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A Trial of Church-Based Smoking Cessation Interventions for Rural African Americans[1]

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Background. **The Alliance of Black Churches Health Project was begun in an effort to address the health problems of the African-American residents of two rural Virginia counties. Smoking cessation was chosen as the principal target behavior in one county. Church coalitions were chosen as the principal organizations through which to implement the interventions.**

Method. **A smoking cessation program was designed that combined one-on-one counseling with self-help materials and community-wide activities. To provide these services, up to two smoking cessation counselors were trained from participating churches. To evaluate the impact, population-based cohorts of smokers were assembled in each county using a door-to-door survey. Respondents were recontacted after 18 months. Smoking cessation (1-month continuous abstinence), stages of change, and exposure to the interventions were assessed.**

Results. **The overall smoking prevalence at baseline was 25.8%. At follow-up, the smoking cessation rate in the intervention county was 9.6% and in the control county 5.4% ($P = 0.18$). Among those attending church once a month or more, the respective quit rates were 10.5% and 5.9% ($P = 0.20$). There was significantly more progress along the stages of change in the intervention than in the control county. There was also higher awareness of and contact with smoking cessation programs in the former compared with the latter.**

Conclusion. **Smoking cessation interventions for African Americans can be successfully implemented through a church coalition. The interventions were associated with significant progress along the stages of cessation. Although the quit rate was higher in the intervention community, the difference was not significant.**

Key Words: **smoking cessation; blacks; epidemiology.**

INTRODUCTION

Cigarette smoking remains the most important preventable cause of death in the United States and was responsible for an estimated 419,000 deaths in 1990 [*1*]. The health consequences of smoking are relatively greater for African Americans than they are for the white population. In 1988, the smoking attributable mortality was 389/100,000 for whites and 437/100,00 for blacks [*2*]. The disparity is even greater for the rate of years of potential life lost, which is twice as high for blacks than it is for whites [*2*].

The smoking prevalence among African Americans has historically been higher than among the white population [*3*]. However, the overall difference is narrowing [*3,4*], and recent data for women indicate a higher prevalence among whites. According to the 1993 National Health Interview Survey, the smoking prevalence among black men was 32.4% and among white men 27.0% [*5*]. Among women, the prevalences of current smoking were 24.0 and 21.0%, respectively. The reasons why the smoking prevalence has been higher among African Americans remain incompletely explained [*6*]. African Americans have been found to have a higher desire to quit than white smokers [*7*] and to have a higher rate of attempting to quit [*8*]. However, their success rate may be lower [*7,8*]. This may in part be due to lack of access to clinical smoking cessation services among African Americans [*9,10*]. The problem of access may be especially pertinent in the rural South, where a high percentage of the population is African American but where services are often very scarce. Ideally, if smoking cessation programs are developed for such areas, they should be tailored to the needs of the specific populations that are being targeted [*9,10*].

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Other differences in smoking patterns have been demonstrated between black and white smokers that may be relevant to the design of such programs. The average age of initiation of smoking is older among both African American men and women than it is among their white counterparts [*11*,*12*]. African American smokers also smoke fewer cigarettes per day [*7*,*13–16*], but smoke more menthol cigarettes [*17*], which tend to be high in nicotine [*9*]. Despite the lower number of cigarettes smoked, after controlling for consumption, African American smokers are more likely than whites to smoke within 10 min of waking up, a measure of nicotine dependence [*7*].

Developing programs to address adverse health behaviors such as cigarette smoking in rural areas is often difficult, because of distances involved and the lack of existing services. Working through churches offers the possibility of overcoming some of these barriers. The church is an especially strong institution in many rural African-American communities and has been involved as a partner in a variety of health-related activities [*18–20*]. The Alliance of Black Churches Health Project was begun in 1991 in an effort to address the health problems of the African-American residents of two rural Virginia counties by working through coalitions of black churches. In one of these counties, smoking cessation was chosen as the principle target health behavior. In this paper we will describe: (1) the philosophy and initial organizational efforts used to develop the smoking control project, (2) the development and implementation of the interventions, (3) the results of the baseline survey, and (4) the initial results after the programs had been in place for 18 months. This study is among the first community-based smoking cessation projects to report results specifically among African Americans, and is the first that was designed to evaluate the impact of these interventions among a rural population in particular.

