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Authors

Robles, Brenda
Wright, Tanishia G
Caldwell, Julia
et al.

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Promoting congregant health in faith-based organizations across Los Angeles County, 2013–2016

Brenda Robles^{a,*}, Tanishia G. Wright^a, Julia Caldwell^a, Tony Kuo^{b,c,d}

^a Division of Chronic Disease and Injury Prevention, Los Angeles County Department of Public Health, Los Angeles, CA, USA

^b Department of Epidemiology, UCLA Fielding School of Public Health, Los Angeles, CA, USA

^c Department of Family Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA

^d Population Health Program, UCLA Clinical and Translational Science Institute, Los Angeles, CA, USA

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ABSTRACT

The Los Angeles County Department of Public Health (DPH) launched the Nutrition Education and Obesity Prevention (NEOP) Project in fall 2013. As the local arm of the Supplemental Nutrition Assistance Program Education (SNAP-Ed), this project partnered with faith-based organizations (FBOs) in Los Angeles County to implement policy, systems, and environmental change interventions (PSEs) at selected church sites, alongside the usual delivery of health education.

A 2-part programmatic assessment was conducted to better understand how the NEOP Faith Based Project at one of the FBOs was implemented during the 2013–2016 SNAP-Ed funding cycle. A qualitative component (key informant interviews) sought to understand and describe the PSE implementation process at each of the participating church sites, whereas the quantitative component (surveys) focused on assessing congregant perceptions about their awareness of the PSEs, their knowledge and beliefs about health, and their self-reported health behaviors after exposure to onsite changes.

Among congregants who participated in the survey, 52% expressed desire for more health education classes. However, only 37% reported being aware of them at church sites that hosted them. When asked to compare their behaviors for “today” versus 6 months ago, more than half reported greater interest in eating more fruits and vegetables (66%), choosing water over soda (69%), and becoming more physically active (59%).

Results from the NEOP Project have implications for how local health departments could partner with FBOs to outreach and promote health among congregants, particularly for those who are at high-risk of diet-related diseases due to poor nutrition and obesity.

1. Introduction

There is growing consensus that where people live, work, and play matters for health. This is especially the case for obesity risk, as both built and social environments have been shown to facilitate or deter individuals from making healthy decisions about diet and physical activity (Brown and Brewster, 2015; Mujahid et al., 2008; Sallis et al., 2016; Story et al., 2008). In the last decade, numerous prevention efforts have sought to improve the food and physical environments of various institutional settings in the United States (U.S.) (Calancie et al., 2015; Chiqui et al., 2014; Dietz, 2015; Mayne et al., 2015). These

efforts have focused on implementing policy, systems, and environmental change interventions (PSEs) in schools, hospitals, and workplaces (Bunnell et al., 2012; Lyn et al., 2013; United States Department of Agriculture, 2017; Townsend et al., 2018). PSEs, by definition, are multi-level, system-based population health strategies that can promote changes in health behaviors by altering the underlying social and environmental determinants of health in a given community (Bunnell et al., 2012; United States Department of Agriculture, 2017).

In recent years, federal and local agencies alike have come to view faith-based organizations (FBOs) as promising venues for implementing PSEs alongside the usual delivery of health education. While various

Abbreviations: DPH, Los Angeles County Department of Public Health; FBO, Faith-based organization; LAC, Los Angeles County; NEOP, Nutrition Education and Obesity Prevention (Project); PSEs, Policy, systems, and environmental change interventions; SNAP-Ed, Supplemental Nutrition Assistance Program Education; U.S., United States; USDA, United States Department of Agriculture

* Corresponding author at: Division of Chronic Disease and Injury Prevention, Los Angeles County Department of Public Health, 3530 Wilshire Blvd, 8th floor, Los Angeles, CA 90010, USA.

E-mail address: brrobles@ph.lacounty.gov (B. Robles).

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definitions and typologies of FBOs exist (Goldsmith et al., 2006; Bielefeld and Cleveland, 2013), an FBO is generally understood to be “an organization, with or without nonprofit status, that provides social services and is either religiously-motivated or religiously-affiliated” (Goldsmith et al., 2006). For numerous reasons, FBOs represent popular places where social as well as public health programming can be tested or scaled. First, they provide a pre-existing organizational structure and available physical space (e.g., designated space for meetings and group gatherings) that can be leveraged to facilitate health messaging and programming (Campbell et al., 2007; Carter-Edwards et al., 2006; Lancaster et al., 2014). Second, their pre-existing social networks and regular contact with community members provide a natural channel for outreach and communication – an avenue that can be used to shape health behaviors (Carter-Edwards et al., 2006; Lancaster et al., 2014; Ralston et al., 2014; Resnicow et al., 2000). Third, health promotion efforts in FBOs may benefit those individuals who are marginalized by mainstream society and the healthcare system. For example, prior research suggests that FBOs are particularly salient settings for reaching communities of color and low-income populations (Bopp and Webb, 2012; Lancaster et al., 2014; Santibañez et al., 2015; Whithers et al., 2010), especially given their focus on community outreach and with connecting people to pertinent resources and services (Baskin et al., 2001; Campbell et al., 2007).

