Trust, Benefit, Satisfaction, and Burden

A Randomized Controlled Trial to Reduce Cancer Risk Through African-American Churches

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BACKGROUND: **Community-based participatory research (CBPR) approaches that actively engage communities in a study are assumed to lead to relevant findings, trusting relationships, and greater satisfaction with the research process.**

OBJECTIVE: **To examine community members' perceptions of trust, benefit, satisfaction, and burden associated with their participation.**

DESIGN, SETTING, AND PARTICIPANTS: **A randomized controlled trial tested a cancer prevention intervention in members of African-American churches. Data were collected at baseline and 1-year follow-up.**

MEASUREMENTS: **Subscales measured perception of trust in the research project and the project team, benefit from involvement with the project, satisfaction with the project and the team, and perception of burden associated with participation.**

MAIN RESULTS: **Overall, we found high levels of trust, perceived benefit, and satisfaction, and low perceived burden among community members in Partnership to Reach African Americans to Increase Smart Eating. In bivariate analyses, participants in the intervention group reported more perceived benefit and trust ($P < .05$). Participants in smaller churches reported more benefit, satisfaction and trust, while participants from churches without recent health activities perceived greater benefit, greater satisfaction, and lower burden with the project and the team ($P < .05$). Participants whose pastors had less educational attainment noted higher benefit and satisfaction; those whose pastors were making personal lifestyle changes noted higher benefit and satisfaction, but also reported higher burden ($P < .05$).**

CONCLUSIONS: **A randomized clinical trial designed with a CBPR approach was associated with high levels of trust and a perceived benefit of satisfaction with the research process. Understanding variations in responses to a research partnership will be helpful in guiding the design and implementation of future CBPR efforts.**

KEY WORDS: **participatory research; trust; benefit; African-American church.**
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Community-based participatory research (CBPR) approaches, where communities are engaged in the research enterprise through partnerships with academic institutions and health agencies, have become fundamental to the national prevention research agenda.[1–4] CBPR is particularly important in African-American communities, where members suffer from disproportionately high rates of many chronic diseases, but where clinical trials and intervention studies have failed to reach this priority population effectively. CBPR assumes that community-academic partnerships will build capacity and engender greater commitment among all research partners to uncover social and behavioral determinants of health and to develop innovative, long-term solutions. Research is conducted with a community partner in the hope of overcoming the fear and distrust that has been identified as a barrier to research participation among African Americans and to inform the design and implementation of interventions that are sensitive to the cultural preferences of participants or that "give back" to the community.[5–13] Table 1 outlines a framework of potential benefits of CBPR to community participants and researchers as well as the potential challenges to the research process.

Because of the central role that churches play in the African-American community and the history of the African-American church as an agent of social change, churches are important community partners in research that uses a participatory framework. However, if such research partnerships are to be successful and sustainable, research participants must emerge from the experience with a belief that their efforts have been worthwhile and that they can trust their research partners. Few studies have evaluated the impact of CBPR research on the expected outcomes of trust, benefit, burden, and satisfaction. Those studies published in the scientific literature have used primarily qualitative methods to describe community partners' impressions of the research process.[14–17] We were not able to find any quantitative data that assessed the impact of this approach. Our goal was to examine community members' perceptions of trust, benefit, satisfaction, and burden with their participation in a

Table 1. Critical Elements in Community-based Participatory Research (from Ammerman A, et al., AHRQ Proposal for CBPR Evidence-based Practice Review)

	CBPR Implementation and Impact			
Research Element	**CBPR Application**	**Community Benefits**	**Research Benefits**	**Research Challenges**
Defining the research question	Full participation of community in identifying issues of greatest importance. Focus on community strengths as well as problems	Problems addressed are highly relevant to the study participants and other community members	Increased investment and commitment to the research process by participants	Time-consuming, and community may identify issues different from those identified by standard assessment procedures or for which funding is available
Grant proposal and funding	Community leaders/members consulted as a part of the proposal writing process	Proposal is more likely to address issues of concern in a manner acceptable to community residents	Funding likelihood increases if community participation results in tangible indicators of support for recruitment and retention efforts, such as letters of support	Seeking input from the community may slow the process and complicate the proposal development effort, when time constraints are often present
Research design	Researchers communicate the need for specific study design approaches and work with community to design more acceptable approaches, such as a delayed intervention for the control group	Participants feel like they are contributing to the advancement of knowledge versus as passive research "subjects"	Community is less resentful of research process and more likely to participate	Design may be more expensive and/or take longer to implement. Possible threats to scientific rigor
Participant recruitment and retention	Community representatives guide researchers as to the most effective way to reach the intended study participants and keep them involved in the study	Those who may benefit most from the research are identified and recruited in dignified manner rather than made to feel like research subjects	Facilitated participant recruitment and retention, which are among the major challenges in health disparities research	Recruitment and retention approaches may be more complex, expensive, or time-consuming