METHODS

Organization and Philosophy of the Alliance of Black Churches Health Project

Two communities, defined by the geographic boundaries of two counties, were chosen by the investigators as the project sites. These counties are demographically similar and are adjacent to Albemarle County (where the University of Virginia is located). They are not contiguous with each other, being separated by over 20 miles, and they are in different health districts. Buckingham County, the smoking intervention community, had a total noninstitutionalized population of 11,926 in 1990, of which 4,656 (39%) were African American. Louisa County, the control community, had a total population in 1990 of 20,325, of which 5,233 (26%) were African American. The two counties were selected because they were of similar size (about 500 square miles each), had similar African-American populations, and contained approximately the same number of predominately black churches. The intervention county was chosen arbitrarily, and the control and intervention conditions were designated before the coalitions were formed or baseline data collected.

The Alliance of Black Churches Health Project received funding from the National Heart, Lung, and Blood Institute in 1991. The principal purpose of this grant was to develop and evaluate a smoking cessation program for rural African Americans. The main goal of the study was to determine if smoking cessation interventions delivered through a coalition of black churches would increase the smoking cessation rate of church members exposed to the interventions. A secondary goal was to determine if the community-wide smoking cessation rate among African Americans would also increase. There were no organized smoking cessation services available in either county at the time the study began.

Because of the central role of the church in these communities, they were chosen as principal sites through which to develop the smoking cessation interventions. Each county has about 35 churches which are identified as primarily serving black residents. Over 90% are Baptist. Rather than each individual church working in isolation, a coalition of churches was developed to provide an organizational framework for the development and implementation of interventions [*21*]. This structure was utilized to provide a sense of shared mission for participants, to allow for more efficient use of resources, and to foster the development of a critical mass of leaders who could help ensure the sustainability of the coalitions. Although a church coalition was chosen as the principal organizational entity through which the smoking cessation interventions would be delivered, we hoped that the effect would also be apparent at the community level. Factors which might contribute to this effect include the authority of and sense of community within the church, the social networks which tie church members to the greater community, and the development of interventions for nonchurch attenders.

The development of the coalitions was directed by a coordinator in each county. Each coordinator devoted 50% of her time to these activities. They began by organizing the two coalitions using community organization strategies similar to those promoted by Dr. Ronald Braithwaite [*22*]. By contacting local agencies and associations, they identified community leaders to serve on ad hoc nominating committees. They then developed community resource inventories, conducted community health needs assessments, and worked with the committees to organize the coalition boards. Within 6 months, board members had been elected, regular coalitions meetings had begun, and members and uni-

versity staff had identified initial target health conditions. Coalition members in each county included both volunteer lay persons and clergy, although most of the volunteers were not ministers.

From its initiation, the Alliance of Black Churches Health Project was guided by a philosophy based on community empowerment, which has been defined by Fawcett et al. as the process through which groups increase their control over consequences that are important to their members and to others in the broader community [*23*]. The ultimate goal has been to assist members of the two communities in improving their ability to deal with health problems that they identify as important. In this process, the organizational structures that have been developed have been designed to foster the ultimate independence of the community groups. The funding for the smoking cessation program therefore created a potential dilemma for developing the community-based interventions. This occurred because the support was contingent on addressing a predetermined problem, one that was not necessarily of primary concern to the intervention community. Conversely, regardless of local priorities, smoking would need to not be a focus of programs in the control community. We addressed this issue by offering assistance to both counties to deal with health issues of concern to them, with the expressed limitation that cigarette smoking must be among the conditions chosen in one county and not among those chosen in the other. Once organized, both of the coalitions were quite accepting of this condition.

