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Background. *Although churches are an important partner for improving health within the African American community, it is not known how congregants are best reached by health promotion activities and thus how best to target members in recruitment. This study examined how characteristics of churches and congregants' beliefs and interests in faith-based health promotion related to their willingness to attend church-based health promotion activities.* Method. *We surveyed adult congregants (*n = *1,204) of 11 predominately African American churches in North Carolina. Surveys collected data within four domains: demographics (age, sex, education), behavioral (church attendance, respondent food choices, and physical activity), cognitive (church-based health promotion belief, Bible-based healthy living interest, healthy living resource interest), or environmental (family health, church travel distance, church health ministry activity, church members' food choices). Analyses used a dichotomous outcome, interest in attending programs offered by the health ministry. Domain-specific models were constructed. Logistic generalized estimating equations adjusted for clustering.* Results. *Of the 1,204 congregants, 72% were female, 57% were 50 years or older, 84% had a high school education or more, and 77% had a chronic health condition. In bivariate analyses and in models adjusting for all four domains, cognitive factors had the highest odds of willingness to attend.* Conclusion. *Congregants' belief in the church's role in health promotion and their desire to learn about healthy behaviors highlight the role of the African American church as a partner in addressing health disparities and the need to capitalize on this expectation through stronger partnerships between medical and faith communities.*

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INTRODUCTION

For many decades, churches have provided a resource for spiritual guidance, social support, and health promotion within the African American community. Individuals and organizations involved in health promotion have capitalized on this relationship by engaging in health education interventions at African American churches. Church-based interventions have increased smoking cessation (Voorhees et al., 1996), weight loss (McNabb, Quinn, Kerver, Cook, & Karrison, 1997; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001; Young & Stewart, 2006), fruit and vegetable consumption (Campbell et al., 2007; Resnicow et al., 2005), and cancer screening in African American congregants (Campbell et al., 2004; Duan, Fox, Derose, & Carson, 2000; Husaini et al., 2008). The importance of the church and its mission for health promotion within the African American community makes it a promising venue for the successful delivery of health interventions that address racial health disparities(Boltri et al., 2008; Darnell, Chang, & Calhoun, 2006; Kim et al., 2008; Tyrell et al., 2008).

Although the effectiveness of health promotion interventions conducted within the church is clear (Campbell et al., 2007; Peterson, Atwood, & Yates, 2002), identifying the attributes of those who would attend these programs is an important step to designing and implementing church-based health promotion programming. These church members will likely be the most receptive audience for any church-based intervention with implications for not only the individual but also the greater community since these participating church members, as early adopters, hold the most promise for facilitating the spread of information (Dearing, Maibach, & Buller, 2006; Rogers, 2003; Weimann, 1994). Additionally as early adopters, they serve as role models for other members and are opinion leaders (Rogers, 2003) within the congregation and their communities. Furthermore, a key element of church-based health promotion is a tailored message to the needs of the congregation (Campbell et al., 2007; Lasater, Becker, Hill, & Gans, 1997; Williams, Palar, & Derose, 2011).

Prior research on health promotion in minority faith-based settings reveals the use of the social cognitive model (SCM) in demonstrating individual health behavior such as cancer screening (Campbell et al., 2004; Campbell et al., 2007), physical activity(Campbell et al., 2007; Ickes & Sharma, 2012), and healthy dietary change(Campbell et al., 2007). The SCM represents human behavior as a reciprocal interplay between cognitive, behavioral, and environmental influences (Bandura, 1986). This reciprocal relationship operates such that any of the three factors—cognitive, behavioral, or environment—informs and alters the other. Although the SCM has been useful in church-based health promotion in minority communities, little is known about the motivating characteristics of minority participants that contemplate health promotion participation within faith-based settings.

