issue. These models include modifiable and static personal elements that are impacted by the social and physical environments where children grow, play, learn, and interact with the world around them.

*The Importance of Organizations in Influencing Child Health*

HE and PA behaviors are complex, and may be impacted by multiple levels of influence.\(^{15,58}\) While a substantial portion of youth behavior is influenced or formed inside the home environment, organizations may play a key role in the development and maintenance of youth dietary and PA habits.\(^{48}\) Outside of the home setting, organizations such as schools, FBOs, afterschool programs, and clubs can serve as an outlet for child development and social interaction.\(^{59,60}\) Within organizations, youth may be exposed to diverse peer influences, environmental structures, expansive or limited availability and accessibility of products, media messages, cultural norms, and policies or rules about behavior that could impact childhood obesity. In the field of childhood obesity prevention, schools have long been a central focus or example of the pathways through which organizations can impact dietary and PA behaviors.\(^{16,61–63}\)

Several systematic reviews have reported on the short- and long-term impact of organizational school-based interventions on childhood obesity.\(^{16,61,62,64}\) In their review of studies summarizing school-based interventions focused on changing dietary intake and PA levels, Brown and Summerbell\(^{64}\) examined 38 controlled trials. Of these studies, 15 demonstrated significant outcomes related to either diet, PA, or combined measures in the
short-term (minimum of 12 weeks). While they did find that the heterogeneity of the studies (design, age of population, intervention focus) was a limitation to understanding what elements of these organizational interventions proved to be effective, the authors note that overall results suggest that combined HE and PA interventions in school environments may be effective at preventing long-term weight gain, especially if implemented early.

Bleich. et al,\textsuperscript{62} investigated community-based interventions to prevent childhood obesity, including schools, homes, and community settings (e.g., YMCAs, youth sports leagues), and included studies only if they had at least one year of follow-up data. Researchers assessed outcomes from nine articles and reported the impact of interventions on behavioral and obesity/adiposity outcomes. One study included only a community-based intervention; two included community and home intervention components; three included community and school intervention components; and the remaining three interventions included a combination of community, home, and school or child care intervention components. Four out of the nine studies demonstrated significant improvements in adiposity or obesity related outcomes, and each of these studies included either a combination of community and school components, or community, school, and home components. Results from this review provide moderately strong evidence that a multidisciplinary approach to preventing childhood obesity, those including both organizational (school) and community (e.g., health education, family outreach) elements, are effective at preventing overweight and obesity among youth.\textsuperscript{65–69}

Similar to findings reported by Bleich et al,\textsuperscript{62} Kelishadi and Azizi-Soleiman\textsuperscript{61} found in their systematic review of family-, school-, and clinical-based interventions to
decrease childhood obesity that school-based programs can have long-term effects in reducing childhood obesity. A majority of school-based studies included in the review presented evidence of favorable HE and PA behavior change or favorable changes in anthropometric measures. However, these authors also acknowledge that a multifaceted approach to preventing childhood obesity that moves beyond school-based interventions should be considered to improve outcomes.

While combined obesity prevention programs that include both school and community or family components may hold promise for future programming, they are not without limitations. In their review of school-based obesity interventions, Gittelsohn and Kumar\textsuperscript{16} acknowledge the importance of including caregivers in organizational obesity prevention programming and simultaneously point to a weakness of school-family program partnerships: caregivers have generally limited interactions with schools, outside of a small subgroup of highly involved parents. This limitation may, unfortunately, be seen across other organizations where children are present for significant periods of time including preschools, daycares, summer camps, and afterschool programs. However, a comprehensive approach to treating and preventing childhood obesity should include an examination of the role that all organizations and environments in which a child interacts, grows and learns - including FBOs. FBOs are uniquely positioned for partnerships to prevent childhood obesity because involvement in these organizations remains high among families (both caregivers and youth) with children and adolescents.\textsuperscript{32,33}
Faith-Based Interventions in Health

FBOs have a historic and current legacy of involvement in treating and promoting health among congregations and the general public. This section will provide a brief history of the role of religious organizations in health programming, discuss the variety of programs and populations served, and provide a focus on recent interventions to increase HE and PA in FBOs (with a focus on the modern Christian church).

Historical Overview

FBOs represent the physical embodiment of an organized set of beliefs, practices, rules, symbols, or rituals created to facilitate a connection to supernatural forces (God or gods).70 Dating back to prehistoric times, the connection between physical health and spiritual health can be seen in artifacts depicting the laying on of hands, those indicating that both physical and mental illness being understood through religious interpretations (spiritual or demonic possession), and references to priest-physicians thought to possess supernatural powers.71 Throughout history, religious institutions have served as organizations for the delivery of human services, including healthcare for the diseased and infirmed.25 Jewish religious texts outline a series of laws significantly tied to public health through diet and hygienic behaviors; Biblical texts from the Christian faith contain multiple passages referring to Christ as a healer and focusing on the meaning of suffering and healing to the whole person; the Qu’ran (scriptures of Islam) also contains a considerable body of medical knowledge said to be revealed to the prophet Mohammed.72

The earliest documented hospitals were established and run by Buddhist monks between 273 and 232 BC, and as early as 500 AD Christian missions were considered a responsibility for monastic groups under the supervision of the early Catholic church.72
These missions were often focused on health, more specifically disease treatment in terms of caring for individuals impacted by plague, leprosy, and similar wide-spread communicable diseases. Disease treatment by religious representatives between 500 AD and the mid-1700s commonly included a treatment of the spirit as well as the physical body, as it was generally accepted that maladies of the body were associated with maladies of the soul. More rigorous scientific study by lay physicians and members of the clergy in the 18th, 19th, and 20th centuries brought about a more thorough understanding of anatomy, biology, chemistry, and the evolution of germ theory. However, the connection between spiritual wellness and physical wellness was not abolished in Christian tradition during this time, or after. The publication of John Wesley’s *Primitive Physick* (1747) marked an important shift in health among the Christian church, as the founder of Methodism recognized that medicine was available almost exclusively to the wealthy and he sought to provide practical medical advice and preventative health recommendations to a broader population. Wesley’s writings emphasized the importance of PA, HE, environmental influences, and mental health in overall physical and spiritual wellbeing.

Beginning in the late 19th and early 20th century, the US and many European countries saw a rise in Christian medical care in the form of Christian, mainly Catholic, hospitals. Between 1884 and 1915, the number of Catholic-associated hospitals in the United States nearly tripled, from under 200 to almost 600. The number of religiously affiliated medical schools and hospital facilities in the United States continued to rise through the 20th and into the 21st century, and Catholic hospitals remain the largest group of not-for-profit healthcare centers in the US.
While religiously-affiliated institutions for healthcare represent an important role of FBOs in individual and population health, health promotion efforts have become increasingly popular, especially in the Christian faith. As early as the 1950s, researchers were beginning to examine associations between religiosity/spirituality and physical and mental health. However, it was not until the 1990s and 2000s that peer-reviewed research involving FBO partnerships began to become more mainstream. Recently, several major public health organizations have advocated for partnerships between health researchers/practitioners and FBOs. The CDC, the National Institutes of Health (NIH), and the National Physical Activity Plan have all identified partnerships with the faith-based sector as important in addressing public health challenges, specifically among underserved populations. Large, religiously associated non-profit organizations such as the Balm in Gilead also create opportunities for FBOs to promote health through faith-based health partnerships, conferences, and by providing technical assistance to faith institutions in their efforts to improve health.

One important reason for the popularity and success of these partnerships is that the mission and values of many FBOs specifically include physical health as a component of their ministry. As part of a broader mission and instilled within their core values, FBOs promote physical health within congregations and communities, and have done so for longer than FBO-public health partnerships have existed. Several examples from Christian religious denominations illustrate the interconnection of faith and physical health. In the Book of Resolutions, The United Methodist Church specifically notes the divine connection between spiritual and physical health and calls for United Methodist congregations to collaborate as a body of Christ in the improvement of physical health for
all. The Catechism of the Catholic Church states that life and physical health are precious gifts entrusted to every person by God and that the faithful are responsible for caring for these gifts and for others.

Modern health promotion partnerships with FBOs can be identified as either “faith-based,” a program that is part of a church’s health ministry and targets either the congregation or community, or “faith-placed,” if health professionals used the church to test an intervention or recruit participants. A more specific definition of faith-based health interventions identifies them as including diverse groups of congregants and involving spiritual elements by either integrating messages and scriptures or otherwise linking interventions to religion.

**Faith-based Health Program Variety and Populations**

Modern FBO health promotion interventions may differ significantly in terms of health issue, population gender, and population age. A 2004 systematic review of FBO programming by DeHaven et al found that major health targets in programs resulting in peer-reviewed studies predominately addressed heart disease (36.4%), weight/nutrition (18.2%), breast cancer (18.2%), prostate cancer (18.2%), and smoking cessation (9.0%). The amount of research regarding health promotion programming in faith-based settings has grown significantly in recent years and at the same time FBO partnerships have expanded to cover an ever-growing variety of health including: PA, HIV prevention, and mental health.

Health-based interventions may also differ significantly in terms of populations of interest. Faith-based interventions have strong ties to underserved populations, specifically adult populations who may be underrepresented in traditional health
promotion research. DeHaven et al\textsuperscript{17} noted in their review that among both faith-based and faith-placed interventions, African Americans were the target recipients of programming in 41.5\% of studies, low income populations in 13.2\% of studies, and Hispanic populations in 7.5\% of studies. More recent systematic reviews also show strong representation of African American communities within FBO partnerships. Parra et al\textsuperscript{27} found that study participants in faith-based PA interventions were primarily African American or Hispanic and Bopp et al\textsuperscript{86} reported that African American women were most commonly targeted for interventions, as were predominately Black churches. Several reviewers\textsuperscript{81,87,90} have focus solely on interventions in African American congregations, covering a broad range of health promotion or prevention topics. The African American church represents a strong potential partnership for several reasons: because considerable portions of the African American community report church attendance, because FBOs serve as social action organizations, and because African Americans represent an often underserved and underrepresented demographic in health promotion research.\textsuperscript{91,92}

In addition to race and income as defining characteristics of partner populations, faith-based interventions may also target specific sub-groups of congregations based on age or health condition (e.g., breast cancer screenings for women, prostate cancer screenings for men). Health promotion efforts in FBOs most often target adult populations, regardless of study design or level or intervention. While youth populations may benefit from programs targeting environmental or organizational change in FBOs, results are rarely reported in the peer-reviewed literature. In his review, DeHaven\textsuperscript{17} found that 43.4\% of interventions targeted adults and 11.3\% targeted the elderly (45.3\% did not
have a specified target, but reported results in adult populations). Lancaster et al.\textsuperscript{90} found that the mean age of participants in faith-based obesity prevention studies was 53, and that only one intervention\textsuperscript{93} targeted children. From recent reviews, only three studies\textsuperscript{93-95} were identified that targeted youth populations in health promotion efforts (one focused on reducing tobacco use and two on obesity). However, as previous sections of this review have indicated, FBO attendance remains high among families with children and adolescents, and FBOs are considered to play a key role in child development making them a desirable organizational partner for early health interventions.\textsuperscript{32,33}

Significant evidence is available to demonstrate that faith-based health programming can be successful in changing health behaviors, specifically in adult African American populations, and subpopulations of congregations at high risk of specific health issues. More research is needed to design and implement programs that may reach a broader audience in terms of ethnicity and age.\textsuperscript{22}

\textit{Faith-based Nutrition and Physical Activity Interventions}

Among health programming in FBOs, obesity prevention/treatment programs focusing on HE and PA are widely supported by public health organizations throughout the US\textsuperscript{44} including the NIH,\textsuperscript{79} the CDC,\textsuperscript{78} and the National Physical Activity Plan,\textsuperscript{80} which has identified FBOs as strategic partners in health programming. Two systematic reviews published in recent years provide a summary of PA interventions delivered in faith-based organizations (while these reviews focus on PA outcomes, several studies reviewed do include HE intervention components and/or outcomes). In their review, Bopp et al.\textsuperscript{86} identified 27 articles (19 faith-based\textsuperscript{23,29,95-111} and 8 faith-placed\textsuperscript{112-119}) describing PA interventions in churches. The review was not limited by study design,
population, or religious affiliation. Of the studies examined, only one reported any outcomes in populations under age 18.⁹⁵ All studies included intra- or interpersonal approaches to obesity reduction through PA, and one was based on an ecological approach, including messages at the organizational level (e.g., messages during sermons, bulletin inserts, posted media), environmental (e.g., physical structures), or church policy level changes to impact PA.²⁹

In a more recent review of PA interventions in faith-based settings, Parra et al²⁷ also reported on faith-based interventions to increase PA, focusing only on studies with control groups, and those measuring outcomes in adults. The review revealed similar results when compared to previous reviews, citing the same study²⁹ and one additional study²⁸ as those that included ecological approaches to PA, capable of reaching a broad church audience.

Both youth-oriented and more generally ecologically-framed interventions in FBOs have the potential to reach populations under the age of 18. Four studies⁹³,⁹⁵,¹²⁰,¹²¹ are available that report health outcomes in youth following an intervention, and four interventions²⁸–³¹,¹²² (two from previous reviews) are available to provide context to current efforts with the potential to address childhood obesity. The following two subsections will review these studies in greater detail.

*Faith-based Nutrition and Physical Activity Interventions Targeting Youth*

Go Girls was a culturally-tailored, faith-placed nutrition and PA intervention designed for African American adolescent females.⁹³ Churches (n=10) were randomized to serve as a delivery site for either a moderate-intensity or high-intensity program, where a tailored group behavioral intervention was delivered over a 6-month period. African
American girls (n=123) attended group sessions with peers and parents that included PA and lessons strategies for and importance of HE and PA. High intensity groups also participated in motivational interviewing sessions with trained counselors and received booster telephone calls from counselors during the intervention. Primary outcomes included BMI and body fat percentage, waist and hip circumference, blood pressure, and blood measures such as glucose and lipid profiles. At follow-up, no significant differences were observed between the two groups, but high-intensity group members who attended 75% or more of the sessions had significantly lower BMIs compared to high-intensity group members who attended fewer sessions. While the Go Girls intervention did not include spiritually-based intervention components, it represents a successful partnership between health researchers and FBOs addressing health in a youth population. Churches were contacted as recruitment centers, congregation members were recruited directly as participants, and churches were used as meeting locations. In this study, churches were integral to recruiting participants, specifically because recruiting parent-child groups from this type of organization proved to be successful. One barrier to obesity interventions in school settings has been identified as obtaining parental involvement, and the Go Girls program demonstrates that church-based programs may have the potential to overcome that barrier because churches are organizations where both youth and parents are socially involved prior to programing.

The Shining Like Stars PA intervention represents a faith-based PA intervention for elementary-aged children and their parents (n=105 dyads). Churches (n=4) were recruited to participate in the program and were randomly assigned to either intervention or control. Children in churches assigned to the control condition were largely Caucasian.
(82.5%) and children in churches assigned to the intervention condition were more ethnically diverse (42.6% Caucasian, 32.4% African American, 11.5% Asian, 11.5% American Indian, 1.6% Hispanic). In intervention churches, Sunday school classes implemented the “Shining Like Stars” PA-based curriculum, a four-module program that included planned PA and family devotional activities. Churches assigned to the control condition implemented the same curriculum without PA time and did not receive the additional family devotional. Outcomes of interest included moderate-to-vigorous PA (MVPA) time during (assessed using pedometers) and outside (assessed using parental self-report) of Sunday school as well as screen time (assessed using parental self-report). Children in the intervention group significantly increased MVPA during Sunday school and significantly reduced screen time, but no differences were observed for MVPA outside of the Sunday school environment. This study, like Go Girls,\textsuperscript{93} represents an intra- and interpersonal level intervention pairing youth with caregivers to improve health behaviors.

The Fitness U N Joy (F.U.N.) intervention\textsuperscript{121} was a 12-week physical activity intervention in churches, focusing on changing attitudes about physical activity among Black adolescent girls. The feasibility study included 41 girls ranging from 12 to 18 years old in a one-group pretest posttest design. The study, rooted in scripture, consisted of weekly 60-minute classes that included 30 minutes of physical activity time. Class components also included physical activity education and motivational messaging. Although researchers did not see significant increases in PA levels, they did note positive changes in odds ratios for attitudes, self-efficacy, and PA intention. The intervention,
rooted in the Theory of Reasoned Action, was implemented at the intra- and inter-personal level.

Finally, the Jewish Day School Wellness Initiative,\textsuperscript{120} was a religiously-tailored school-based health initiative focusing on elements at the intra- and inter-personal levels and at the environmental/policy level. In this pilot study, researchers used the coordinated school health program model to develop an intervention implemented at two Jewish Day Schools. Intervention elements included the formation of a school wellness council and the creation of wellness policies in five targeted areas: (1) health education, (2) physical education, (3) school environment, (4) family involvement, and (5) staff wellness. Participants in the single-group pilot study reported significant increases in meeting the recommendation of one hour of physical activity four times a week. No significant differences were observed in fruit and vegetable intake, breakfast eating, sugar sweetened beverage intake, or fast food intake.

The studies presented here represent health program partnerships with FBOs (including one religious school) where programs were implemented to create healthy behavior change among youth. In both the faith-placed\textsuperscript{93} and faith-based\textsuperscript{95,120,121} studies, researchers were able to recruit youth and adult caregivers to participate in study activities, and were successful in creating some behavior change among subgroups of participants. These studies, however, do not represent the only approach possible for reaching youth in a faith-based setting.
Faith-based Nutrition and Physical Activity Interventions Targeting Environmental Change

Faith-based interventions using ecological models to create healthy church environments also have the ability to reach youth populations in FBOs. A small group of studies\(^{29,28,30,122,31}\) have been conducted in recent years investigating the impact of programs that target multiple aspects of change within churches such as environmental and policy on congregational health.

The *Health-E AME* faith-based PA initiative\(^{29}\) was a partnership between researchers and the 7th Episcopal District of the African Methodist Episcopal (AME) Church. The intervention used community-based participatory research (CBPR) approaches to develop a culturally-acceptable and sustainable program with the goal of increasing PA and HE among African American church members. Program components included individual, interpersonal, and policy components to reach a broad range of church members. Individual and interpersonal level components included an 8-week volunteer led program to teach behavior change skills, providing sample messages that could be delivered through bulletin boards, bulletin handouts, during sermons, and at health fairs. Churches were also encouraged to make organizational level change by developing and implementing policies to encourage HE and PA. Although over 300 churches were trained in the program, evaluations were completed with 20 randomly selected churches. A total of 418 participants over the age of 18 completed survey measures at baseline and 1-year follow-up, and 316 completed measures again at year 2 follow-up. While the intervention did not result in significant increases in MVPA among
a random sample of church members, program awareness was significantly related to PA and HE outcomes.

Similar to the Health-E-AME intervention\textsuperscript{29}, the Faith, Activity, and Nutrition (FAN) study\textsuperscript{28} was developed through a partnership with the AME church. The FAN Program was a group-randomized controlled 15-month intervention with the goal of increasing MVPA and HE among church members by creating a healthy church environment. Seventy-four AME churches were randomized to either an early or delayed (control) intervention, and churches were trained on program elements and HE approaches during two full-day training sessions. Churches were taught how to create healthy church environments by increasing the availability and accessibility of products and programs encouraging HE and PA, changing physical structures, social structures, and cultural and media messages. Results from the program indicate that adult members of intervention churches were more likely to report increases in leisure-time MVPA than the control groups. While the study effect was small, study authors discuss that broad-reaching ecologically-focused interventions, such as FAN, have the ability to reach large portions of the population, meaning that even small effect sizes may have large public health impacts.

Body and Soul\textsuperscript{30}, a program developed for implementation in African American Churches, was designed to increase fruit and vegetable (FV) intake among church congregations through a combined approach including motivational interviewing, church-wide changes to meals and snacks served (including at least one policy change), self-help materials, and church-wide messages about HE. The original Body and Soul intervention was delivered in 16 churches (8 intervention and 8 comparison) in states around the US.
FV consumption was measured among mostly older (mean age 50.6) women (74.4%). At follow-up, intervention group participants reported significantly greater consumption of FV compared to the control group, and also reported significantly greater changes for reducing calories from fat, motivation to eat FV, self-efficacy to eat FV, and social support for eating FV.

The most recent study to consider ecological change in FBOs is the *Fe en Accion* (Faith in Action) program, designed to promote PA in Latino congregations. Sixteen churches were randomized to receive either the PA intervention or a cancer screening comparison intervention, and female church members classified as “low active” based on PA screening were invited to participate. PA intervention activities took place at the individual, interpersonal, environmental, and organizational levels for both conditions. Individual PA intervention elements included PA classes, monthly health mailings, and motivational interviewing calls; interpersonal elements included PA class reminder calls, and motivational interviewing; environmental elements were less clearly implemented and mainly focused on encouraging individuals to advocate for environmental change within their neighborhood settings. Participants were adult (mean age 44.4 years) women. Individuals in intervention churches significantly increased MVPA (measured by accelerometer and self-report) when compared to control churches. Results from the study focused predominately on the connection between individual and interpersonal level factors (class attendance, completed motivational interviewing calls) on PA outcomes. The authors, however, acknowledge that many of the environmental changes such as advocating for and constructing sidewalks, church gardens, and safer and cleaner
walking trails in the community require longer-term efforts for evaluation, but have the potential to promote long-term impacts in the larger community.

Examined together, the results of these ecologically-based interventions indicate that: (1) broad reaching ecologically-based programs may have the ability to reach large numbers of participants, meaning that even small changes in individual behavior can have broad reaching public health impacts, (2) a more extensive and longer-term evaluation of program elements (individual, interpersonal, environmental, policy) focusing on both HE and PA in faith-based obesity prevention programs should be considered, and (3) a more robust body of literature is needed to investigate the potential impact of broad reaching and population-specific programs on HE, PA, and obesity related health behaviors and outcomes among youth.

**Church Influence on Health Behavior**

As discussed earlier, FBOs have a strong history of involvement in improving or maintaining physical health. Several Christian denominations have identified the importance of physical health within congregations and communities as part of their core mission and value system. FBOs are uniquely positioned to be public health partners in obesity prevention programming based on this common mission of physical health, the social and physical characteristics of the church, and its position in the broader community. FBOs have a significant history of providing care to congregants and community members, of hosting health services independently and through partnerships, and providing care to the “whole person” through both individual and population health initiatives. Historically, FBOs have been viewed as a viable, trusted, and important organization for delivering health promotion and disease prevention programming,
particularly in underserved communities. FBOs provide a comfortable and familiar setting where information and services can be provided to individuals and communities who may not be part of conventional health care systems, or who may lack trust in formal healthcare settings. The existing social and structural networks that exist in FBOs are important to health promotion programming because they provide established channels for interventions using social support, informational support, existing physical structures, and FBOs often connect congregants to products or services needed to improve health.

Supported by evidence presented in previous sections, broad reaching ecological interventions have been shown to create positive health behavior change and have resulted in positive anthropometric outcomes among church members by harnessing the existing social and physical structures of FBOs, and helping FBO leadership to create positive change. While these elements are consistently present in most FBO environments, little evidence is available to suggest how they might be, or currently are, used to impact youth health as part of a broader FBO health intervention.

A recent qualitative study conducted by He et al examined the Latino church leaders’ perspectives on childhood obesity and the role of the church in obesity prevention programs from a group of 38 church leaders in Texas. Themes emerging from interviews were often specific to Latino populations: perceived health issues facing Latino congregants and perceptions about causes of overweight and obesity among Latino children. In addition to population-specific themes, He et al reported themes associated with church leaders understanding of the structural role that the church may play in childhood obesity prevention. These themes focused on more general faith-based
partnerships, and church leaders commented that the role of the church included information sharing, social support from caregivers who are already involved in the organization, and the general need for childhood obesity programming in the underserved community. While information presented here lays important groundwork for a deeper understanding of how youth obesity prevention programs might work within Latino churches, more work should be done to investigate broad understandings and specific opportunities for these programs and partnerships.

2.1 SIGNIFICANCE AND INNOVATION

Significance

Childhood obesity rates in the US have risen dramatically in past decades. From 1971-1974 to 2011-2012, rates of youth (aged 2-19) overweight rose from 10.2% to 14.9% and obesity rates rose from 5.2% to 16.9% nationally.127 Youth obesity rates in South Carolina also remain high with 15.2% of youth aged 2-17 considered overweight and 19.9% considered obese (35.1% overweight or obese).42 Minority youth remain at highest risk of overweight and obesity both nationally (non-Hispanic black youth obesity rates 35.2% and Hispanic youth obesity rates 38.9%)1 and in SC (non-Hispanic black youth obesity 43.8% and Hispanic youth obesity 40.1%).42

Childhood obesity is a critical health issue with serious consequences. Children and adolescents who are overweight or obese are more likely to face health issues in early life including metabolic syndrome, cardiac abnormalities, sleep disorders, and mental health consequences.1–9 Overweight adolescents, without intervention, have a 70% chance of becoming overweight or obese adults, and of dealing with persistent health consequences throughout the life course.44,45
Poor dietary intake and low rates of PA are key contributors to high rates of childhood obesity.\textsuperscript{10,11} Despite the well-known benefits of a diet high in fruits and vegetables and low in added sugars and fat coupled with the benefits of regular PA, a substantial portion of US children and youth do not meet the dietary or PA recommendation guidelines.\textsuperscript{13,14} Currently, only 40\% of children between the ages of 2-18 years consume the recommended servings of fruits, 7\% consume the recommended servings of vegetables, and less than 40\% meet the recommended amount of weekly PA nationally.\textsuperscript{13,14} Conversely, children 2-18 reportedly consume three times the recommended amount of added sugar each day, 44\% of children report consuming over the recommended amount of dietary fat, and over 50\% report excess sedentary behavior each week.\textsuperscript{13,14}

As rates of childhood overweight and obesity have increased, so have efforts to reverse this trend. Organizational partnerships with schools, child-care facilities, and FBOs have been suggested as integral to improving health behaviors and reducing obesity risk among children.\textsuperscript{15,16} To date, much of the research conducted exploring childhood obesity prevention has focused on school-based interventions.\textsuperscript{15,16,61,63} While school-based interventions have been successful at increasing HE and PA,\textsuperscript{61,63} a comprehensive approach to preventing and treating childhood obesity should consider additional community settings, including churches and other FBOs, as potential leverage points for programs and partnerships.\textsuperscript{16} Examining the potential partnerships with FBOs is important in (1) establishing and understanding organizational interest in childhood obesity prevention, (2) identifying organizational and programmatic elements within FBOs that may already be affecting or could have the potential to impact health
behaviors, and (3) expanding childhood obesity prevention efforts using innovative approaches outside of currently available organizational options.38

Innovation

This dissertation is innovative for several reasons. FBOs have a long history of involvement in health, both disease treatment and more recently health promotion.17–21,71 Recently, the faith-based sector has been identified as a key strategic partner in health promotion, including HE and PA.17,22,24–26,78–80 Health prevention and promotion efforts have been successful at delivering health information to congregants and community members through a variety of mechanisms; some focusing on creating environments and organizational policies that support HE and PA.28–31,122 While these programs are broad-reaching, they generally focus on changing behaviors among adult congregants and health outcome measures are reported for adults only.28–31 However, FBO attendance remains high among families with children and adolescents, as FBOs are considered to play a key role in child development.32,33 Therefore, FBO settings represent a potential and underexplored leverage point in health promotion among children and youth. This research examines mechanisms within ecological programming in FBOs that may impact youth health.