Data Collection

This study was designed to evaluate the effects of the interventions both among church members directly exposed to the programs and among the entire African-American population of the two counties. The latter impact was to be measured by the smoking cessation rate among population-based cohorts of smokers in each county. In order to maximize community input and cooperation, initial data collection was conducted after the coalition boards were formed and incorporated suggestions regarding content and administration procedures. Several design changes occurred after the initiation of the study. First, the baseline survey was initially designed to be conducted with respondents primarily contacted by telephone, supplemented by a representative sample of individuals without telephones who would be interviewed in person. A pilot study of a random-digit-dialed telephone survey conducted in an adjacent, demographically similar county was unsuccessful due to both a low response rate and a low self-reported smoking prevalence. Only 14% of the African-American respondents indicated that they smoked, and they reported that only 18% of the total number of individuals in their households smoked. Because of this low reported smoking prevalence, an in-person household survey was performed instead. Second, the impact of the interventions was to be measured both among church members directly exposed to the interventions in participating churches (and in matched churches in the control county) and among the population at large. Due to the cost of the in-person population-based survey, separate cohorts could not be assembled through the churches. Thus, the effect of the interventions was measured primarily at the population level, and frequency of church attendance was used as a surrogate for exposure. Many of the churches were small and met less than once a week, although almost all met at least once a month. As a result, individuals who reported going to church once a month or more were considered regular attenders.

Baseline data collection was conducted in both counties by the University of Virginia Center for Survey Research. The methods used have been reported in detail previously [*24*]. The sampling methodology resulted in two sets of data for the analyses presented here: a roster database, containing information on gender, age, and smoking status of all adult members of each sampled household (n = 3,744), and a smoker database that consisted of all smokers who were personally interviewed and who were to be followed to determine smoking cessation rates (n = 648). Smokers from a total of 535 households were included. Of these households, 422 (79%) provided a single respondent and 113 (21%) two respondents. Members of the cohort were not specifically targeted for the smoking cessation programs, and their identity was not known by those involved in implementing the interventions.

Respondents were considered to have ever smoked if they had smoked at least 100 cigarettes in their lifetime. Current smokers were those who had smoked at least 1 cigarette per day for the past 7 days. Occasional smokers smoked intermittently, but had smoked less than 1 cigarette per day for the past 7 days. The 21 respondents who met this definition were not included in the cohort of smokers.

Overall, 3,744 African Americans over the age of 17 were rostered in the two counties. This represents 52% of all eligible individuals in the population. A total of 965 smokers were identified, of whom 896 were selected for interviews. The majority of those who were not selected were not included because two respondents in the household had already been interviewed. Of those who were selected, 652 (73%) completed the baseline survey. Four were subsequently found to be ineligible due to either not being African American or not living in one of the study counties. The majority of the noncompletions were due to refusals (21.5% of those selected). The remainder (10.1% of those selected) were due to a variety of reasons, with the most common being the inability to contact the designated respondent after repeated attempts. The initial sample

size calculation indicated that 315 respondents in each county would be necessary to detect an increase in the cessation rate from 4.5% in the control county to 13% in the intervention county, using an α error (two-tailed) of 0.05 and a β error of 0.1.

Follow-up data collection started 18 months after the interventions began. We attempted to recontact all smokers who were initially interviewed, first by telephone if one was listed as present in the household and then in person. Of the initial survey respondents, 452 (70%) were reinterviewed. Among those not recontacted, 16 (2.5%) had died, 67 (10%) could not be contacted due to inaccurate addresses, 17 (2%) had moved out of the study area, 54 (8%) could not be contacted after the maximum number of attempts, and 35 (5%) refused.

All respondents were classified, both at baseline and at follow-up, into a stage of change based on the Transtheoretical Model [*25*]. At baseline, these mutually exclusive categories were precontemplation—did not plan to quit smoking in the next 6 months; contemplation—planned to quit smoking in the next 6 months but not in the next 30 days, or planned to quit in the next 30 days but had not made a serious quit attempt; and preparation—planned to quit in the next 30 days and had made a serious quit attempt. The timing of the most recent quit attempt was not determined, so classification into the preparation stage was based on any prior serious quit attempt. At follow-up, two additional stages were included: action—had quit smoking completely during the past 6 months, and maintenance—had quit continuously for more than 6 months.