(*Continued*)

Table 1. (continued)

	CBPR Implementation and Impact			
Research Element	**CBPR Application**	**Community Benefits**	**Research Benefits**	**Research Challenges**
Qualitative or formative data collection	Community members provide input as to intervention design, barriers to recruitment and retention, etc. via focus groups or structured interviews	Interventions and research approach are likely to be more acceptable to participants and thus of greater benefit to them and the broader population	Clinical and community-based interventions are likely to be more effective than if they are designed without prior formative data collection	Delays the start of quantitative data collection
Quantitative data instrument design and data collection	Extensive cognitive response and pilot testing of measurement instruments before beginning formal research	Measurement instruments less likely to be offensive or confusing to participants	Quality of data is likely to be superior in terms of reliability and validity	Time-consuming. Possible threats to scientific rigor
Intervention design and implementation	Community representative consulted about the most appropriate intervention approach given cultural and social factors and strengths of the community	Participants feel the intervention is designed for their needs and offers benefits while avoiding insult. Provides resources for communities involved	Intervention design is more likely to be appropriate for the study population, thus increasing the likelihood of a positive study	Time-consuming. Hiring local staff may be less efficient than using study staff hired for the project
Data analysis and interpretation	Community members are consulted regarding their interpretation of the findings within the local social and cultural context	Community members who hear the results of the study are more likely to feel that the conclusions are accurate and sensitive	Researchers are less likely to be criticized for limited insight or cultural insensitivity	Interpretations of data by nonscientists may differ from those of scientists. Thoughtful negotiation is required
Manuscript preparation and research translation	Members of the community are included as authors of the manuscripts following previously agreed upon guidelines	Pride in accomplishment, experience with scientific writing, and potential for career advancement	The manuscript is more likely to reflect an accurate picture of the community environment of the study	Time-consuming. Requires extra teaching and negotiation

randomized controlled trial testing a cancer prevention intervention that used a participatory approach. We also assessed whether church community characteristics, individual sociodemographic factors, and study group allocation were associated with these perceptions. Our hope is that findings from this study can be used by other researchers to guide their approach to study design and implementation in populations where mistrust is high and perceived benefit is low.

METHODS

Overview of PRAISE!

Data for these analyses were drawn from the Partnership to Reach African Americans to Increase Smart Eating (PRAISE!). Funded by the National Cancer Institute, PRAISE! was a 5-year randomized study (1996–2001) that included 60 churches in 8 North Carolina counties. The project was designed to identify barriers and motivators to dietary change among African Americans, to develop a theory-based culturally sensitive intervention, and to test this 12-month intervention in a randomized trial conducted in African-American churches. The major dietary outcomes were intake of dietary fat, fruits and vegetables, and fiber. Also collected were biochemical measures related to dietary intake and psychosocial data to assess determinants of dietary intake and behavioral change. PRAISE! was designed as a multilevel intervention with particular attention to cultural appropriateness, long-term sustainability, and potential for diffusion to other interested churches. A description of the design and implementation of the intervention has been published elsewhere.[18]

The development and design of PRAISE! parallels the CBPR model, where community members are engaged early in the process of program development.[19–21] However, in the purest form of CBPR, community members determine the health-related focus of the research. Because the project was funded in response to a program announcement from the National Cancer Institute, PRAISE! investigators were confined to an emphasis on cancer prevention. However, throughout the project the study team relied on input from members of the church community to guide the nature and structure of the intervention and to make it broad enough to affect other health outcomes of interest to participants. Church leaders and community members hired as staff also were involved with decisions about survey design and implementation as well as approaches to data collection.

Recruitment of PRAISE! Churches and Study Participants

PRAISE! churches were recruited by letters to the pastors of African-American churches within 8 North Carolina counties. Churches were eligible that had congregations of 100 active members or more, were 90% African American, and had not participated in substantial nutrition education activities in the last 10 years. The pastors of participating churches appointed a church liaison to handle the research interface with the church and a Health Action Team (HAT) leader to guide the intervention process.