The United States Department of Agriculture (USDA) is an example of a federal agency that in recent years have to explored opportunities to scale PSEs through FBOs. In some states, such as in California, faith-based settings have been increasingly considered ideal places to promote health and to provide services to reach marginalized populations. The California Department of Public Health (CDPH), through an agreement with the California Department of Social Services, for instance, has aligned some of the USDA's Supplemental Nutrition Assistance Program Education (SNAP-Ed) resources to support programming and interventions in FBOs across the state. However, in spite of this burgeoning effort in the last several years, scaling PSEs in FBOs remains a relatively new approach that requires further study to understand the process and to demonstrate its utility and health impact.

The present study sought to close these gaps in health promotion practice by describing a local jurisdiction's SNAP-Ed effort to scale PSEs alongside health education in several church sites across Los Angeles County (LAC). This effort, referred to as The Nutrition Education and Obesity Prevention (NEOP) Faith Based Project (“Project”), was tasked with implementing select PSEs to complement health education services at eligible FBOs throughout the region. The Project was led by SNAP-Ed's local lead agency – the Los Angeles County Department of Public Health (DPH) – during the 2013–2016 funding cycle of this federal program in LAC. FBOs were eligible for inclusion in the Project if they were located in census tracts where 50% of the households live at or below 185% of the Federal Poverty Level.

2. Methods

2.1. The Episcopal Diocese of Los Angeles

The Episcopal Diocese of Los Angeles (“Diocese”) was the FBO selected for this study because it was an early adopter of the Project interventions during the 2013–2016 SNAP-Ed funding cycle. It is also considered among the top five most populous and culturally diverse Episcopal dioceses in the U.S. and abroad (Diocese of Los Angeles, 2018) with approximately 70,000 members spread out across 136 neighborhood congregations, the Diocese is considered one of the largest faith-based institutions in LAC (The Episcopal Church, 2018). At the time of the Project, this FBO operated 200+ church-owned properties (40 schools, 2 hospitals, 4 health centers) and 70 food banks/food pantries – all of them serving primarily low-income and racial/ethnically diverse populations (Los Angeles County Department of Public Health, 2016). Between 2013 and 2016, the Diocese worked with 16 of

their church sites, engaging predominantly African-American and Hispanic populations to carry out Project interventions. Collectively, this work had the potential to reach approximately 5569 congregants. Considerations were given to scaling the Project's PSEs in all 200+ Diocese church properties if the initial implementation achieved promising/favorable results.

2.2. Programmatic assessments

To capture a ‘snapshot’ of the Faith Based Project, two key programmatic assessments were conducted by DPH evaluators alongside investigators from an externally contracted evaluation firm. The two assessments comprised of the following: (1) *qualitative component* – key informant interviews were performed to better understand and describe the PSE implementation process at Diocese church sites, including those that were tailored to meet the needs of specific congregant groups; and (2) *quantitative component* – a congregant survey of Diocese church members were conducted to learn more about how the congregants perceived and benefited from the Project interventions; this survey was also administered at comparison Catholic church sites. For both components, protocols and materials were reviewed and approved by the Los Angeles County Department of Public Health Institutional Review Board prior to field implementation.

2.3. Key informant interviews

DPH evaluators conducted two waves of key informant interviews between April and June of 2016. All of the responses to scripted questions and probes were electronically typed. These qualitative data were analyzed using deductive coding techniques.

2.3.1. Wave I

In April 2016, the lead Project manager at DPH was asked to describe PSEs and health education activities that were initiated at the 16 church sites in the Diocese; the manager was also asked about the different phases of Project implementation. The in-person interview lasted approximately 60 min. Because this initial interview with the manager focused primarily on three simple questions, a more comprehensive semi-structured interview script was not required. The three questions were: (1) *What SNAP-Ed interventions or activities are taking place at selected Diocese church sites?*; (2) *What are the key phases for implementing these interventions or activities?*; and (3) *What are barriers and facilitators in each of these phases?*

Using these results from the interview, DPH evaluators proceeded to catalog the Project's key interventions and activities and identify the core phases of the implementation process. To attain further information about the Project (e.g., implementation facilitators and barriers), three additional non-structured interviews were conducted with the lead Project manager and with a Project coordinator who was sub-contracted to serve as an intermediary between DPH and the Diocese. Supplemental information such as meeting notes and monthly tracking reports were obtained to help triangulate and verify information for accuracy and clarity.

2.3.2. Wave II

To augment information collected from the first wave of interviews, four key decision-makers from participating church sites were interviewed by phone during May 2016. These four participants included: a rector, an associate director, an interim director, and a financial ministry advisor. They were asked to participate in this second wave of interviews because the Project coordinator had identified them as someone who can speak to the process of implementing PSEs and to other interventions at their church site. Their diverse perspectives and various roles in the Church represented an added benefit because they offered nuanced insights into the structure and functioning of the Diocese. A semi-structured script was used for these interviews. Each of

Table 1
 Nutrition Education and Obesity Prevention Faith-Based Project: Interventions and activities implemented across participating church sites in the Episcopal Diocese of Los Angeles, 2013–2016 (n = 16).