Self-reported continuous abstinence was used as the principal outcome measure. Individuals who said they had quit smoking and had not smoked even one cigarette in the past month were considered to have quit. All others were considered to be still smoking. Smoking cessation was not biochemically confirmed, although informed consent to return to check on smoking status via biochemical means (either expired carbon monoxide testing or sputum cotinine level) was obtained.

Data Analysis

The data were analyzed using SPSS-PC 6.0 for Windows (SPSS, Inc., Chicago, IL). For analyses of baseline data, differences in means of continuous variables were analyzed using *t* tests, and differences in the distributions of categorical data were analyzed using χ^2 analyses. Two-tailed *P* values ≤ 0.05 were considered statistically significant.

The effect of the interventions was assessed using χ^2 analysis, with the 452 individuals available at the time of follow-up as the denominator. The principal outcome (quit rate) was determined using 1-month continuous abstinence. Logistic regression was used to determine the impact of potentially confounding variables on the quit rates. Differences between counties in the distribution of stages of change were also assessed, using the χ^2 test for trend. Repeated-measures analysis of variance was used to determine the significance of differences in stages of change pre- and postintervention between the two counties. The stages were coded from 1 (precontemplation) to 5 (maintenance) for these analyses. Missing follow-up data were handled two ways. First, all those who were not available for follow-up were considered to be still smoking. Second, smoking cessation rates and stages of change for the cohorts were modeled using logistic regression, with baseline variables that differed significantly between those who did and those who did not have follow-up included in the equations. The coefficients from this model were then applied to all subjects ($n = 648$) using their baseline status to determine predicted quit rates for the entire cohorts [*26*].

Design of the Interventions

The smoking cessation interventions in Buckingham County were designed with the assistance of members of the coalition. Although all of the coalition board members were African American, and the president and vice president were ministers, they chose an inclusive approach to developing both the coalition's identity and the intervention programs. They did not want either their name or the interventions to be exclusively associated with churches or with the African-American community. They therefore chose as their name the Buckingham Health Education Board. A multichannel approach was developed for delivering interventions that used both church and nonchurch avenues.

The core program was designed to combine one-on-one counseling with self-help materials since most smokers said they would use these techniques if available. To provide these services, up to 2 smoking cessation counselors were trained from participating churches. The counselors were chosen by their churches, and each received 8 hr of training. During the intervention period, 26 smoking cessation counselors from 14 churches were trained. The training included specific recruitment and counseling skills, and included guidelines for dealing with smokers at different stages of change. An analysis of the stages of change model in this population has shown that the predictors of the current stage of cessation for smokers are very similar to those from other populations [*24*]. Each counselor was encouraged to discuss the program with his or her congregation at large, and to ask individuals about whether they smoked and wanted information, in a nonjudgmental fashion. For smokers, the counselors then asked about interest and readiness in quitting. For individuals not ready to quit, they asked

about the pros and cons of smoking, gave them information about the risks of smoking and the benefits of quitting, and asked permission to recontact them later. Individuals interested in quitting were encouraged to pick a quit date, and coping skills were reviewed using a self-help program.

The self-help smoking cessation program was designed by the project staff, with assistance from the coalition members. It incorporates current recommendations for self-help guides [*27*] and addresses local issues as well. The program is called "Call It Quits," and is based on a calendar style handout which can be hung from the wall or refrigerator. Each page contains a goal for 1 day, with seven pages devoted to preparing to quit and 7 pages containing information relevant to the seven days after quitting. Each page can be torn off and carried as a reminder of the day's tasks. The smoking cessation counselors were trained to provide initial advice on a one-time basis using the program and to provide brief active follow-up counseling. The program guide can also be used alone as a self-help manual.