This formative research is also innovative because it uses original and secondary data as well as several qualitative methods including content analysis and thematic analysis to present findings, providing a more comprehensive view of FBO involvement in childhood obesity than is generally available in existing literature. The current project includes a comprehensive review of existing literature on this topic in the form of a systematic review (Aim 1), original qualitative perspectives from potential partners and
leaders in FBO programming for youth (Aim 2), and a content analysis using data from a current intervention with the potential to impact youth health in an FBO setting (Aim 3).

Prior to developing or implementing health promotion programming in organizational settings, it is imperative to understand organizational elements including previous or existing partnerships as well as leaders’ perspectives and opportunities to design and implement health promotion efforts. While significant effort has been placed on creating faith-health partnerships, there is little information available to provide a background, framework, or system for implementing and evaluating these interventions among children and youth. Therefore this project combined a review of previous interventions to provide information and context about health interventions that might impact children, and used this information to expand upon a small body of existing literature.

This research also represents an innovative approach to understanding church leaders’ views of health promotion for children and youth through existing partnership with a denomination advocating to improve children’s health through nutrition and PA. The goal of the United Methodist Church’s Abundant Health initiative is to improve the health of children in congregations and communities. Based on an existing partnership with the South Carolina UMC and the innovative Abundant Health initiative, the qualitative work in Aim 2 provided an opportunity to examine church leaders’ views of health promotion efforts in churches who have the support of a larger governing body. This partnership allowed for novel input from leaders who were able to conceptualize health promotion efforts in both the abstract and the concrete; brainstorming potential intervention elements and providing examples of current efforts of programming.
Finally, Aim 3 includes an innovative approach to assessing an ecologically-based intervention for potential impact in sub-populations. The approach to evaluating planned activities that are either targeted at children/youth populations or may reach them because of the ecological nature of the activity presents an advancement in the process of evaluating the potential impact of faith-based health programs on younger populations. Furthermore, this research provided a promising strategy for evaluating activities from organizational-level interventions using data from an evidence-based program.

Because of these innovative elements, this work helps fill a gap in existing peer-reviewed literature concerning the impact of organizational programming in FBOs on health behaviors among youth. This research also helps establish a foundation to help answer calls for expanding organizational health programming for youth beyond the classroom and provides insight into potential partnerships, programs, and interventions in FBOs for this population.
Figure 2.1. Ecological model of predictors of childhood overweight developed by Davison & Birch, 2001.
CHAPTER 3
METHODOLOGY

This dissertation builds on the Faith, Activity, and Nutrition (FAN) Dissemination and Implementation (D&I) Study, funded by a CDC grant to the University of South Carolina (USC) Prevention Research Center (PRC) (PI: Wilcox). The following methods provide a background on the FAN D&I study and study setting to establish how the dissertation expands upon the FAN research agenda. This section also describes the conceptual model and data collection procedures, study measures, and analytical approach for each of the three aims.

3.1 FAN D&I STUDY

Phase 1 of the FAN D&I study is a partnership between the USC PRC and the Fairfield Community Coordinating Council (FCCC) in which churches (n=54) participated in the FAN program over a two-year period. Churches were either trained early during year 1 of the program (n=35) or late during year 2 of the program (n=19) and received one year of technical assistance from a FAN Community Health Advisor. Phase 1 represents a community/coalition approach to creating healthy organizational change through county-level partnerships.

Phase 2 of the FAN D&I study is a partnership between the USC PRC and the SC Conference of the United Methodist Church (SCUMC). In this phase, churches were trained to implement the FAN Program in their organizations and received one year of
technical assistance calls from a program CHA. Phase 2 represents a hierarchical approach to partnerships through broader denominational structures. This dissertation research extends the current FAN D&I project (1) by increasing the understanding of the scope of impact for the program, and (2) because data provide insights that may be useful for future training and partnerships through the FAN program.

The study population recruited for Aim 2 of this dissertation are representatives of the FAN D&I Phase 2 partner, the SCUMC. The denomination consists of close to 1,000 churches across SC, separated into 12 districts (Figure 4.1). Church membership within the SC UMC Conference ranges from 4 to 3,690, with an average congregation membership of 232. Within the conference, approximately 26% of churches are majority Black/African American, 73% of churches are majority Caucasian, and 3 church majority Korean congregations.

Data for Aim 3 (implementation) of this dissertation were collected from churches participating in Phase 1 of the FAN D&I intervention. Churches were recruited from Fairfield County, SC, which has 132 churches, through a partnership with the FCCC. The only significant difference between churches participating in the FAN intervention and those who did not was predominant race of members (p<0.0001), with participating churches more likely to be Black/African American than non-participating churches. No differences were observed in church size or religious denomination (Table 3.1).

3.2 CONCEPTUAL MODEL

The conceptual model in Figure 3.1 illustrates the influence of FBO elements on childhood obesity prevention and treatment. This conceptual framework draws primarily
from the United Methodist Church’s Statement on Health and Wholeness83 and Cohen’s et al’s35 structural model of health behavior.

Three major elements are depicted in the model and include the church mission as it pertains to health and wellbeing (outer rectangle), the church environment as it might pertain to different areas of health (large red circles), and contextual elements within the church (shaded purple interior circles) that may play a role in child behaviors (the shaded gray circle) impacting childhood obesity. The overall model represents the relationship between the church mission and elements of the church environment that may play a key role in public health initiatives involving or focused on youth populations.

The outer rectangle of the model is representative of the mission of the church in preserving and promoting human health and encompasses all other aspects of the model. FBOs have historic involvement in the treatment of disease.17–20 More recently, FBOs have aligned health goals with the World Health Organization definition of health, determined to be “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”129 FBOs may consider several approaches to “whole person health,” specifically within the context of the Christian faith, explored here. The UMC characterizes health as having multiple dimensions, built on a foundation of spiritual health, but together characterized by the concept of Shalom: “a comprehensive view of human well-being including a long life of happiness ending in natural death.”83 In addition to spiritual health, FBOs may define health in terms of physical, mental, and emotional elements. Based on the public health goal of reducing childhood obesity, the model displayed in Figure 2 focuses on the connection of physical health to elements of the church environment but does not discount that physical health is
encompassed with other elements of health (e.g., spiritual health, emotional/mental health) as part of the larger church mission.

Within an organizational environment (light pink circle), several factors have been identified from Cohen’s et al’s model as important to creating public health change (shaded interior circles). Cohen et al’s model, used to guide the development and implementation of the FAN program, targets the availability and accessibility of products, physical structures, social structures, and cultural and media messages that impact health behaviors and health outcomes. More specifically, within the FAN program, churches are encouraged to make changes to increase opportunities for HE and PA, to create or enhance programs for HE and PA, to build social structures policies supporting HE and PA, and to support the delivery of media and cultural messages supporting HE and PA. These elements also align with elements identified by the UMC as crucial to the concept of Shalom: public health factors (e.g., tailored and culturally sensitive programs, age and gender appropriate health opportunities, educational services, tailored information), social lifestyle factors (e.g., education, access to food and health programming, marketing, social messaging), cultural factors (e.g., culinary traditions), and environmental factors (e.g., the built environment as it may pertain to nutritious foods, safe spaces for activity). Factors within the model that are depicted as influencing childhood obesity may do so by encouraging or facilitating healthy behavior and discouraging unhealthy behavior in terms of HE and PA.

Elements within the model also align with previous research conducted to identify correlates of PA for children including opportunities for activity and social support for
activity, opportunities to try healthy foods, social support and media messages about HE, and social influences on HE.48,50,60

3.3 AIM 1 METHODS

Specific Aim 1 was a systematic review of literature to examine the population focus, reach, effectiveness, adoption, implementation, and maintenance of PA and nutrition health promotion programming in faith-based organizations, with a focus on how these programs may impact youth and children. Search terms for this systematic review (Appendix A) were developed through a partnership with Amy Edwards, the USC Health Science Reference Librarian who provided guidance in the development and refinement of search terms. Search terms covered broad categories including “faith,” “nutrition,” “PA,” “obesity,” and “US bound,” using the strategy:

Faith AND (Nutrition OR Physical Activity OR Obesity) AND US Bound

The systematic review was conducted between in June and July 2017 with ongoing monthly searches for newly published articles ending in May 2018. With the help of Amy Edwards, six databases (MEDLINE via PubMed, PsychInfo, Web of Science, CINAHL, ATLA, and Cochrane) were searched to identify relevant articles on faith-based PA and/or HE interventions. In addition to the electronic search, study team members contacted corresponding authors to request information about additional relevant citations when needed, previous review publications were checked for relevant references or companion articles (e.g., methods papers, maintenance reports), and relevant article citation lists were examined.27,86,90

Two people used Cochrane Covidence systematic review software (https://www.covidence.org/home) to review titles and abstracts and determine if they
appeared to meet key inclusion criteria. Discrepancies were handled through discussion to reach consensus. Full-text reviews to assess eligibility were independently conducted by two people and articles providing information about the same intervention were merged if they included information relevant to the review. Methods followed PRISMA guidelines.131

Articles were eligible to be included in the review if they: (1) were published in an English language peer-reviewed journal; (2) were conducted in the United States; (3) were interventions, (4) included individual-level HE or PA behavioral outcomes; (5) were conducted within an organizational setting (e.g., church, hospital, school); and (6) were faith-based defined as including some element of spirituality such as prayer, referenced the Bible, or other faith traditions.17,86 Study designs could include randomized controlled trials (RCTs), non-RCTs with a control or comparison group, quasi-experimental designs, and pilot and feasibility studies. No limitations were placed on publication date or participant age, gender, race/ethnicity, or presence of chronic disease.

Two reviewers independently extracted study data, including level of intervention (e.g., individual/interpersonal levels, environmental/policy levels, multiple levels) study design, population, geographic location, sample size, intervention elements, and intervention outcomes (HE and PA), using predefined criteria.

Two research team members used a previously validated RE-AIM extraction tool132,133 and coded three interventions together to develop familiarity with the coding protocol and discuss RE-AIM elements. All indicators from the data extraction tool were
coded either 0 (no) or 1 (yes). The 21-indicator extraction tool represented the five RE-AIM domains:

- **Five indicators used to assess Reach (individual-level measures):**
  - Method to identify target population, inclusion criteria,
  - Exclusion criteria,
  - Participation rate, and
  - Representativeness

- **Four indicators used to assess Efficacy/effectiveness:**
  - The use of intent-to-treat analysis or statistical methods robust enough to account for participant loss,
  - Quality of life outcomes or unintended consequences,
  - Attrition rate, and
  - Measures from at least one follow-up;

- **Six indicators used to assess Adoption (organizational-level measures):**
  - Site participation rate,
  - Setting description,
  - Method to identify organizations,
  - Level of expertise of change agents,
  - Inclusion or exclusion criteria for settings, and
  - Site representativeness;

- **Three indicators used to assess Implementation:**
  - Intervention duration,
  - The extent to which the protocol was delivered as intended, and
• Measures of implementation costs;

• Three indicators used to assess Maintenance:
  - Individual-level measures from at least six months post intervention,
  - Measures of site-level maintenance post-intervention, and
  - Measures of maintenance cost.

Team members then reviewed and independently coded an additional 12 interventions (30% of the sample) to ensure acceptable inter-rater reliability at $\kappa > 0.8$ for all indicators. Coders met with a senior-level researcher to resolve coding discrepancies and refine examples in the code-book.

One author coded the remaining interventions independently, meeting with senior level researchers for clarification if issues arose. The proportion of interventions reporting each indicator was calculated by dividing the number of interventions reporting the indicator by the total number of interventions. The mean number of indicators reported per study was also calculated for each RE-AIM domain. Additionally, a sum of interventions reporting at least one indicator was calculated for each RE-AIM domain. Using previously implemented protocols, a comprehensiveness of reporting score was calculated for each study.\textsuperscript{134} Based on a previous RE-AIM evaluation, comprehensiveness was considered high for a study if it included 15-21 out of 21 indicators, moderate if it included 8 to 14 indicators, and low if it reported less than 8 indicators.\textsuperscript{134} One study, published in 2018, was not assessed for maintenance due to the time-frame of publication, and was thus scored out of 18 possible indicators. Pilot and/or feasibility studies were identified if the article explicitly stated the nature of the project, or if the total study population was under 100 participants.\textsuperscript{135} Pilot studies were evaluated
out 15 indicators because adoption often relied on previously existing relationships
and/or the recruitment of a single location without consideration of representativeness,
and therefore adoption could not be fully assessed. Comprehensiveness for pilot studies
was considered high if the study included 11-15 out of 15 indicators, moderate it included
5-10 indicators, and low if it reported less than 5 indicators.

3.4 AIM 2 METHODS

Specific Aim 2 is a qualitative study with the purpose of examining church
leaders’ understandings, interpretations, meanings, and perceived opportunities
associated with the role of FBOs in promoting children’s HE/PA. The University of
South Carolina Institutional Review Board reviewed study procedures and materials and
determined this research to have exempt status. The study was conducted between
January and July 2018 and consisted of in-depth interviews with church leaders from the
SCUMC. The UMC was selected as a research partner based on an existing research
relationship between SCUMC and the USCPRC, as well as their 2017 denomination-
wide implementation of the Abundant Health Program that includes an emphasis on
improving children’s health globally and locally through HE, PA, mental health, and
substance-free living.128

In keeping with theoretical underpinnings of the ongoing research partnership,
interview guide development was based on a conceptual model incorporating elements of
Cohen’s structural model of health behavior and the UMC Statement on Health and
Wholeness.35,83 The interview guide, available in Appendix B, was evaluated by experts
in qualitative methods and faith-based health intervention research and by partners within
the SCUMC. Three pilot interviews were conducted, and refinements were made to the interview guide to improve clarity.

Recruitment and Sample

The primary level of sampling for this aim was the church. The research team recruited a purposeful sample of representatives from SCUMC churches (n=20) who were either participating or not participating in the Faith, Activity, and Nutrition (FAN) Program. The research team sought to recruit a sample from participating and non-participating to provide a breadth of perspective on health promotion efforts. Pastors were contacted by email (Appendix C) and phone and invited to participate at their convenience and female pastors were oversampled compared to the general demographic breakdown of leadership within the state conference to provide diverse perspectives. Participation was voluntary, and all participants provided consent prior to interviews.

Participants initially included twenty pastors representing twenty congregations (n=10 participating in the FAN Program; n=10 not participating). Pastors were then asked to provide the names and contact information for an additional staff or congregation member that they identified as having knowledge about the topic of interest. This method of recruitment resulted in six additional church leaders (e.g., health committee chairs, youth pastor), all representing FAN churches, willing to participate in interviews.

Data Collection

The interviewer, a White female (CGD), remained the same throughout data collection. To build rapport with participants and establish a shared point of understanding, the interviewer’s guide introduction noted that CGD was a member of the
United Methodist Church and had previously worked in youth ministry. Semi-structured interviews were conducted by phone, lasting on average 56 minutes (range 33-89 minutes). All interviews were audio-recorded and transcribed verbatim using a professional transcription service (rev.com). Identifying information was removed and pseudonyms were assigned to recordings prior to transcription. No church leader declined audio recording. The interviewer wrote field notes after all interviews and notes were discussed by the interviewer and a second research team member. Data collection continued based on research protocol until 10 churches participating in FAN and 10 churches not participating in FAN were recruited, for a total of 20 churches (n=26 interviews).

Data Analysis

Data analysis was facilitated by using NVivo 11 qualitative data analysis software. Two trained coders independently coded five interviews using an a priori codebook based on the conceptual model and interview guide. Trained coders used emergent coding and met to discuss themes and subthemes that arose across double-coded interviews. Thematic elements were discussed with senior researchers, who provided input on thematic structure and overlap. Coders continued to analyze 10 additional interviews to establish coding consistency using the refined codebook. A single coder independently analyzed the remaining interviews using constant comparative methods to identify similarities and differences in interviews and met with research team members weekly to discuss themes.
**Funding**

All participants were offered a $20 gift card incentive and participants could elect to donate their incentive to the UMC Epworth Children’s Home (facilitated by the research team). Funding for this research was used to pay for participant incentives and transcription costs. Funding came from the Olga I Ogoussan Doctoral Research Award, provided by the USC Arnold School of Public Health Department of Health Promotion, Education and Behavior. Additional funding was a result of a scholarship award from the South Carolina Public Health Association and a research award from the Society for Nutrition Education and Behavior.

**3.5 AIM 3 METHODS**

Specific Aim 3 was a content analysis of planned activities proposed by churches participating in Phase 1 of the FAN D&I Project. The goal of the content analysis was to identify and categorize opportunities, programs, messages, and social structures/policies related to improving HE and PA for children and youth using a semi-directed content analysis approach. All study procedures were reviewed and deemed exempt by the University of South Carolina Institutional Review Board.

**Sample**

Data were collected from churches participating in Phase 1 of the FAN D&I intervention, which has been described elsewhere. In brief, the purpose of the FAN Program is to help churches create a healthier church environment that encourages HE and PA. In Phase 1, churches were recruited from a rural and medically underserved county in South Carolina using mailed letters, telephone calls, emails, in-person visits, community presentations, and general marketing. Churches were eligible to participate if
they were in Fairfield County, SC, had at least 20 members, and agreed to random
assignment to either an early or delayed control intervention. Eligible churches were
randomized to attend full-day FAN training workshops during year 1 (2015; n=39 early)
or year 2 (2016; n=20 delayed control), delivered by a Community Health Advisor. A
total of 53 churches (n=35 early, n=18 delayed) completed training and returned
materials for this assessment.

Data Collection

Researchers used two data sources to assess planned and implemented activities
that would reach children and youth: (1) proposed activities from Program Plans and (2)
descriptions of activities from technical assistance (TA) calls. Congregation size and the
estimated number of children and youth were reported by the FAN Coordinator (i.e.,
individual in the church who served as a liaison with the study staff and who coordinated
program implementation). When FAN Coordinators could not be reached, the number of
children and youth was estimated based on in-church observations.

Program Plans

Each church formed a FAN Committee of 3-5 members (e.g., FAN Coordinator
and up to 4 other members that may include a pastor, church cook or menu planner, and
other church members interested in creating a healthy church environment) who attended
training. Trainings provided an overview of the FAN program elements and goals,
described program materials including programmatic links to scripture, and explained
recommendations for HE and PA. Guided by Cohen’s structural ecological model, church committees assessed current church activities and planned how they might expand
opportunities (including programs), messages, policies/guidelines, and pastor support for
HE and PA in churches to create a FAN Program Plan. During training, church committees brainstormed Program Plan elements specific to their church needs, then finalized and submitted plans after training and further reflection.

Program Plans for the upcoming year were developed based on guidance in the FAN Program training materials and included sections for committees to identify and describe proposed activities to increase opportunities, programs, messages, and social support structures/guidelines (e.g., pastoral support activities) that would reach most church members. While church committees were encouraged to identify activities that would best fit the needs and composition of their congregations, several program elements were suggested in Program Plans for all church settings, including: (1) using monthly bulletin inserts provided by FAN that connect scripture and health, (2) sharing health messages during church services, (3) creating a bulletin board to display health materials, (4) sharing the monthly pastor activity, (5) asking the pastor to allow health champions to talk about HE/PA during worship or meetings, (6) providing the pastor with messages about HE/PA that he/she could speak about from the pulpit, (7) encouraging the pastor to be a role model by wearing his/her pedometer and speaking about it with church members, and (8) suggesting guidelines or policies that the pastor could put into place to support HE/PA. After training, FAN committees finalized Program Plans (including a budget) and submitted them to research staff members for review prior to churches receiving the program incentive ($300 or $500 depending on church size).

Technical Assistance Calls

During the first year of the FAN program, FAN Coordinators and Pastors received 12 months of support from Community Health Advisors including TA calls
delivered each month by trained study staff to learn about program implementation, answer questions, and help churches creatively problem solve. TA calls rotated between the FAN Coordinator (months 1, 2, 4, 5, 7, 8, 10, 11) and the pastor (months 3, 6, 9, 12). Data from these calls were entered by the Community Health Advisor into the web-based online FAN TA call database, and information was extracted once all calls were complete in October 2017.

Coding and Analysis

Data from Program Plans and TA calls were organized by church using NVivo qualitative data analysis software (QSR International Pty Ltd. Version 10, 2012). After submission, researchers extracted proposed activities from Program Plans for coding (e.g., start a walking group, use lower sodium recipes in church meals). Using a semi-inductive approach, researchers developed an a-priori codebook based on the original theoretical model used to guide the FAN program,\textsuperscript{35} knowledge of program implementation suggestions from training, and obesity prevention strategies (e.g., HE, PA, or a combined approach) used in the current faith-based literature.\textsuperscript{22,27,86} Each proposed activity was coded based on three content categories. Codes were selected for a dominant (1) population (e.g. ecological, youth/child, other population), (2) health promotion approach (e.g., HE, PA, combined), and (3) theoretical orientation (e.g., opportunity, program, message, social structure/policy). Codes and definitions are included in Table 3.2. Only one code from each category could be assigned for an activity, for example the activity “take a 10-minute stretching break during worship services” would be coded as having an ecological (population) impact, being PA-related, and as an opportunity. Two graduate students coded all proposed activities independently.
(n=1,498 activities). Data from TA calls were assessed for mentions of implemented activities involving children/youth and were used to provide context to proposed activities. TA call data were not included in activity counts to avoid counting any activity more than one time.

Cohen’s kappa measures inter-coder reliability and was calculated for 100% of the Program Plan data using SPSS (version 25.0, 2017, Armonk, NY: IBM Corp.) (Table 1). Descriptive statistics were used to explore the frequency of codes across and within the range of churches and to assess the frequency of activity combinations (health promotion approach combined with theoretical orientation) by population. Independent sample t-tests were used to assess differences in the number of youth focused activities based on the portion of congregation members under 18 (≥20% under 18, <20% under 18), church size (≥50 members, <49 members), and early or delayed status. Cut-offs for the proportion of members under 18 and church size were established at these levels to create an appropriate distribution for statistical analysis methods. A one-way ANOVA was used to determine differences between denominations.
Table 3.1. Characteristics of adopting versus non-adopting churches, FAN D&I project, Fairfield County, SC

<table>
<thead>
<tr>
<th></th>
<th>Adopting (n=55)</th>
<th>Non-Adopting (n=77)</th>
<th>Total (n=132)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Church size</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25 members</td>
<td>12.7 (7)</td>
<td>23.9 (17)</td>
<td>24</td>
<td>.24</td>
</tr>
<tr>
<td>25-49 members</td>
<td>40.0 (22)</td>
<td>33.8 (24)</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>50-74 members</td>
<td>23.6 (13)</td>
<td>14.1 (10)</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>75+ members</td>
<td>23.6 (13)</td>
<td>28.2 (20)</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td><strong>Predominant race of members</strong></td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Black/African American</td>
<td>92.7 (51)</td>
<td>50.7 (39)</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>5.5 (3)</td>
<td>46.8 (36)</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Multi-racial</td>
<td>1.8 (1)</td>
<td>2.6 (12)</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td><strong>Religious denomination</strong></td>
<td></td>
<td></td>
<td></td>
<td>0.07</td>
</tr>
<tr>
<td>Baptist</td>
<td>45.5 (25)</td>
<td>36.4 (28)</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Non-denominational or independent</td>
<td>20.0 (11)</td>
<td>23.4 (18)</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Presbyterian</td>
<td>5.5 (3)</td>
<td>16.7 (13)</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>African Methodist Episcopal (AME)/AME Zion</td>
<td>14.6 (8)</td>
<td>3.9 (3)</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Pentecostal</td>
<td>7.3 (4)</td>
<td>7.8 (6)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Methodist</td>
<td>5.5 (3)</td>
<td>2.6 (2)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Episcopal</td>
<td>1.8 (1)</td>
<td>2.6 (2)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0 (0)</td>
<td>6.5 (5)</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
Note that one ineligible church (<20 members) was trained and is included in this column.
Table 3.2. Coding variables and definitions

<table>
<thead>
<tr>
<th>Population Typology</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth-directed</td>
<td>Item specifically targets youth as the recipients of intervention in any setting (e.g., children’s/youth Sunday School, Youth Group, Vacation Bible School). Youth-specific opportunities could include additional population/age groups (e.g., Adult versus youth dance competition “old school versus new school,” Youth and older adult cook-off).</td>
</tr>
<tr>
<td>Environmental</td>
<td>Opportunity found at the environmental level with the intention of impacting all members of the congregation. These opportunities may be church-wide events (e.g., worship services, church-wide potlucks), policies that have the potential to impact all members, media messages posted in the church or on social media, or equipment/improvements to the church that would be available to all members (e.g., the creation of a walking path, the purchase of exercise equipment such as stretching bands).</td>
</tr>
</tbody>
</table>

Cohen’s Structural Model of Health Behavior Theoretical Component

Programs | Refers to products made available to congregants as programs within the church with the aim of improving health. Programs would be created in addition to existing opportunities and are structured and organized. Examples would include the
formation of a walking group, a healthy cooking class, a new Sunday school that focuses on nutrition or PA, a Zumba class.