Intervention type	Intervention activities	# Churches sites
Policy, Systems, and Environmental Change Interventions (PSEs)	Diocesan Food Policy (Organizational Resolution)	Policy intended to be adopted across all 200+ Diocese church properties located in Los Angeles County.
	<ul style="list-style-type: none"> ● Passage of the “Resolution Regarding Diocesan Policy on Food,” which recommended that the Diocese: 1) only offer fresh, nutritious food whenever food is served and distributed (e.g., food pantries, feeding programs, social gatherings, coffee hour, Sunday school, youth activities); and 2) refrain from serving/distributing foods/beverages that contribute to obesity and poor health. 	
	Edible Gardens	9
	<ul style="list-style-type: none"> ● Creation of edible gardens at 16 Diocese church sites. ○ Food grown at gardens distributed as part of church sites’ food pantry distribution program. ○ Food demonstrations highlight and promote use of fruit and/or vegetables grown in the gardens. ○ Gardens to be subsequently scaled across other Diocese church properties in Los Angeles County. 	
Health Education	Behavioral Economics	11
	<ul style="list-style-type: none"> ● Healthy meals and/or refreshments made available during church events (e.g., meetings, events). ● Taste testing of healthy foods during church fundraisers. ● Display of health messaging on food advertisements/menus displayed on Diocese church properties. 	
	Institutional Best Practices	10
	<ul style="list-style-type: none"> ● Increased availability of food pantries/food banks that follow a universal healthy food donation, standards, and distribution policy, which typically include a requirement that food grown in Diocese church gardens or obtained through external donations are to be shared with food pantries in the community. ● Offer nutritious food and refrain from serving foods of little or no nutritional value in soup kitchens/cafés. 	
Health Education	Nutrition, Physical Activity, and/or Cooking Classes	10
	<ul style="list-style-type: none"> ● Offer 5–10 nutrition and physical education classes (including healthy food cooking demonstrations) per week at the 16 Diocese church sites using structured curriculum developed by the United States Department of Agriculture and/or the California Department of Public Health, <i>Champions for Change Fruit, Vegetable, and Physical Activity Toolbox for Community Educators</i>. ○ Average participation 20–30 people per class. ○ Average class length ~60 min. ○ Food demonstrations conducted at end of each class. 	
	Nutrition Education During Community Garden Demonstrations	7
	<ul style="list-style-type: none"> ● Offer 1–2 nutrition classes as part of community garden demonstrations informed by the United States Department of Agriculture’s <i>Dig In! Standards-Based Nutrition Education from the Group Up</i> curriculum at 16 Diocese church sites per week. ○ Sessions held outside at church site garden spaces. ○ Average participation 5–30 people per session. ○ Session length ~15–30 min. 	
Health Education	Health Communication	7
	<ul style="list-style-type: none"> ● Integration of stealth health messages promoting healthy eating and/or lifestyles during Diocese church events (e.g., sermons, coffee hours, workshops) and other channels (e.g., video announcements) to encourage congregants to engage in healthier diet and physical activity behaviors. ● Dissemination of video announcements or other forms of Diocese communications (e.g., bulletins) promoting health and wellness among congregants. 	

them lasted approximately 75 min. The script was organized into four domains: background (e.g., church and congregant characteristics, interviewee’s role within the church); context prior to the Project (e.g., health promotion policies, interventions, and/or activities taking place prior to SNAP-Ed support); current Project experience (e.g., activities implemented, congregant receptivity to Project activities); and future considerations (e.g., lessons learned).

2.4. Congregant survey

2.4.1. Design and church site selection

A cross-sectional survey assessing congregants’ opinions on health programming at their church was conducted by an external evaluation group contracted by DPH during October 2014 to January 2015. The

Table 2
Implementation phases of the Nutrition Education and Obesity Prevention Faith-Based Project in the Episcopal Diocese of Los Angeles: Key activities, facilitators, and barriers, 2013–2016.