In an economic climate of reduced funding for research and programming, investigators and churches should prioritize programming that targets those individuals who most likely would attend health promotion programs. Such efforts ensure that the health promotion messages are received by participants and leverage the role of these opinion leaders for disseminating the information in their community. For this reason, using the SCM, we examined the relationship between church members' demographic, behavioral, cognitive, and environmental factors and their willingness to attend health promotion programs through their church health ministry. In addition, we identified attributes of individuals who are willing to attend church-based health promotion and congregant preferences in receiving health information, providing a potentially more robust and responsive collaborative method of promoting health within African American churches.

METHOD

Recruitment

The study sample included North Carolina churches that were predominately African American and comprised a voluntary church network, the Carolina Church Network (originally described as the Data Collection/Data Distribution Network; Goldmon et al., 2008). The network was established in 2003 to engage churches in collaborative research and education; a description of this network has been published elsewhere (Carey et al., 2005; Goldmon et al., 2008). Churches were solicited through mailing lists of African American churches in North Carolina and through the North Carolina General Baptist State Convention (Goldmon et al., 2008; Goldmon & Roberson, 2004). The 18 churches in the network were in regions with higher proportions of

African Americans and higher prevalence of chronic diseases (i.e. diabetes, hypertension, cardiovascular disease, stroke, and cancer) compared with state averages (Carey et al., 2005; Goldmon et al., 2008).

During July to October 2007, Carolina Church Network members were invited to participate in the Congregational Health Assessment (CHA) survey in their church. Church pastors were contacted by mail and followed up by phone. Eleven gave consent to disseminate the CHA in their church. Pastors and pastor appointed church liaisons received training and distributed the CHA: most commonly before, during, or after regularly scheduled church events (e.g., Sunday service, Bible study, choir rehearsal, and church auxiliary meetings). Before the CHA was administered, the liaison in each church described the survey and obtained verbal consent from eligible participants, who were assured confidentiality and anonymity. Surveys were administered to adult church members age 18 or older who volunteered to participate and provided consent. Of the 1,326 congregants who completed the survey, 122 were excluded from the analysis because of missing church identifiers preventing the linking of congregant and church data.

Survey Instrument

A description and the full CHA instrument are published elsewhere (Goldmon et al., 2008). The CHA is composed of 40 questions querying congregants' demographics, church characteristics, health beliefs, health behaviors, health desires, and preferred method of receiving health promotion–related information. Additionally, congregants were asked to share their willingness to attend health promotion programs through their church health ministry. Health ministry was defined as "the group within the church that focuses on the promotion of health and healing as part of the mission and ministry of the larger faith group and the wider community." The CHA was pilot tested to assess the appropriateness and comprehension of survey questions prior to use for this study. Pastors provided feedback on drafts of the CHA document before it was finalized and distributed. The survey instruments and all study procedures were approved by the Behavioral Institutional Review Board at the University of North Carolina at Chapel Hill.

Measures

The SCM (Bandura, 1986) was used to guide the analysis and group independent variables into behavioral, cognitive, or environmental domains to examine the relationship between these domains and willingness to attend health promotion programs. Additionally, congregant characteristics were categorized into a demographic domain that included age (18-29 vs. 30-49 vs. >50 years), gender (male/female), education (<high school education vs. ≥high school education), and health conditions (diabetes, lupus, hypertension, cancer, asthma/emphysema, arthritis, heart disease, HIV/AIDS, obesity, or other; yes/no).

Variables in the behavioral domain included the following: attends church three or more times a week (yes/no), makes healthy food choices (yes/no), and is physically active for 30 minutes or more on most days of the week (yes/no). Cognitive characteristics included the following: believes church has a responsibility to promote healthy living (yes/no) and desires to learn more about what the Bible says about living healthy (yes/no). Environmental characteristics included the following: members travel 11 miles or more one way to church, family member has a health condition (yes/no), the health ministry at church is very active (yes/no), and members make healthy food choices during church programs (yes/no).