**Opportunities**

Opportunities refer to those methods of improving PA or HE that are built in to existing social, structural, or physical environments. Examples would include taking a stretching break during Bible study, adding fruit to the menu at Christmas dinner, using the ROSE (Reduce, Omit, Substitute, Equipment) method to reduce fat, purchasing stretching bands, or building a walking path. These could also be opportunities to reduce unhealthy behaviors, such as getting rid of the deep fat fryer.

**Social Structures and Policies**

Promote or discourage behaviors through organizational policies/guidelines and support (e.g., policy that all church events that include food must include a healthy food option, policy that church events lasting longer than 30 minutes must include a 5-minute exercise break).

**Media and Cultural Messages**

Messages that people see and hear frequently through large or small media, stories, and/or cultural practices (e.g., monthly church bulletin inserts with health messages focused on healthy eating and/or PA, posters on bulletin boards, fruit and vegetable grocery store flyers on information tables, bulletin board/email newsletter/social media update with health information, pastor shares health messages from pulpit).
Health Topic Focus

Nutrition-related Focuses on improving HE (e.g., policies advocating for healthy food options, media material about sodium intake, healthy food taste-testing).

PA-related Focuses on increasing PA or decreasing sedentary time (e.g., policy to increase PA during meetings lasting more than one-hour, social media/bulletin board poster about decreasing screen time, formation of a walking program or exercise class).

Mixed/Non-specific Strategy contains either both HE- and PA-focused opportunity or focuses on general disease prevention (e.g., monthly bulletin inserts for worship bulletins, holding a health fair, weight loss competitions, newsletter mailing focusing on heart disease prevention strategies).

Figure 3.1. SC UMC Districts
Figure 3.2. Conceptual Model Highlighting Connections Between Church Environment and Children’s Health
CHAPTER 4

RESULTS

This chapter is comprised of three independent manuscripts that detail the findings of this study and partially fulfill the requirements of this dissertation. The first manuscript, “Healthy eating and physical activity interventions in faith-based settings: A systematic review using the RE-AIM framework,” will be submitted for publication consideration in the *American Journal of Preventive Medicine*. The second manuscript, “Church leaders’ views of obesity prevention efforts for children and youth,” will be submitted for publication consideration in the *Journal of Nutrition Education and Behavior*. The final manuscript, “An ecologically-based health intervention in faith-based settings: Analyzing opportunities to improve child nutrition and physical activity behaviors,” will be submitted for publication consideration to *Pediatric Obesity*. 
HEALTHY EATING AND PHYSICAL ACTIVITY INTERVENTIONS IN FAITH-BASED SETTINGS: A SYSTEMATIC REVIEW USING THE RE-AIM FRAMEWORK

1 Dunn CG, Wilcox S, Saunders R, Kaczynski, AT, Blake CE, and Turner-McGrievy G.

To be submitted to *American Journal of Preventive Medicine.*
Abstract

Context: Faith-based health interventions have been effective at improving desirable health behaviors, including healthy eating (HE) and physical activity (PA). However, the generalizability of results and the inclusiveness of reporting of critical design elements sufficient for large-scale implementation and broad public health impact are less known.

Evidence Acquisition: A systematic literature search was performed from 2017 to 2018. Interventions were assessed to determine the extent to which faith-based HE and/or PA interventions reported indicators of the RE-AIM (reach, effectiveness/efficacy, adoption, implementation, maintenance) framework. Articles were included if they (1) were published in an English language peer-reviewed journal; (2) were conducted in the United States; (3) were interventions; (4) included individual-level HE or PA behavioral outcomes; (5) were conducted within an organizational setting; and (6) were faith-based.

Evidence Synthesis: Thirty-eight interventions (46 articles) met inclusion criteria. Most were conducted at the individual/interpersonal level, few focused on organizational policy or environmental change. Most interventions showed favorable changes in at least one health behavior outcome under investigation, but none addressed all RE-AIM indicators. The mean level of reporting was low for all RE-AIM dimensions across interventions (reach, 2.3±1.1 out of 5 possible indicators; efficacy/effectiveness, 2.3±0.8 out of 4 indicators; adoption, 3.8±1.4 out of 6 indicators; implementation, 1.3±0.6 out of 3 indicators; maintenance, 0.3±0.5 out of 3 indicators).

Conclusions: Faith-based interventions to improve HE/PA behaviors do not report the necessary information needed to understand the potential for broad dissemination and implementation in community settings. Future interventions should report on
considerations for translation and dissemination of evidence-based programs to expand public health impact.

**Context**

Healthy eating (HE) and physical activity (PA) are critical in the prevention and treatment of overweight and obesity and several chronic diseases, including diabetes, heart disease, and several types of cancers.\(^1\)\(^{-}\)\(^4\) However, youth or adults throughout the US do not consistently meet HE or PA guidelines, and these numbers are especially low among rural and racial/ethnic minority populations.\(^5\)\(^{-}\)\(^7\) Community and organizational partnerships have long been proposed to improve HE and PA, and faith-based organizations (FBOs) may play an important role in improving health behaviors, especially for high-risk populations.\(^8\)\(^,\)\(^9\)

Faith-based programming (e.g., connecting health programming to scripture, prayer, or spirituality) may assist in providing authentic connections between spirituality and health to create relevance for congregants, improve programmatic acceptance, and increase social support for programming and behavior change.\(^8\) Evidence is available to support the effectiveness of HE and PA programs in faith-based settings.\(^10\)\(^{-}\)\(^12\) However, previous reviews in this area have focused primarily on PA,\(^10\)\(^,\)\(^11\) or only on specific at-risk populations,\(^12\) and little is known about the potential impact of faith-based HE and PA programming on population health. Though reviews provide evidence to demonstrate the effectiveness of faith-based health programming in specific groups,\(^10\)\(^{-}\)\(^12\) more information is needed about how to design and implement programs that can be scaled up to reach broader audiences for large-scale public health impact.\(^13\) Scalable interventions that are capable of improving health behaviors across cultural, geographic, and socioeconomic
contexts are critical to improving population health\textsuperscript{14}, and little has been done to evaluate elements of faith-based studies needed for translation and dissemination.

One approach used to better understand the potential public health impact of organizational health interventions is to use the reach, effectiveness, adoption, implementation, maintenance (RE-AIM) framework\textsuperscript{15}. The RE-AIM framework was created to evaluate intervention elements; accordingly, it can be used to assess an intervention’s potential for public health impact by evaluating the degree to which interventions report intervention and evaluation elements with an equal emphasis on internal (efficacy/effectiveness) and external (generalizability) validity\textsuperscript{15,16}. Within the framework are criteria to determine the degree to which interventions report elements of internal and external validity at both the individual and organizational levels. The RE-AIM framework has been applied broadly across public health interventions at all levels of ecological influence (e.g., individual/interpersonal levels, environmental/policy levels, both sets of levels) to evaluate interventions in PA and obesity, disease management, tobacco or substance abuse, health literacy and other topics\textsuperscript{17–19}.

Effective interventions that can be scaled up and/or delivered to large numbers of people, both adults and youth, may have a more widespread impact\textsuperscript{15,20}, and assessing faith-based HE and PA programs using RE-AIM may provide insight into the potential of such programs for public health influence. Currently, reviews of faith-based health interventions have primarily focused on program efficacy/effectiveness by identifying evidence of causal relationships between intervention strategies and health outcomes\textsuperscript{8,10,12,13}. However, these reviews may not provide insights to the generalizability of these interventions. Therefore, the primary purpose of this article is present findings of
Evidence Acquisition

Literature Search and Selection

This systematic review was conducted between June and July 2017 with ongoing monthly searches for newly published articles ending in May 2018. With the help of an experienced librarian, six databases (MEDLINE via PubMed, PsychInfo, Web of Science, CINAHL, ATLA, and Cochrane) were searched to identify relevant articles on faith-based PA and/or HE interventions. The full search strategy used for MEDLINE can be found in the Appendix (available online). In addition to the electronic search, study team members contacted corresponding authors to request information about additional relevant citations when needed, previous review publications were checked for relevant references or companion articles (e.g., methods papers, maintenance reports), and relevant article citation lists were examined.¹⁰⁻¹²

Two people (CGD and DB) used Cochrane Covidence systematic review software (https://www.covidence.org/home) to review titles and abstracts and determine if they appeared to meet key inclusion criteria. Discrepancies were handled through discussion to reach consensus. Full-text reviews to assess eligibility were independently conducted by two researchers (CGD and CM) and articles providing information about the same intervention were merged if they included information relevant to the review. Methods
followed PRISMA guidelines, and Figure 1 includes details of the systematic process used to identify eligible articles for inclusion in this review.

**Inclusion Criteria**

Articles were eligible if they: (1) were published in an English language peer-reviewed journal; (2) were conducted in the United States; (3) were interventions, (4) included individual-level HE or PA behavioral outcomes; (5) were conducted within an organizational setting (e.g., church, hospital, school); and (6) were faith-based defined as including some element of spirituality such as prayer, referenced the Bible, or other faith traditions. Study designs could include randomized controlled trials (RCTs), non-RCTs with a control or comparison group, quasi-experimental designs, and pilot and feasibility studies. No limitations were placed on publication date or participant age, gender, race/ethnicity, or presence of chronic disease.

**Data Extraction**

Two reviewers (CGD and CM) independently extracted study data, including level of intervention (e.g., individual/interpersonal levels, environmental/policy levels, multiple levels) study design, population, geographic location, sample size, intervention elements, and intervention outcomes (HE and PA), using predefined criteria (Appendix 1).

**RE-AIM Evaluation Assessment**

Using a previously validated RE-AIM extraction tool, two people (CGD and LD) coded three interventions together to develop familiarity with the coding protocol and
discuss RE-AIM elements. CGD and LD then reviewed and independently coded an additional 12 interventions (30% of the sample) to ensure acceptable inter-rater reliability. Coders met with a senior-level researcher (RS) to resolve coding discrepancies and refine examples in the code-book.

The 21-indicator extraction tool represented the five RE-AIM domains: (1) five indicators used to assess **Reach** (individual-level measures): method to identify target population, inclusion criteria, exclusion criteria, participation rate, and representativeness; (2) four indicators used to assess **Efficacy/effectiveness**: the use of intent-to-treat analysis or statistical methods robust enough to account for participant loss, quality of life outcomes or unintended consequences, attrition rate, and measures from at least one follow-up; (3) six indicators used to assess **Adoption** (organizational-level measures): site participation rate, setting description, method to identify organizations, level of expertise of change agents, inclusion or exclusion criteria for settings, site representativeness; (4) three indicators used to assess **Implementation**: intervention duration, the extent to which the protocol was delivered as intended, and measures of implementation costs; and (5) three indicators used to assess **Maintenance**: individual-level measures from at least 6 months post interventions, measures of site-level maintenance post-intervention, and measures of maintenance cost. All indicators from the data extraction tool were coded either 0 (no) or 1 (yes).

One author (CGD) coded the remaining interventions independently, meeting with senior level researchers (RS or SW) for clarification if issues arose. The proportion of interventions reporting each indicator was calculated by dividing the number of interventions reporting the indicator by the total number of interventions. The mean
number of indicators reported per study was also calculated for each RE-AIM domain. Additionally, a sum of interventions reporting at least one indicator was calculated for each RE-AIM domain. Using previously implemented protocols, a comprehensiveness of reporting score was calculated for each study. Comprehensiveness was considered high for a study if it included 15-21 out of 21 indicators, moderate if it included 8 to 14 indicators, and low if it reported less than 8 indicators. One study, published in 2018, was not assessed for maintenance due to the time-frame of publication, and was thus scored out of 18 possible indicators. Pilot and/or feasibility studies were identified if the article explicitly stated the nature of the project, or if the total study population was under 100 participants. Pilot studies were evaluated out 15 indicators because adoption often relied on previously existing relationships and/or the recruitment of a single location without consideration of representativeness, and therefore adoption could not be fully assessed. Comprehensiveness for pilot studies was considered high if the study included 11-15 out of 15 indicators, moderate it included 5-10 indicators, and low if it reported less than 5 indicators.

**Evidence Synthesis**

**Study Selection**

Initial searches in six databases (Figure 4.1) yielded 19,528 records. After removing duplicate articles (3,239), unrelated articles based on title/abstract (n=16,091), and articles not meeting inclusion criteria after full text review (n=154), 46 articles were considered for the review, representing 38 interventions.
Description of Included Interventions

Appendix D summarizes study characteristics described here. Of the 38 interventions, 25 (66%) used interpersonal and/or intrapersonal strategies, 13 (34%) used strategies at multiple levels (e.g., intra/interpersonal and policy/environmental), and no intervention used exclusively organizational strategies (e.g., environmental or policy only) (Table 4.1). Of the 13 interventions implemented at multiple levels, 7 were conducted using the Body and Soul program and 2 using the Faith, Activity, and Nutrition Program.

Pilot studies accounted for 16 of the 38 interventions (42%). Over half of the interventions were randomized trials (n=21, 55%), and the remaining used quasi-experimental designs (n=17, 45%). Pilot studies most often used quasi-experimental designs, while non-pilot interventions more often used randomized designs, often with a delayed control intervention group.

One intervention focused on Jewish faith traditions, and the remaining interventions were rooted in Christian beliefs. African Americans were the most common recipients of faith-based interventions (n=31), one intervention focused on Latinas, another on Korean church members and five on white or racially diverse faith communities. One intervention was conducted in a hospital setting (patients, staff, and visitors recruited from one hospital for a 12-week, scripturally-based weight loss intervention), one in an orthodox Jewish school, and the remaining interventions were conducted within a religious organization (i.e., churches). Though 13 interventions intended to make organizational level change to impact the majority of members, none of these interventions measured outcomes in members under 18 years old. Adults were the
intended recipients of interventions in all but three of the remaining interventions, where children or adolescents were identified as the sole recipients of the intended program.

Twenty-nine interventions reported PA outcomes (19 included significant changes), 24 reported HE outcomes (13 included significant changes), and 15 reported both PA and HE outcomes (6 included significant outcomes for both PA and HE). Appendix 1 (available online) summarizes these characteristics across all interventions.

Comprehensiveness of Reporting

Table 4.2 includes the comprehensiveness of reporting across the five RE-AIM domains (21 indicators) for non-pilot interventions, and across the four RE-AIM domains (15 indicators, adoption excluded) for pilot studies. Inter-coder reliability, assessed using kappa, was measured at $\kappa>0.8$ for all domains for the 30% of interventions that were double-coded. Comprehensiveness of reporting was moderate across interventions – the mean number of indicators reported for non-pilot interventions was $10.1\pm2.6$ (range 5-15), and $6.1\pm1.6$ for pilot studies (range 3-9). Only one non-pilot intervention’s reporting was highly comprehensive, with a score of 15. This study specifically used the RE-AIM framework as an evaluation tool. Though it was not scored on maintenance due to the early phase of the study at the time of publication, the overall score of 15 was still considered highly comprehensive. Two other interventions used the RE-AIM framework to guide their evaluation, but reporting was moderate (8-14 indicators) based on the number of indicators addressed. Three non-pilot interventions had a low comprehensiveness score (less than 8 indicators). No pilot studies were highly comprehensive, and three had low comprehensiveness (less than 5 indicators).
Reach. Across interventions, 100% reported at least one indicator of reach, and included an average of 2.3±1.0 indicators of reach out of a possible 5. The most commonly reported indicator of reach was the **method to identify the target population**, reported 100% of the time for both non-pilot and pilot studies. Target populations were most commonly defined based on race, gender, or geographic location, and the method of identifying these target populations was often based on health outcome or health disparity. For example, several interventions identified African American or Black women as intervention recipients and discussed low rates of physical activity among African American women compared to their white counterparts as their reason for identifying this target population. When considering the remaining elements of reach, excluding method to identify target population, 82% of interventions reported at least one additional element. Non-pilot and pilot interventions reported overall reach similarly, with 77% of non-pilot interventions reporting at least one additional element of reach, and 88% of pilot studies reporting at least one additional element of reach. Most interventions (76%) provided information about **inclusion criteria** for individuals, but fewer included information about **exclusion criteria** (34%). Several interventions that included elements at multiple levels (e.g., targeting most members of the church) reported no inclusion criteria, stating that all members of the church were considered part of the intervention due to their presence in the physical and social space; however these interventions excluded measurements from congregants under 18 years old, indicating that age would be an exclusion or inclusion criteria that was not specified. In these interventions, participant responses to follow-up surveys was limited to adult congregants.
even though children and adolescents could be influenced by the intervention through the nature of their presence in the religious organization. Few interventions reported on the **participation rate** (18%) or **representativeness** of the sample (5%).

**Efficacy/Effectiveness.** All interventions reported **measures from at least one follow-up** because this was an inclusion criterion for the current review. On average, interventions reported 2.3±0.8 indicators of efficacy/effectiveness out of a possible 4. Excluding measures from at least one follow-up, 87% of interventions reported at least one indicator of efficacy/effectiveness. **Intent-to-treat analysis** was reported in 39% of interventions overall, and was considered present if authors stated its use, if there was no attrition from the study, or if statistical methods were robust enough to account for the loss of participants. **Quality of life or unintended consequences** were reported in only 8% of interventions, all of which were pilot studies, and most often were reported as a study outcome measure or an adverse event. Most interventions (87%) reported **attrition rates** and reporting was similar between non-pilot and pilot interventions. Attrition rates were considered present if they were reported, or if study authors provided sufficient information in text, tables, or figures for attrition to be calculated for individual participants.

**Adoption.** The six RE-AIM indicators of adoption were only assessed for non-pilot interventions (n=22). The nature of pilot studies often dictates that they are based in one organization or are organized based on existing partnerships with single or few organizations, and therefore elements of adoption (e.g., organizational participation rate,
representativeness) are not relevant to the analysis of those smaller interventions. Non-pilot interventions reported an average of 3.8±1.4 indicators of adoption out of a possible six. Almost all interventions (95%) provided a setting description, which might include organization size or denomination. Study authors also provided information about methods to identify organizational partners 77% of the time. Organizations were often identified as potential partners based on their geographic proximity to the research location or because of pre-existing partnerships with research or public health institutions. Interventions reported the level of training for change agents 86% of the time. Change agents were often community or lay health advisors (e.g., church members) trained to deliver a program, or were trained researchers or graduate students. Training descriptions often included the duration of training, materials used to train change agents, or the level of expertise if the change agent was a research team member (e.g., registered dietitian, registered nurse). Fewer interventions (45%) provided information about site participation rates (e.g., the number of sites participating in the intervention versus the number of sites eligible to be included), and even fewer presented information about the representativeness of the organizations participating (18%). Over half of the interventions (59%) included information about inclusion or exclusion criteria for organizations, which was most often based on membership size, geographic location, racial composition, and willingness to accept random assignment.

Implementation. On average, interventions reported 1.3±0.6 indicators of implementation out of a possible three. Intervention duration was the most commonly reported indicator (92% reporting) and ranged from 4 weeks to 15 months. Fewer
interventions (29%) provided information about the extent to which a protocol was delivered as intended, and this was more common in non-pilot interventions (36%) than pilot studies (19%). This information included researcher observations of class sessions or implementer (e.g., change agent) checklists. Several interventions reported collecting process evaluation data including implementation fidelity but did not provide this information in published papers. Only 2 interventions (5%), both non-pilot interventions, reported any type of implementation costs.

**Maintenance.** Maintenance was the least frequently reported RE-AIM dimension, with only 10 interventions (27%) describing any type of maintenance, and interventions reporting an average of 0.3±0.5 out of three possible indicators. Eight non-pilot interventions reported at least one indicator of maintenance, and only two pilot studies reported any measure of maintenance. The most often reported element of maintenance was measurement at the individual level greater than 6 months post intervention (22%). Three interventions (8%) described elements of site-level maintenance, most often as an update from a community health or lay health advisor within the church, and all were non-pilot interventions. No interventions included measurements of maintenance cost, congruent with few interventions providing information about study cost or intervention maintenance.

**Discussion**
Faith-based health programs have demonstrated success at improving health behaviors and multiple public health organizations have identified faith-based partnerships as
important in improving global population health. However, many published interventions focus on individual behavior change and only on adult populations. Interventions implementing changes at the organizational level may provide broader potential to improve public health by assisting a greater number of individuals in making small changes and this research highlights the need to focuses on the translation and dissemination of such projects. Information required for dissemination of evidence-based programs necessitates comprehensive reporting on intervention effectiveness and generalizability. This study used the RE-AIM framework to systematically review the degree to which faith-based HE and PA interventions report on elements important to the potential scalability of evidence-based programs and results indicate that more comprehensive reporting is needed to scale-up effective interventions.

The findings presented here provide insight into the variety of interventions in terms of target population, geographic location, intervention approach, and study design, and are consistent with previous reviews of faith-based health interventions. Measures of reach for this review are higher than some previous RE-AIM studies, and are likely due primarily to the high number of interventions describing the method to identify target populations. However, when compared with findings from previous faith-based reviews, the results here are consistent and demonstrate that interventions most often identify a target population based on health disparities, include a primary focus on Christian faith communities, and are comprised of homogeneous populations in terms of race (predominantly African American), age (predominantly adults), and gender (predominantly female).
In this review, it is not surprising that efficacy/effectiveness was the most commonly reported RE-AIM dimension when examining both large and pilot studies. This is likely because an *a priori* characteristic of interventions included here is that they must have an outcome measure of PA or HE at the individual level. Unlike previous reviews that may not have used this qualification for study inclusion, the high percentage of interventions reporting these outcomes increases the overall proportion reporting for this dimension. The use of intent-to-treat analysis or robust statistical methods was low (39%) across all interventions and because there may often be differences between study completers and non-completers in terms of age, income, and current health level, it is important that intent-to-treat measures be employed to account for attrition throughout the study.

Though adoption was not assessed for pilot studies, reporting among non-pilot interventions was substantial. However, because many interventions examined in this review were pilot studies, it should be mentioned that these studies do not provide a realistic or replicable view of what health promotion programming would be on a large scale. Providing information about participation rates and characteristics of organizations is paramount, and should be considered as important as reporting on individual participation rates and characteristics if programs are to be implemented with organizational partners.

It is not surprising that duration emerged as the most commonly reported indicator of implementation, because describing the intervention is mandated by most journals. However, implementation fidelity and cost are similarly important to determine if a program is to have public health impact. Low implementation fidelity under real-world
circumstances may be a reason that interventions that are effective in highly controlled environments do not yield similar results in less constrained settings.\textsuperscript{76,77} Program costs may be measured as financial input, time from volunteers, and organizational costs including space; but regardless of how they are determined, reporting the potential cost of programming is imperative to the potential adoption of the program at a population level.\textsuperscript{78,79}

Consistent with previous reviews using RE-AIM criteria,\textsuperscript{18,19} reporting was lowest for indicators of maintenance. And like other reviews, reporting across multiple health interventions, the most commonly reported measure of maintenance in this review was a measure of individual-level outcomes at 6 months post-intervention.\textsuperscript{17,18} However, faith-based health interventions often require the participation and support of an organization, and therefore an understanding of elements that may improve or increase program maintenance at the organizational level. Such approaches as creating organizational policy or integrating programs into already existing organizational activities are strategies to improve program maintenance but may seldom be seen in interventions that only target the individual or interpersonal level. This does, however, provide ample opportunity for future research into individual and site-level maintenance in faith-based health promotion, which may include both quantitative and qualitative analysis of organizations and their members.\textsuperscript{17}

\textbf{Limitations}

This review has several limitations. As with all systematic reviews, it is only possible to report study elements to the extent to which they are reported in available sources. While this research team conducted multiple reference list searches, contacted
study authors, and included companion methods and process evaluation manuscripts, information included in the review is limited to information in the published literature. Second, the number of pilot studies included in this body of literature was substantial. Because the field of faith-based PA and HE intervention research is in its early stages, authors had limited ability to make comparisons of RE-AIM characteristics across intervention levels. An initial goal of this review was to compare reporting between interventions at the individual/interpersonal level, the environmental/policy level, and interventions including elements at multiple levels, as has been done in other reviews. However, the sizable number of pilot studies, and the small number of unique programs delivering multi-level interventions prohibited this comparison. Third, this review wanted to focus on all age ranges for intervention recipients; however, only three interventions measured outcomes in populations under 18 years old.55,65,66 Because peer-reviewed literature on faith-based PA and HE interventions including children and youth is limited, the results presented here are also limited in their generalizability.

This review also has several strengths. Unlike previous reviews that have been limited to PA outcomes only or have been confined by population,10–12 this synthesis includes interventions focusing on PA and HE. Sixteen interventions reviewed here reported on HE and PA outcomes, and even more included intervention elements addressing both behaviors, regardless of their inclusion as outcome measures. Nine interventions included only HE outcomes and were not included in previous reviews. While multiple public health organizations including the World Health Organization,71 the National Institutes of Health,80 and the Centers for Disease Control and Prevention72 have identified faith-based organizations as partners in promoting PA, this does not come
at the exclusion of HE promotion, which is often included in comprehensive health promotion programing. Therefore, a comprehensive search of the literature that included PA and HE interventions may provide a more robust overview of these interventions than has been previously published. Another strength was that this review used an established coding methodology that has been applied in several areas of health intervention literature. This method provides ample information about elements of internal and external validity and provides insight into areas where interventionists and research teams may need to place effort to improve overall reporting.

**Conclusion**

This RE-AIM based review systematically identified faith-based PA and HE interventions and provided evidence that most are not reporting sufficient information related to the potential generalizability of interventions in this setting.