Phase	Pre-implementation	Implementation	Sustainability
Activities	<ul style="list-style-type: none"> ● Participate in NEOP subcontractor pre-implementation webinars administered by CDPH. ● Through SNAP-Ed funding, recruit and hire culturally sensitive and competent project staff. ● Identify participating church sites within geographic areas where 50% of the population is ≤ 185% FPL. ● Outreach to local church organizations that are within SNAP-Ed eligible census tracts. 	<ul style="list-style-type: none"> ● Develop church recruitment and engagement plans for each target church site. ● Develop a Diocese-wide healthy food and beverage policy. ● Identify and meet with key members of each participating church site to discuss faith-based initiatives. ● Send introduction letters to leadership of each church and follow up with phone calls. ● Introduce the NEOP Faith-Based Project to church leaders and health ministry (e.g., background, goals, benefits). ● Conduct an environmental need assessment at each church site. ● Use programmatic assessment data to inform project development and address church needs. ● Work with each church to identify achievable goals and objectives. ● Provide nutrition and physical activity education (health education). ● Assist participating church sites with implementation of PSE interventions. 	<ul style="list-style-type: none"> ● Convene ongoing meetings with church leadership. ● Identify church volunteers to assist with sustaining project after end of funding period. ● Identify additional funding sources.
Facilitators	<ul style="list-style-type: none"> ● Existing partnerships with faith-based organizations facilitated the selection of NEOP Faith-based Project participating church sites for intervention. ● Existing faith-based health ministry/committee facilitated buy-in from church leadership/clergy. ● Familiarity with grant-related administrative and implementation processes in participating church sites facilitated execution of grant deliverables. ● Space capacity at participating church sites facilitated delivery of nutrition education and physical activity classes. 	<ul style="list-style-type: none"> ● Bishop of all Episcopalian churches had prior interest in implementing a food and beverage policy and championed the implementation of the Diocese-wide policy. ● Clergy interest in improving health outcomes of their congregations aligned with NEOP Faith-Based Project goals, which led to church leadership buy-in and propelled early adoption of PSE and health education interventions. ● Selected subcontracted agency ability was flexible, relatable, engaged with diverse communities, offered a wide range of technical support and resources, and innovation which led to high levels of receptivity among church leadership and congregants. ● Technical assistance provided to the subcontracted agency on a weekly basis and hands-on assistance to implement the CDPH's <i>Body and Soul</i> model accelerated implementation of NEOP Faith-Based Project interventions. ● High level of support for health promotion activities and engagement among church congregants led to high participation in NEOP Faith-Based Project activities (e.g., weekly nutrition education and physical activity classes). ● Existing infrastructure (e.g., kitchens) facilitated delivery of interventions (e.g., cooking classes). 	<ul style="list-style-type: none"> ● Existing evaluation infrastructure (i.e., USDA's IOE and CX3 tools) facilitated quality improvement/assurance of NEOP Faith-Based Project interventions. ● Commitment among all NEOP Faith-Based Project church sites to designate a point-person to coordinate church garden activities. ● Creation of a coalition of faith leaders encouraged dialogue around health promotion and disease prevention efforts within faith-based settings.
Barriers	<ul style="list-style-type: none"> ● Unfamiliarity among subcontracted agencies with the complex administrative grant processes led to challenges in monthly reporting and invoicing requirements. ● Unfamiliarity among subcontracted agencies with CDPH's <i>Body and Soul</i> model and the sensitivity required to effectively engage clergy members to disseminate health education curriculum. ● Lack of knowledge among subcontracted agencies of church locations posed difficulties in identifying eligible churches for recruitment into NEOP Faith-Based Project. ● Scheduling conflicts among clergy members created difficulties in solidifying dates to hold introductory meetings necessary to launch the project. ● Absence of an existing health ministry and/or a key champion within participating church sites delayed launch of the intervention activities. 	<ul style="list-style-type: none"> ● Prior negative experiences working with government agencies resulted in some initial church leadership mistrust of the NEOP Faith-Based Project. ● Limited DPH experience and knowledge working within the faith community led to some difficulties in building early rapport with church leadership. ● Limited staff capacity among DPH's subcontracted agency made it difficult to recruit congregants to participate in nutrition and physical activity classes. ● Limited church staff and congregants living far from churches made it difficult find individuals to maintain church gardens. ● Initial pushback from congregants on healthy food offerings in churches created early resistance among church leadership to adopt the Diocese food/beverage policy at participating church sites. ● Logistical issues (e.g., scheduling, timing) made coordination of intervention activities difficult. ● Inadequate physical infrastructure made it difficult to implement interventions (e.g., lack of kitchens which are necessary for cooking classes). 	<ul style="list-style-type: none"> ● Limited involvement or lack of health ministries (i.e., which are typically the backbone of church operations) at target church sites delayed stakeholder engagement necessary to ensure early adoption and implementation of some of the NEOP Faith-Based Project interventions. ● Implementation takes a long time. ● Constant oversight and building of relationships are resource- and time-intensive. ● Continual need for infrastructure and resources (e.g., facilities, space, staff time) to sustain health education and interventions.

Footnotes: CDPH = California Department of Public Health; CX3 = *Communities of Excellence in Nutrition, Physical Activity, and Obesity Prevention* assessment tool/process; Diocese = Episcopal Diocese of Los Angeles; DPH = Los Angeles County Department of Public Health; FPL = Federal Poverty Level; IOE = Impact Outcome Evaluation; NEOP = Nutrition Education and Obesity Prevention (Project); PSEs = Policy, systems, and environmental change interventions; SNAP-Ed = Supplemental Nutrition Assistance Program Education; USDA = United States Department of Agriculture.

survey was administered at the thirteen Diocese church sites selected by the Project for intervention. Although sixteen sites initially committed to participating, three were excluded because the Project interventions had not yet started on site when the survey was initiated. For comparison purposes, the survey was administered to congregants from six Catholic church sites during the same timeframe. These comparison sites were selected because they had no or limited PSEs and/or health education activities taking place. These Catholic church sites were located near the Diocese church sites and shared similar population demographics. All survey questionnaires were given out and collected at each site during or after selected events such as church coffee hours, fitness classes, cooking demonstrations, food banks activities, and holiday celebrations.

2.4.2. The Survey: Questionnaire, Eligibility, Recruitment

A 5-page self-administered questionnaire was developed by the external evaluation group and made available in English and Spanish. Survey questions asked about congregants' awareness and desire for health programming at the church they attended. Questions also asked congregants about their health knowledge, beliefs, and behaviors related to healthy eating, physical activity, and health messaging. Where feasible, some of the questions were adapted from existing items found in the peer-reviewed and grey literature. For a number of them, they were developed internally due to the unique nature of the topic and to the operation of this local Diocese.

Eligible congregants were invited to complete the survey during or after a designated church event. Only those who were ≥ 18 years of age and who had not previously taken the survey were eligible to participate. On average, the survey took approximately 10–15 min to complete. When language assistance was needed to complete the survey, bilingual staff were available to assist. An incentive (e.g., a T-shirt, hat, or bag) was given to each person who completed the survey.

2.4.3. Survey variables

Variables of interest were grouped based on the following constructs: awareness of health programming at churches; desire for health programming at churches; accuracy of health knowledge; changes in health beliefs; and changes in health behaviors. Variables corresponding to the first three constructs (i.e., awareness, desire, and accuracy) were created by asking participating congregants to answer “yes/agree” or “no/disagree” to a series of questions. Responses of ‘yes/agree’ were assigned a value of 1, whereas responses of ‘no/disagree’ were assigned a value of 0. Variables corresponding to the changes in health beliefs and behavior constructs were also created by asking participating congregants a series of questions; albeit response options were based on a 5-point Likert scale ranging from “strongly agree” (assigned a value of 5) to “strongly disagree” (assigned a value of 1). Responses for each series of questions were summed to create a single continuous variable. More information on these variables, as well as for those related to socio-demographic characteristics, can be found below.