The primary outcome was congregants' willingness to attend health ministry programs, measured by the level of agreement with the following statement: I would like to attend the programs and services offered by the Health Ministry (*strongly agree, agree, neutral, disagree*, or *strongly disagree*). Congregants' willingness was dichotomized to attend as yes (*strongly agree* or *agree*) or no (*neutral, disagree*, or *strongly disagree*).

Analysis

We used descriptive statistics to summarize congregant characteristics. We evaluated bivariate associations and used the chi-square test to examine differences in preferred method of receiving health information by age-group. We assessed associations between congregant characteristics and willingness to attend health promotion programs through the health ministry using logistic generalized estimating equations to adjust for clustering within churches. The models are presented based on the four domains: demographic, behavioral, cognitive, and environmental. Each domain was modeled individually. A full model that included all variables and domains simultaneously was employed to observe relationships with reduced confounding.

➤RESULTS

Of the 1,204 congregant respondents, most were healthy, older, educated, and female. Most congregants

TABLE 1
Descriptive Sample Overview (n = 1,204)

	%
Demographics factors	
Age (years)	
18-29	8.2
30-49	33.3
≥50	56.8
Male	27.7
≥High school education	83.6
Has a health condition	76.6
Behavioral factors	
Attends church three or more times per week	25.6
Makes healthy food choices	49.8
Physically active for 30+ minutes most days	64.2
Cognitive factors	
Believes church has responsibility to promote healthy living	87.7
Desires to learn more about what Bible says about living healthy	94.9
Environmental factors	
Travels 11+ miles one way to church	33.6
Family member has health condition	96.1
Health Ministry at church is very active	65.6
Members make healthy food choices during church programs	34.2

attended church less than three times in a week and were physically active, and approximately half reported making healthy food choices (Table 1). The majority of congregants believed that the church has a responsibility for promoting healthy living; were concerned about their own health, family, and friends; and wanted to learn about resources to live healthy and about what the Bible says about healthy living. Most congregants lived close to their churches, had family members with health conditions, had active health ministries at church, and had healthy foods available at church. The majority of respondents (76.6%) indicated willingness to attend health ministry programs.

First we assessed unadjusted bivariate associations between each domain and congregants' willingness to attend health promotion through their church. Of the demographic characteristics, congregants who were older and who had a health condition had higher odds of being willing to attend health ministry programs whereas congregants who were younger had lower odds of being willing to attend. All variables within the behavioral and cognitive domains had greater odds of willingness to attend in unadjusted bivariate analysis. Of the environmental factors, congregants who reported their health ministry as active and that healthy food were available during programs had increased odds of being willing to attend.

Next we examined the adjusted relationships between variables within each domain (demographic, behavioral, cognitive, and environmental) of congregant factors and willingness to attend in order to better understand the contribution of each domain (Table 2). When modeling demographic factors alone, younger congregants had lower odds of being willing to attend the health ministry programs through the church in comparison with older members. For behavioral factors, attending church multiple times a week and making healthy food choices were associated with greater odds of willingness to attend. When modeling the cognitive domain, all variables within the domain were associated with greater odds of being willing to attend. For the environmental domain model, an active health ministry and members choosing healthy foods during church programs remained associated with increased odds of willingness to attend.

Last, in the full model, we included variables across all four domains to capture the relationship of all the domains with congregants' willingness to attend (Table 2). Within the demographic domain, younger congregants had lower odds of being willing to attend, when compared with older church members. A congregant making healthy food choices was the only behavioral factor with significantly higher odds of willingness to attend. All of the cognitive variables, congregants who believe the church has a responsibility to promote health or who desired to learn what the Bible says about health had the strongest associations with greater odds of willingness to attend health promotion. This pattern was observed in all models. Within the environmental domain, having an active health ministry and having members who choose healthy foods at church programs were associated with increased odds of being willing to attend.