Comprehensiveness of reporting for most studies was moderate to low, which is problematic because reporting that includes information on internal and external validity is important for designing and implementing effective interventions that can be scaled up for broad population impact. Interventions seldomly reported participation rate and representativeness of the sample (**reach**); intent to treat analysis (**efficacy/effectiveness**); site participation and representativeness (**adoption**), implementation as intended (**implementation**); and nearly all elements of **maintenance** especially site level maintenance. Taken together, weak reporting in these areas suggest a lack of attention to or understanding of the concept of populations as compared to individuals. This represents a substantial barrier to creating sustainable, health-promoting environments
that can facilitate population behavior change and therefore public health impact. If programs are to be successfully scaled up and disseminated to improve public health, it is imperative that researchers provide information about research elements to improve replicability on a population scale.
Table 4.1. Comprehensiveness of reporting of interventions included in the systematic review (n=38) by non-pilot or pilot intervention status

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention level</th>
<th>R % (n=5)</th>
<th>E % (n=4)</th>
<th>A % (n=6)</th>
<th>I % (n=3)</th>
<th>M % (n=3)</th>
<th>Total (n=21)</th>
<th>Comprehensiveness of reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allicock, 2012</td>
<td>Multiple</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>Moderate</td>
</tr>
<tr>
<td>Allicock, 2013</td>
<td>Multiple</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>Moderate</td>
</tr>
<tr>
<td>Arredondo, 2017</td>
<td>Individual or interpersonal</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>13</td>
<td>Moderate</td>
</tr>
<tr>
<td>Bopp, 2009</td>
<td>Individual or interpersonal</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>9</td>
<td>Moderate</td>
</tr>
<tr>
<td>Bowen, 2009</td>
<td>Individual or interpersonal</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>Low</td>
</tr>
<tr>
<td>Study</td>
<td>Type</td>
<td>Methods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
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</tr>
<tr>
<td>Campbell, 1999</td>
<td>Multiple</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Campbell, 2004</td>
<td>Individual or interpersonal</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Christie, 2009</td>
<td>Individual or interpersonal</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Gutierrez, 2014</td>
<td>Individual or interpersonal</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Murrock, 2010</td>
<td>Individual or interpersonal</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Pinsker, 2017</td>
<td>Multiple</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Resnicow, 2001</td>
<td>Individual or interpersonal</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Resnicow, 2004</td>
<td>Multiple</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td></td>
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<tr>
<td>Resnicow, 2005</td>
<td>Multiple</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Type of Study</td>
<td>Number of Indicators Reported</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sattin, 2016</td>
<td>Individual or interpersonal</td>
<td>3 3 4 1 1 12</td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomson, 2015</td>
<td>Multiple</td>
<td>1 2 5 1 0 9</td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tussing-Humphreys, 2013</td>
<td>Multiple</td>
<td>2 2 3 1 0 8</td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wilcox, 2007</td>
<td>Multiple</td>
<td>2 3 4 1 2 12</td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wilcox, 2013</td>
<td>Multiple</td>
<td>3 3 6 2 0 14</td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wilcox, 2018</td>
<td>Multiple</td>
<td>5 3 6 N/A N/A 14</td>
<td>*High</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yanek, 2001</td>
<td>Individual or interpersonal</td>
<td>2 3 5 1 1 12</td>
<td>Moderate</td>
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<td></td>
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<td></td>
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<tr>
<td>Young, 2006</td>
<td>Individual or interpersonal</td>
<td>3 3 4 1 0 11</td>
<td>Moderate</td>
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<td></td>
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</tr>
</tbody>
</table>

**Pilot Studies**

<table>
<thead>
<tr>
<th>Number of Indicators Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>Anderson, 2013⁵⁴</td>
</tr>
<tr>
<td>Benjamins, 2010⁵⁵</td>
</tr>
<tr>
<td>Duru, 2010⁵⁶</td>
</tr>
<tr>
<td>Fitzgibbon, 2005⁵⁷</td>
</tr>
<tr>
<td>Harmon, 2014⁵⁸</td>
</tr>
<tr>
<td>Hughes, 2016⁵⁹</td>
</tr>
<tr>
<td>Study</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Kim, 2008</td>
</tr>
<tr>
<td>Parker, 2010</td>
</tr>
<tr>
<td>Peterson, 2005</td>
</tr>
<tr>
<td>Peterson, 2010</td>
</tr>
<tr>
<td>Thompson, 2013</td>
</tr>
<tr>
<td>Trost, 2009</td>
</tr>
<tr>
<td>Tussing-Humphreys, 2015</td>
</tr>
<tr>
<td>Study</td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>Walker, 2015&lt;sup&gt;68&lt;/sup&gt;</td>
</tr>
<tr>
<td>Whitt-Glover, 2008&lt;sup&gt;69&lt;/sup&gt;</td>
</tr>
<tr>
<td>Woods, 2013&lt;sup&gt;70&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
Table 4.2. Proportion of faith-based HE and PA interventions reporting reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) item indicators by intervention type.

<table>
<thead>
<tr>
<th>Dimension and indicators</th>
<th>Non-pilot intervention (n=22) (^a)</th>
<th>Pilot studies (n=16)</th>
<th>Total reporting (n=38) (^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reach</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method to identify target population</td>
<td>22 (100%)</td>
<td>16 (100%)</td>
<td>38 (100%)</td>
</tr>
<tr>
<td>Inclusion criteria</td>
<td>15 (68%)</td>
<td>14 (88%)</td>
<td>29 (76%)</td>
</tr>
<tr>
<td>Exclusion criteria</td>
<td>6 (27%)</td>
<td>7 (44%)</td>
<td>13 (34%)</td>
</tr>
<tr>
<td>Participant rate</td>
<td>5 (23%)</td>
<td>2 (13%)</td>
<td>7 (18%)</td>
</tr>
<tr>
<td>Representativeness</td>
<td>2 (9%)</td>
<td>0 (0%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Mean number of indicators reported/study</td>
<td>2.3±1.1</td>
<td>2.4±0.7</td>
<td>2.3±1.0</td>
</tr>
<tr>
<td>Interventions reporting at least one indicator (^c)</td>
<td>17 (77%)</td>
<td>14 (88%)</td>
<td>31 (82%)</td>
</tr>
<tr>
<td><strong>Efficacy / Effectiveness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intent-to-treat analysis</td>
<td>9 (41%)</td>
<td>6 (38%)</td>
<td>15 (39%)</td>
</tr>
<tr>
<td>Quality of life or unintended consequences</td>
<td>0 (0%)</td>
<td>3 (19%)</td>
<td>3 (8%)</td>
</tr>
<tr>
<td>attrition rate</td>
<td>19 (86%)</td>
<td>14 (88%)</td>
<td>33 (87%)</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>measures from at least one follow-up</td>
<td>22 (100%)</td>
<td>16 (100%)</td>
<td>38 (100%)</td>
</tr>
<tr>
<td>mean number of indicators reported/study</td>
<td>2.3±0.8</td>
<td>2.4±0.9</td>
<td>2.3±0.8</td>
</tr>
<tr>
<td>interventions reporting at least one indicator</td>
<td>19 (86%)</td>
<td>14 (88%)</td>
<td>33 (87%)</td>
</tr>
<tr>
<td>adoption</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>site participation rate</td>
<td>10 (45%)</td>
<td>N/A</td>
<td>10 (45%)</td>
</tr>
<tr>
<td>setting description</td>
<td>21 (95%)</td>
<td>N/A</td>
<td>21 (95%)</td>
</tr>
<tr>
<td>method to identify organization</td>
<td>17 (77%)</td>
<td>N/A</td>
<td>17 (77%)</td>
</tr>
<tr>
<td>level of expertise of change agents</td>
<td>19 (86%)</td>
<td>N/A</td>
<td>19 (86%)</td>
</tr>
<tr>
<td>inclusion or exclusion criteria for setting</td>
<td>13 (59%)</td>
<td>N/A</td>
<td>13 (59%)</td>
</tr>
<tr>
<td>representativeness</td>
<td>4 (18%)</td>
<td>N/A</td>
<td>4 (18%)</td>
</tr>
<tr>
<td>mean number of indicators reported/study</td>
<td>3.8±1.4</td>
<td>N/A</td>
<td>3.8±1.4</td>
</tr>
<tr>
<td></td>
<td>Study 1</td>
<td>Study 2</td>
<td>Study 3</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Interventions reporting at least one indicator</td>
<td>22 (100%)</td>
<td>N/A</td>
<td>22 (100%)</td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention duration</td>
<td>20 (91%)</td>
<td>15 (94%)</td>
<td>35 (92%)</td>
</tr>
<tr>
<td>Extent to which protocol was</td>
<td>8 (36%)</td>
<td>3 (19%)</td>
<td>11 (29%)</td>
</tr>
<tr>
<td>delivered as intended</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measures of implementation costs</td>
<td>2 (10%)</td>
<td>0 (0%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Mean number of indicators reported/study</td>
<td>1.4±0.7</td>
<td>1.1±0.5</td>
<td>1.3±0.6</td>
</tr>
<tr>
<td>Interventions reporting at least one indicator</td>
<td>20 (95%)</td>
<td>15 (94%)</td>
<td>35 (95%)</td>
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<tr>
<td><strong>Maintenance</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Measures and/or results &gt;6 months</td>
<td>6 (29%)</td>
<td>2 (13%)</td>
<td>8 (22%)</td>
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<tr>
<td>Measures of site-level maintenance</td>
<td>3 (14%)</td>
<td>0 (0%)</td>
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<tr>
<td>Mean number of indicators reported/study</td>
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<td>0.1±0.3</td>
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Interventions reporting at least one indicator | 8 (38%) | 2 (13%) | 10 (27%)  

| a | Maintenance calculated for 21 out of 22 non-pilot interventions, Wilcox, 2018 excluded due to stated exclusion of this dimension |
| b | Maintenance calculated for 37 out of 38 total interventions, Wilcox, 2018 excluded due to stated exclusion of this dimension |
| c | Interventions reporting at least one Reach indicator calculated excluding reporting method to identify target population, reported in 100% of interventions |
| d | Interventions reporting at least one Efficacy/Effectiveness indicator calculated measures from at least one follow-up, which was part of inclusion criteria and reported in 100% of interventions |
| e | Adoption not reported for interventions identified as pilot or feasibility |
Figure 4.1. Research study selection criteria and selection
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CHAPTER 4: MANUSCRIPT 2

CHURCH LEADERS’ VIEWS OF OBESITY PREVENTION EFFORTS FOR CHILDREN AND YOUTH

1 Dunn CG, Wilcox S, Bernhart JA, Blake CE, Kaczynski, AT, and Turner-McGrievy G.

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Abstract

Objective: To examine church leaders’ understandings, interpretations, meanings, and perceived opportunities associated with the role of faith-based organizations in promoting healthy eating and physical activity in children.

Design: Qualitative research using semi-structured in-depth interviews.

Participants: Leaders (n=26) from United Methodist churches (n=20) in South Carolina.

Phenomenon of Interest: Perceptions of health promotion efforts for children in faith-based settings, including primary health concerns, perceived opportunities, partnerships, and relationship of these efforts to the overall church mission.

Analysis: Interviews were transcribed verbatim and coded using a constant comparative method using NVivo software.

Results: Five themes emerged related to (1) multiple concerns about health issues facing children, (2) existing church structures influencing health behaviors, (3) potential partnerships to address children’s health, (4) importance of role models, and (5) the need for a tailored approach.

Conclusions and Implications: Church leaders view childhood health behaviors as an important area of concern for the church and identified links between physical and spiritual health. They identify multiple existing and potential organizational and community structures as important in improving healthy eating and physical activity. Faith-based organizations can play an important role in developing and delivering health
programming for children but desire assistance through partnerships with subject matter experts.

Introduction

Physical activity (PA) and healthy eating (HE) are associated with significant health benefits in children, including reduced risk of childhood overweight/obesity, improved mental health, and improved sleep.\textsuperscript{1–6} The development of PA and HE habits in childhood also has positive carry-forward effects on adult health and behavior and may reduce chronic disease risk throughout the life course.\textsuperscript{7,8} Moreover, overweight adolescents, without intervention, have a 70\% chance of becoming overweight or obese adults.\textsuperscript{9,10}

Important health recommendations for children include consuming a diet high in fruits and vegetables and low in added sugars and unhealthy fats and engaging in 60 minutes or more of PA daily.\textsuperscript{11,12} However, few US children meet guidelines, and rates of childhood overweight/obesity remain high, especially among racial and ethnic minority populations.\textsuperscript{13–15}

HE and PA behaviors are complex, and may be impacted at multiple levels of influence.\textsuperscript{16,17} While a substantial portion of youth behavior is influenced inside the home, organizations may play key roles in development and maintenance of youth dietary and PA habits.\textsuperscript{18} Outside of the home, organizations such as schools, faith-based organizations (FBOs), afterschool programs, and clubs can serve as an outlet for child development and social interaction.\textsuperscript{19,20} Within organizations, children may be exposed to
diverse peer influences, environmental structures, expansive or limited availability and accessibility of products, media messages, cultural norms, and policies or rules about behavior that could impact childhood obesity. Current childhood obesity research skews heavily toward school-based programs and partnerships. However, a broader approach to addressing childhood obesity that considers additional community settings where children grow, play, and interact with others may identify additional social and environmental components important to a comprehensive public health approach to improving health.

FBOs have a successful history of implementing health programming for congregants and community members, and have been identified as strategic partners in health promotion by public health organizations, including the National Institutes of Health, the Centers for Disease Control and Prevention, the National Physical Activity Plan, and the World Health Organization. Faith-based health promotion programs are broad-reaching but often focus on behavior change among adults. At the same time, church attendance among families with children and adolescents is high, FBOs are considered important partners in improving children’s health, and FBOs often host child-specific activities.

FBOs are trusted community organizations with existing structures to disseminate information and programming to children and families, yet few studies have examined child-focused health promotion programming in FBOs. Three pilot interventions, Go Girls, Shining Like Stars, and the Jewish Day School Wellness Initiative, demonstrated small improvements in health knowledge or behaviors among children. However, these studies represent only a small portion of documented faith-based health
interventions and an even smaller proportion of organizationally-based children’s health interventions. At the same time, several religious traditions and denominations have formalized programs or statements on the importance of children’s health including PA and HE behaviors, and church leaders have previously identified childhood obesity prevention as important to their congregations.

Little is known about the underlying motivations, understandings, or potential and existing approaches to positively influence children’s health, specifically HE/PA and childhood overweight/obesity, in FBOs. Therefore, the purpose of this qualitative research is to examine church leaders’ understandings, interpretations, meanings, and perceived opportunities associated with the role of FBOs in promoting children’s HE/PA.

METHODS

This qualitative study was conducted between January and July 2018 and consisted of in-depth interviews with church leaders from the South Carolina Conference of the United Methodist Church (SCUMC). SCUMC was selected based on an existing research partnership between SCUMC and the University of South Carolina Prevention Research Center, as well as their 2017 denomination-wide implementation of the Abundant Health Program that includes an emphasis on improving children’s health globally and locally through HE, PA, mental health, and substance-free living.

In keeping with theoretical underpinnings of the ongoing research partnership, interview guide development was based on a conceptual model incorporating elements of Cohen’s structural model of health behavior and the UMC Statement on Health and Wholeness. The interview guide was evaluated by experts in qualitative methods and
faith-based health intervention research and by partners within the SCUMC. Three pilot interviews were conducted, and refinements were made to the interview guide to improve clarity. Selected interview questions and probes from the final interview guide relevant to the current research are shown in Figure 4.2.

**Recruitment and Sample**

The primary level of sampling was the church. The research team recruited a purposeful sample of representatives from SCUMC churches (n=20) (Table 4.3) who were either participating or not participating in the Faith, Activity, and Nutrition (FAN) Program, an ecologically-based HE/PA intervention described elsewhere. The research team sought to recruit a sample from participating and not participating churches to provide a breadth of perspective on health promotion efforts. Pastors were contacted by email and phone and invited to participate at their convenience and female pastors were oversampled compared to the general demographic breakdown of leadership within the state conference to provide diverse perspectives. Participation was voluntary, and all participants provided consent prior to interviews. The University of South Carolina Institutional Review Board reviewed study procedures and materials and determined this research to have exempt status.

Participants initially included twenty pastors (Table 4.4), representing twenty congregations (n=10 participating in the FAN Program; n=10 not participating). Pastors were then asked to provide the names and contact information for an additional staff or congregation member that they identified as having knowledge about the topic of interest. Snowball sampling resulted in six additional church leaders (e.g., health committee
chairs, youth pastor) (Table 4.5), all representing FAN churches, willing to participate in interviews. All participants were offered a $20 gift card incentive and participants could elect to donate their incentive to the UMC Epworth Children’s Home (facilitated by the research team).

**Data Collection**

The interviewer, a White female (CGD), remained the same throughout data collection. To build rapport with participants and establish a shared point of understanding, the interviewer’s guide introduction noted that CGD was a member of the United Methodist Church and had previously worked in youth ministry. Semi-structured interviews were conducted by phone, lasting on average 56 minutes (range 33-89 minutes). All interviews were audio-recorded and transcribed verbatim using a professional transcription service. Identifying information was removed and pseudonyms were assigned to recordings prior to transcription. No church leader declined audio recording. The interviewer wrote field notes after all interviews and notes were discussed by the interviewer and a second research team member (JAB). Based on interviewer’s notes and research team discussions, it is estimated that saturation was reached after 16 interviews, but data collection continued based on research protocol until 10 churches were recruited from churches participating in FAN and 10 churches not participating in FAN, for a total of 20 churches (n=26 interviews).

**Data Analysis**

Data analysis was facilitated by using NVivo 11 qualitative data analysis software. Two trained coders, CGD and JAB, independently coded five interviews using
an *a priori* codebook based on the conceptual model and interview guide. Trained coders used emergent coding and met to discuss themes and subthemes that arose across double-coded interviews. Thematic elements were discussed with SW and CB, who provided input on thematic structure and overlap. CGD and JAB continued to code 10 additional interviews to establish coding consistency using the refined codebook. CGD independently coded the remaining interviews using constant comparative methods to identify similarities and differences in interviews and met with JAB weekly to discuss themes.

**RESULTS**

Five themes emerged related to church leaders’ views on addressing childhood obesity: (1) Church leaders have multiple and differing concerns about health issues facing children in their congregation and community, (2) Church leaders identify existing church structures that play a role in health behaviors, (3) Church leaders identify partnerships as important to addressing childhood health behaviors, (4) Church leaders believe that adults are role models for children in their churches, and that churches and church members are role models in the community, and (5) Addressing health concerns about obesity among children and youth will need to be tailored to the spiritual environment of the church and tailored for individual churches.

**Church leaders have multiple and differing concerns about health issues facing children in their congregation and community**

*Holistic health.* When asked what types of health the church should address among young members of their congregation and community, church leaders most often mentioned
“holistic health” or “whole person health.” Leaders identified “spiritual” health as most important, but included “physical,” “emotional,” and “mental” health as parts of “holistic health” while emphasizing that overall spiritual health could be impacted by these other types of health. One pastor stated:

“I think that it’s important to eat right, to get enough exercise, to sleep well, to have good emotional and spiritual health, to have good relationship health. I mean, good health includes so much, and it’s important for us to be wholly healthy. And that sort of health can help us to do the work of building the Kingdom of God.”

Health behaviors more concerning than obesity. When probed about their thoughts on specific physical health concerns among children, church leaders often identified health behaviors, specifically PA, increased screen time, and poor diet as more worrisome than overweight/obesity. One leader mentioned:

“I don’t see a lot of obesity in the congregation, but I see a need for children to participate or get out more and do things that are not associated with games and phones.”

Inactivity and increased screen time were identified across multiple interviews as concerning behaviors for children. Several leaders discussed perceived decreased PA opportunities for “children today,” often stating that there are fewer opportunities for children to be active outdoors than for past generations. Leaders also identified significant concerns about the amount of time that children spent with screens, including “tablets,” “phones,” “TV,” and “computer games.” Leaders identified these behaviors as
being related to one another, with increased screen time causing decreasing activity levels. When asked about health concerns, one pastor stated:

“Screen time, too much screen time, not using the resources outside. Not going outside playing like we’ve done in the past, they’re just on their phones and staying inside.”

Leaders’ concerns about poor diet were related to increased fast food or “convenience food” intake and parents being “too busy” to cook. Additional concerns about diet were related to community characteristics like lack of access to healthy foods and increased access to fast food. A sub-set of leaders identified cultural food traditions, primarily Southern food traditions or the “low-country” diet, as contributing to poor dietary intake among children in their congregation and community.

Concerns differ between church and community. Several church leaders identified different health concerns for young members of their congregation compared to the larger community, often related to childhood overweight/obesity and food security. When asked if childhood overweight/obesity was a concern in her congregation, one leader mentioned:

“In my congregation, it is not an issue. But in the community, it is certainly an issue.”

These differences were often related to economic differences between congregations and the surrounding community. Leaders who identified these differences mentioned the “affluence” of their congregation as a reason for low rates of childhood obesity and indicated that children in their congregation were “well taken care of.” In contrast,
leaders assessed that children in their community may not have the same level of “support.” One leader stated:

“We just have so much abundance in spots. And then there are spots where there isn’t abundance, and children struggle to get a good meal, and are very dependent on the food programs...”

Existing church structures exist that may play a role in influencing child health behaviors

Multiple activities and programs exist to encourage healthy behaviors. Church leaders identified multiple opportunities within their church that either are or could be used to encourage healthy behaviors, most often identifying these opportunities as part of existing programs (Table 4.1). When asked what opportunities existed in the church for children to be active, one leader responded:

“Every one of them at every turn have some kind of physical activity as a component of what we do, and to at least offer healthy options when we have meals and snacks.”

Several leaders mentioned that PA time was already built in to church activities such as Sunday School, youth group, Vacation Bible School, and choir practice. However, these activities were not always included as an effort to intentionally increase PA for health but were identified as a method to calm children prior to church events. One leader described:
“I think we’ve done this with our youth because I think our youth are a little hyper. In order to have a 15-minute program for young people, you need to wear ‘em out a little bit.”

Another pastor mentioned:

“We allow for physical movement and we encourage it in some places, or some activities, but it’s not systematic, thought out, or meant to really address that except for the fact, hey, kids need to burn off some energy.”

Opportunities for unhealthy behaviors exist. Church leaders identified several activities or opportunities in the church that could allow unhealthy behaviors among children, almost exclusively related to eating. Several leaders mentioned the church using food to entice children; examples included serving pizza in youth group, ice cream socials, doughnuts or cookies as snacks, and providing candy to children during Children’s Church. One leader said:

“I know on occasion youth group will have donuts to try to lure them in.”

And another stated:

“Why do I have to give the kids candy at the end of talking to them at Sunday church? Oh, otherwise they won’t want to come up anymore.”

Several leaders described attempts to reduce unhealthy opportunities or to provide healthy food options along with unhealthy foods at events like “family meals” and “Wednesday night dinners.” However, leaders also identified barriers related to church traditions and Southern food traditions. One leader said:
“In the Methodist Church, when you have a potluck or anything like that, you’re not eating a salad. You’re getting cheese and noodles... I think that’s also a thing, too, it may be a cultural issue.”

The only unhealthy opportunity related to PA was on movie nights, where leaders spoke about a two- to three-hour span where children would be sedentary. However, none saw this as a problem behavior, specifically because the event only occurred “once or twice a year.”

*Churches have physical structures that can be used for PA.* When children were physically active in the church environment, leaders identified multiple physical structures where PA could take place. These included “playgrounds,” “fields,” “gymnasiums,” “fellowship halls,” and other large indoor spaces. Leaders also mentioned sports programs, hosted either by the church or in partnership with other churches and community organizations, where children and youth could participate in PA, including “basketball,” “volleyball,” and “tee-ball.”

*Churches have existing methods of communicating health information to children and families.* Church leaders mentioned communicating HE and PA information as important to improving health behaviors, and one of the most significant things that churches could do to influence children’s health. Leaders mentioned established means of communication within the church including “messages from pulpit,” “bulletins,” “newsletters,” “email,” “curriculum,” and “bulletin boards.” One pastor expressed:

“I think we have the capability, the same means we use to communicate other things are available, for us to do the same thing with health for children.”
While established methods of communication were identified as the preferred method to reach children and their families, several leaders mentioned the need to adapt health message delivery for children using technology and social media. For example, one pastor’s suggestions included:

“So, I’m thinking that we need to meet the kids where they are, and not always expect them to come to us. So, if they do YouTube, then we do YouTube. If they do Snapchat, then we do Snapchat. That’s how we reach out to them. That’s how they don’t feel concerned, because we’re doing what they want done, and not saying you have to come to us.”

**Partnerships are important in improving children’s health behaviors**

*Churches identify families and caregivers as the most important partners.* Church leaders most often identified parents or caregivers as responsible for children’s health behaviors including what they eat and how active they are. Subsequently, they suggested creating programs for parents and asking parents how the church could be more involved in children’s health. Leaders acknowledged that encouraging healthy behaviors for children and youth in churches would need to be reinforced in the home environment. One leader stated:

“The church also has to continue trying to educate parents, and the parents have to help at home, because we can’t just try to do it at church, and then the parents just let the children continue to eat fast food when they are away from church.”
Church leaders also spoke about the opportunity to reach children and youth through parents, specifically because parents may be more involved in churches than at other child-focused organizations.

“I know some parents who are minimally involved with school but are very involved with the church.”

Church leaders are looking for partners with expertise. Church leaders communicated a desire to partner with community organizations or church members with subject matter expertise (e.g., knowledge of dietary guidance, children’s health experts, PA experts) to deliver programs or disseminate information to church and community members. One leader stated:

“I don’t believe we should always reinvent the wheel.”

Instead leaders identified community organizations such as the “YMCA,” “schools,” “universities,” “hospitals,” and agencies like the state public health department as potential partners in addressing children’s health. Internal to the church congregation, leaders suggested reaching out to church members with “qualifications” like “doctors,” “nutritionists,” and “coaches” to help create opportunities or programming.

Churches can provide to the community. When asked about what the church would contribute to a community partnership to address childhood obesity, leaders identified physical characteristics of the church as strengths. As stated by one leader:

“We’re blessed by size with some spaces and resources that other churches may not have or even some other pockets of the community may not have.”
Another leader mentioned members of the community being welcome to use church resources:

“When they come for our community activities, there are all types of children. All over our playground… We encourage it, and people, when they’re here we always say, ‘You’re welcome to bring your children!’”

Along with physical space, church leaders identified the church as contributing to community partnerships through altruism or material supports. One area where church leaders believe churches could address community needs was through mission work, specifically food assistance programs for children and families. Several leaders mentioned “backpack,” “SnackPack,” or “food pantry” programs orchestrated through the church to address hunger and HE in their community. A church pastor described:

“Our church is highly mission oriented. Our church does the SnackPack program where we make sure that for some of the kids at school, when they go home if they’re on a school lunch program, or whatever when they go home for the weekends, they’ve got a couple of bags to take with them to get them through Saturday and Sunday to make sure they’ve got food to eat.”