2.5. Awareness of health programming at church site

Participating congregants were asked the following questions about their awareness of health programming at their church site: “Do you know if your church does the following activities: 1) holds food and nutrition classes; 2) has an edible garden; 3) holds yoga, dance or exercise classes; and 4) sells fruits and vegetables.” Responses to these four questions were summed. The final score, which ranges from 0 to 4, corresponds to the number of church activities that a congregant indicated awareness of at their church site.

2.6. Desire for future health programming at church site

Participating congregants were asked the following questions about health changes they would like to see at their church site: “Which of the

following changes would you like to see at your church: 1) more healthy food and beverages at coffee hours and other church events; 2) establish a food pantry/food bank; 3) establish an edible garden; 4) offer fruits and vegetables for sale; 5) more nutrition education classes; 6) offer cookies classes or demonstrations; and 7) offer exercise classes.” Responses to these seven questions were summed. The final score, which ranges from 0 to 7, pertains to the number of future health programming activities that a congregant reported wanting.

2.7. Health knowledge

Participating congregants were asked to indicate if they agreed or disagreed with the following health statements: 1) ‘What you eat can make a difference in your chances of getting heart disease or cancer; 2) ‘A way to prevent obesity is to eat smaller portions of food’; and 3) ‘A way to prevent obesity and diabetes is not drink sweetened beverages such as soda, sport drinks, punch and other fruit drinks.’ Based on established dietary guidelines (DHHS and USDA, 2015), ‘agree’ responses were considered to be accurate. Level of agreement to the three statements were summed. The final score, which ranges from 0 to 3, is related to the number of health statements that a congregant accurately agreed with.

2.8. Health beliefs

Participating congregants were asked to indicate their level of agreement with the following statements: 1) ‘My church has changed the way I think about food’; and 2) ‘My church has changed the way I think about exercise.’ Responses to these two statements (based on a 5-point Likert scale) were summed. The final score was related to the level of agreement with the statements, which ranged from 2 to 10.

2.9. Health behaviors

Participating congregants were asked to indicate whether they agreed or disagreed with the following statements: 1) ‘I am more likely to eat fruits and vegetables today than 6 months ago’; 2) ‘I am more likely to choose water over soda today than 6 months ago’; and 3) ‘I am more likely to be physically active today than 6 months ago.’ Responses to these three statements (based on a 5-point Likert scale) were summed. The final score was related to the level of agreement with the statements, which ranged from 2 to 15.

2.10. Socio-demographics

Participating congregants were asked to indicate their age (18–45 years, 46–65 years, or > 65), race/ethnicity (Hispanic/Latino, Black, White, Asian/Pacific Islander, or Other [Indian/Alaskan Native, Other]), education (less than high school, high school graduate/GED, associate degree, bachelor/graduate degree), employment status (employed, unemployed/underemployed, retired/disabled), and nativity status (born in the United States, born outside the United States).

2.11. Data management and analysis

Survey data were entered into EpiData and cleaned using the SAS 9.3 statistical software package (SAS Institute, Inc., Cary, North Carolina). Cleaning of the survey dataset included: checking for incorrect data entry, inconsistent answers, and ID numbers; adjusting for skip patterns; and categorizing missing and “other” responses. After data cleaning, the dataset was analyzed using Stata 14.1 (StataCorp LP, College Station, Texas, USA).

All analyses were stratified by the number of Project interventions taking place at sites that were part of the survey: thirteen Diocese and six Catholic (comparison) sites. The stratification process (e.g., scoring assignment and cutoffs) were based on objectively recorded staff

Table 3 Congregant characteristics from the programmatic assessments of the Nutrition Education and Obesity Prevention Faith-Based Project: Congregant Survey, Los Angeles County, October 2014– January 2015.