To gain insight for health program planning, we examined the preferred methods to receive health information among congregants who would attend health ministry programs, and these findings are presented by age and gender in Figure 1. Most women and men of all included ages preferred workshops. After

TABLE 2
The Association of Congregant Demographic, Behavioral, Cognitive, and Environmental Factors With Attending Health Ministry Programs

	Would Attend Health Ministry Program, Odds Ratio [95% Confidence Interval]					
	Unadjusted	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Number of observations	1,204	1,153	1,115	1,174	1,091	995
Demographic factors						
Age (years)						
18-29	0.46 [0.31, 0.69]***	0.46 [0.27, 0.79]**				0.66 [0.44, 0.97]*
30-49	0.92 [0.80, 1.07]	0.83 [0.60, 1.13]				1.25 [0.90, 1.75]
≥50	1.44 [1.11, 1.87]**	Reference				Reference
Male	0.91 [0.70, 1.18]	0.97 [0.74, 1.29]				0.89 [0.62, 1.29]
≥High school education	1.08 [0.81, 1.45]	1.10 [0.78, 1.54]				0.97 [0.61, 1.55]
Has a health condition	1.39 [1.02, 1.88] *	1.18 [0.81, 1.73]				1.35 [0.92, 1.97]
Behavioral factors						
Attends church three or more times per week	1.51 [1.04, 2.19]*		1.48 [1.01, 2.16]*			1.46 [0.96, 2.21]
Makes healthy food choices	2.76 [1.94, 3.92]***		2.53 [1.77, 3.61]***			1.44 [1.03, 2.00]*
Physically active for 30+ minutes most days	1.51 [1.08, 2.13]*		1.31 [0.93, 1.86]			1.49 [1.00, 2.22]
Cognitive factors						
Believes church responsible to promote healthy living	5.15 [3.33, 7.96]***			5.00 [3.20, 7.82]***		4.11 [2.76, 6.13]***
Desires to learn what Bible says about living healthy	5.14 [3.02, 8.76]***			4.38 [2.53, 7.59]***		4.56 [1.67, 12.46]**
Environmental factors						
Travels 11+ miles one way to church	0.91 [0.68, 1.22]				0.97 [0.68, 1.37]	0.96 [0.66, 1.40]
Family member has health condition	1.15 [0.70, 1.88]				1.62 [0.99, 2.65]	1.53 [0.84, 2.80]
Health Ministry at my church is very active	2.89 [2.27, 3.69]***				2.21 [1.64, 2.97]***	1.80 [1.20, 2.68]**
Members choose healthy foods during church programs	3.47 [2.24, 5.37]***				2.90 [1.70, 4.93]***	2.19 [1.42, 3.38]***

NOTE: All models adjusted for clustering within church using generalized estimating equations. Models 1-4 include the respective domain variables only. Model 5 includes variables in all domains.

*p<0.05. ** p<0.01. ***p<0.001.