While the PRAISE! intervention was designed to reach all regular members of the church, data were collected on a subset of members. Based on advice from church consultants on inaccuracy of church roles and concerns about randomly selecting participants, we elected to create a "measurement group" consisting of 15 to 35 volunteers from each church. Church members were eligible to participate if they were between the ages of 18 and 75, attended church services at least once per month, were not pregnant or breast-feeding, and were able to make dietary changes (not restricted by physiologic or medical conditions). In order to assure adequate data to assess study outcomes, participants were included in the measurement group if they provided a blood sample and completed 2 telephone interviews at baseline.

The measurement group also was asked to complete follow-up telephone surveys and blood draws. Those individuals who completed both baseline and follow-up measures are included in the analysis for this article.

Study Design and Intervention Implementation

PRAISE! investigators designed the study with an intervention group and a delayed intervention control group. Feedback from pastor consultants and early recruits among church leaders suggested that participation in a nutrition intervention program was considered highly desirable, and concern was expressed that control group churches would not receive such an intervention. PRAISE! investigators decided a delayed intervention control group would facilitate recruitment and respond to this concern voiced by church partners. We worked closely with church advisors to decide on interim interventions (stress reduction and honoring the health and well-being of church seniors). Figure 1 describes the study group allocations and interventions.

We recruited churches in 3 waves of 20 each (10 intervention and 10 control) to facilitate enrollment, data collection, and intervention implementation. This recruitment strategy also allowed us to gather input from our community research partners. Pastors, church liaisons, and HAT leaders in the first wave served as an informal advisory committee, providing guidance about survey items that might be sensitive, timing of survey administration around church events and holidays, and intervention approaches sensitive to church culture.

Data Collection

Baseline Interview. Before randomization, baseline data were collected from individual participants and pastors. For individual participants, baseline data collected through telephone interviews included a psychosocial,