	Number of Objectively Measured NEOP Faith-Based Project Interventions Implemented at Participating Church Sites					Pearson χ^2 p-value
	Full Sample	0	1–6	7–12	13–18	
Congregant Characteristics						
<i>Total</i>	n (%) 969 (100)	n (%) 461 (47.6)	n (%) 110 (11.4)	n (%) 398 (41.1)	n (%) 398 (41.1)	
Socio-demographics						
<i>Age (years)</i>						
18–45	293 (30.2)	160 (34.7)	27 (24.6)	106 (26.6)	106 (26.6)	< 0.001
46–65	408 (42.1)	215 (46.6)	43 (39.1)	150 (37.7)	150 (37.7)	
Over 65	223 (23.0)	72 (15.6)	34 (30.9)	117 (29.4)	117 (29.4)	< 0.001
<i>Race/ethnicity</i>						
Hispanic/Latino	543 (56.0)	315 (68.3)	46 (41.8)	182 (45.7)	182 (45.7)	
Black	168 (17.3)	80 (17.4)	32 (29.1)	56 (14.1)	56 (14.1)	
White	76 (7.8)	12 (2.6)	8 (7.3)	56 (14.1)	56 (14.1)	
Asian/Pacific Islander	52 (5.4)	5 (1.1)	5 (4.6)	42 (10.6)	42 (10.6)	
Other ^a	75 (7.7)	34 (7.4)	12 (10.9)	29 (8.3)	29 (8.3)	
<i>Education</i>						
Less than high school	267 (27.6)	114 (24.7)	35 (21.8)	118 (29.7)	118 (29.7)	0.020
High school graduate or GED	250 (25.8)	124 (26.9)	34 (30.9)	92 (23.1)	92 (23.1)	
Associate degree	160 (16.5)	92 (20.0)	15 (13.6)	53 (13.3)	53 (13.3)	
Bachelor or graduate degree	232 (23.9)	107 (23.2)	23 (20.9)	102 (25.6)	102 (25.6)	
<i>Employment</i>						
Employed	450 (46.4)	271 (58.8)	43 (39.1)	136 (34.2)	136 (34.2)	< 0.001
Unemployed/underemployed	214 (22.1)	93 (20.2)	29 (26.4)	92 (23.1)	92 (23.1)	
Retired/disabled	233 (24.1)	76 (16.5)	29 (26.4)	128 (32.2)	128 (32.2)	0.047
<i>Nativity</i>						
Born in the United States	381 (39.3)	178 (38.6)	49 (44.6)	154 (38.7)	154 (38.7)	
Born outside the United States	539 (55.6)	269 (58.4)	54 (49.1)	216 (54.3)	216 (54.3)	
Church environmental changes						
<i>Awareness of health programming at church sites</i>						
Participant indicated awareness of the following activities: ^b						
Food and nutrition classes	366 (37.8)	101 (21.9)	44 (40.0)	221 (55.5)	221 (55.5)	< 0.001
Edible gardens	255 (26.3)	82 (17.8)	15 (13.6)	158 (39.7)	158 (39.7)	< 0.001
Yoga, dance, or exercise classes	330 (34.1)	116 (25.2)	34 (30.9)	180 (45.2)	180 (45.2)	< 0.001
Sale of fruits and vegetables	218 (22.5)	121 (26.3)	7 (6.4)	90 (22.6)	90 (22.6)	< 0.001
<i>Desire for future health programming at church sites</i>						
Participant indicated wanting the following at their church: ^b						
Healthier food/beverages during church events	627 (64.7)	334 (72.5)	54 (49.1)	239 (60.1)	239 (60.1)	< 0.001
Food pantry/foodbank	296 (30.6)	134 (29.1)	37 (33.6)	125 (31.4)	125 (31.4)	0.574
Edible gardens	374 (38.6)	186 (40.4)	43 (39.1)	145 (36.4)	145 (36.4)	0.498
Fruits and vegetables for sale	419 (43.2)	263 (57.1)	34 (30.9)	122 (30.7)	122 (30.7)	< 0.001
Nutrition education classes	507 (52.3)	265 (57.5)	61 (55.5)	181 (45.5)	181 (45.5)	0.002
Cooking classes or demonstrations	438 (45.2)	223 (48.4)	52 (47.3)	163 (41.0)	163 (41.0)	0.084
Exercise classes	466 (48.1)	265 (57.5)	41 (37.3)	160 (40.2)	160 (40.2)	< 0.001
Health knowledge, beliefs, and behaviors						
<i>Accuracy of health knowledge</i>						
Participant (accurately) agrees with the following statements: ^b						
What you eat can make a difference in your chances of getting heart disease or cancer	856 (88.3)	431 (93.5)	93 (84.6)	332 (83.4)	332 (83.4)	< 0.001
A way to prevent obesity is to eat smaller portions of food	867 (89.5)	420 (91.1)	97 (88.2)	350 (87.9)	350 (87.9)	0.039
A way to prevent obesity and diabetes is not to drink SSBs	856 (88.3)	424 (92.0)	95 (86.4)	337 (84.7)	337 (84.7)	0.003
<i>Changes in health beliefs</i>						
Participant agrees with following statements: ^c						
My church has changed the way I think about food	366 (37.8)	146 (31.7)	52 (47.3)	168 (42.2)	168 (42.2)	< 0.001
My church has changed the way I think about exercise	376 (38.8)	160 (34.7)	49 (44.6)	167 (42.0)	167 (42.0)	0.004

(continued on next page)

Table 3 (continued)

	Number of Objectively Measured NEOP Faith-Based Project Interventions Implemented at Participating Church Sites			
	Full Sample	0	1–6	7–12
<i>Changes in health behaviors</i>				
Participant agrees with following statements: <i>Today > 6 months ago...</i> ^c				
<i>I am more likely to eat fruits and vegetables</i>	637 (65.7)	311 (67.5)	83 (75.5)	243 (61.1)
<i>I am more likely to choose water over soda</i>	660 (68.1)	319 (69.2)	84 (76.4)	257 (64.6)
<i>I am more likely to be physically active</i>	574 (59.2)	279 (60.5)	74 (67.3)	221 (55.5)

Note: Due to rounding and missing information, the number of cases and percentage in each row and/or column may not add up to the total or to 100%, respectively. GED = General Education Development/Diploma; PSE = Policy, systems, and environmental change interventions; SSBs = Sugar-sweetened beverages.

^a Other category includes congregants who reported being American Indian/Alaskan Native, or Other.

^b Only “yes” or “agree” responses were reported.