Additional smoking cessation programs were developed to address other local issues. In order to emphasize the role of the church, smoking cessation devotional booklets were distributed through the churches (provided by the Heart, Body, and Soul Project, Baltimore, MD [*28*]). County-wide Gospel Quit Nights, during which gospel groups perform and information on the smoking cessation programs is given out, have been held every 6 months. To broaden the number of individuals exposed beyond the churches, a county-wide smoking cessation contest has been held annually in conjunction with the Great American Smoke-Out. Finally, the importance of children as an influence to quit has been addressed by having annual educational contests in the schools. A poster contest was held first, followed by an essay contest.

A parallel process of training church volunteers was undertaken in the control county. The initial health problem chosen to be addressed was hypertension. Additional training in dietary and exercise counseling was also provided. Smoking was not addressed by the volunteers or by any coalition activities.

RESULTS

Baseline Survey

The smoking prevalence based on the roster of households is shown in Table 1. The overall age-adjusted smoking prevalence was 25.8%, 20.0% among women and 32.6% among men. The smoking prevalence peaked at ages 26–35 for both women (30.5%) and men (43.4%). The overall smoking prevalence was higher in Buckingham than in Louisa County (27.2 vs 24.4%; $P = 0.04$).

Overall, 88% of the respondents said they belonged to a specific church, and 86% of these attended church in the county in which they resided. Only 2.6% of respondents attended church in one of the two intervening counties, and no one in the control or the intervention county attended church in the other county. Membership in other community organizations was noted by only 11%. Additional characteristics of the cohorts from each county are shown in Table 2. Smokers in the control county were significantly less likely to attend church at least once a month than were smokers in the intervention county (42 vs 50%), and they had an older mean age of starting to smoke (20 vs 18.4 years). The distributions of baseline stages of change were similar in both counties, with the majority of individuals being in the precontemplation stage (53%).

The characteristics of men and women were also compared for the same variables. Women were significantly more likely than men to be high school graduates (52 vs 42%, $P = 0.016$) and to attend church regu-

TABLE 1

Smoking Prevalence by Age and Gender among the African-American Population in the Two Study Counties

	Men				Women			
	Louisa		Buckingham		Louisa		Buckingham	
Age	Number	Smoke (%)	Number	Smoke (%)	Number	Smoke (%)	Number	Smoke (%)
18–25	120	20.0	115	28.7	146	11.6	140	17.9
26–35	166	42.8	175	44.0	210	28.1	220	32.7
36–45	203	36.5	168	44.0	226	25.7	196	27.0
46–55	153	33.3	110	34.5	132	19.7	149	23.5
56–65	122	28.7	105	34.3	143	14.7	115	14.8
⩾66	125	16.0	144	18.8	161	8.1	193	7.8
Total	889	30.9	817	34.9	1018	19.1	1013	21.4
Age-standardized prevalence		30.5		34.7		18.7		21.1

Note. Age-standardized prevalences have been weighted to the age distribution of the African-American population in the two counties based on the 1990 census.

TABLE 2

Baseline Characteristics of the Study Cohorts

	County		
	Louisa $N = 304$	Buckingham $N = 344$	P
Age (mean years)	41.5	40.1	0.23
Men (%)	56.3	53.5	0.48
Married (%)	45.9	51.2	0.18
Employed (%)	56.8	59.9	0.42
High school graduate (%)	46.3	46.4	1.00
Attend church ⩾ once/month (%)	41.8	50.0	0.04
Telephone in home (%)	75.5	72.2	0.43
Age started in smoke (mean years)	20.0	18.4	0.007
Amount smoked (%)			
⩽10/day	58.2	52.2	0.29
11–20/day	32.0	37.3	
⩾20/day	9.8	10.5	
Cigarettes/day (mean)	13.4	14.0	0.32
Stage of change (%)			0.70
Precontemplation	52.1	54.9	
Contemplation	33.3	29.9	
Preparation	14.5	15.1	
Very confident will be nonsmoker in 1 year (%)	18.2	22.7	0.16

larly (56 vs 38%, $P < 0.001$) and, compared with men, women started to smoke later (21 vs 18 years, $P < 0.001$) and smoked less on average (12 vs 15 cigarettes/day, $P < 0.001$). There were no significant county by sex interactions. The majority of both men (66%) and women (72%) smoked menthol brands, with the most common being Newport (37%), Salem (12%), and Kool (9%). The next most commonly smoked brands among both men and women were Winston (8%) and Marlboro (6%).