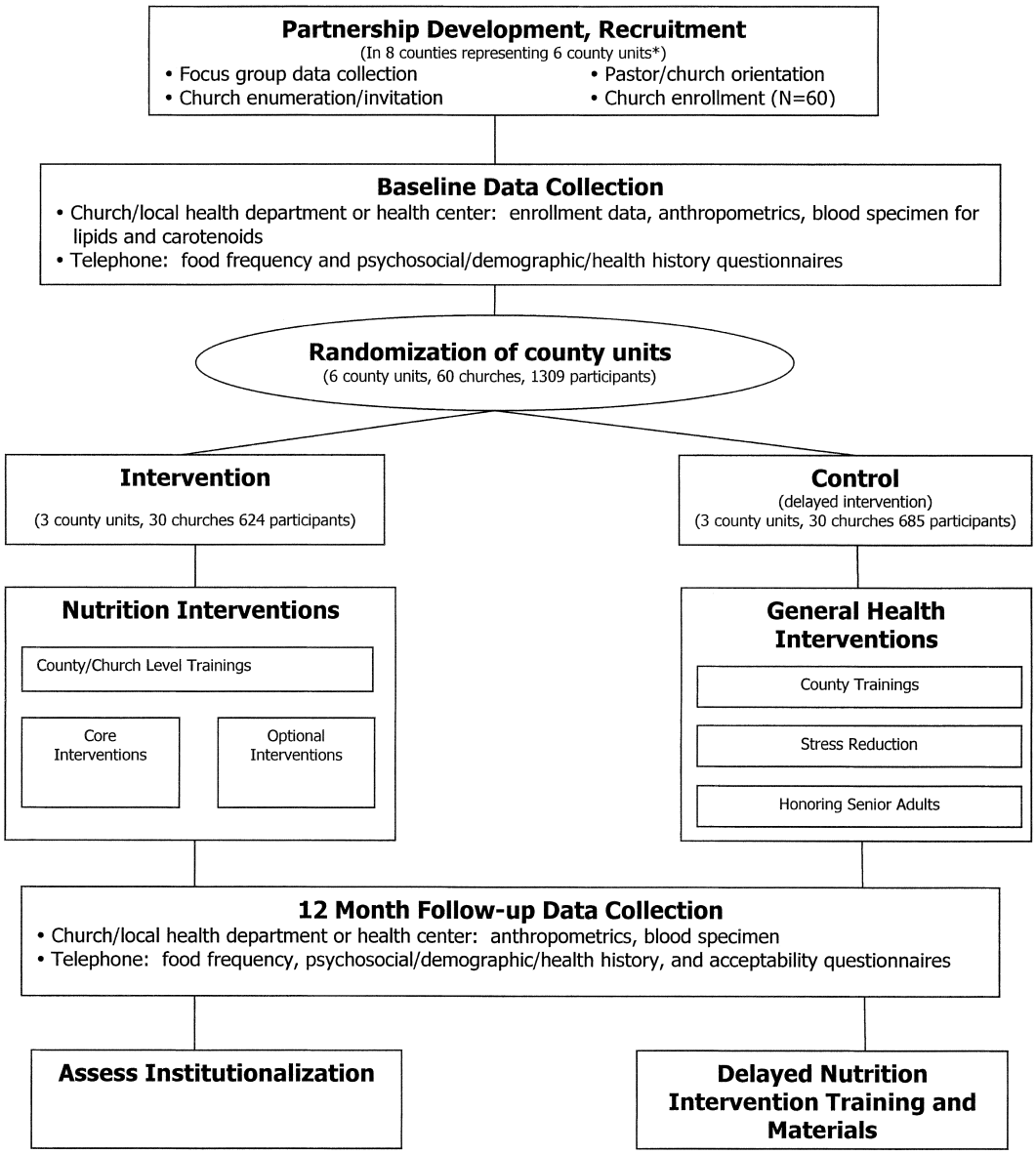

FIGURE 1. Study group allocations and interventions.

health, and demographic questionnaire, dietary intake, weight, height, a food frequency questionnaire, and fasting blood tests. Pastors in each church also completed a baseline survey about their church, their experience being a pastor in that church, personal demographics, and types of health and other outreach programs previously held by the church.

Follow-up Interviews. At the conclusion of the 12-month intervention (before the control group received the delayed intervention), individual participants completed a series of 2 telephone-administered interviews by interviewers blinded to participant study status. In addition to repeating many of the baseline items, the follow-up surveys included questions about specific PRAISE! activities, perceived benefits and burden, and general participation in the project.

All questionnaires underwent extensive pilot testing during the planning phases of the study. Questions were derived from prior focus groups and semistructured interviews. Many of the survey items were highly specific to the PRAISE! research partnership and, thus, existing measures from other projects were not appropriate.

Study Variables

The independent variables included characteristics of individual participants and the characteristics of their churches and pastors. Participant variables included: age (continuous variable in years), sex, educational attainment, annual income, frequency of church service attendance, length of church membership, and frequency of involvement in church functions. Church characteristics included: study group allocation of the church, church

size, age of the church, and existence of health activities in the church during the 2 years before the study. Pastor characteristics included: length of his/her tenure in the church and whether he/she was trying at the time to make changes in dietary habits or lose weight.

We used subscales generated from a series of questions included in the 12-month follow-up questionnaire as dependent variables. These questions solicited participants' attitudes about the research project and the project staff, and were believed to represent 4 underlying constructs: 1) perception of trust in the research project and team; 2) benefit from involvement with the project; 3) satisfaction with the project and researchers; and 4) perception of burden associated with participation. For each item, respondents were asked whether they agreed or disagreed with the statement. Table 2 shows the individual items that comprise each subscale. Items were initially chosen based on face validity and factor analytic techniques confirmed the existence of 4 factors (1 for each of the underlying constructs: trust, benefit, satisfaction, and burden). Each factor was used to create a score that summed responses to each component item, with high scores corresponding to more of the attribute. All scales had acceptable internal consistency reliability (Cronbach's α ranging from 0.66 to 0.73) and were comprised of questions with binary responses, with 1 indicating agreement with a statement about PRAISE! and 0 indicating disagreement. The trust and satisfaction scales comprised 4 questions, with possible scores ranging from 0 to 4. The benefit scale comprised 6 questions and, hence, possible scores ranged from 0 to 6 (little/no benefit to very beneficial). The burden scale scores also ranged from 0 to 6, with 0 representing higher perceived burden to 6 representing lower/no burden). In order to make the scoring of the scale consistent, 4 of the items (items 1 to 4, in Table 2) were reverse-coded, i.e., 1 indicating disagreement and 0 indicating agreement with the statement. Thus, a scale score of 0 represented high burden and 6 represented low/no burden. The cut-off for high levels of each outcome was the highest possible score (e.g., a score of 6 indicated high benefit and no burden; a score of 4 indicated high trust and high satisfaction).