Role models

Leaders view adults as role models for children in the church. Church leaders view adult church members as role models for children’s health behavior, and leaders identified themselves as personally responsible for modeling health behaviors. One pastor stated:
“As I think about the young people, and I’m thinking about my own, my responsibility is being an example for them.”

Another leader applied the responsibility more broadly to any adult in the church, saying:

“It doesn’t have to be somebody who is in a leadership position on a piece of paper. Anybody who has influence over the youth can say that they have a good idea on how we can better take care of ourselves.”

And when asked what role the church could play in reducing childhood obesity, another leader stated:

“A good example from the pastor and the adults and all the leaders in the church. If we’re taking care of our bodies, then youth are going to be ... We have a lot of youth who look up to us.”

Leaders view churches and church members as role models in the community. Leaders also viewed church members and the church organization as role models in the community by setting an example through spirituality and behavior. When asked what role the church could play in reducing childhood obesity, one leader discussed the church in the broader context of the community and stated:

“Just as the pastor is a good example for the church, the church is a good example, or should be, for the community.”

And another leader mentioned:

“[The church] can be the lone voice speaking out above the crowd about why it’s important to take care of your body from a spiritual perspective, rather than
because the government said you should, or because culture says that we should. Those are voices that change, but the Word of God does not.”

Leaders also spoke about how church members might act as role models within their community. These approaches included demonstrating healthy behaviors like HE and PA and speaking to others about the connection between faith and health. One pastor identified children as potential role models in their own social circles, saying:

“Hopefully our kids would be models for that ... our kids have this opportunity when they’re outside of the church or in schools or in extracurricular activities to have their faith be an important part of who they are and why the like to play and grow and learn.”

The need for a tailored approach

Spiritually tailored programs. Church leaders consistently identified the connection between spiritual health and physical health as part of an acceptable approach to improving children’s health behaviors. While leaders identified physical health as important, leaders also expressed that any program or opportunity to address childhood obesity and health behaviors should be tailored to include a spiritual component for relevance in the church environment. Suggestions for tailoring included connecting messages to scripture, incorporating health programming into Sunday School curriculum, and discussing the connection between God’s concern for the spirit and concern for the body. One pastor illustrated this by stating:

“I think that anything we do needs to fit within our mission. I think that being healthy is definitely in our mission, but making and nurturing disciples of Christ
is with every church. There needs to be a spiritual component, even if it’s nothing more than just remembering God is at the center of all we do.”

Another pastor confirmed this sentiment when asked how the church could be involved in reducing childhood obesity:

“Just encouraging them to take care of bodies as the temple the Scripture tells us they are. As long as we take Scripture to heart, we’re also going to incorporate better ways of living and discourage childhood obesity.”

Efforts should be tailored to individual churches. Church leaders also identified the need for an individually-tailored approach to addressing childhood obesity based on church size, member demographics, decision-making policies and procedures, staffing, and existing programming. Procedures and policies for making decisions in the church environment may differ between churches, and decision-making responsibility may also be variable. When discussing eating opportunities at churches, leaders identified various individuals or committees that might be responsible for making decisions about the types of foods served and PA opportunities for children. Leaders mentioned “parents,” “pastors,” “teachers,” “members,” “youth ministers,” “children’s ministers,” “kitchen chairperson,” “program staff,” and “health committees” as having this type of decision-making power. Even within one church, decision makers might change based on scheduling or the type of program. When asked who had decision making power over the health behaviors of children and youth that attend her church, one leader responded:

“Quite honestly, the person who’s running the program.”
Church leaders also discussed that encouraging HE and PA in their congregation may look different than in other churches due to member demographics. Leaders at small churches mentioned that addressing childhood obesity may be difficult due to lack of interest from their congregation or due to lack of participation. One pastor acknowledged:

“I think one of the challenges that small churches face is they’re either all older adults with a few young families with children.”

Another leader mentioned that, even within a single church, variable attendance from children year-to-year may impact this ability:

“This year our enrollment was too small to start because our children are aging to such a place where the schools are having programs after school, sports programs, so we didn’t have the participation this year like we would have in years past.”

Discussion

This qualitative research examined understandings, interpretations, meanings, and perceived opportunities associated with the role of FBOs in promoting HE and PA in youth populations among a diverse group of church leaders from the SCUMC. Results from this study are consistent with previous qualitative work investigating connections between faith and health, and expand the current field of knowledge by focusing on existing and potential church-based health promotion efforts directed at children and youth. This study confirms strong perceptions of the connection between spiritual health and physical health and leaders demonstrated willingness, interest, and current actions taken to improve HE and PA for children.
Across church leaders, wholistic health, or the connection between spiritual, emotional, mental, and physical health, was identified as a primary focus for churches. Leaders discussed the connection between these types of health, specifically mentioning the Biblical basis for addressing physical health among their younger congregants. The idea of interconnectedness appeared again when church leaders discussed the need to spiritually tailor health programming for children, connecting it to scripture and to the core mission of the church. To date, however, only two interventions have addressed children’s health behaviors using a spiritually-tailored approach.\textsuperscript{32,33} Larger-scale, ecologically focused studies have investigated religiously-tailored health interventions in faith-based settings, but have not measured program impacts on children.\textsuperscript{46,50–52} Considering the strong association church leaders identify between spirituality and physical health, spiritually tailoring health interventions for children and understanding beliefs, perceptions, and values of faith leaders will be vital to developing acceptable interventions for children in FBOs.

When thinking about specific physical health concerns, leaders identified health behaviors as an issue among their congregations more often than childhood overweight/obesity. While the root of this concern was the perception among some leaders that few children in their congregations had overweight/obesity, focusing on health behaviors instead of weight may prevent conferring negative weight stigmatization on children, which has been shown to result in maladaptive eating and PA behaviors.\textsuperscript{53} Church leaders most commonly mentioned low levels of PA, increased screen time, and diets high in convenience foods as concerning. These concerns are consistent with recent
trends suggesting that screen time\textsuperscript{54} and fast-food consumption\textsuperscript{55} are increasing among children and adolescents while few meet PA recommendations.\textsuperscript{14}

To address these health concerns, church leaders identified several potential and existing social, physical, and organizational structures that either could be or already are being used to improve health. These approaches are consistent with ecologically-framed health promotion theories suggesting that organizational change across multiple domains (e.g., messages, opportunities, physical structures, socials structures) may impact health behavior.\textsuperscript{18,44} To address opportunities for healthy behaviors, leaders identified existing programs for children like Sunday School, Vacation Bible School, and youth group as activities where PA and HE could be incorporated. Some leaders also suggested incorporating health messages into curriculums. These approaches are similar to school-based approaches incorporating health messaging and healthy opportunities into K-12 curriculum, which may help prevent long-term weight gain.\textsuperscript{56} At the same time, leaders identified organizational activities that could promote unhealthy behaviors, specifically unhealthy eating. These activities almost exclusively centered around eating and are consistent with research suggesting that church meals and potlucks deliver unhealthy eating opportunities.\textsuperscript{57} Several church leaders mentioned increasing healthy options at church meals as an approach to addressing these unhealthy opportunities, but more emphasis may need to be placed on decreasing practices such as enticing children to events with unhealthy foods.

Approaches to improving health behaviors for children in faith-based settings should also consider social structures that may be important in the development and maintenance of PA and HE habits. Conceptual models exploring childhood obesity
identify social interactions with adults as having influence on behaviors that can impact weight status. In this study, church leaders identified themselves and other adult church members as important role models for young members. These findings are consistent with previous qualitative research among pastors, who often identified themselves as role models, teachers, or motivators, and pastors perceive themselves as having influence over the development of eating behaviors, based on their own eating identities and their role in the church. Therefore, a successful approach to faith-based programming for children may necessitate involving adults in intervention components to model behaviors, educate, or inspire. This may also suggest that an ecological approach to increasing HE and PA in the FBOs that includes consideration for all member subgroups, including children, would constitute an effective strategy.

Church leaders’ views concerning parental roles in addressing childhood obesity and health behaviors were consistent with previous research from schools. Like school leadership, church leaders view parents as role models for children and gatekeepers for children’s health behaviors, responsible for dietary intake and PA among children. Because of this perception, church leaders identified parents as partners in faith-based health programming and suggested several ways that parents could be involved, including providing healthy opportunities. These included serving as program leaders with decision making power over a church event menu or PA time, acting as role models in the church environment, and reinforcing healthy behaviors in the home environment. Church leaders also mentioned that, unlike the school setting, parents may be more involved in the church environment thus presenting an opportunity to address childhood health behaviors within the important context of the family unit.
While overweight/obesity did not emerge as a major concern for many of the congregations represented here, church leaders did identify childhood overweight/obesity as a concern among youth in their communities, often related to poverty and lack of access to healthy foods. Church leaders viewed these issues within their community as the responsibility of the church, regardless of membership within the congregation. However, church leaders mentioned limited approaches to addressing these issues, mostly focused on sharing space for PA (e.g., playgrounds) or food relief efforts including backpack programs for children, which often include items of mixed or low dietary quality.60,61

This study had several limitations. Church leaders in this sample represented only one denomination and were geographically confined to one Southeastern state. This may limit the generalizability of the results presented here. This study also employed a purposeful sampling strategy, meaning that participants who self-selected to be involved in the study may have strong opinions or previous knowledge of the subject compared to the larger population of SCUMC leaders. However, a goal of the current research was to examine perceptions among a sample of church leaders from a denomination already advocating for health programming for children. While the purposeful sampling strategy may fail to include all perspectives, the data gathered provided information about strategies currently being implemented in churches, illustrating real-word examples in addition to proposed approaches. Finally, most study participants in this sample were church employees. Adding additional perspectives from parents and caregivers could expand views on this topic and provide additional and increasingly diverse perspectives.
This study also had several strengths. In addition to senior pastors, this research included perspectives from leaders in diverse positions within the church, including lay leaders, and pastoral leadership with responsibilities for children and youth programming. These diverse perspectives proved important as several leaders identified multiple individuals, councils, and groups as having decision-making power over the healthy opportunities that children are exposed to in the church environment. Trained researchers conducted in-depth interviews, collecting rich data to provide diverse perspectives about health promotion efforts for children and youth. This study also provided insight into potential faith-community partnerships and highlighted the role that church leaders believe their organization may play in community health. This research was also informed by and conducted with the cooperation of a denomination advocating for efforts to improve children’s health and may provide insights into future public health programming and partnerships useful to both the FAN program and the global UMC.

IMPLICATIONS FOR RESEARCH AND PRACTICE

FBOs have been acknowledged as important partners in health promotion efforts and are uniquely positioned for partnerships to address childhood obesity because of their role in child development and because involvement in these organizations remains high among families with children and adolescents. Faith leaders support activities to increase healthy behaviors at the church, but motivations and approaches may differ, even within the same denomination. Approaches included creating spiritually tailored partnerships, opportunities, and messages; identifying role models; and generating programs. Future approaches should be tailored to fit individual churches based on their unique membership, demographics, history, and structure.
Table 4.3. Congregational characteristics (n=20)

<table>
<thead>
<tr>
<th></th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FAN participation status</strong></td>
<td></td>
</tr>
<tr>
<td>Participating in FAN</td>
<td>10 (50)</td>
</tr>
<tr>
<td>Not participating in FAN</td>
<td>10 (50)</td>
</tr>
<tr>
<td><strong>Church size (number of active members)</strong></td>
<td></td>
</tr>
<tr>
<td>Small (≤100)</td>
<td>8 (40)</td>
</tr>
<tr>
<td>Medium (100-399)</td>
<td>9 (45)</td>
</tr>
<tr>
<td>Large (≥400)</td>
<td>3 (15)</td>
</tr>
<tr>
<td><strong>Proportion of children and youth</strong></td>
<td></td>
</tr>
<tr>
<td>≤20%</td>
<td>10 (50)</td>
</tr>
<tr>
<td>&gt;20%</td>
<td>10 (50)</td>
</tr>
<tr>
<td><strong>Predominant race of congregation</strong></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>15 (75)</td>
</tr>
<tr>
<td>Black/African American</td>
<td>4 (20)</td>
</tr>
<tr>
<td>Native American</td>
<td>1 (5)</td>
</tr>
<tr>
<td><strong>Church programs</strong></td>
<td></td>
</tr>
<tr>
<td>Sunday School</td>
<td>19 (95)</td>
</tr>
<tr>
<td>Children’s church</td>
<td>18 (90)</td>
</tr>
<tr>
<td>Sunday nursery care</td>
<td>15 (75)</td>
</tr>
<tr>
<td>Youth group</td>
<td>17 (85)</td>
</tr>
<tr>
<td>Children’s/youth choir</td>
<td>13 (65)</td>
</tr>
<tr>
<td>Vacation Bible School</td>
<td>17 (85)</td>
</tr>
<tr>
<td>Service</td>
<td>Count</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Afterschool care</td>
<td>1 (5)</td>
</tr>
<tr>
<td>Childcare/child development center</td>
<td>6 (30)</td>
</tr>
</tbody>
</table>
Table 4.4. Church leader characteristics (n=26)

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FAN Participation status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congregation participating in FAN</td>
<td>16</td>
<td>(62)</td>
</tr>
<tr>
<td>Congregation not participating in FAN</td>
<td>10</td>
<td>(38)</td>
</tr>
<tr>
<td><strong>Leadership role</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pastor (Senior, Associate, Assistant)</td>
<td>18</td>
<td>(69)</td>
</tr>
<tr>
<td>Youth/Children’s pastor</td>
<td>3</td>
<td>(12)</td>
</tr>
<tr>
<td>Church Elder/Supply pastor</td>
<td>1</td>
<td>( 4)</td>
</tr>
<tr>
<td>Health committee leader</td>
<td>4</td>
<td>(15)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>20</td>
<td>(77)</td>
</tr>
<tr>
<td>Black/African American</td>
<td>5</td>
<td>(19)</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>( 4)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10</td>
<td>(38)</td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>(62)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤29</td>
<td>1</td>
<td>( 4)</td>
</tr>
<tr>
<td>30-39</td>
<td>5</td>
<td>(19)</td>
</tr>
<tr>
<td>40-49</td>
<td>1</td>
<td>( 4)</td>
</tr>
<tr>
<td>50-59</td>
<td>7</td>
<td>(27)</td>
</tr>
<tr>
<td>≥60</td>
<td>12 (46)</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.5. Selected interview questions and probes used in a qualitative study on the role of FBOs in addressing childhood obesity.

<table>
<thead>
<tr>
<th>Interview Question</th>
<th>Probes (follow-up questions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are some health concerns you have for young members of your congregation and community?</td>
<td>• Tell me more about why [health concern] as an issue for young members of your congregation/community.</td>
</tr>
<tr>
<td></td>
<td>• To what extent (and why) do you view inactivity among children as an issue in your congregation? In your community?</td>
</tr>
<tr>
<td></td>
<td>• To what extent (and why) do you view unhealthy eating among children as an issue in your congregation? In your community?</td>
</tr>
<tr>
<td></td>
<td>• What about childhood obesity is concerning, what is problematic about childhood obesity?</td>
</tr>
<tr>
<td>Can you describe where children are involved and active in your church (both physical spaces and programs)?</td>
<td>• Where in your church can children be active and play?</td>
</tr>
<tr>
<td></td>
<td>• When (during what events) can children be active and play in your church?</td>
</tr>
<tr>
<td></td>
<td>• Can you describe any events that your church has in the community (community partnerships) where children might be active and play?</td>
</tr>
</tbody>
</table>
| What types of activities or events does your church hold where children might eat or drink? | • What are events or activities that are specifically held for children where they might eat or drink?  
• What are events or activities held in your church for all members where children might eat or drink?  
• Can you describe any events that your church has in the community (community partnerships) where children might be eat? |
| Who do you see as having decision-making power about the health behaviors of children and youth that attend your church, such as how active they are and what they eat? | • Who do you consider to be responsible for making decisions about children’s health (healthy eating, physical activity)?  
• Who are advocates in your church for healthy eating and physical activity for children and youth?  
• Tell me about your role in making decisions that might impact the health behaviors of children and youth. |
| What are key features of the church or church mission | • How can churches participate in reducing childhood obesity? |
| That you think are important when addressing childhood obesity? | • What potential challenges/difficulties do you see in addressing childhood obesity within your church, community?  
• What potential opportunities do you see in addressing childhood obesity within your church, community? |
References


CHAPTER 4: MANUSCRIPT 3

AN ECOLOGICALLY-BASED HEALTH INTERVENTION IN FAITH-BASED SETTINGS: ANALYZING OPPORTUNITIES TO IMPROVE CHILD NUTRITION AND PHYSICAL ACTIVITY BEHAVIORS¹

¹ Dunn CG, Turner-McGrievy G, Wilcox S, Regan E, Kaczynski, AT, and Blake CE. To be submitted to Pediatric Obesity.
Abstract

Background: Faith-based organizations (FBOs) are potential partners in improving children’s health behaviors due to their status as trusted community organizations, high attendance among families with children, and successful history of health programming.

Objectives: The purpose of this study was to examine data from the evidence-based Faith, Activity, and Nutrition intervention to determine proposed opportunities, programs, messages, and social structures or policies related to improving healthy eating and physical activity for children and youth in FBOs.

Methods: Church program plans (N=53) with proposed health-promotion activities were collected and data were extracted to determine the dominant population, health behavior focus, and theoretical orientation of each proposed activity (n=1,498) using NVivo 11. Data from technical assistance calls delivered during the one-year program were used to confirm consistency of proposed and reported programs.

Results: Planned activities were most often intended to impact the entire church population (n=1,181, 79%) including children/youth, were nutrition focused (n=612, 41%), and were meant to create opportunities for healthy behaviors within already existing church events (n=743, 50%). Five percent of planned health focused activities specifically targeted children/youth.

Conclusions: Ecologically-based interventions in FBOs have the potential to reach children/youth through population- and youth-based programming in an evidence-based intervention.
INTRODUCTION

Childhood obesity is a critical issue with negative life-long health consequences, such as metabolic syndrome, cardiac abnormalities, sleep disorders, and mental health issues.\textsuperscript{1–9} Poor dietary intake and low rates of physical activity (PA) are key contributors to high rates of childhood obesity.\textsuperscript{10–12} Despite the well-known benefits of a diet high in fruits and vegetables and low in added sugars and fats coupled with the benefits of regular PA, a substantial portion of U.S. children and youth do not meet healthy eating (HE) or PA recommendations.\textsuperscript{13,14} Currently, only 40\% of children between 2-18 years old consume the recommended servings of fruits, 7\% consume the recommended servings of vegetables, and less than 40\% meet the recommended amount of weekly PA.\textsuperscript{14} Conversely, children 2-18 reportedly consume three times the recommended amount of added sugar each day, 44\% of children report consuming over the recommended amount of dietary fat, and over 50\% report excess sedentary behavior each week.\textsuperscript{14}

Organizational partnerships with schools, child-care facilities, pre-schools, afterschool, and faith-based organizations (FBOs) have been suggested as integral to improving health behaviors and reducing obesity risk among children.\textsuperscript{15,16} To date, much of the research examining childhood obesity prevention has focused on school-based interventions.\textsuperscript{15,16} However, a comprehensive approach to preventing childhood obesity should consider additional community settings as potential leverage points for programs and partnerships.\textsuperscript{16}

FBOs have a long history of involvement in health - both disease prevention and treatment.\textsuperscript{17–21} Recently, the faith-based sector has been identified as a key strategic
partner in health promotion, including HE and PA,\textsuperscript{17,22–27} and organizations such as the National Physical Activity Plan,\textsuperscript{28} the World Health Organization,\textsuperscript{29} and the American Heart Association\textsuperscript{30} have recognized faith-based partnerships as important in health promotion. Churches have been effective conduits for delivering health promotion and disease prevention information to congregants and community members through a variety of mechanisms such as health messaging, enhanced social support for health behaviors, and health programs offered in the church setting. Several of these programs have moved beyond individual or interpersonal interventions and have added aspects focusing on creating organizational and environmental changes that support HE and PA.\textsuperscript{31–34}

Programs such as the Health-E AME faith-based PA initiative,\textsuperscript{32} the Faith, Activity, and Nutrition (FAN) study,\textsuperscript{31} Body and Soul,\textsuperscript{33} and the Black Churches United for Better Health Project,\textsuperscript{35,36} have incorporated intervention elements of environmental or policy change to encourage healthy behaviors among all church congregants.

While these programs are often broad reaching, they tend to focus on changing behaviors among adult congregants, and health outcome measures are usually reported for adults only.\textsuperscript{17,27} However, FBO attendance remains high among families with children and adolescents, as FBOs are considered to play a key role in child development and many churches provide child/youth specific programming including Sunday School, youth groups, child development programs, and summer programming such as Vacation Bible School (VBS).\textsuperscript{37,38} Therefore, FBO settings represent a potential leverage point in health promotion among children and youth.

Examined together, the results of ecologically-based interventions indicate that: (1) broad reaching programs implemented at the organizational level may have the ability
to reach large numbers of participants, meaning that even small changes in individual behavior can have broad reaching public health impacts, (2) a more extensive and longer-term evaluation of program elements (individual, interpersonal, environmental, policy) focusing on both HE and PA in faith-based obesity prevention programs should be considered, and (3) a more robust body of literature is needed to investigate the potential impact of broad reaching and population-specific programs on HE, PA, and obesity-related health behaviors and outcomes among youth. Therefore, the purpose of this research was to examine data from an ecologically-based intervention, specifically the first phase of the FAN Dissemination & Implementation (D&I) trial,\(^39\) to identify and categorize opportunities, programs, messages, and social structures/policies related to improving HE and PA for children and youth using a content analysis approach.\(^40\)

**METHODS**

*Sample*

All study procedures were reviewed and deemed exempt by the University of South Carolina Institutional Review Board. Data were collected from churches participating in Phase 1 of the FAN D&I intervention, which has been described elsewhere.\(^39\) In brief, the purpose of the FAN Program is to help churches create a healthier church environment that encourages HE and PA. In Phase 1, churches were recruited from a rural and medically underserved county in South Carolina using mailed letters, telephone calls, emails, in-person visits, community presentations, and general marketing. Churches were eligible to participate if they were in Fairfield County, SC, had at least 20 members, and agreed to random assignment to either an early or delayed control intervention. Eligible churches were randomized to attend full-day FAN training
workshops during year 1 (2015; n=39 early) or year 2 (2016; n=20 delayed control), delivered by a Community Health Advisor. A total of 53 churches (n=35 early, n=18 delayed) completed training and returned materials for this assessment.

Data Collection

Researcher team members used two data sources to assess planned and implemented activities that would reach children and youth: (1) proposed activities from Program Plans and (2) descriptions of activities from Technical Assistance (TA) calls. Additionally, congregation size and the estimated number of children and youth were reported by the FAN Coordinator (i.e., individual in the church who served as a liaison with the study staff and who coordinated program implementation), when FAN Coordinators could not be reached, the number of children and youth was estimated based on in-church observations.

Program Plans. Each church formed a FAN Committee of 3-5 members (e.g., FAN Coordinator and up to 4 other members that may include a pastor, church cook or menu planner, and other church members interested in creating a healthy church environment) who attended training. Trainings provided an overview of the FAN program elements and goals, described program materials including programmatic links to scripture, and explained recommendations for HE and PA. Guided by Cohen’s structural ecological model, church committees assessed current church activities and planned how they might expand opportunities (including programs), messages, policies/guidelines, and pastor support for HE and PA in churches to create a FAN Program Plan. During training, church committees brainstormed Program Plan elements
specific to their church needs, then finalized and submitted plans after training and further reflection.

Program Plans for the upcoming year were developed based on guidance in the FAN Program training materials and included sections for committees to identify and describe proposed activities to increase opportunities, programs, messages, and social support structures/guidelines (e.g., pastoral support activities) that would reach most church members. While church committees were encouraged to identify activities that would best fit the needs and composition of their congregations, several program elements were strongly suggested in Program Plans for all church settings, including: (1) using monthly bulletin inserts provided by FAN that connect scripture and health, (2) sharing health messages during church services, (3) creating a bulletin board to display health materials, (4) sharing the monthly pastor activity, (5) asking the pastor to allow health champions to talk about HE/PA during worship or meetings, (6) providing the pastor with messages about HE/PA that he/she could speak about from the pulpit, (7) encouraging the pastor to be a role model by wearing his/her pedometer and speaking about it with church members, and (8) suggesting guidelines or policies that the pastor could put into place to support HE/PA. After training, FAN committees finalized Program Plans (including a budget) and submitted them to research staff members for review prior to churches receiving the program incentive ($300 or $500 depending on church size).

Technical Assistance Calls. During the first year of the FAN program, FAN Coordinators and Pastors received 12 months of support from Community Health Advisors including TA calls delivered each month by trained study staff to learn about
program implementation, answer questions, and help churches creatively problem solve. TA calls rotated between the FAN Coordinator (months 1, 2, 4, 5, 7, 8, 10, 11) and the pastor (months 3, 6, 9, 12). Data from these calls were entered by the Community Health Advisor into the web-based online FAN TA call database, and information was extracted once all calls were complete in October 2017. TA calls included process evaluation questions with pre-populated answers and open ended questions where church leaders could elaborate on health promotion activities.

**Coding and Analysis**

Data from Program Plans and TA calls were organized by church using NVivo qualitative data analysis software (QSR International Pty Ltd. Version 10, 2012). After submission, research team members extracted proposed activities from Program Plans for coding (e.g., start a walking group, use lower sodium recipes in church meals). Using a semi-inductive approach, researchers developed an a-priori codebook based on the original theoretical model used to guide the FAN program, knowledge of program implementation suggestions from training, and obesity prevention strategies (e.g., HE, PA, or a combined approach) used in the current faith-based literature. Each proposed activity was coded based on three content categories. Codes were selected for a dominant (1) population (e.g. ecological, youth/child, other population), (2) health promotion approach (e.g., HE, PA, combined), and (3) theoretical orientation (e.g., opportunity, program, message, social structure/policy). Codes and definitions are included in Table 1. Only one code from each category could be assigned for an activity, for example the activity “*take a 10-minute stretching break during worship services*” would be coded as having an ecological (population) impact, being PA-related, and as an
opportunity. Two graduate students (CG and ER) coded all proposed activities independently (n=1,498 activities). Data from TA calls were assessed for mentions of implemented activities involving children/youth and were used to provide context to proposed activities. TA call data were not included in activity counts to avoid counting any activity more than one time.