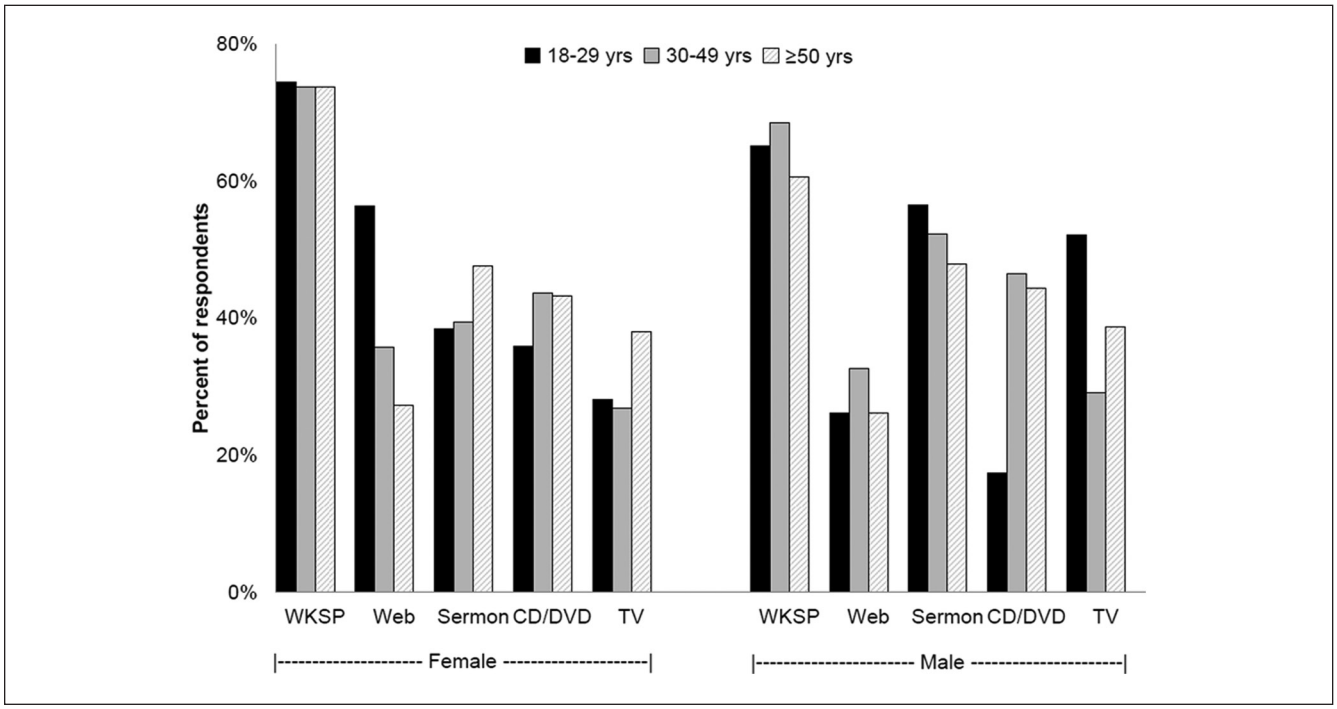

FIGURE 1 Preferred Method of Receiving Health Information by Age and Gender, for Respondents Who Would Attend
NOTE: WKSP = workshop.

workshops, older (≥50 years) women preferred sermons, middle-aged (30-49 years) women preferred CDS/DVDS, and younger (18-29 years) women chose the web as the means of getting their health information. For men in all three age-groups, after workshops the preferred source of information was sermons. Among women, significant differences in preferences by age were seen for sermon ($p < .01$), TV ($p < .01$), and web ($p < .01$), whereas no significant differences by age-group were found for men.

DISCUSSION

This study examined the relationship between African American congregant characteristics and their willingness to attend health promotion programs through their church, and assessed how they desire to receive their health information. Although there is a long-standing history of health promotion within churches in the African American community (Campbell et al., 2007; Chatters, Levin, & Ellison, 1998; Markens, Fox, Taub, & Gilbert, 2002; Parrill & Kennedy, 2011), these data indicate that North Carolina African American congregants expect the church to promote health and desire to learn about healthy living through the Bible and that these two beliefs are strongly associated with their willingness to attend health promotion events through their church.

These findings highlight a potentially powerful motivator for individual congregant attendance at health promotion events in the church. Additionally, they identify and strongly recommend specific areas in which churches should focus on developing as an integral part of the health ministry curriculum. Given the historical context of African Americans in the South, the church took on and maintained roles beyond the scope of spirituality and religion, which might explain the popular sentiment within this community that the church has a role of health promotion and the desire to learn about health through the Bible. Congregant's preferences suggest that, both men and women ranging from young to old prefer to receive health promotion information via workshops. Our expectation was that church members would have preferred sermons; however, this finding is consistent with adult learning and health behavior theory. Individuals who expect to receive health promotion through the church and desire to learn Bible-based healthy living may be more willing to attend interactive health promotion events through the church.