Table 2. Questionnaire Items Comprising the Trust, Benefit, Satisfaction, and Burden Subscales

Trust*
In general, I trust the UNC PRAISE! Project staff.
As a result of PRAISE!, I feel more comfortable about participating in research.
As a result of PRAISE!, I feel more confident that churches and universities can form partnerships to improve the health of individuals.
I trusted that the UNC PRAISE! staff would not do me any harm.
Benefit*
I benefited personally from participating in the PRAISE! Project.
My family benefited from participation in the PRAISE! Project.
By participating in PRAISE! I feel like I have contributed to a greater understanding of how to help African Americans improve their health.
I liked the idea of contributing to a better understanding of diet and cancer.
I wanted an opportunity to work on improving my own eating habits.
I wanted to see my church be progressive in this area.
Satisfaction*
If I had the opportunity to participate in the PRAISE! Project again I would do it.
I would encourage other churches and individuals to participate in PRAISE!.
The project was clearly explained by PRAISE! staff.
Chapel Hill PRAISE! staff were helpful in making PRAISE! work for me.
Burden†
Being a part of the measurement group took too much time and energy.
Getting my blood drawn was a big problem.
Answering all of the telephone surveys took too much time.
It bothered me that some of the survey questions were quite personal.
Participating in PRAISE! activities at my church was worth the time and effort.
Getting my blood drawn and answering the surveys was worth the time and effort.

** All Trust, Benefit, and Satisfaction scale items coded with 1 for agreement and 0 for disagreement with the statement.*

† Burden scale items 1–4: 1 for disagreement and 0 for agreement; items 5–6: 1 for agreement and 0 for disagreement.

Data Analysis

We used SAS software version 8 (SAS, Inc., Cary, NC) for all analyses. During the first phase of analysis, we examined the frequency distributions of the characteristics of churches, pastors, and participants. The bivariate relationships between each of the independent variables and each of the 4 dependent variables were examined. Chi-square tests were used to assess the statistical significance of differences between groups for the nominal and ordinal variables and t tests were used for the continuous variables. An α of 0.05 was used for tests of significance. Independent variables significantly related to the outcomes of interest were used to create multivariable regression models (1 for each of the 4 outcomes), to assess the independent relationship of each characteristic and each study outcome. In these analyses, mixed models were used that accounted for the study design in which individuals were sampled from churches, nested within county (counties were the unit of randomization).

RESULTS

Characteristics of Participants, Churches, and Pastors

A total of 1,309 participants from the 60 participating churches completed all baseline measures and were randomized to the intervention (n = 624) and the control (n = 685) groups (Fig. 1). Here we present analyses based on

Table 3. Sociodemographic Characteristics of PRAISE! Participants (*N* = 883)

Characteristic	*n*	%
Sex		
Male	214	24.2
Female	669	75.8
Education		
Less than high school graduate	98	11.1
High school graduate	244	27.7
Post–high school	538	61.1
Annual income		
<$20,000	172	25.0
$20,000–$39,999	218	31.6
$40,000–$59,999	156	22.6
$60,000+	143	20.8
Number of services attended		
<4/mon	145	16.4
4/mon	258	29.3
>4/mon	479	54.3
Length of church membership, y		
<5	160	18.3
5–10	137	15.7
11–20	150	17.2
>20	426	48.8
Involvement in church functions		
Rarely/occasionally	144	16.4
Usually	285	32.4
Always	451	51.3

Numbers may not sum to 883 because of missing values.

the responses of 883 measurement group participants who completed both the baseline and follow-up surveys (response rate 63.9% in the intervention group, *n* = 399; 70.7% in the control group, *n* = 484). Participant age ranged from 18 to 75 years (mean 49.6 y, SD 12.4). Most participants were female and reported at least high school education (Table 3). Generally, the respondents were active, long-term church members, with over half attending more than 4 worship services per month.

Most of the churches had been in existence for many years; only 7% of the respondents were attending churches less than 20 years old at the end of the study (data not shown). Most of the participants attended churches of less than 400 members (Table 4). More than half of the participants attended churches that had hosted health activities within the 2 years before the PRAISE! intervention.