Cohen’s kappa measures inter-coder reliability and was calculated for 100% of the Program Plan data using SPSS (version 25.0, 2017, Armonk, NY: IBM Corp.) (Table 1). Descriptive statistics were used to explore the frequency of codes across and within the range of churches and to assess the frequency of activity combinations (health promotion approach combined with theoretical orientation) by population. Independent sample t-tests were used to assess differences in the number of youth focused activities based on the portion of congregation members under 18 (<20% under 18, ≥20% under 18), church size (<49 members, ≥50 members), and early or delayed status. Cut-offs for the proportion of members under 18 and church size were established at these levels to create an appropriate distribution for statistical analysis methods. A one-way ANOVA was used to determine differences between denominations.

RESULTS

Churches most often identified the dominate race of their members as African American (n=49, 92%), three churches identified as predominantly Caucasian, and one church identified a combination of African American and Caucasian members. Average church membership was 64 people and ranged from 15-175 members. Three churches reported having no children or youth in their congregations, and the number of children and youth when present ranged from 1-50 (5-75% of members).
Inter-coder reliability was above 0.8 for all coding categories (Table 4.5). Based on Program Plans, churches proposed an average of 28 health-related activities (range 20-37) (Table 4.6). Each church included 8 core activities (included on all Program Plans); of these, 4 identified the pastor as the recipient and 4 were considered ecological, meaning they were directed at most church members. As seen in Table 4.7, most activities (n=1,181) were identified as ecological or directed toward a majority of members. Pastors were the primary recipient of activities 213 times (14% of the time); 212 of these were strongly suggested activities associated with the FAN program. Adult groups (e.g., men, women, seniors) were the recipient of proposed intervention activities 37 times (2.5% of the time). Outside of FAN suggested activities for the pastor, children and youth were the most often identified recipient population for health-related activities, 67 times (5% of the time) (Table 4.7). There were no significant differences in the number of activities planned for children between churches based on the proportion of children and youth (P=0.4), denomination (P=0.90), or early or delayed intervention status (P=0.65). Churches with greater than or equal to 50 members planned significantly more activities for children and youth than churches with less than 50 members (P=0.02).

**Youth focused activities**

Church members under 18 were the group most commonly targeted for activities that were not suggested as part of FAN (described above). These activities (n=67) were most commonly nutrition- (n=32) or PA-related opportunities (n=29), meaning they were built into an existing church event.

Nutrition-related opportunities focused on assuring that foods served to children and youth at church were healthy. VBS was the most commonly identified church event
where activities for children and youth were likely to occur (n=14). Most churches proposed activities such as “replace chips with fruits, replace little huggies juice with 100% juices and water, replace cookies with whole grain fruit bars,” and “increase the number of fruits and vegetables as snacks, buy Sun Chips and popcorn for snacks, select drinks that are no sugar added or water, do turkey subs on Thursday instead of pizza, substitute granola bars for cookies.”

Sunday School (n=9), weekly children’s or youth church (n=5), youth events (n=3), and nursery (n=1) were also identified as church events where nutrition opportunities could be implemented. In general, activities proposed for these events were like those proposed for VBS, focusing on providing healthy food options and sometimes on reducing the number of unhealthy items served. TA data confirmed that VBS and Sunday School were the most common church events for nutrition opportunities addressing children/youth. Reported activities from these events included “menu planning for Vacation Bible School (VBS) ... for healthy options during these events,” and “HE was implemented during VBS for all in attendance.”

PA opportunities (n=29) were also identified as a strategy to engage children/youth in healthy behaviors and were most commonly proposed during Sunday School (n=12), children’s or youth church (n=7), VBS (n=6), and other programs such as nursery or Boys and Girls Club meetings (n=4). PA opportunities focused on incorporating movement into children/youth activities, for example, “once a month, we will incorporate a 5 to 10-minute exercise during the Youth Sunday School Class,” or “during our annual Vacation Bible School session, we will incorporate an exercise session in our nightly classes.” These activities sometimes included an adult population
in addition to children/youth. One church planned to have youth and adults compete in PA competitions during VBS, “adults vs. youth participating in physical activity (number of push-ups, jumping jacks, leg races, and other sporting activities).” TA calls confirmed that VBS and Sunday School were the most common events where churches incorporated PA opportunities into events for children/youth. One church reported “during VBS members and visitors played games and exercised [sic].”

Programs, activities created in addition to existing church events (e.g., formation of a walking group, a healthy cooking class, a new Sunday school that focuses on nutrition or PA, a Zumba class), were less common than opportunities incorporated into existing events. Three PA programs were planned and included a jump rope program, a youth walk, and a “step it out” competition between youth and the church pastor. Only one nutrition-related program for children/youth was mentioned, a children’s cooking class called “Critters are Good to Eat” where children/youth would learn to create snacks such as ants on a log from celery, peanut butter, and raisins.

Messages and social structures/policies were infrequently planned for children and youth. Only one nutrition-related message was listed where a church decided to “emphasize stories regarding dietary choices of Biblical figures to the youth.” One church implemented a policy focusing on PA for youth, stating “Church social events must include active games or opportunities for youth.” No nutrition social structures/policies, PA messages, or any activities focusing on combined health topics were identified.

TA call data infrequently identified messages and social structures/policies for children and youth, and infrequently identified children and youth as the sole recipients
of activities within the church. In TA calls, churches often reported activities that
included both children and adults, most often PA or cooking competitions. At the same
time, several churches reported pastors and FAN committees making significant efforts to
include children/youth and to encourage their involvement in FAN activities. For
example, one church reported “Pastor engages children in FAN program with HE/PA.
Children are more excited about FAN than the adults.”

**Ecologically focused activities**

Most activities proposed in Program Plans were ecologically-based (n=1,181, 79%), or focused on reaching the majority of members in the church congregation. Of
these activities, the most common were nutrition opportunities (n=530), which were often
from the strongly suggested list in the FAN Program Plan focusing on increasing fruits
and vegetables served, decreasing fat in recipes, decreasing sodium, and increasing whole
grains at church meals and snacks. PA opportunities (n=122) were also proposed for all
church members and included stretching or walking breaks built in to church events such
as worship, Sunday School, or meetings. TA call data confirm that churches implemented
these broad-reaching nutrition and PA opportunities. For example, churches reported
“Monday Night Fellowship served baked chicken with vegetables,” and “Members
perform stretches and exercise movement during devotional service or after worship
service.”

Messages shared with all members were most often combined (e.g., focusing on
both PA/HE or general topics like disease risk) (n=248). These were often FAN strongly
suggested activities that included (1) using monthly bulletin inserts provided by FAN that
connect scripture and health, (2) sharing health messages during church services, and (3)
creating a bulletin board to display health materials. Nutrition- and PA-specific messages were less frequently planned than combined messages, and TA calls confirmed that combined message delivery to the majority of members occurred through methods such as “Pastor emphasis PA/HE from the pulpit.”

Among programs, ecologically-based PA programs were the most common (n=105) and HE (n=14) or combined programs (n=15) were less frequently proposed. Walking programs and 5K walking/running events were popular among planned activities and commonly reported in TA calls. Proposed HE programs included healthy cooking demonstrations and food tastings, and combined programs included the establishment of church gardens. TA call data confirm the implementation of HE and combined programs similar to proposed activities.

Social structures/policies were the least planned activity directed at the majority of the church population (n=131), and most of these were strongly suggested activities from FAN Program Plans. These included guidelines on the frequency of FAN committee meetings or statements about FAN committee members or pastors serving as role models for HE/PA. TA call data infrequently mentioned social structures/policies.

Other populations

Pastors were the most commonly identified recipients of FAN activities (N=213), but of those, 212 (99%) were FAN suggested social structures/policies or messages. These activities most often focused on assuring that the FAN committee and church members provided support to the pastor to assist in program implementation. The remaining 37 activities directed at other populations focused on adults and seniors. These activities were most commonly HE (serving fruits and vegetables) or PA (taking
stretching breaks) opportunities incorporated into adult Sunday School or at events such as an annual Women’s Conference, where children/youth would not be in attendance. Several church confirmed these activities in TA calls, sharing information like “Healthy eating options provided at women’s conference this month.” PA or combined programs such as exercise classes specifically for women or a weight loss competition were also identified for adults and were determined to be inappropriate or unhealthy for children/youth. No nutrition programs for adults/seniors were identified. One church suggested delivering HE/PA messages for adults at church board meetings, and no church identified HE or PA specific messages specifically for adults. TA calls infrequently identified activities specific to adults or seniors.

DISCUSSION

The purpose of this study was to examine data from an ecologically-based intervention, specifically the first phase of the FAN Dissemination & Implementation (D&I) trial, to determine planned opportunities, programs, messages, and social structures/policies related to improving HE and PA for children and youth. Additional information from TA calls was used to corroborate planned activities and provide additional information about what planned activities were implemented in the church setting. The findings presented here suggest that ecologically-based health interventions in faith-based settings have the potential for broad-reach to positively impact HE/PA behaviors among congregants under 18 years old. As such, the approach to evaluating planned activities that are either targeted at children/youth populations or may reach them because of the ecological nature of the activity presents an advancement in the process of evaluating the potential impact of faith-based health programs on younger populations.
Furthermore, this research provides a promising strategy for evaluating activities from organizational-level interventions using data from an evidence-based program.

Results from this study suggest that planned activities to address HE/PA in churches most often focused on the broadest possible population, which is one of the overall goals of the FAN program and is heavily emphasized in program training. While most of these activities were not specifically targeted at children/youth, the nature of an ecologically-based or population-focused activity dictates that the impact of the activity would be seen through sub-populations. For example, increasing the amount of fruits and vegetables served at church meals and snacks or integrating PA into Sunday worship has the potential to reach all members of the population, including children/youth. These ecologically-based interventions such as the FAN Program, Body and Soul, and the Black Churches United for Better Health Project encourage actions that are taken at the organizational level, with the potential to reach large portions of members. To date, these interventions have measured outcomes exclusively in adult populations, most often adult women. However, the results of the research presented here indicate that the exclusivity of these measurements may not fully capture the potential population-level impact of evidence-based broad-reaching interventions.

Additionally, the current research shows that, except for FAN suggested activities focused on supporting pastors, church committees involved in a health-focused intervention most often identified children/youth as a specific population that would receive the benefit of planned health-related activities. At the same time, church attendees under 18 represent, on average, less than 30% of congregations in this sample. The emphasis on children/youth despite their smaller representation in the church population
supports current research suggesting that underlying social or religious emphasis on children’s health could influence types and frequency of activities in faith-based settings.45

The most commonly identified activities for children/youth (e.g., activities targeting youth as the recipient of an intervention) were HE/PA opportunities built in to existing church functions such as VBS, children’s Sunday School, choir, or children’s church. Like ecologically focused activities, opportunities for healthy behavior in children/youth programming most often included increasing healthy food options and intentionally creating structured time for PA. In this sample, child/youth-focused activities sometimes necessitated or invited adult participation. For example, PA opportunities and programs for children and youth sometimes featured a competition that also included adult or senior populations. However, no activity targeted at adults/seniors included a child/youth component. Consistent with theoretical models focused on addressing childhood obesity,46,47 these results indicate that addressing HE/PA behaviors in children may either necessitate the participation of adults to oversee activities (e.g., children’s Sunday School will have an adult leader, adults will organize and carry out activities for VBS) or may include adults to act as role models for children.48 By including adult populations in activities focused on children, whether by necessity or because of the attraction of improving childhood health, this research supports the idea that addressing childhood health may have a spill-over effect for adults. For organizations with mixed age membership, proposing activities that target children/youth may increase participation among adults.
Considering previous research into the existing social (e.g., familial participation, ongoing social interaction, membership structure, information delivery) and physical (e.g., playgrounds, classrooms, gymnasiums, kitchens) environments within FBOs, the church has been identified as an appropriate conduit for HE/PA activities focusing on children and youth. Results from this study support this previous research, and further identify ongoing church programs for children and youth such as VBS, Sunday School, youth group, and choir practice as appropriate moments for intervention. Based on the framework used for this analysis, churches seldomly identified health messages as a strategy to reach children/youth. If FBOs desire to increase child/youth specific health intervention activities, identifying and tailoring appropriate health messages may present an additional method of contact. Public health partnerships may provide strategies and suggestions for this type of health communication.

This research is not without limitations. Data for this analysis included process evaluation data and was not collected for the exclusive purpose of evaluating activities for children/youth. Program Plans provided information about a church committee’s intention to create health change within their church but did not provide a comprehensive overview of implemented activities, and committees were not instructed to brainstorm for specific subpopulations such as youth. Researchers used TA calls to provide additional context and to triangulate information from Program Plans. However, TA calls were designed as an intervention delivery tool, not as a data collection instrument, and call scripts were not designed to collect information specifically about youth populations. Community Health Advisors were not instructed to keep comprehensive notes of all implemented activities, and there were no youth-specific probes. An additional limitation
of this research is the homogeneity of the population, which included predominately African American churches in the Southeastern US. While this may limit the generalizability of the results, faith-based interventions remain popular among African American populations\cite{22,51} and attendance at religious organizations remains high in the South\cite{37}.

This study also has several strengths. Research team members assessed 1,498 planned activities for dominant population, health focus, and theoretical orientation, representing a substantial amount of data. Additionally, all data from program plans were double coded, and the inter-rater reliability kappa statistic for each variable was above 0.8, demonstrating a high level of agreement. Several data sources were also used for this analysis, allowing researchers to triangulate qualitative data and demonstrate that planned and implemented activities had similarities along the three variable types (e.g., dominant population, health topic, theoretical orientation) based on overlapping information from Program Plans and TA calls.

To date, few studies have examined the potential impact of faith-based interventions on children/youth\cite{50,52,53} and these interventions focused on changing behaviors using intrapersonal or interpersonal approaches. To our knowledge, no ecologically-based intervention in a church setting has assessed the potential for or measured the impact of an organizational- or community-level program on health behaviors among children and youth. This analysis provides an important initial view into what programs, opportunities, messages, and social structures or policies in churches have the potential to reach youth and what existing programs churches have in place that may be leveraged to improve health behaviors among child/youth populations. Future
research is needed to assess the impact of organizational-level faith-based programs on health behavior outcomes in children and youth, and to determine which activities have the strongest impact on health behavior change.
Table 4.6. Coding variables, definitions, and inter-rater reliability

**Dominant Population** ($\kappa = 0.885$)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth-directed</td>
<td>Activity specifically targets youth as the recipients of intervention in any setting (e.g., children’s/youth Sunday School, Youth Group, Vacation Bible School). Youth-specific activities could include additional population/age groups (e.g., Adult versus youth dance competition “old school versus new school,” Youth and older adult cook-off).</td>
</tr>
<tr>
<td>Environmental</td>
<td>Activity found at the environmental level with the intention of impacting all members of the congregation. These activities may be church-wide events (e.g., worship services, church-wide potlucks), policies that have the potential to impact all members, media messages posted in the church or on social media, or equipment/improvements to the church that would be available to all members (e.g., the creation of a walking path, the purchase of exercise equipment such as stretching bands).</td>
</tr>
<tr>
<td>Other</td>
<td>Activity specifically targets a population other than youth (e.g., pastor, adult women, adult men), which exclude youth by definition.</td>
</tr>
</tbody>
</table>

**Dominant Theoretical Orientation** ($\kappa = 0.900$)
<table>
<thead>
<tr>
<th>Programs</th>
<th>Refers to activities made available to congregants as programs within the church with the aim of improving health. Programs would be created in addition to existing opportunities and are structured and organized (e.g., formation of a walking group, a healthy cooking class, a new Sunday school that focuses on nutrition or PA, a Zumba class).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities</td>
<td>Opportunities refer to methods of improving PA or HE that are built in to existing social, structural, or physical environments (e.g., taking a stretching break during Bible study, adding fruit to the menu at Christmas dinner, reducing sodium in meals, purchasing stretching bands, or building a walking path). These could also be opportunities to reduce unhealthy behaviors, such as getting rid of the deep fat fryer.</td>
</tr>
<tr>
<td>Social Structures and Policies</td>
<td>Activities that promote or discourage behaviors through organizational policies/guidelines and support (e.g., policy that all church events that include food must include a healthy food option, policy that church events lasting longer than 30 minutes must include a 5-minute exercise break).</td>
</tr>
<tr>
<td>Media and Cultural Messages</td>
<td>Messages that people see and hear frequently through large or small media, stories, and/or cultural practices (e.g., monthly church bulletin inserts with health messages focused on HE and/or PA, posters on bulletin boards, fruit and vegetable grocery store flyers on information tables, bulletin board/email newsletter/social media update with health information, pastor shares health messages from pulpit).</td>
</tr>
</tbody>
</table>
**Dominant Health Topic** ($\kappa = 0.972$)

<table>
<thead>
<tr>
<th>Nutrition-related</th>
<th>Focuses on improving HE (e.g., policies advocating for healthy food options, media material about sodium intake, healthy food taste-testing).</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA-related</td>
<td>Focuses on increasing PA or decreasing sedentary time (e.g., policy to increase PA during meetings lasting more than one-hour, social media/bulletin board poster about decreasing screen time, formation of a walking program or exercise class).</td>
</tr>
<tr>
<td>Combined/Non-specific Prevention</td>
<td>Strategy contains either both HE- and PA-focused opportunity or focuses on general disease prevention (e.g., monthly bulletin inserts for worship bulletins, holding a health fair, weight loss competitions, newsletter mailing focusing on heart disease prevention strategies).</td>
</tr>
</tbody>
</table>
Table 4.7. Church attendance and frequency of codes (n=53 churches)

<table>
<thead>
<tr>
<th>Number of church members</th>
<th>Churches n (%)</th>
<th>Number of activities (M, range)</th>
<th>Youth focused activities (M, range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25</td>
<td>7 (13%)</td>
<td>28.7 (31-34)</td>
<td>0.9 (0-2)</td>
</tr>
<tr>
<td>26-50</td>
<td>20 (38%)</td>
<td>28.2 (20-36)</td>
<td>1.0 (0-3)</td>
</tr>
<tr>
<td>51-75</td>
<td>13 (25%)</td>
<td>29.0 (20-37)</td>
<td>1.6 (1-4)</td>
</tr>
<tr>
<td>≥76</td>
<td>13 (25%)</td>
<td>27.5 (24-32)</td>
<td>1.6 (0-3)</td>
</tr>
</tbody>
</table>

Percent of members under 18

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20%</td>
<td>21 (40%)</td>
<td>28.8 (20-37)</td>
<td>1.1 (0-4)</td>
</tr>
<tr>
<td>≥21%</td>
<td>32 (60%)</td>
<td>27.9 (20-36)</td>
<td>1.3 (0-4)</td>
</tr>
</tbody>
</table>
Table 4.8. Topic and theoretical orientation combinations by population (n=1,498 activities)

<table>
<thead>
<tr>
<th>Dominant Health Promotion Topic</th>
<th>Nutrition</th>
<th>Physical Activity</th>
<th>Combined</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ecological</strong></td>
<td></td>
<td></td>
<td></td>
<td>1,181</td>
</tr>
<tr>
<td>Opportunity</td>
<td>530</td>
<td>122</td>
<td>1</td>
<td>653</td>
</tr>
<tr>
<td>Program</td>
<td>14</td>
<td>105</td>
<td>15</td>
<td>134</td>
</tr>
<tr>
<td>Message</td>
<td>12</td>
<td>3</td>
<td>248&lt;sup&gt;a&lt;/sup&gt;</td>
<td>263</td>
</tr>
<tr>
<td>Social structure or policy</td>
<td>11</td>
<td>7</td>
<td>113&lt;sup&gt;b&lt;/sup&gt;</td>
<td>131</td>
</tr>
<tr>
<td><strong>Youth</strong></td>
<td></td>
<td></td>
<td></td>
<td>67</td>
</tr>
<tr>
<td>Opportunity</td>
<td>32</td>
<td>29</td>
<td>0</td>
<td>61</td>
</tr>
<tr>
<td>Program</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Message</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Social structure or policy</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td>250</td>
</tr>
<tr>
<td>Opportunity</td>
<td>11</td>
<td>18</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Program</td>
<td>Message</td>
<td>Social structure or policy</td>
<td>Total</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>0</td>
<td>6</td>
<td>0</td>
<td>53&lt;sup&gt;c&lt;/sup&gt;</td>
<td>612</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>1</td>
<td>160&lt;sup&gt;d&lt;/sup&gt;</td>
<td>347</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>539</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,498</td>
</tr>
</tbody>
</table>

<sup>a</sup> includes 159 FAN suggested activities

<sup>b</sup> includes 53 FAN suggested activities

<sup>c</sup> includes 53 FAN suggested activities

<sup>d</sup> includes 159 FAN suggested activities
<table>
<thead>
<tr>
<th>References</th>
</tr>
</thead>
</table>


44. Arredondo EM, Haughton J, Ayala GX, et al. Fe en Accion/Faith in Action: design and implementation of a church-based randomized trial to promote


CHAPTER 5
OVERALL SUMMARY AND CONCLUSIONS

Childhood overweight and obesity are critical issues with life-long health consequences.\textsuperscript{1-3} Over the past several decades, rates of obesity among children and adolescents have increased significantly;\textsuperscript{139} and while these rates have plateaued in recent years,\textsuperscript{139} 31.8% of children age 2-19 years old are currently considered either overweight or obese, with the highest rates among Hispanic (38.9%) and non-Hispanic Black (35.2%) youth.\textsuperscript{1} Health behaviors such as poor dietary intake and physical inactivity are key contributors to high rates of childhood obesity,\textsuperscript{10-12} and few children meet current healthy eating (HE) and physical activity (PA) recommendations.\textsuperscript{8}

A comprehensive approach to preventing childhood obesity and improving health behaviors should consider organizations and community settings as potential leverage points for programs and partnerships.\textsuperscript{16} While a substantial portion of childhood obesity prevention programming has been conducted through school-based partnerships,\textsuperscript{15,16} faith-based organizations (FBOs) show potential for delivering programming to improve children’s health because of their strong history of involvement in health promotion efforts, high attendance among families with children, extensive reach to racial and ethnic minority populations, existing programming focusing on children and adolescents, and because FBOs are considered to play a key role in child development.\textsuperscript{32,33} However, little is known about the potential role of FBOs in childhood obesity prevention efforts, or the
potential for ecologically-focused faith-based health interventions to reach children and youth in these environments. Guided by the structural model of health behavior and the UMC statement on Health and Wholeness, the purpose of this dissertation was to examine the potential of faith-based communities to serve as leverage points for the prevention of childhood and adolescent obesity. This dissertation includes: (1) a systematic review of previous faith-based HE and PA interventions, (2) a qualitative examination of faith leader perspectives on the role of the church in childhood obesity prevention, and (3) a content analysis of intervention activities with the potential to impact children from churches participating in an evidence-based health intervention. This chapter will summarize the major conclusions from each of the studies with a discussion of how this work relates to previous research, provide insights for how this work may be expanded upon for public health impact, and discuss limitations of the research.

**Systematic review of previous faith-based interventions (Manuscript 1)**

The first manuscript, “Healthy eating and physical activity interventions in faith-based settings: A systematic review using the RE-AIM framework,” addressed Aim1: conduct a systematic review of published peer-reviewed literature to examine the degree to which interventions reported the reach, effectiveness, adoption, implementation, and maintenance of HE and PA health promotion programming in FBOs, with a focus on how these programs may impact children and youth. To address this a, we assessed current research describing faith-based HE and PA interventions to determine their potential for large-scale public health impact on a variety of populations, including children and youth. For this review, we assessed 38 interventions (46 studies); most of which (n=25) were
conducted at the individual or interpersonal level. Though most interventions showed favorable changes in at least one health behavior under investigation, no studies addressed all RE-AIM indicators. In general, reporting was moderate for RE-AIM dimensions across studies. These results indicate that faith-based interventions to improve HE/PA behaviors do not fully assess the potential public health impact of these programs.

An initial goal of this study was to assess peer-reviewed literature on faith-based interventions with a specific focus on the potential health impact among children and adolescents. This portion of Aim 1, however, proved difficult. Only three faith-based interventions, all of which were pilot studies, *Shining Like Stars*,140 *Fitness U N-Joy*,16 and the *Jewish Day School Wellness Initiative*,141 focused on youth populations, and studies that included ecologically-based interventions that have the potential to influence youth health behaviors (e.g., *the Health-e-AME intervention*,18 *Faith, Activity, and Nutrition intervention*19,20 and those based on the *Body and Soul* protocol21) did not include outcomes in populations under 18 years old. While the lack of peer-reviewed literature describing interventions in this population prohibited this assessment, the small body of research in this area support the need for additional research like that provided in this dissertation.

Results from this review confirm that current understandings of the potential impact of health interventions on youth in these institutions is not well documented, despite the fact that FBOs remain popular among families with children and adolescents.11 These findings, support the need for more robust research into the potential of FBOs as leverage points for the improvement of childhood health behaviors and the
prevention of childhood obesity. Specifically, research is also needed into the potential role of ecological interventions in reaching all members of a congregation including children, though this research would benefit from including children and youth in assessments. Therefore, the following manuscripts add to the small body of literature assessing the potential impact of public health interventions for children in FBOs.

**Conceptualization (Manuscript 2)**

The second manuscript, titled “Church leaders’ views of obesity prevention efforts for children and youth,” used qualitative methods to address specific Aim 2: examine understandings, interpretations, meanings, and perceived opportunities associated with the role of FBOs in promoting HE and PA in child and youth populations among a sample of United Methodist Churches in South Carolina. To address Aim 2, we recruited church leaders (n=26) from 20 congregations through an existing partnership with the South Carolina Conference of the United Methodist Church where churches were invited to participate in the FAN program (n=10 participating in the FAN program, n=10 not participating in the FAN program).