The smokers were asked what smoking cessation services they would use if they were available. Overall, 69% of smokers said they would use some type of help, with 58% indicating they would use written materials, 53% one-on-one counseling, and 43% classes.

Outcome Evaluation

The follow-up response rate was 70% in each county. There were a number of differences overall between those for whom follow-up information was and was not obtained, as shown in Table 3. These same variables were compared for between-county differences for the cohorts that were available for follow-up. None of the differences were significant, including regular church attendance.

Among those with follow-up data available, after the 18-month intervention period the smoking cessation rate in the control community was 6.2% vs 9.6% in the intervention county (difference 3.4%, 95% confidence interval (CI) −1.5, 8.4%). Among those who attended church once a month or more, the rates were 5.8 and 10.5%, respectively (difference 4.7%, 95% CI −2.2, 12.0), and for those who attended church less frequently 6.4 and 8.8% (difference 1.8%, 95% CI −5.4, 9.0). One of the original hypotheses was that there would be an association between smoking cessation, residence, and church status, such that those in the control county would have similar quit rates regardless of church attendance, those in the intervention county who did not attend church would have higher rates, and those who attended church regularly would have the highest rates. The overall quit rates were in this order, although the trend was not significant ($P = 0.14$ by χ^2 test for trend).

TABLE 3

Characteristics of Subjects with and without Follow-Up after 18 Months

	Followed up $N = 453$	Not followed up $N = 195$	P
Age (mean years)	41.8	38.2	0.002
Men (%)	50.6	64.6	<0.001
Married (%)	54.5	35.1	<0.001
Employed (%)	60.6	53.3	0.08
High school graduate (%)	45.6	48.2	0.54
Attend church ⩾ once/month (%)	50.3	36.3	0.001
Telephone in home (%)	73.9	66.2	0.05
Cigarettes/day (mean)	13.9	13.2	0.44
Stage of change (%)			0.04
Precontemplation	50.8	60.3	
Contemplation	33.3	27.3	
Preparation	15.9	12.4	
Plan to quit next 30 days (%)	19.2	17.0	0.51
Very confident will be nonsmoker in 1 year (%)	22.5	16.0	0.06

Up to two respondents from each household could be included in the cohort. In order to control for the potential effect of the nonindependence of multiple household respondents, the outcome was also assessed for only a single respondent per household. The quit rates for these individuals in the control and intervention communities were 6.9 and 10.5%, respectively (difference 3.6%, 95% CI −2.1, 9.2).

Only two of the variables shown in Table 3 were significantly associated with quitting. Those who quit smoked less at baseline (10 vs 14 cigarettes/day, $P = 0.025$) and were more likely to be married (75 vs 53%, $P = 0.011$) than those who continued to smoke. The overall quit rates were essentially unchanged after controlling for these variables, as well as for church attendance (which differed between counties at baseline). The unadjusted odds ratio for quitting in the intervention vs the control county was 1.62 (95% CI 0.76, 3.49) and the adjusted odds ratio was 1.64 (95% CI 0.79, 3.40).

The distributions of stages of change for the counties at follow-up are shown in Table 4. The difference ap-

proached statistical significance ($P = 0.06$). The change from baseline to follow-up was significant (in favor of the intervention county) using repeated-measures analysis of variance ($P = 0.03$)

Two methods were used to account for the effect of nonrespondents. First, the cessation rates and stages of change were projected for the entire cohort in each county using baseline variables. The results were very similar to the unadjusted rates, as shown in Table 4. Second, individuals who did not have follow-up data available were included as smokers. Using this method, the cessation rates were 6.7% in the intervention county and 4.3% in the control county ($P = 0.18$). The absolute rates and difference between them were reduced using this method, but the relative difference and statistical significance were unchanged.