Pastors had been leading their respective churches for varying lengths of time, from 1 to 29 years (data not shown). The majority of the participants attended churches led by pastors who held college and graduate degrees. Many of the participants attended churches with pastors who were trying to improve their health by changing their diets or engaging in weight loss activities.

Relationship Between Individual and Church/Pastor Characteristics and Trust, Benefit, Satisfaction, and Burden Scales

Overall, participants perceived PRAISE! to be beneficial (mean 5.5, range 0–6, SD 0.8) and with low burden (mean 5.3, range 0–6, SD 1.0). Moreover, they were generally trusting of the research and researchers (mean 3.8, range 0–4, SD 0.5), and satisfied with the project (mean 3.7, range 0–4, SD 0.6).

Members with less educational attainment were more trusting of PRAISE! than those with higher educational attainment, and those who had been members for longer were more trusting than those who had more recently joined their churches (Table 5). Intervention group participants and members of smaller churches reported more trust than the control participants and members of larger churches (Table 6).

Persons who reported more frequent church attendance and greater church involvement perceived greater benefit from participation in PRAISE! (Table 5). Intervention group participants, members of smaller churches, and members of churches without recent health activities found PRAISE! more beneficial than control group participants, members from larger churches, and churches with recent health focused activities (Table 6). In addition, members of churches with pastors with less educational attainment perceived PRAISE! to be more beneficial than members of churches with pastors of higher educational attainment (Table 6). Pastors' personal efforts to improve their health were associated with perceptions of benefit; members whose pastors were trying to change their diets or lose weight were more likely to perceive greater benefit from PRAISE! than participants whose pastors were not making personal efforts to change.

Table 4. PRAISE! Participants' Church and Pastor Characteristics (*N* = 883)

Characteristic	*n*	%
Church		
Study group allocation		
Control (delayed intervention)	484	54.8
Intervention	399	45.2
Number of members		
<200	355	40.2
200–399	320	36.2
400+	208	23.6
Health activities in past 2 y		
Yes	511	57.9
No	372	42.1
Pastor		
Education		
<College graduate	155	17.7
Bachelor's	227	26.0
Master's	350	40.1
Earned/honorary doctorate	142	16.3
Trying to make changes in dietary habits		
No	263	29.8
Yes	620	70.2
Trying to lose weight		
No	444	50.3
Yes	439	49.7

Numbers may not sum to 883 because of missing values.

Participants in smaller churches and churches without recent health activities were more satisfied than those from larger churches and from churches with recent activities (Table 6). Members of churches whose pastors reported higher educational attainment were least satisfied with the PRAISE! intervention. Those participants whose pastors were trying to lose weight were more satisfied with PRAISE! than those whose pastors were not.

Male participants were more likely than females to report that PRAISE! participation was not a burden (Table 5). Burden also was related to recent health activities in the church (Table 6). In addition, members whose pastors were making personal efforts to change perceived PRAISE! to be more of a burden than those whose pastors were not trying to change.

Multivariable models showed that many variables that, in bivariate analyses, were related to benefit, trust, satisfaction, and burden, were not independently related to the outcomes. However, trust was significantly related to church size ($P = .02$) with members of smaller churches being more trusting than members of larger churches even after adjusting for other factors and the design effect. Smaller church size was associated also with higher perceived benefit ($P < .01$), as was allocation to the intervention group ($P < .01$), lesser pastor's education ($P = .01$), and pastor's efforts to make dietary changes ($P = .01$). Perceived burden was only associated with sex, with females perceiving greater burden than males ($P = .01$). None of the variables significantly associated with satisfaction in the bivariate analyses were confirmed in the multivariable model.

DISCUSSION

We found overall high levels of trust, perceived benefit, and satisfaction, and low perceived burden among participants in PRAISE!, a randomized controlled trial designed with a CBPR framework. Community members in the intervention group and those with more involvement in church services were most likely to report benefit from participating in this study. Members who belonged to smaller churches were also most likely to report perceived benefit, increased trust, and satisfaction with the research experience.