Using semi-structured in-depth interviews, we found that leaders viewed childhood health behaviors as an important area of concern for the church and identified links between physical and spiritual health. In general, leaders voiced stronger concern about children’s health behaviors, such as PA and HE, than they did about childhood obesity, even if they identified obesity as an issue in their congregation or community. We also found that leaders identified existing church events (e.g., church meals), programs (e.g. Sunday School, Vacation Bible School), physical structures (e.g.,
playgrounds, gyms), and social structures (e.g., adult role models) that could positively or negatively influence health behaviors and identified ways that they could or were already using these structures in their own congregations. Church leaders cited the importance of community and congregational partnerships, indicating that churches desired input from subject matter experts. Leaders also identified methods for how churches or church members could contribute to partnerships, usually by providing material resources (e.g., physical space for meetings, donations). Finally, church leaders discussed the importance of tailoring programs to achieve the best potential impact. Approaches for tailoring included connecting health programming to spiritual messages for children and considering church and community demographics.

Results from this manuscript are similar to the larger body of research detailing connections between faith and health,\textsuperscript{126,142,143} and contribute to the faith-based literature by focusing on existing and potential church-based health promotion efforts directed at children and youth. This study confirms strong perceptions of the connection between spiritual health and physical health among church leaders and their willingness, interest, and current actions taken to improve HE and PA for children.\textsuperscript{22} Findings from this research are also supported by conceptual models that may explain ecological influences on child health behaviors by identifying influential physical and social settings.\textsuperscript{13,25,26} Church leaders identified influences from each of these levels including physical structures, activities and programs, and social relationships that could impact children’s health, which align with the more general bodies of faith-based and childhood obesity prevention research. Previous work in faith-based research offers insights into church leaders’ roles as models of health behavior, which was supported by results from this
manuscript. Similarly, leaders’ feelings about organizational structure and mission were similar to findings from school-based obesity prevention research, specifically that the goals of health interventions should be tailored to the overall organizational mission. These results confirm the need to understand and explore organizational structure and mission to create meaningful and lasting partnerships. Because little work has been done in terms of faith-based programming focusing on children and youth, this manuscript provides important initial understandings that can be used to contribute to future intervention development. These results, specifically assuring that messages and program elements align with organization goals and needs, are particularly important for informing how researchers and health experts approach potential partnerships with FBOs.

Implementation (Manuscript 3)

The final manuscript, “An ecologically-based health intervention in faith-based settings: Analyzing opportunities to improve child nutrition and physical activity behaviors,” addressed Aim 3: to examine data from the evidence-based FAN intervention to determine proposed opportunities, programs, messages, and social structures or policies related to improving HE and PA for children and youth in FBOs. Data used to address Aim 3 were collected from program plans and technical assistance calls from churches (n=53) participating in the first phase of the larger FAN Dissemination and Implementation trial. Data included proposed health intervention activities tailored to fit individual churches. Activities (n=1,498) from program plans were assessed for primary population (e.g., the entire church, children, adults), health behavior focus (e.g., HE, PA, general health), and theoretical classification (e.g., program, opportunity, social structure/policy, message) using the structural model of health behavior.
assistance calls were reviewed for mentions of youth-specific programming to provide examples of implemented activities and to triangulate information from program plans.

We found that planned activities were most often intended to impact the entire church population (including children and youth), were most often nutrition focused, and were meant to create opportunities for healthy behaviors within existing church events. Of those church-committee generated activities planned for a specific population, children and youth were the intended recipients 14% of the time, more often than any other sub-population within the church organization.

The findings presented here suggest that ecologically-based health interventions in faith-based settings have the potential for broad-reach to positively impact HE/PA behaviors among congregants under 18 years old. As such, the approach to evaluating planned activities that are either targeted at children/youth populations or may reach them because of the ecological nature of the activity presents an advancement in the process of evaluating the potential impact of faith-based health programs on younger populations.

Results from this study were consistent with the proposed FAN intervention approach - to create a health church environment that is supportive of HE and PA by targeting the broadest possible population (i.e., the entire congregation). Ecologically-focused intervention activities such as serving healthy options at church-wide meals or incorporating PA into worship were common, and similar to approaches taken in other ecologically-based faith-based health interventions. Previous ecologically-based research has not assessed how specific sub-populations such as children may be targeted as the intended recipients of specific activities. Therefore, this research presents a newly identified outcome of ecologically-based interventions and a promising strategy for
evaluating activities from organizational-level interventions using data from an evidence-based program. This approach to assessing population, topic, and structural factors may provide insight into potential areas for outcome measurement in future intervention studies and highlights the need for measurement of health outcomes in all sub-populations in future research.

Implications and Considerations

Overall, this dissertation explored the potential of FBOs as potential partners to decrease childhood obesity and improve children’s health behaviors. This exploration began with a review of existing intervention literature to examine the degree to which interventions reported the reach, efficacy, adoption, implementation, and maintenance of faith-based HE and PA programs, specifically considering how these programs may impact child and youth health. The systematic review identified two general types of interventions, individual/interpersonal and ecologically-based, and found that with the exception of those few studies that focused specifically on children and youth behaviors,\textsuperscript{140,141} there is little information about the potential impact of faith-based health interventions on children and youth. While this limitation created difficulty in evaluating the potential public health impact of faith-based interventions among children and youth, the lack of research in this area underscores the importance of this dissertation and demonstrates a need for future research in this area. Therefore, the second and third studies included in this dissertation contribute to currently limited understandings of the potential for faith-based partnerships to improve children’s health.

Across Aims 2 and 3, we noted several important and overlapping themes. This dissertation was guided by a theoretical framework based on the structural model of
health behavior and the UMC Statement on Health and Wholeness. These categories of structural factors were identified as important to the current work as a foundation for the conceptualization, design approach, and analysis plan for the research, and to tailor the research to the context of the existing partnership between researchers and participants. Research findings that elaborate on the conceptualization and implementation of faith-based partnerships to address childhood obesity confirmed the relevance of the theoretical model. These findings also expanded upon the initial conceptualization by including community elements (e.g., partnerships with health experts, community outreach programs) outside of the social and physical structure of the church.

Data collected to satisfy Aims 2 and 3 provided insight into both proposed and implemented examples of activities to impact children’s health and the mechanisms that churches currently use to reach this population. Across Aims 2 and 3, church leaders identified opportunities, programs, messages, and social structures or policies that could potentially impact children’s health, and these activities were situated across the theoretical model. Importantly, church leaders, in both in-depth interviews and program plans/technical assistance calls, identified several existing church programs or events that would be important to impacting children’s health. Existing church programs, such as Sunday School, Vacation Bible School, and Youth Group, were mentioned across both Aims 2 and 3 as events that could be used to encourage healthy behaviors. While identifying and assessing these structures specifically as having the potential to impact to children and youth is unique, targeting existing activities or structures is a well-established technique in ecologically-based programming. Because little is
known about the outcomes of these faith-based ecological interventions among children and youth (e.g., the FAN program,\textsuperscript{19,20} Body and Soul\textsuperscript{21}), there is a lack of information about the adequacy of currently identified events at reaching children and youth. Therefore, deeper exploration of health programming may necessitate assisting churches in identify existing activities most likely to reach children and youth and assisting leaders in brainstorming and planning for activities that have potential to reach children and youth.

While there was some level of consistency in the theoretical underpinnings for Aims 2 and 3, there was variation in the activities or approaches identified across the studies. For example, in-depth interviews revealed that church leaders often identified social structures such as encouraging adults to act as role models in improving children’s health behaviors, which is consistent with previous faith-based research in which pastors identify modeling healthy behaviors as important to their function in the church.\textsuperscript{144} However, church program plans seldom identified these social structures as a planned activity. Additionally, church leaders mentioned the role of the church and church members in broader community activities or initiatives such as community feeding programs to impact children’s health, but program plans seldom included such approaches. There may be several reasons for these variations across studies. First, in-depth interviews focused on children and youth while program plans focused on intervention strategies to address the entire congregation. FAN training encourages churches to focus on the overall church environment, not at the expense of any one population, but for purpose of reaching the broadest possible population.\textsuperscript{19} Therefore, church leaders completing program plans may not have identified program elements
aimed specifically at children and youth. Second, populations differed across Aims 2 and 3. UMC church leaders from across South Carolina were included in Aim 2 and Aim 3 data were collected from multiple denominations geographically isolated to one county in South Carolina. Finally, the focus of the FAN program is to change the church environment, and while church leaders may have conceptualized impacting children’s health as having a broader community focus in in-depth interviews, these community-driven approaches were not a primary focus of FAN training and therefore may not be prominently featured in program plans or technical assistance calls. Proposed community-driven approaches, however, are reflective of current research understandings of the role of the church in community development, and may reflect the desire of churches to impact health within their congregations as well as their surrounding communities.147,148

Future Intervention and Evaluation

Based on the results of this dissertation, there are several potential approaches to health promotion intervention development and evaluation for children in faith-based settings. First, additional observations are needed to assess opportunities for PA and HE in faith-based settings where children are present. Currently, little information is available to provide detail about the types of foods consumed or the amount of activity children engage in during their time in FBOs. These observations would provide additional information, outside of self-report, about areas where structural factors may influence children’s health behaviors. In addition to direct observations of the HE and PA environments, assessments should include evaluations of messages and social structures that might influence children and youth.
Second, it is evident that ecological interventions have the potential to reach all members of the church, including children and youth, and these interventions should consider outcome measurement in congregants under 18 years old. These measurements would require the use of tools specifically for children and might incur additional data collection costs. However, understanding the impact of ecologically-based interventions may help to refine or expand existing programs to assure the broadest possible public health impact on populations of interest and may provide an understanding of what intervention elements have profound impact on children and youth. If church leaders and program developers do in fact identify children and youth as part of the target population for health interventions, understanding and incorporating nuanced approaches will be important to expanding programmatic impact.

Next activities proposed and presented in this research may be used as examples in future program development or public health trainings and should be considered when developing measurement guidelines for interventions using policy, systems, and environment change. The developers of ecologically-based interventions may benefit from this research, as it provides a basis to develop intervention element suggestions for churches with children and youth. Church leaders identified a need to tailor programming to fit church demographics. While ecologically-based interventions often provide that flexibility, researchers should be prepared to offer examples, ideas, and materials specific to child and youth populations. Churches in this research often targeted existing programs such as Vacation Bible School, Sunday School, and Youth Group as activities where health programming may occur. However, they may not be fully prepared to implement programs or change without assistance from public health experts or program developers.
In addition, the implementation of ecologically-based interventions does not prevent individual or interpersonal level activities from being implemented as part of an overall approach to improving health. For example, churches implementing policy, systems, and environment changes may also provide exercise classes for individuals, or tailored Bible Study curriculums focusing on health. Ecologically-based interventions could include children’s Sunday School or Youth Group curriculums that are health-focused, and these materials may already be available. The results of this dissertation may also help identify strategic partners in the church organizations that should be approached as potential partners to develop or implement structural factors that influence health behaviors. For example, some churches may identify parents as key partners in these approaches, while others may specifically identify youth ministers, children’s ministers, or Sunday School teachers as the gatekeepers for such interventions.

The information presented here may also be used to inform church leadership at the church, organizational, and denomination level of the potential for more cohesive approaches to improve health. Such suggestions may include faith-tailored curriculum and partnerships with health-care or research organizations, and may expand on existing denomination-level health initiatives. Additionally, community-wide approaches to addressing childhood obesity, health behaviors, and food security may be important to FBOs and may necessitate partnerships with public health organizations like local health departments, research organizations, food relief agencies, and inter-faith coalitions. While interventions in FBOs alone may not represent a sufficient “dosage” of health promotion programming to eliminate childhood obesity, researchers recognize the importance of evaluating programs in a variety of settings that may play a role in
childhood obesity prevention. FBOs represent one organizational setting in a holistic approach to childhood obesity prevention that includes all environments in which children grow, learn, and interact with others. And though attendance at FBOs may be time-limited compared to settings like schools, FBOs are important partners in child development and may provide unique and important opportunities to engage parents and families in health promotion efforts.

Limitations

This dissertation has limitations that should be noted. First, the systematic review confirms that faith-based health intervention literature is in its early stages, and the existing body of research focusing on the development, testing, or outcomes of faith-based interventions among populations under 18 years old is small. The limited amount of data created a challenge in assessing current approaches to faith-based health interventions measuring outcomes among children and youth.

A common limitation of Aims 2 and 3 is the potential for generalizability of the findings due to the homogeneity of the samples. Data used to address both Aims 2 and 3 were collected exclusively from churches in South Carolina and present limitations based on geographic and cultural considerations. Data from Aim 2 may also be difficult to generalize due to representation of a single protestant denomination that includes physical health as part of an overarching belief structure. While denominations may have similarities in belief structures, denominational characteristics including organizational structure, practices, and programming may differ, making the application of findings to other denominations or religions challenging. This study also employed a purposeful
sampling strategy in which participants self-selected to be involved in the study. Self-selection by participants may lead to strong opinions or previous knowledge of the subject compared to the population at large. While the purposeful sampling strategy may fail to include all perspectives, the data gathered provided information about strategies currently being implemented in churches, illustrating real-word examples in addition to proposed approaches. Data for Aim 3 included additional limitations related to generalizability due to the racial homogeneity of the study population, which included predominately African American churches. While these issues with generalizability should be noted, faith-based interventions remain popular among African American populations,36,37 and attendance at religious organizations remains high in the South.37

Aim 3 included an additional limitation. Specifically, data were initially intended to be used for process evaluation and were not collected for the purpose of evaluating activities for children/youth. Program plans provided information about a church committee’s intention to create health change within their church, but churches were not prompted or instructed to create specific plans for reaching children and youth. Furthermore, plans do not equate with the implementation of activities. Similarly, technical assistance calls were designed as an intervention delivery tool, not as a data collection instrument, and call scripts were not designed to collect information specifically about youth populations.

Conclusions

FBOs have been acknowledged as important partners in health promotion efforts and are uniquely positioned to address childhood health behaviors such as HE and PA, which may reduce childhood obesity. This dissertation examines previous work in this
area and then builds upon the small body of knowledge by evaluating the conceptualization and implementation of faith-based programming for children and youth. The results presented here provide a foundation for future research and public health interventions through a theoretically-framed examination and highlight the need to expand intervention and evaluation efforts for children and youth in faith-based settings.
REFERENCES


66. Singh AS, Chin A Paw MJM, Brug J, van Mechelen W. Dutch obesity intervention in teenagers: effectiveness of a school-based program on body composition and


73. Wesley J. *Primitive Physick Or an Easy and Natural Method of Curing Most Diseases.* United Kingdom: W. Strahan, 1761.


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APPENDIX A

SYSTEMATIC REVIEW SEARCH TERMS, PUBMED

#1 (religion/faith-based)

"Faith-based" [tw] OR “Faith-placed” [tw] OR Buddhism [tw] OR Buddhist*
[tw] OR Catholic* [tw] OR Christian* [tw] OR Church* [tw] OR Diocese*
[tw] OR Judaism [tw] OR Mosque* [tw] OR Muslim* [tw] OR orthodox*
OR Protestant [tw] OR Rastafari [tw] OR Religion [tw] OR Religion and Medicine
[MeSH] OR Religion and Psychology [MeSH] OR Religion and Science
[MeSH] OR Religious belief* [tw] OR Sikh* [tw] OR soul [tw] OR Spiritual therapies

#2 (physical activity)

Aerobic exercises [tw] OR Athletic [tw] OR athletic activities [tw] OR baseball [tw]
OR basketball [tw] OR dancing [tw] OR Exercise [MeSH] OR fitness
Exertion [MeSH] OR Physical fitness [MeSH] OR Physical inactivit*
OR Exercise therapy [MeSH] OR Motor activity [MeSH] OR exercise* [tw]

#3 (nutrition)
"Energy density" [tw] OR "energy intake" [tw] OR "energy intakes" [tw] OR "whole
grains" [tw] OR Breast feeding [MeSH] OR Calorie* [tw] OR carbohydrate
[tw] OR vegetable [tw] OR Whole grains [MeSH]

#4:
#2 OR #3 (physical activity OR nutrition)

#5 (obesity)

#6: #4 OR #5 (physical activity OR nutrition OR obesity)

#4 OR #5 (physical activity OR nutrition OR obesity)

#7: (US Based)


#8:

#1 AND #6 AND #7 (religion/faith-based AND (physical activity OR nutrition OR obesity) AND US based)
Hello, [insert participant name]. We’ve spoken before about your participation in project looking at the role of churches in childhood health, specifically decreasing childhood obesity, but I want to take a chance to introduce myself. My name is Caroline Dunn and I am a graduate student at University of South Carolina, I am also a member of the United Methodist Church, and I used to work in youth ministry.

[Audio recorder]: Before we get started, I would like to use an audio recorder during the discussion so that I can refer back to the discussion when I write my research report. Do you mind if I record this interview session?

a . (NO) Thank you!

b . (YES) OK. I’m afraid we have to audio record the interview. Because of that, you will not be able to participate in the interview today. Thank you for your time.

[PRESS BUTTON HERE]

I want to tell you a little bit about this study.

At the end, I will ask you to give verbal consent to participate in this interview. Is it alright if I begin?

A. Purpose of this study:
We hope to learn more about the role of faith-based organizations, specifically the United Methodist Church in South Carolina, in promoting healthy eating and physical activity in child and youth populations. We hope to learn a little more about your view of health promotion efforts, partnerships, and programs; how you view these activities as part of the broader context of the mission of the church; and also about what opportunities you identify as important to the promotion of healthy eating and physical activity among children and youth. There are no right or wrong answers, so feel free to share what you feel would help us understand your experiences and views.

B. What will happen if you take part in the study?

If you agree to participate in this study, you will be asked questions about your view on health promotion efforts for children and youth within the church. The interview will last about 30-60 minutes. I will be taking notes throughout the interview and will also audio-record the session. I want to assure you that all of your responses will be confidential and only used for research purposes. If any question makes you uncomfortable, feel free to not respond.

Upon completing the interview, you will receive a $20 Walmart gift card as a token of appreciation for participating. If you would like, you may also choose to donate your incentive gift card to the UMC Epworth Children’s Home in Columbia, SC. If you choose to do this, we are happy to facilitate that donation for you. Do you have any questions for me before we start?
I would like to start off by asking you some questions about yourself and your church:

Can you give me your:

Name: ________________________________________________________________

Church name: ___________________________________________________________

Role: __________________________________________________________________

Gender: _______________________________________________________________

Race/Ethnicity: __________________________________________________________

Age: __________________________________________________________________

Church size (# of members): _______________________________________________

How many people are active in your church: _________________________________

Number of children and youth birth-18 years who are active in your church: _______

The Faith, Activity, and Nutrition (FAN) Program is a partnership between the SC Conference of the United Methodist Church and the University of South Carolina’s Prevention Research Center. The goal of the program is to help churches create a healthy church environment that supports healthy eating and physical activity. Is your church participating in the FAN program? Yes  No

Now I want to ask you about youth and children’s programming in your church.

I am going to read you a short list of youth and children’s programming, and you tell me if your church provides this type of activity for children and youth?

<table>
<thead>
<tr>
<th>Does your church have…..</th>
<th>X if YES</th>
<th>X if NO</th>
</tr>
</thead>
</table>

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**Sunday School?**

<table>
<thead>
<tr>
<th><strong>Children’s Church?</strong> (Note: Children’s Church is different from Sunday School. Usually children leave the main worship service at a defined point and go to a separate “children’s church” during the sermon or for the entire service)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Nursery care</strong> provided to babies and toddlers for parents to attend Sunday School or worship service?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Youth group</strong> (such as Youth Fellowship Group)?</th>
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<table>
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<tr>
<th><strong>Children’s / youth choir?</strong></th>
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<tr>
<th><strong>Vacation Bible School (VBS)?</strong></th>
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<table>
<thead>
<tr>
<th><strong>Afterschool care</strong> during the week?</th>
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<table>
<thead>
<tr>
<th><strong>Childcare or child development center</strong> that provides childcare during week days?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Any other children’s or youth programs or activities we may not have listed above?</strong> <em>(Note: if “yes” please briefly describe this program or activity below the table)</em></th>
</tr>
</thead>
</table>

Have you heard of the United Methodist Church Abundant Health Program or the 10,000 church challenge?  Yes  No

*(If no, offer to provide information about Abundant Health and the 10,000 church challenge)*
General Health/Physical Health:

I want to start off by asking you some general questions about the connection between the church and youth health.

1. What are some health concerns that you have for young members of your congregation and community?

   *Probe:* Tell me more about why [health concern] as an issue for young members of your congregation/community.

2. To what extent (and why) do you view childhood obesity as an issue in your congregation? In your community?

   *Probe:* To what extent (and why) do you view inactivity among children as an issue in your congregation? In your community?

   *Probe:* To what extent (and why) do you view unhealthy eating among children as an issue in your congregation? In your community?

   *Probe:* What about childhood obesity is concerning, what is problematic about childhood obesity?

3. In your opinion, what is the role of the church in promoting health among your congregation and community?

   *Probe:* What types of health do you think are important for the church to address?

4. What is the role of the church in promoting health among youth in your congregation and community?

   *Probe:* What types of health do you think are important for the church to address among youth?
5. Can you tell me about any activities (policies, programs, opportunities) that your church has put into place or participated in with the intention of promoting physical health among youth?

 Probe: Has your church participated in any programs or created any partnerships to address obesity, healthy eating, and physical activity in your congregation?, in your community?, in youth? If so, can you describe these efforts?

 Church Environment:

We have talked a little bit about some of the health concerns that you see reflected in your congregation and community, specifically we talked about childhood obesity. Now I want to talk a little more about how children are active in your church.

6. Can you describe where children are involved and active in your church (both physical spaces and programs)?

 Probe: Where in your church can children be active and play?

 Probe: When (during what events) can children be active and play in your church?

 Probe: Can you describe any events that your church has in the community (community partnerships) where children might be active and play?

7. What types of activities or events does your church hold where children might eat or drink? (Sunday school, worship, afterschool…)

 Probe: What are events or activities that are specifically held for children where they might eat or drink?
Probe: What are events or activities held in your church for all members where children might eat or drink?

Probe: Can you describe any events that your church has in the community (community partnerships) where children might be eat?

8. Who do you see as having decision-making power about the health behaviors of children and youth that attend your church, such as how active they are and what they eat (parents, employees, volunteers, community leaders)?

Probe: Who do you consider to be responsible for making decisions about children’s health (healthy eating, physical activity)?

Probe: Who are advocates in your church for healthy eating and physical activity for children and youth?

9. Tell me about your role in making decisions that might impact the health behaviors of children and youth.

Probe: How do you see your role in making decisions about the health behaviors of children and youth?

Church Elements:

Next, I want to talk a little more about some specific aspects of your church that may impact childhood health, including obesity.

Media Messages

10. What types of messages or media does your church share with children, youth, or their families about health? healthy eating, physical activity, or obesity prevention?
Probe: What channels are used to get this information to children, youth? (e.g., messages from the pulpit, Sunday School, youth events, bulletin boards, social media…)

Probe: What channels are used to get this information to caregivers of youth? (e.g., messages from the pulpit, Sunday School, youth events, bulletin boards, social media…)

11. Who is responsible, or who would be responsible for communicating messages about healthy eating, physical activity, or obesity prevention to youth and their families?

12. How do you know if these messages are reaching their intended audience?

Probe: Do you (or who does) talk about these messages with youth and their families?

Opportunities:

13. Earlier we talked about youth and children’s activities at your church that are available for all children and youth. You mentioned that you have [PROGRAMS]. What opportunities do you see in these events, or in others that we may not have talked about, for children and youth to be physically active and eat healthy foods?

Probe: Can you walk me through what a meal or snack would look like at [PROGRAM]?

Probe: Can you tell me about they types of activities that take place at look like at [PROGRAM]?

Probe: Sometimes there are opportunities in the church that encourage eating foods that aren’t as healthy as others, or may be times when youth don’t have a
chance to move around much. Can you identify any activities in your church, like this, that might encourage unhealthy behaviors?

Programs:

14. What types of programs are available for children/youth and their families to address childhood obesity?

   Probe: What programs or activities at your church do you think either encourage or discourage healthy behavior among children and youth?

   Probe: Do you have or have you considered any partnerships (community, research) that may encourage obesity prevention efforts?

   Probe: What concerns do you have about programs or partnerships to encourage obesity prevention efforts?

Policies:

15. Have guidelines or policies been proposed or put in place to encourage healthy eating or physical activity for children and youth?

   Example policy (if the participant has a question about what is a policy/guideline): At all church events lasting more than 60 minutes, we will take a 5-10 minute physical activity break/At all church events where food is served, there will be a health option such as fresh fruits or vegetables.

   Probe: What types of policies do you have for Sunday school, youth group, during worship, VBS, (check list of activities above), that may increase healthy eating or physical activity?

   Probe: Are there any policies that your church has put in place for all members that might impact children and youth?
Closing:

I just have a couple more questions about how the United Methodist church, and individual churches, could potentially be involved in childhood obesity prevention.

16. What are key aspects of the church or church mission that you think are important to tap into in order to address childhood obesity?

    *Probe: How can churches participate in reducing childhood obesity?*

17. What potential challenges/difficulties do you see in addressing childhood obesity within your church, community?

    *Probe: What types of support could be helpful in overcoming these potential challenges?*

18. What potential opportunities do you see in addressing childhood obesity within your church, community?

    *Probe: What types of support could be helpful in making these opportunities become reality?*

*Addition:* If you start addressing childhood obesity, what impact do you think this might have on the rest of your congregation?

We are just about done with the interview, but I wanted to see if there was anything I did not ask you, or any other thoughts that you may have about this topic. Every church is different, and there may be something important about your church that I didn’t ask. Is there anything else that you would like to share with me?

Do you have any questions for me?
I want to thank you so much for your time today. If you think of anything that you would like to share, or have any questions please don’t hesitate to get in contact with me.
APPENDIX C

EMAIL RECRUITMENT FOR UMC PASTORS

Dear Pastors,

Proverbs 22:6 says, “Start children off on the way they should go, and even when they are old they will not turn from it.”

I am writing to ask for your help and participation in our efforts to learn more about the role that churches can play in improving the health of children and youth.

You are receiving this email because although your church did not enroll in the Faith, Activity, and Nutrition (FAN) program, you participated in an interview as part of the FAN program earlier in 2017. We’d like to learn more about this topic from both participating and non-participating churches.

We are asking interested pastors to participate in a 30-60 minute interview with one of our FAN Program graduate assistants, Caroline Dunn. Participation in this interview would be in addition to the interviews you agreed to as part of the FAN program.