In addition to cessation rates and stages of change, exposure to the interventions was also assessed. The results are shown in Table 4. Similar proportions of the population had heard of the church coalitions in both counties, while a higher percentage in the intervention (15.4%) than in the control county (9.4%) had heard of the smoking cessation program. Among individuals who said they belonged to a specific church ($n = 400$), similar proportions said someone had talked to them about diet, high blood pressure, and diabetes, but more said that someone discussed smoking with them in the intervention than in the control county.

DISCUSSION

The smoking patterns among this exclusively rural population largely mirror those of African Americans in other settings. The overall prevalence of smoking (25.8%) was lower than that reported for African Americans nationally in 1991 (29.2%) [*3*], but higher than that reported for African Americans in Virginia that year (20%) [*29*]. Interestingly, these data for Virginia were obtained using a telephone survey, and the prevalence is similar to that we obtained in the pilot study based on telephone interviews (18%). Among our in-person sample, smokers were less likely to have telephones than nonsmokers (74% vs 82%; $P = 0.001$).

Overall, the individuals who smoked began at a relatively late age, the majority smoked less than a pack per day, and most smoked menthol brands. This late-onset, low-rate, high-menthol pattern among African-American smokers has been reported from data collected from both local and national samples [*3,7,11,17, 30*].

The smoking cessation activities of the Buckingham Health Education Board have been well accepted by the community. Even though smoking was suggested as the target health problem by outsiders, coalition members quickly accepted it as an important issue when the prevalence and health effects were reviewed. The coalition has had ultimate control of the interventions from the beginning, and community ownership of the programs developed rapidly. The leaders of the coalition were aware that many of the individuals in the community at highest risk for adverse health behaviors, including cigarette smoking, were least likely to attend church. As a result, they chose an inclusive approach that attempted to reach nonattenders as well.

Less than half of the study sample attended church once a month or more, but the great majority (almost

TABLE 4

Unadjusted and Adjusted Rates of Smoking Cessation and Exposure to Interventions after 18 Months

	Unadjusted[a]			Adjusted[b]	
	Louisa	Buckingham	*P*	Louisa	Buckingham
Cessation rate (%)					
Overall	6.1	9.5	0.18	5.9	9.4
Attend church ⩾ once/month	5.9	10.5	0.20	5.0	10.6
Attend church < once/month	6.4	8.2	0.62	6.8	7.6
Stage of change (%)			0.06		
Precontemplation	46.2	40.2		44.4	41.5
Contemplation	34.4	32.1		34.5	32.7
Preparation	13.2	17.3		12.5	16.5
Action	1.9	2.9		1.8	2.8
Maintenance	4.2	6.6		4.1	6.8
Heard of church coalition group in own county (%)	41.0	46.5	0.24	39.6	43.8
Heard of ″Call It Quits″ (%)	9.4	15.4	0.06	9.4	15.9
Someone from church talked to respondent about (%)					
Quitting smoking	19.1	27.4	0.05	19.6	29.0
Diet	18.1	18.1	0.98	17.5	19.1
High blood pressure	21.8	19.9	0.64	21.8	19.3
Diabetes	16.0	14.2	0.60	15.2	14.3

[a] Unadjusted—actual rates among cohort members recontacted after 18 months ($n = 453$).

[b] Adjusted—rates projected to all cohort members ($n = 648$) using coefficients from logistic regression after controlling for baseline age, gender, marital status, church attendance, telephone in home, amount smoked, stage, and confidence is quitting.

90%) said that they belonged to a specific church. Few participated in other community groups. The black churches in these counties were small, and often met less than once a week. However, church identification was high. This factor, combined with a lack of association with other groups, confirmed the status of the church as a principal social organization among African Americans in these counties. These patterns are found throughout the rural South, and contrast with a lower rate of church identification but higher average attendance in urban areas [*31*]. The rapid acceptance of this project in the control and intervention counties seems most likely to be due to our affiliation with the church coalitions.