Through long-term and mutual partnerships, research that uses a CBPR approach is expected to lead to improved trust and increased satisfaction with the research process. In this study, we found high levels of trust and satisfaction overall. While we cannot determine causality from this study, PRAISE! is one of several projects that have emerged from long-term university-community partnerships with

Table 5. Relationship Between PRAISE! Participant Characteristics and Trust, Benefit, Satisfaction, and Burden Scales*: Individual Factors

	Trust Score, %		Benefit Score, %		Satisfaction Score, %		Burden Score, %	
Characteristic	Low Trust	High Trust	Low Benefit	High Benefit	Low Satisfaction	High Satisfaction	Burden	Not a Burden
Sex								
Male	13.7	86.3	27.0	73.0	23.2	76.8	38.0	62.0†
Female	12.0	88.0	32.0	68.0	19.5	80.5	48.5	51.5
Education								
Less than high school graduate	7.4	92.6†	31.6	68.4	21.1	79.0	53.6	46.4
High school graduate	9.4	90.6	28.3	71.7	20.9	79.1	41.0	59.0
Post–high school	14.7	85.3	32.0	68.0	20.1	79.9	46.7	53.3
Annual income								
<$20,000	14.0	86.1	30.8	69.2	18.6	81.4	47.7	52.3
$20,000–$39,999	9.3	90.7	31.8	68.2	18.9	81.1	47.3	52.8
$40,000–$59,999	11.5	88.5	28.2	71.8	21.2	78.9	39.1	60.9
$60,000+	14.8	85.2	33.1	66.9	23.2	76.8	44.1	55.9
Number of services attended								
<4/mon	11.8	88.2	34.7	65.3†	18.1	81.9	45.1	54.9
4/mon	14.0	86.1	38.0	62.0	22.5	77.5	52.7	47.3
>4/mon	11.8	88.2	25.8	74.2	20.0	80.0	42.7	57.3
Length of church membership, y								
<5	15.0	85.0†	34.4	65.6	22.5	77.5	45.0	55.0
5–10	17.7	82.4	33.6	66.4	24.8	75.2	46.0	54.0
11–20	12.2	87.8	33.1	66.9	22.3	77.7	48.3	51.7
>20	9.9	90.1	27.6	72.4	17.9	82.1	45.9	54.1
Involvement in church functions								
Rarely/occasionally	12.0	88.0	40.9	59.2†	19.7	80.3	45.8	54.2
Usually	15.4	84.6	32.6	67.4	22.5	77.5	46.0	54.0
Always	10.5	89.5	26.5	73.5	19.2	80.9	46.1	53.9

* *High benefit and no burden = score of 6; high trust and high satisfaction = score of 4.*
† $P < .05$.

Table 6. Relationship Between PRAISE! Participant Characteristics and Trust, Benefit, Satisfaction, and Burden Scales*: Church and Pastor Factors

Characteristic	Trust Score, %		Benefit Score, %		Satisfaction Score, %		Burden Score, %	
	Low Trust	High Trust	Low Benefit	High Benefit	Low Satisfaction	High Satisfaction	Burden	Not a Burden
Church								
Study group allocation								
Control†	14.6	85.5‡	42.7	57.3‡	22.4	77.6	46.6	53.4
Intervention	9.8	90.2	16.4	83.6	17.9	82.1	45.2	54.8
Number of members								
<200	8.5	91.5‡	25.5	74.5‡	17.9	82.2‡	46.3	53.7
200–399	12.3	87.7	28.2	71.8	19.4	80.6	42.5	57.5
400+	19.3	80.7	44.0	56.0	26.1	73.9	50.7	49.3
Health activities in past 2 y								
Yes	14.2	85.8	35.8	64.2‡	23.2	76.8‡	49.4	50.6‡
No	10.0	90.0	24.1	76.0	16.5	83.5	41.2	58.8
Pastor								
Education								
<College graduate	10.4	89.6	23.4	76.6‡	18.8	81.2‡	42.2	57.8
Bachelor's	10.7	89.3	27.0	73.0	18.1	81.9	48.2	51.8
Master's	12.9	87.1	29.2	70.8	18.3	81.7	44.9	55.1
Earned/honorary doctorate	17.0	83.0	49.7	50.4	31.9	68.1	50.7	49.3
Trying to make changes in dietary habits								
No	11.1	88.9	39.3	60.7‡	22.1	77.9	40.7	59.3‡
Yes	13.0	87.0	27.2	72.8	19.6	80.4	48.2	51.8
Trying to lose weight								
No	11.8	88.2	35.6	64.4‡	23.1	76.9‡	42.7	57.3‡
Yes	13.0	87.0	26.0	74.0	17.6	82.4	49.3	50.7