Our results have implications on several levels. First, health practitioners can leverage this expectation from

congregants for health promotion within the church to better serve the congregants and enhance the health and wellness mission of the church. Furthermore, by querying the desires of those who are most willing to attend health promotion programs, churches and investigators can more appropriately design community–academic partnered health interventions to meet the needs of its members who will be present. Such steps could improve self-efficacy and outcome expectancies, resulting in healthy behavior change. Individuals who will be present could also prove instrumental in the dissemination of information beyond the church, potentially shifting the general community's health beliefs through formal and informal social interactions via social networks (Baruth, Wilcox, & Condrasky, 2011; Krause, Shaw, & Liang, 2011).

As previously cited in the literature, the African American church is a potentially powerful mechanism for responding to chronic health conditions (Butler-Ajibade, Booth, & Burwell, 2012; Campbell et al., 2007; Markens et al., 2002). Furthermore, many of the inherent strengths of the African American church, particularly the pastor, lend themselves to the development of a positive and effective partnership with academic researchers (Ammerman et al., 2003; Campbell et al., 2007; Corbie-Smith et al., 2010; Reed, Foley, Hatch, & Mutran, 2003; Yanek et al., 2001).

Individuals in churches with active health ministries and whose members made healthy food choices at church programs had higher odds of being willing to attend health promotion events. This is consistent with the findings of other studies (Baruth et al., 2011; Butler-Ajibade et al., 2012) and likely speaks to an environment that increases self-efficacy for attending faith-based health promotion programs. These findings do underscore the importance of the church environment in health promotion and the opportunity to consider environmental policies in faith-based organizations. Churches and investigators can also use these data to better inform decisions regarding resource allocation and mission objectives, potentially reserving more resources for churches without active or established health ministries and churches with poor health practices at program events. We suggest that investigators use these data not to exclusively work with churches that appear ready for health promotion but rather to distribute limited resources equitably in order to better serve congregants' and churches' health needs.

As in all research, these findings should be viewed in the context of the limitations to this study. Congregants who agreed to participate in this study likely have more favorable attitudes regarding willingness to attend health promotion programs than the congregants and pastors that refused to be part of this study, leading to potential bias in our results and possible decrease in the strength of the observed associations. Additionally, although these findings may be generalizable to African American churches in Southeastern United States, we would recommend caution in generalizing these findings to African American churches in other settings or to the greater African American population. Last, the cross-sectional design of the study precludes inferring causal pathways.

Despite these limitations, there were also strengths to this study. The sample size of 1,204 congregants is substantial, and the multivariate models included a rich set of variables that capture pertinent behavioral, cognitive, and environmental factors. We were able to asses a unique population of African Americans in North Carolina in regions with high racial/ethnic health disparities and chronic diseases, a population likely to be in the highest need of health promotion programming. We believe that the congregants who feel that the church has a responsibility for health promotion or desire to learn about healthy living from the Bible demonstrate an interest and an expectation within this community that can be partnered with to better inform and use resources for faith-based health promotion. Translating the potential powerful impact of an effective partnership into action steps may require innovation that responds to the individuality of a community. As a result, the findings from this analysis identify a strong relationship with churches that provide healthy food choices and have active health ministries, with church member's willingness to actively participate in the health promotion programming. In the context of the larger body of literature, this is an effort that should be lead by the church leadership in partnership with health researchers. Doing so could have great promise for addressing chronic health conditions for African Americans, especially considering that there is an expectation of health promotion within this venue.

CONCLUSION

The findings from this analysis support the importance of the Bible and the belief that the church has a responsibility to promote health as two factors that are substantially linked to African American congregants' willingness to attend church-based health promotion events. The collaboration between churches and research partners around the common objective of promoting health by increasing congregants' willingness to attend these health events would be a valuable contribution to racial health disparities empirical work. The results of such partnerships can more practically and

effectively inform the design of future health interventions and the ways to promote health within faith-based communities and the broader community settings that surround the church.

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