The smoking cessation rate was higher in the intervention than in the control county, and individuals who attended church were more likely to quit than those who did not. Both of these were in the direction that was originally hypothesized, but neither difference was statistically significant. Individuals in the intervention county were more likely to have heard of the smoking cessation program than in the control county, and more likely to report that someone spoke to them about stopping smoking. Similar proportions in both counties reported that someone talked with them about hypertension, diet, and diabetes. These topics were addressed in both counties. About the same number mentioned that someone had discussed smoking with them in the control county, even though this behavior was not specifically addressed by the project. This may have been due to a response bias, with individuals answering yes to all topics, or the health educators may have been discussing smoking without our training them. Nonetheless, the highest response rate for any condition was for smoking in the intervention county, which makes this finding likely to be valid.

Residents of the control county were less likely to attend church regularly than were those individuals who lived in the intervention county. However, the greatest difference in smoking cessation rates between counties was among those who attended church at least once a month, and these individuals noted similar exposure to other health-related programs delivered by the coalitions.

Although smoking cessation was the principal outcome measure, we also assessed progress through the stages of change. Despite a higher smoking rate in the intervention county, the baseline distribution of stages of change was similar to the control county. At follow-up, individuals in the intervention county had made significantly more progress through the stages than those in the control county. Similar findings have recently been reported from a smoking cessation program based in black churches in Baltimore [*32*].

The results of a number of larger multisite smoking cessation intervention trials have recently been reported [*33–36*]. These trials included largely white populations, and the results have been mixed. Both the COMMIT trial and the Stanford Five-City Project noted significantly higher quit rates among cohorts of smokers in the intervention than in the control sites [*33,34*]. Thus, it is possible that the difference we noted was actually due to the interventions, but that the sample size was too small and/or the follow-up period too brief to establish statistical significance. However, in addition to the small sample size and short follow-up, this study had several other limitations which render the results only speculative. First, we analyzed the data as if the individual were the unit of allocation, when we actually determined intervention status at the county level [*37*]. Thus, these results can only be considered descriptive. On the other hand, the final cohorts of smokers represented a substantial proportion (approximately 25%) of all smokers in the two counties, which would tend to decrease the variance due to the "finite population" effect [*38*]. We did not adjust the results for this effect, which would be in the opposite direction from that of utilizing a larger unit of analysis.

A second limitation is the follow-up rate of approximately 70%. Tracking members of this population, many of whom live in remote rural areas and a quarter of whom did not have telephones, proved to be quite difficult. We did develop estimates of predicted cessation rates based on baseline variables, a technique similar to that used by the COMMIT investigators [*33*], and the results were very similar to the observed rates. In addition, the cohort members who were available for follow-up were very similar in the two counties. Other smoking cessation studies have found both that cohort members who are followed are different from those who are not and that those who are followed are similar in control and intervention groups [*39*]. Thus, the results using this design may be valid for the cohort members who are followed, but may not be generalizable to the entire population.

The third limitation is the lack of biochemical confirmation of smoking cessation status. The need for such confirmation in population-based surveys has recently been questioned [*40,41*], and the COMMIT trial also did not document this information [*33*].

This study demonstrates that church coalitions can be developed to deliver health-related interventions to rural African Americans, including smoking cessation programs. Although there was no significant effect of the smoking cessation interventions on quit rates, the observed effects were in the direction postulated, and there was a significant difference in the distribution of the stages of change between the counties. This study does provide support for use of this coalition model to provide interventions to this population. One of the main goals of this project was to develop coalitions that would continue after the specific interventions described here were completed. Twelve months after

their completion both the Buckingham Health Education Board and the Louisa Alliance of Black Churches are still active, providing health promotion programs to their communities. Determining the overall impact of this model will require a larger study with a longer period of follow-up.

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