As a thank you for participating in this interview, you will receive a $20 gift card, or you may elect that your gift card be donated to the United Methodist Epworth Children’s Home in Columbia, SC. If you are interested and would like to participate, or would like
to learn more about what participation involves, please contact Caroline Dunn (dunncg@email.sc.edu, 803-777-2830).

Right now the UMC is devoting time and resources to improving the health and well-being of children through the *Abundant Health Initiative*. Although all interviews will be confidential, we will share our combined learnings with the church so that what is learned might help to facilitate the ongoing work in the SC Conference of the UMC.

We sincerely hope that you will participate, and look forward to hearing from you! Thank you in advance for considering this opportunity to participate and contribute to increasing our understanding of health promotion in churches.

If you have any questions about the interview, please feel free to contact me (803-777-8141) or Reverend Kathy James, Director of Connectional Ministries (803-786-9486).

Sincerely,

Sara Wilcox, PhD
### APPENDIX D

#### SYSTEMATIC REVIEW INTERVENTION INFORMATION

<table>
<thead>
<tr>
<th>Author, Year of Publication, Intervention Name (if provided)</th>
<th>Study Design</th>
<th>Theory</th>
<th>Study Population</th>
<th>Geographic location</th>
<th>Intervention elements</th>
<th>PA outcomes</th>
<th>HE outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allicock, 201225 <em>Body and Soul, Dissemination</em></td>
<td>Randomized Controlled Trial</td>
<td>Transtheoretical Model, Social Cognitive Theory, Socioecological Model, Motivational Interviewing</td>
<td>AA² Intervention 8 churches 273 participants 75% female Mean age: 51.4 Control (n=7): 7 churches 289 individuals 73% female Mean age: 52</td>
<td>CA, FL, LA, MI, NJ, NY, NC, TX, VA, DC</td>
<td>Pastoral involvement, educational activities, church environment changes, peer counseling</td>
<td>--</td>
<td>No difference in F/V intake between groups at post-test</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Theory</td>
<td>Setting</td>
<td>Participants</td>
<td>Outcomes</td>
<td></td>
<td></td>
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<tr>
<td>-------------------------------------------</td>
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</tr>
</tbody>
</table>
| Allicock, 2013²⁶⁻²⁷  
*Body and Soul Community Implementation* | Randomized Controlled Trial                | Transtheoretical Model, Social Cognitive Theory, Socioecological Model, Motivational Interviewing | AA NC, MI Body and Soul: 9 churches 338 individuals 71% female Mean age: 62 ACTS of Wellness: 10 churches 374 individuals 66% female Mean age: 64 Christian | Pastoral involvement, educational activities, church environment changes, peer counseling ACTS of Wellness: peer counseling, tailored newsletters, PA and cancer screening events at the church, screening resources. No significant changes or differences in PA | Increase in F/V intake from baseline to follow-up in Body and Soul group (+0.35 servings/day, *P*=0.04) |
| Arredondo, 2017²⁸⁻²⁹  
*Fe en Accion (Faith in Action)*         | Randomized Controlled Trial                | Socioecological Model          | Latinas Intervention 8 churches 178 individuals 100% female Control 8 churches San Diego, CA | Free PA classes, motivational interviewing, educational handouts, community walkability audits, social encouragement to create | Significant increase in MVPA (*P*=0.03) and self-report leisure time (*P*=0.003) between groups. |
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Theory</th>
<th>Interventions</th>
<th>Comparison</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bopp, 2009^30 Qualified</td>
<td>Quasi-experimental</td>
<td>Social Cognitive Theory, Transtheoretical Model</td>
<td>AA Intervention 3 churches 72 individuals 79% female Mean age: 53</td>
<td>SC 8 weekly sessions including 20-30 minutes of PA, discussion, handouts, and homework.</td>
<td>No significant differences for kcal/week or 1-week step count at 3 months or 6 months.</td>
</tr>
<tr>
<td>Eating for a Healthy Life</td>
<td>Randomized Controlled</td>
<td>Social Learning Theory, Transtheoretical Model</td>
<td>Intervention 20 churches 1,099 individuals 84% female</td>
<td>WA Volunteer advisory board, interpersonal support through volunteer</td>
<td>Significant improvements in fat consumption, fiber</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Interventions</td>
<td>Control</td>
<td>Recruitment and Encouragement</td>
<td>Comparison</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
| Campbell, 1999<sup>32</sup>  
*Black Churches United for Better Health* | Randomized Controlled Trial | Motivational Interviewing  
91% White  
Control  
20 churches  
1,076 individuals  
86% female  
87% White | recruitment and encouragement to discuss dietary change options with members, mailings, motivational messages, social activities, healthy eating education session, RO leadership encouragement of healthy eating | No information about control | -- | consumption, and F/V consumption (all P’s<0.05)  
Intervention group consumed 0.85 F/V servings more than control group (P<0.001) |
<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention Type</th>
<th>Population Characteristics</th>
<th>Interventions</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campbell, 2004&lt;sup&gt;33&lt;/sup&gt; <em>Wellness for African Americans Through Churches (WATCH)</em></td>
<td>Randomized Controlled Trial</td>
<td>AA</td>
<td>Individual Intervention</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NC</td>
<td>Individual intervention: 4 computerized newsletters and 4 targeted tapes mailed to participants Lay health advisor intervention: Lay health advisors trained to</td>
<td>Individual intervention participants had significantly greater recreational exercise at follow-up compared to controls (P&lt;0.01)</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Theoretical Model</td>
<td>Intervention</td>
<td>Expected Activities</td>
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<tr>
<td>Christie, 2009</td>
<td>Quasi-experimental</td>
<td>Trantheoretical Model, Social AA</td>
<td>Lay health advisor Intervention 3 churches 123 individuals 72% female 41% over 50 years old</td>
<td>Promote social support for church members, expected to organize and conduct church-wide activities focused on spreading information about HE/PA.</td>
</tr>
<tr>
<td>Body and Soul Health Initiative</td>
<td>Cognitive Theory, Socioecological Model, Motivational Interviewing</td>
<td>24 churches 383 individuals 100% female Mean age: 44 Christian</td>
<td>meetings led by study staff including nutrition education, physical activity, cooking demonstrations, and group social support. Phase 2: 12 weeks of meetings facilitated by church Health Improvement Groups</td>
<td>exercise from baseline to 12 weeks ($P&lt;0.05$); no differences at 24-week follow-up</td>
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<tr>
<td>Gutierrez, 2014$^{35}$ Fine, Fit, and Fabulous</td>
<td>Quasi-experimental</td>
<td>No theory reported</td>
<td>Black N=107 (58.5%) Latino N=76 (41.5%)</td>
<td>NYC</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Theory</td>
<td>Group Characteristics</td>
<td>Setting</td>
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<tr>
<td>Murrock, 2010[36]</td>
<td>Quasi-experimental</td>
<td>Social Cognitive Theory</td>
<td>AA 100% female</td>
<td>Large midwestern city</td>
</tr>
<tr>
<td>Pinsker, 2017[37]</td>
<td>QE (one group pretest posttest)</td>
<td>Trantheoretical Model, Social Cognitive Theory, Socioecological Model, Motivational Interviewing</td>
<td>AA Intervention 20 churches 189 individuals 77% female</td>
<td>Minneapolis-St. Paul metropolitan area of Minnesota</td>
</tr>
</tbody>
</table>
| Resnicow, 2001[^1][^2] | **Eat for Life** | **3 group Randomized Controlled Trial** | **Motivational Interviewing** | **Cohort:** AA 
861 individuals 
73% female 
Mean age: 44 | **Atlanta, GA** | Culturally tailored: Participants received tailored self-help intervention (Eat for Life video, cookbook, printed education materials, newsletter) with 1 telephone cue call. 
Culturally tailored + motivational interviewing: Participants received tailored self-help intervention (above) with 1 cue call and 3 counseling calls. 
Control: Participants received standard nutrition | -- | Change in fruit and vegetable intake was significantly greater in the motivational interviewing group than in comparison and self-help groups \( (P's<0.05) \). |
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Theoretical Models, Intervention Components</th>
<th>Cohort Description</th>
<th>Intervention Description</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resnicow, 2004&lt;sup&gt;40&lt;/sup&gt;</td>
<td>Cluster Randomized Controlled Trial</td>
<td>Transtheoretical Model, Social Cognitive Theory, Socioecological Model, Motivational Interviewing</td>
<td>Cohort: Predominantly AA 854 individuals Intervention 8 churches 76% female Mean age: 51 Control 7 churches 73% female Mean age: 51 Christian</td>
<td>Churchwide changes included a kickoff event, a church committee, health policy changes, and increasing access to healthy foods. Individual components included self-help materials and motivational interviewing.</td>
<td>Intervention participants had significant higher F/V intake and lower fat intake at posttest than controls (all P’s&lt;0.05)</td>
</tr>
<tr>
<td>Resnicow, 2005&lt;sup&gt;41,42&lt;/sup&gt;</td>
<td>3 group Randomized Controlled Trial</td>
<td>Transtheoretical Model, Social Cognitive Theory, Socioecological Model, Culturally targeted</td>
<td>Culturally targeted: 6 churches 335 individuals 76% female Mean age: 46 Atlanta, GA</td>
<td>Intervention groups showed significant increase in PA at posttest (P’s&lt;0.05).</td>
<td>Intervention groups showed significant increases in F/V intake at posttest (P’s&lt;0.05).</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Intervention</td>
<td>Control</td>
<td>Setting</td>
<td>Results</td>
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</tbody>
</table>
| Sattin, 2016<sup>43</sup>  
*Fit Body and Soul* | Randomized Controlled Trial | Motivational Interviewing  
Culturally targeted + motivational interviewing: 5 churches 304 individuals 78% female  
Mean age: 47  
Control  
5 churches  
267 individuals  
74% female  
Mean age: 46  
Christian | printed education materials, newsletter).  
Culturally targeted + motivational interviewing:  
Participants received tailored self-help intervention (above) with 1 cue call and 4 motivational interviewing calls.  
Control:  
Participants received standard nutrition education and PA materials. | Augusta, GA | No significant differences in PA. | -- |
<table>
<thead>
<tr>
<th>Thomson, 2015&lt;sup&gt;44&lt;/sup&gt;</th>
<th>Quasi-experimental</th>
<th>Transtheoretical Model, Social Cognitive Theory, Socioecological Model, Motivational Interviewing</th>
<th>Intervention</th>
<th>Lower Mississippi Delta</th>
<th>Intervention: 6-month intervention including pastoral involvement, 6 once-monthly educational sessions led by church planning committee encouraging F/V consumption, increased F/V availability at church functions; phone counseling and motivational interviewing</th>
<th>--</th>
<th>Significant improvements in total fruit, whole fruit, total vegetable consumption for intervention group (all P’s &lt;0.05).</th>
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<tbody>
<tr>
<td></td>
<td>Implementati</td>
<td>Mean age: 47</td>
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<td>Control 12 weekly group 1-hour sessions including general health information.</td>
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<tr>
<td></td>
<td>on</td>
<td>Control 10 churches 287 individuals 83% female Mean age: 47 Christian</td>
<td></td>
<td>Control: 12 weekly group 1-hour sessions including general health information.</td>
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<td>Mean age: 47</td>
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<td>Control: 12 weekly group 1-hour sessions including general health information.</td>
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<td>Control 10 churches 287 individuals 83% female Mean age: 47 Christian</td>
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<td>Control: 12 weekly group 1-hour sessions including general health information.</td>
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<td>Mean age: 47</td>
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<td>Control: 12 weekly group 1-hour sessions including general health information.</td>
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<td>Control 10 churches 287 individuals 83% female Mean age: 47 Christian</td>
<td></td>
<td>Control: 12 weekly group 1-hour sessions including general health information.</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Theory/Cohort</td>
<td>Intervention</td>
<td>Control</td>
<td>Outcomes</td>
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<tr>
<td>Tussing-Humphreys, 2013[^45]</td>
<td>Quasi-experimental</td>
<td>Transtheoretical Model, Social Cognitive Theory, Socioecological Model, Motivational Interviewing</td>
<td>Intervention: 6-month intervention including church kickoff, health screening, 6 60-minute health education sessions monthly, self-directed PA, printed educational materials and newsletters.</td>
<td>Control: Bimonthly newsletters containing health information unrelated to HE/PA.</td>
<td>Significant increase in aerobic and strength/flexibility indicators in intervention group (both P’s &lt;0.05). Significant increases in total fruit, total vegetable, and diet quality in control and intervention groups (all P’s &lt;0.05).</td>
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</tbody>
</table>

[^45]: Delta Body and Soul Effectiveness Study
| Wilcox, 2007\cite{46,47} | Group Randomized Controlled Trial | Socioecological Model, Transtheoretical Model | AA Evaluation Cohort: 20 churches 571 individuals Christian | SC Intervention: 8-week volunteer led program including praise aerobics, chair aerobics, walking programs. Church elements included bulletin inserts, PA breaks, church-based health messaging, healthy policy changes. Control: Delayed intervention control. | No significant changes in PA | No significant changes in HE |
| Wilcox, 2013\cite{48,49,50} | Group Randomized Controlled Trial | Structural Model of Health Behavior | AA Evaluation cohort: Intervention 37 churches 466 individuals Control 33 churches | SC Intervention: Church committees trained to increase opportunities for PA/HE in the church, create healthy church guidelines, engage the | Significant group by time interaction for leisure time MVPA in intervention group (\(P=0.02\)). | For completers only, significantly higher F/V consumption in intervention churches (\(P=0.03\)). |
| Wilcox, 2018 \(^{51}\) | Group Randomized Controlled Trial Posttest only | Structural Model of Health Behavior | Intervention 35 churches 811 individuals 70% female Mean age: 53 96%AA | Rural SC County | Intervention: Church committees trained to increase opportunities for PA/HE in the church, create healthy church guidelines, engage the pastor in FAN activities, provide healthy messages to church members. Technical support provided to church committees over 15 months. Control: Delayed intervention control. | Congregants in intervention churches reported significantly less inactivity \((P=0.02)\) than control churches. No difference in meeting PA guidelines. | No significant differences in meeting F/V guidelines between conditions. |

\(^{51}\) *Faith, Activity, and Nutrition (FAN) Dissemination and Implementation*
<table>
<thead>
<tr>
<th>Yanek, 2001</th>
<th>3 Group Randomized Controlled Trial</th>
<th>Social Learning Theory</th>
<th>AA</th>
<th>Baltimore, MD</th>
<th>support provided to church committees over 12 months.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Joy</td>
<td>100% female Spiritual intervention 4 churches 267 individuals Mean age: 54</td>
<td>20-week CVD curriculum with 30 min of PA each week, church bulletins, pastoral involvement.</td>
<td>Behavioral intervention 5 churches 188 individuals Mean age: 52</td>
<td>Behavioral: 20-week CVD curriculum with 30 min of PA each week.</td>
<td>No between or within group differences in energy expenditure.</td>
</tr>
<tr>
<td></td>
<td>Behavioral: 20-week CVD curriculum with 30 min of PA each week.</td>
<td></td>
<td>Self-help: Individually tailored educational materials.</td>
<td></td>
<td>Outcomes combined for spiritual and behavioral groups: Within group significant decreases in energy intake, total fat, energy from fat, and sodium (all P’s &lt;0.001)</td>
</tr>
<tr>
<td></td>
<td>Self-help: Individually tailored educational materials.</td>
<td></td>
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<td></td>
<td>Between group significantly greater decrease in energy intake, total fat, and sodium compared to</td>
</tr>
</tbody>
</table>
Young, 2006
Church-based physical activity intervention for African American Women

<table>
<thead>
<tr>
<th>Author, Year of Publication, Intervention Name (if provided)</th>
<th>Study Design</th>
<th>Theory</th>
<th>Study Population</th>
<th>Geographic location</th>
<th>Intervention elements</th>
<th>PA outcomes</th>
<th>HE outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Randomized trial with active control</td>
<td>Social Cognitive Theory</td>
<td>AA Intervention 5 churches 123 individuals 100% female Mean age: 48</td>
<td>Baltimore, MD</td>
<td>Intervention (Aerobic exercise): 1-hour weekly exercise class for 6 months, social support, spiritual programming, monthly newsletters. Control (Stretch and Health): Alternating weekly 60-minute stretching classes and health lectures.</td>
<td>No differences in PA between or within groups at follow-up.</td>
<td>self-help (all P’s &lt;0.05)</td>
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<tr>
<td>Study</td>
<td>Design Type</td>
<td>Interventions</td>
<td>Key Findings</td>
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<tr>
<td>Anderson, 2013[54]</td>
<td>Cluster Randomized Controlled Trial</td>
<td><strong>Intervention</strong>: Weekly educational and goal-setting meetings delivered by an RN; weekly muscle strengthening and walking</td>
<td><strong>Signifcantly higher muscle strengthening activities</strong> days/week, muscle strengthening activities minutes/week, and 6-minute walk in intervention ($P&lt;0.05$). No between group differences in kcal expenditure or amount of moderate-intensity PA</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Control</strong>: Delayed control intervention</td>
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<tr>
<td>Benjamins, 2010[55]</td>
<td>Single group pilot</td>
<td><strong>Intervention</strong>: School wellness council formation, wellness policy creation and policy change in 1 hour of PA 4</td>
<td><strong>Significant increase in meeting 1 hour of PA 4</strong>. No differences in F/V intake, breakfast eating, soda intake, or FF intake.</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Population Details</td>
<td>Setting</td>
<td>Intervention Details</td>
<td>Control Details</td>
<td>Results</td>
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<tr>
<td>Wellness Initiative</td>
<td></td>
<td>190 individuals in year 2 Grades 2-8 Jewish</td>
<td></td>
<td></td>
<td></td>
<td>No control</td>
<td></td>
</tr>
<tr>
<td>Duru, 2010</td>
<td>Randomized Controlled Trial, within church randomization</td>
<td>AA 100% female 3 churches (randomization within church) Evaluation Cohort: Intervention 34 individuals Mean age: 73 Christian 28 individuals Mean age: 72 Christian</td>
<td>Los Angeles, CA</td>
<td>All: Weekly 90 minute meetings for 8 weeks followed by once monthly meetings for 6 months. 45 minutes of PA. Intervention: Curriculum included faith-based PA information. Control: Curriculum focused on</td>
<td></td>
<td>Intervention participants increased steps per week significantly more than controls (P=0.02)</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Intervention Design</td>
<td>Theoretical Framework</td>
<td>Population Characteristics</td>
<td>Location</td>
<td>Intervention Details</td>
<td>Results</td>
<td>Notes</td>
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</table>
| Fitzgibbon, 2005<sup>57</sup>  
*Faith on the Move* | Pilot Randomized Controlled Trial | Social Cognitive Theory | 100% AA  
100% female  
One hospital location participated  
Intervention 23 individuals  
Mean age: 48  
Control 23 individuals  
Mean age: 49  
Christian | Chicago, IL | Intervention: Spiritually tailored twice weekly small group format for 12 weeks, including two 45-minute exercise sessions.  
Control: Culturally tailored twice weekly small group format for 12 weeks, including two 45-minute exercise sessions. | -- | No significant differences in PA. |
| Harmon, 2014<sup>58</sup>  
*Dash of Faith* | Quasi-experimental | Transtheoretical Model, Social Cognitive Theory, Socioecologi | AA  
Intervention 1 church  
10 individuals  
60% female | SC | Intervention: 12 weekly 2-hour classes followed by 4 monthly booster sessions over 8 months. | -- | No significant changes. |
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Framework</th>
<th>Intervention</th>
<th>Control</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hughes, 2016</td>
<td>Cluster Randomized Controlled Trial</td>
<td>Behavioral Ecological Framework, Socioecological Model</td>
<td>Korean</td>
<td>Southern CA</td>
<td>Educational materials, five coaching sessions, F/V cooking demonstrations and taste testing following church events.</td>
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<td></td>
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<td></td>
<td>11 churches</td>
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<td>Intervention</td>
<td>Control</td>
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<td></td>
<td>35 individuals</td>
<td>36 individuals</td>
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<td></td>
<td></td>
<td></td>
<td>51% female</td>
<td>67% female</td>
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<td></td>
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<td>Mean age: 37</td>
<td>Mean age: 35</td>
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<td>Christian</td>
<td>Christian</td>
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<td></td>
<td></td>
<td>Significance not reported because study was feasibility</td>
</tr>
<tr>
<td>Study</td>
<td>Intervention Model</td>
<td>Social Support Models</td>
<td>Control</td>
<td>intervention</td>
<td>Posttest Results</td>
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<tr>
<td>Kim, 200860</td>
<td>Quasi-experimental</td>
<td>Transtheoretical Model, Social Support Models</td>
<td>AA</td>
<td>NC</td>
<td>Significant higher posttest recreational PA (METs) for intervention group (P=0.01)</td>
</tr>
<tr>
<td>Wholeness, Oneness, Righteousness, Deliverance (WORD)</td>
<td></td>
<td></td>
<td>Intervention: Weekly small group classes led by trained community members met for 8 weeks emphasizing nutrition, PA, and faith connection to health</td>
<td>Control: Delayed intervention control</td>
<td>No significant HE outcomes</td>
</tr>
<tr>
<td>Parker, 201061</td>
<td>Quasi-experimental</td>
<td>Social Learning Theory</td>
<td>AA</td>
<td>Rural SC</td>
<td>Statistically significant improvements in PA (YPAS) from pre to posttest in spiritual outcomes.</td>
</tr>
<tr>
<td>The LIFE Project</td>
<td></td>
<td></td>
<td>Spiritual: 10-week weight loss educational intervention held in weekly 90-minute sessions with additional time for taste tests. Included</td>
<td></td>
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<tr>
<td>Peterson, 2005&lt;sup&gt;62&lt;/sup&gt;</td>
<td>Quasi-experimental</td>
<td>Social Cognitive Theory</td>
<td>Rural counties in the Midwest</td>
<td>Intervention: Weekly 1-hour meetings for 12 weeks, educational materials. Comparison: Educational materials, 1 hour of verbal instruction summarizing the materials and providing PA</td>
<td>No change in PA, increased energy expenditure in subgroups.</td>
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<tr>
<td>Heart and Soul Physical Activity Program (HSPAP)</td>
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<tr>
<td>Study &amp; Program</td>
<td>Design</td>
<td>Theory</td>
<td>Setting</td>
<td>Christian Demographics</td>
<td>Recommendations</td>
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<tr>
<td>Peterson, 2010&lt;sup&gt;63,64&lt;/sup&gt;, Heart and Soul Physical Activity Program (HSPAP)</td>
<td>Quasi-experimental (one group pretest posttest)</td>
<td>Social Cognitive Theory</td>
<td>Urban city</td>
<td>1 church 18 individuals 100% female Mean age: 50 Christian</td>
<td>Weekly 2-hour meetings for 6 weeks, educational materials, engagement in PA.</td>
</tr>
<tr>
<td>Thompson, 2013&lt;sup&gt;65&lt;/sup&gt;, Fitness U N-Joy (FUN)</td>
<td>Quasi-experimental (one group pretest posttest)</td>
<td>Theory of Reasoned Action</td>
<td>Southern US</td>
<td>2 churches 41 individuals 100% female Mean age: 14 Christian</td>
<td>12-weekly 60-minute sessions including 30 minutes of PA education and motivation and education, and 30 minutes of PA.</td>
</tr>
<tr>
<td>Trost, 2009&lt;sup&gt;66&lt;/sup&gt;, Shining Like Stars</td>
<td>Randomized Controlled Trial</td>
<td>No theory reported</td>
<td>KS</td>
<td>2 churches 65 individuals 51% female Mean age: 8.4 43% White Control 2 churches 40 individuals 53% female Mean age: 7.4</td>
<td>Intervention: 4-lesson Sunday School curriculum focused on increasing MVPA and connecting religious themes to PA. Three weekly family devotionals.</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Framework</td>
<td>Intervention Details</td>
<td>Control Details</td>
<td>Outcomes</td>
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<tr>
<td>Tussing-Humphreys, 2015&lt;sup&gt;67&lt;/sup&gt;</td>
<td>Quasi-experimental</td>
<td>Transtheoretical Model, Social Cognitive Theory, Socioecological Model, Motivational Interviewing</td>
<td>Lower Mississippi Delta: Intervention: 6-month intervention including pastoral involvement, 6 once-monthly educational sessions led by church planning committee encouraging F/V consumption, increased F/V availability at church functions.</td>
<td>Control: Same curriculum but without PA connection. in PA outside of Sunday School.</td>
<td>No significant differences or changes in diet.</td>
</tr>
<tr>
<td>Walker, 2015&lt;sup&gt;68&lt;/sup&gt;</td>
<td>QE, single group pretest posttest</td>
<td>Spiritual framework for coping</td>
<td>Phoenix, AZ: Four weekly 90-minute educational sessions and No significant differences in PA.</td>
<td>--</td>
<td>No significant increases in daily F/V.</td>
</tr>
<tr>
<td>Study</td>
<td>Design/Location</td>
<td>Theory/Intervention/Control</td>
<td>Demographics</td>
<td>Intervention Details</td>
<td>Results</td>
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<tr>
<td>Optimal Health (Spirit, Mind, and Body)</td>
<td>Whitt-Glover, 2008&lt;sup&gt;69&lt;/sup&gt;</td>
<td>QE, Single group pretest posttest</td>
<td>Social Cognitive Theory AA</td>
<td>4 churches 87 individuals 89% female Mean age: 52 Christian</td>
<td>8 weekly group sessions focusing on behavioral strategies to increase PA including 30 minutes of MPA and 60-minute discussion. Significant increase in steps per day and minutes per day of MVPA from baseline (P’s &lt;0.01)</td>
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<td>weekly calls during a 4-week follow-up period.</td>
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<td>Living Well by Faith</td>
<td>Woods, 2013&lt;sup&gt;70&lt;/sup&gt;</td>
<td>Randomized Pilot Study</td>
<td>No theory, grounded in CBPR 90% AA 73% female</td>
<td>Intervention: 8-week delivered twice per week in 90-minute sessions including focusing on diet and PA and individualized wellness plans. Control: Single 90-minute session educational workshop with information</td>
<td>Significant increase in physical fitness for intervention compared to control (P&lt;0.02)</td>
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about diet, exercise and cancer screening, included PA demonstration.

\(^a\) AA=African American