^c Only “strongly agrees” or “agree” responses were reported.

reviews of program data (e.g., meeting notes, monthly tracking reports) and/or field assessments of actual intervention implementation. Recorded number(s) and information were assigned and stratified as 0 if no interventions were implemented at Diocese sites or if the sites were the Catholic (comparison) church sites; 1–6 if one to six interventions were implemented at the Diocese sites; and 7–12 if seven to twelve interventions were implemented at the Diocese sites.

Descriptive statistics were generated to understand congregants' socio-demographic characteristics, awareness of health programming at their church site, their desire for healthy programming at their church site, their health knowledge, and changes in their health beliefs and behaviors. Initially, the percentages for socio-demographic characteristics and each of the five variables of interest were tabulated; corresponding Pearson chi-squared tests were then performed to assess for differences among the variables by the number of objectively measured Project interventions at each of the participating church sites. Finally, median (row) scores and interquartile ranges for each of the five summed variables were calculated. This was followed by a corresponding Kruskal-Wallis test to determine if there were statistical differences by the number of objectively measured Project interventions at the participating church sites. A Wilcoxon Rank-Sum test was also conducted to identify pairwise differences.

3. Results

3.1. Key informant interviews

The interventions and corresponding activities implemented across the sixteen participating Diocese church sites, including number of churches implementing each type of activity, are presented in Table 1. The first type of intervention asked Project partners to promote healthy eating and active living in church environments through PSE interventions. These included: (a) passage of a food policy that encourages churches to only offer healthy foods whenever food is served/distributed and discourages distribution of unhealthy foods in settings such as food pantries, feeding programs, and/or social gatherings; (b) creation of edible community gardens, which were coupled with food demonstrations during gardening events, all purposefully designed to highlight and promote the use of fruits and/or vegetables grown from these gardens; (c) behavioral economics approaches that were used to nudge individuals to make healthier food selections; and (d) institutional best practices aimed at improving the availability of healthier foods in food pantries and food banks. Of these, the majority of the participating church sites ($n = 11$) focused on implementing behavioral economic approaches.

The second type of intervention intended to promote healthy eating and active living among congregants by delivering culturally-relevant nutrition and physical activity education that was based partly on the USDA and/or CDPH curriculum. These educational approaches included: (a) nutrition education, physical activity, and/or cooking classes to congregants; (b) nutrition education during community garden demonstrations; and (c) health communications that used ‘stealth’ messaging during church events (e.g., church sermons, coffee hours) and/or other channels (e.g., video announcements) to encourage congregants to engage in healthier diet and physical activity behaviors. Among this intervention type, the majority of church sites ($n = 10$) focused on implementing nutrition, physical activity, and/or cooking classes.

Table 2 highlights the three-phase process used to advance the Project interventions across Diocese church sites. Key activities, common facilitators, and common barriers are described within each phase category. The main objective of the first phase (*pre-implementation*) was to engage qualifying church sites that were located predominantly in African-American and/or Latino communities. The main objective of the second phase (*implementation*) was to work with each participating church site to increase the likelihood that individuals

Table 4

Potential impact of Nutrition Education and Obesity Prevention (NEOP) Faith-Based Project interventions on congregants by number of objectively measured interventions, October 2014–January 2015 ($n = 969$).

Potential Impact ^a	Number of Objectively Measured NEOP Faith-Based Project Interventions Implemented at Participating Church Sites:			Kruskall Wallis p-Value
	0	1–6	7–12	
	Median (Interquartile Range)			
Awareness of healthy church activities ^{b,c}	0 (1)	1 (2)	2 (3)	< 0.001 ^{±, e}
Desire for future health programming at church ^{b,d}	4 (3)	2.5 (4)	2 (4)	< 0.001 ^{×, ±}
Accuracy of health knowledge ^{b,e}	3 (0)	3 (0)	3 (0)	0.1549
Changes in health beliefs ^{f,g}	6 (4)	7 (2)	7 (3)	0.0012 ^{×, ±}
Changes in health behaviors ^{f,h}	12 (5)	12 (3)	12 (5)	0.0280 ^e

^a Based on patron survey respondent answers to a series of questions, for which each variable was based on two to seven questions.

^b References the median of the sum of 'yes' and 'no' responses, assigned values of 1 and 0, respectively.

^c Responses to four questions were summed and scored ranged from 0 to 4.

^d Responses to seven questions were summed and scored ranged from 0 to 7.

^e Responses to three questions were summed and scored ranged from 0 to 3.

^f References the median of the sum of level of agreement to responses based on a 5-point Likert scale, which ranged from 'strongly agree' (assigned a value of 5) to 'strongly disagree' (assigned a value of 1).

^g Responses to two questions were summed and scored ranged from 2 to 10.

^h Responses to three questions were summed and scored ranged from 2 to 15.

[±] Significant differences observed between 1–6 versus 7–12 objectively measured NEOP Faith-Based Project interventions ($p < 0.05$).

[×] Significant differences observed between 0 versus 7–12 objectively measured NEOP Faith-Based Project interventions ($p < 0.05$).

^e Significant differences observed between 0 versus 1–6 objectively measured NEOP Faith-Based Project interventions ($p < 0.05$).

eligible for SNAP-Ed will make healthy food choices and lead physically active lifestyles recommended by the current USDA guidelines. Finally, the objective of the third phase (*sustainability*) was to support long-term implementation of the two core SNAP-Ed interventions of PSEs and health education throughout the health ministry.