* *High benefit and no burden = score of 6; high trust and high satisfaction = score of 4.*
† *Delayed intervention.*
‡ $P < .05$

surrounding communities. This existing relationship along with careful partnership development work with church pastors and members in the early stages of PRAISE! may have set the stage for the positive response to this effort. Prior research highlights the importance of early, active, and ongoing community involvement in the research process to establishing trust and ensuring satisfaction.[15,16]

In addition to high overall perceived benefit, trust, and satisfaction, specific church characteristics were associated with high levels of these outcomes. Church size and pastor education have been described as characteristics of churches that may be most likely to have active health promotion programs.[22] In this study, we found that smaller church size and pastor characteristics such as education and engaging in personal lifestyle changes were characteristics associated with perceived benefit, trust, and satisfaction. While larger church size has been associated with existing health promotion activities,[22] small church size has been associated with greater perceived impact of intervention activities.[23] This finding might be because of the close-knit nature of smaller churches; or perhaps, because smaller churches are less likely to have health promotion activities already in place, they see more benefit than larger churches. In addition, pastor education may serve as a proxy for church resources and thus average income of the membership, since a wealthier congregation may be able to hire a pastor who had more formal education. The fact that church members affiliated with pastors who have received less formal education reported greater levels of benefit, and satisfaction, suggests that PRAISE! may be reaching congregations who have had more limited opportunities to benefit from health promotion interventions in the past, due in part to limited resources.

An important consideration in the design of PRAISE! and in other research that uses a CBPR approach is the issue of randomization and the use of a control group. Control groups are often critical to a rigorous study design, yet raise concerns that the control group participants might not perceive benefit from study participation. Other investigators have highlighted the importance of providing tangible benefits to community members in all research.[15,17,24] For studies with an intervention component, pastors have stressed the importance of providing some type of intervention to the control group.[24] Our findings of greater perceived benefit among participants in the intervention group further reinforce the fact that as investigators engage in partnerships with communities, the need for scientific rigor should be balanced with community needs (e.g., through an alternative or delayed-intervention control group). The delayed intervention approach used in PRAISE! may have been responsible, in

part, for the relatively high level of satisfaction and perceived benefit among the control group.

Participation in this study required individuals to complete multiple surveys and blood draws. The time and energy associated with completing these tasks can be burdensome. However, most of the participants in this study thought this burden acceptable. Interestingly, women were more likely than men to report the study as a burden. It is possible that because women traditionally shoulder the larger burden of food purchasing and preparation, the added requirements of adopting a new way of eating fell disproportionately to them. Balancing perceived burden and benefit is critical when planning community-based interventions that we hope to be sustainable.

An important limitation of the study is the degree to which the "measurement group" can be seen as representative of the broader church membership involved in the study. Our decision to use this approach reflects lengthy discussions and consideration of a) scientific rigor, b) input from our church partners, and c) available resources. In this report, we sought to gain insight into community perceptions of collaborative research from those participating in the process rather than from a hypothetical perspective. Therefore, these findings reflect perceptions of those who had been involved with the process of measurement as well as the intervention. The more difficult question was the process used to recruit the measurement group. While our recruitment approach limits generalizabilty to relatively active church members and study volunteers, we feel that the benefits of increased trust and satisfaction are a reasonable trade-off.

In addition, our inability to contrast the impact of a traditional research approach with a study that uses a CBPR approach is an inherent limitation to the design of this study. Another important limitation is the difference in response rates between the control and intervention groups. It is possible that those most unhappy or fatigued by the research process were not captured at follow-up, thus potentially biasing our results. In addition, we are not able to infer causality because we cannot compare our outcomes before and after participation in PRAISE! However, in a CBPR approach much time and effort are put into building relationships long before the project or data collection begins, with the intention of gradually, over time, affecting the outcomes we measured; therefore, measuring these features at baseline is problematic. The 1-year intervention is not likely to be solely responsible for such favorable outcomes. Instead, we believe that the relationships that existed before funding, which facilitated conducting the research, and were further developed through negotiation and collaboration during recruitment, were what led to these positive results.

PRAISE! was associated with high levels of trust, perceived benefit of the research, and satisfaction, and with low burden with the research process. While we were not able to directly compare the impact of the CBPR approach to a more traditional research approach, the overall highly positive response to study involvement suggests that this approach has the potential to lead to high acceptance of the research process. Compromises in the recruitment strategy and study design are examples of the balancing act between community-based participation and research required by the CBPR approach. We anticipate that findings from this study will be used by researchers to guide the design and implementation of future CBPR efforts.

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