3.2. Congregant surveys

In total, 969 congregants completed surveys during the programmatic assessments – 508 from the thirteen Episcopal church sites and 461 from the six Catholic church sites. In the full sample, a majority were between the ages of 46–65 years (42.1%), Hispanic/Latino (56.0%), had a high school education or less (53.4%), were employed (46.4), and were born outside of the United States (55.6%) (Table 3). A large percentage reported being aware of food and nutrition classes (37.8%) and expressed a desire to have more health programming at church events (64.7%). Variation in exposure to Project interventions was also observed by congregant socio-demographic and other characteristics.

Results from analyses comparing the summed variables by the number of objectively measured Project interventions are presented in Table 4. Differences were seen in the raw medians for all the variables, except for accuracy of health knowledge. A subsequent analysis using the Kruskal Wallis test revealed a significant effect of number of objectively measured Project interventions implemented at participating church sites on: a) awareness of healthy church activities ($\chi^2(2) = 77.2$, $p < 0.001$); b) desire for future health programming at church ($\chi^2(2) = 28.7$, $p < 0.001$); c) changes in health beliefs ($\chi^2(2) = 13.5$, $p = 0.0012$); and d) changes in health behaviors ($\chi^2(2) = 7.2$, $p = 0.0280$). For these variables, a post-hoc test using Wilcoxon Rank-Sum tests showed significant differences between the three groups of objectively measured Project interventions ($p < 0.05$).

4. Discussion

The present analysis of the NEOP Faith Based Project during the 2013–2016 SNAP-Ed funding cycle in LAC yielded three notable findings. First, the study described programming heterogeneity and several lessons learned regarding the implementation of PSEs and health

education at participating Project church sites within the Diocese. Lessons learned from these programmatic assessments bolster previous findings that faith-based settings are a prime environment for which to deliver health promotion interventions as well as messaging, primarily by leveraging church leadership and clergy members as credible authorities of information exchange. The study also pointed to nuances and barriers that impeded collaboration and progress. For example, during the pre-implementation phase of the Diocese's effort, barriers such as a limited infrastructure and capacity to start PSEs and a steep learning curve among the FBOs on how to operationalize these interventions delayed several preparatory steps for advancing the timeline. In the implementation phase, further barriers such as a lack of buy-in from key groups at the institutional and the congregant level; limited staff capacity to sustain interventions after the funding is gone; and membership and leadership turnover that is often common in a voluntary organization impeded a number of activities in the field.

Second, the programmatic assessments showed that congregant characteristics and reported behaviors varied by the number of Project interventions implemented at participating church sites. For instance, congregants between the ages of 46–65 had the highest level of exposure to the interventions compared to any other age group. While this suggests an important opportunity to influence the 46–65 group about healthy eating and physical activity, it also highlights the unintended disparities that exist for the other groups in terms of having differential access to interventions. Similar variations were observed for the comparisons of congregants by other socio-demographic characteristics.

Third (and lastly), results suggest that as the number of objectively measured interventions increased at participating church sites, congregants who participated in the survey reported greater awareness of the health programming activities (including PSEs) occurring at their church site. Interestingly, this pattern was not observed for the desire for future health programming, accuracy of health knowledge, and changes in health beliefs/behaviors. It is possible that the interventions needed to change these outcomes require extended exposure time and/or higher doses of the interventions. For example, a recent research study on childhood obesity posits that the dose of exposure is critical; i.e., most PSEs likely will require an intervention or a group of interventions to reach a certain threshold/level of exposure before any improvement will be seen at the population-level (Wang et al., 2018).

5. Limitations

Although the present analysis provided valuable insights into how NEOP interventions can drive healthy changes at FBOs, there were several limitations with its design and execution. First, survey analyses did not account for potential demographic differences between church sites, which may limit comparability between Diocese and comparison Catholic church sites. Second, the findings from the congregant survey were not causal due to the cross-sectional nature of the design, which was only conducted at one-time point after intervention implementation had taken place. Third, recall, selection, and social desirability biases may have affected the survey responses; all of these biases could have skewed the interpretation of the study results. Fourth, timing and staffing challenges related to using a contracted external evaluation group may have led to a longer timeline due to a steeper learning curve (i.e., the external evaluation group was less familiar with the NEOP Project) and the data collection may have been less complete. For instance, the external evaluation group did not adequately capture gender in the surveys, which limited the ability to understand a key demographic characteristic of the congregants. Respondents were also not asked how often they attended church services, thereby limiting our ability to account for intervention dose in study analyses. Finally, differences in viewpoints and in the interpretation of program concepts and variable terminology, especially between Project staff and the external evaluation group, may have affected the type and content of the data that were eventually collected.

Policy and practice implications

FBOs may offer a sustainable institutional environment where PSEs and other public health programs can be implemented to help communities of color and/or at-risk populations address diet-related diseases due to poor nutrition and obesity. In LAC and elsewhere, FBOs often serve as a backbone for many marginalized communities and can more readily link together faith and health for their members. As such, they possess a unique capacity to widely and effectively reach high priority populations; this is a capacity that local health departments and SNAP-Ed implementers can work to further develop and strengthen in their communities. FBOs serve a pivotal role in the community and can confer value to local jurisdictions interested in designing and tailoring health promotion interventions and messaging that their intended audiences can trust.

Declaration of Competing Interest

The authors report no financial disclosures or conflicts of interest.

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Conflict of interest statement

The content of this paper is the responsibility of the authors and do not necessarily represent the official views of the United States Department of Agriculture, the Los Angeles County Department of Public Health, or any other organization mentioned in the text.

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