# Effectiveness of a self-help quit smoking program for African Americans

**Victor J. Schoenbach[1,2], C. Tracy Orleans[3,2], Dana Quade[4], Mary Anne Salmon[5], Charles D. Watts[6], Charles Blackmon[6], Victor J. Strecher[7], Carol Q. Porter[2]**

[1] Department of Epidemiology, School of Public Health, University of North Carolina at Chapel Hill (UNC-CH);

[2] Cecil G. Sheps Center for Health Services Research, UNC-CH,

[3] Robert Wood Johnson Foundation, Princeton, NJ and the Fox Chase Cancer Center, Philadelphia, PA;

[4] Department of Biostatistics, School of Public Health, UNC-CH;

[5] School of Social Work, UNC-CH;

[6] North Carolina Mutual Life Insurance Company, Durham, NC;

[7] Department of Health Education, School of Public Health, University of Michigan.

**Background**: This randomized trial tested a self-help smoking cessation program tailored specifically for low-middle income African American smokers.

**Methods**: During February-April 1987, North Carolina Mutual Life Insurance Company sales agents recruited 779 male and 1,238 female African American policyholders seriously thinking about quitting smoking. Sales district pairs in 12 states were randomized to Intervention or Control conditions. Intervention sales agents presented the quit smoking program to their participants, and counselors at NC Mutual telephoned a 50% random sample.

**Results**: Among 1,462 participants (72%) responding at 4, 8, and 12 months after recruitment, 6.2%, 10%, and 13%, respectively, reported 7-day abstinence from tobacco. Intervention participants were more likely to have switched brands (58% vs. 22% at 8 months), used non-smoking reminders (49% vs. 28%), and set a quit date (33% vs. 17%). The odds ratios of self-reported abstinence for Intervention versus Control were 1.7 (95% confidence interval: 1.0,2.8) at 8 months after recruitment (4 months post-intervention) and 1.3 (0.9, 1.9) at 12 months. Among Intervention participants, nonsmoking prevalence was greater in the proactive telephone counseling condition at 8 months (13.6% vs. 10.4%, p=0.18) but not at 12 months (15.0% vs. 14.6%).

**Conclusions**: Mediated self-help interventions have promise for populations with relatively low exposure to formal treatment programs.

**Keywords**: blacks, health promotion, minority health, randomized trial, self-help, smoking cessation, telephone counseling

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Address for correspondence: Victor J. Schoenbach, Department of Epidemiology, University of North Carolina, McGavran-Greenberg 2104D, Chapel Hill, NC 27599-7435, vjs@unc.edu

African American adults have a higher smoking prevalence (25.8% vs. 24.7% for U.S. adults overall), a low lifetime quit rate (37.8% vs. 49.6% for U.S. adults overall),[1] and disproportionately high rates of morbidity and mortality from tobacco-caused disease.[2] Lower socioeconomic status and restricted health care access have limited African Americans' access to effective smoking cessation resources[3-7] but not to targeted tobacco marketing.[8] African American smokers may be more likely than white smokers to make serious quit attempts, but have lower short-term success rates.[9] These findings suggest brief population-tailored self-help quit smoking interventions as potentially appealing and cost-effective strategies for assisting African American smokers to quit smoking and stay quit[3,8,10,11]. We report here a randomized, controlled trial of a culturally-appropriate self-help smoking cessation program tailored to African Americans' smoking patterns and quitting motives and barriers[3] and also evaluated brief proactive telephone counseling as an adjunct to a self-help quit smoking packet.[12-14] The trial was conducted among policyholders of the NC Mutual Life Insurance Company, the largest African American insurance company in this country.

## MATERIALS AND METHODS

### Setting

At the time of the study, nearly two-thirds of NC Mutual's individual life insurance policyholders lived in the South; substantial percentages lived in Philadelphia, Pittsburgh, Baltimore, Chicago, and Detroit. Over 95% of policies had a face value of $5,000 or less. Premiums for about four-fifths of these policies were collected during brief weekly or monthly home visits by sales agents, who typically made over 200 visits per month. NC Mutual did not offer a quit smoking benefit on existing policies.

### Quit smoking intervention

The *Quit for Life* (*QFL*) quit smoking intervention consisted of:

- an introductory *QFL* brochure designed to portray quitting in a positive light;
- the American Lung Association's just released multi-ethnic quitting guide, *Freedom from Smoking® for You and Your Family*[15], which offers a comprehensive motivational and behavior change program including a simplified nicotine fading (brand switching) procedure[16];
- four *QFL* tip sheets with key points from the guide, for posting on the refrigerator;
- a "quit kit" containing refrigerator magnets and other items designed to serve as concrete compliance cues and aids[17];
- an invitation to call the "*QFL* Advisor" at the NC Mutual home office (toll-free);
- for half of the intervention group, two short proactive telephone counseling calls from an African American quit smoking counselor at the home office, to facilitate adherence to the self-quitting program by providing encouragement and support appropriate to the quitter's stage of quitting[18] and by helping participants identify and overcome their personal quitting barriers[12].

The *QFL* materials were tailored to the modal smoking pattern of African American smokers (low daily smoking rate; high nicotine/menthol brands) and addressed the most salient quitting motives and barriers and cultural themes identified in focus groups and a survey of African American smokers[6]. The materials were written at a fifth-grade level, featured photovignettes employing exclusively Black peer models, and were extensively pretested for appeal and ease of comprehension.

### NC Mutual sales agents as intermediaries

NC Mutual sales agents recruited participants, presented the quitting program, and collected participant data at recruitment and three follow-ups. At the time of the study, NC Mutual had approximately 500 sales agents, organized into 36 sales districts in four regions. Based on a survey (N=372, 55% male, median age 38 years, all African American) at the time they received training for recruitment, 32% of agents were current smokers, and 22% were ex-smokers.

Project staff and NC Mutual's Training Director conducted home office and regional training sessions for district managers, who in turn led training sessions in their districts according to training manuals. Standardized training emphasized guarantees, signed by all agents, that nothing about the study – participation, refusal, or any information obtained – would affect anyone's insurance policy or premium and that all

information for the study was confidential. All agents, Intervention and Control, were instructed not to offer any smoking cessation assistance or advice. Following randomization, agents in Intervention districts received additional training in how to present the quitting program at the end of the 4-month follow-up visit and to provide encouragement (but not counseling) at a "reinforcement visit" about six weeks later. Agents and their managers received small monetary payments ($5 to $10) and/or sweepstakes entries for $50 prizes for recruiting eligible policyholders and delivering and returning questionnaires.

**Experimental design and recruitment procedures**

The design and timeline of the study appear in Figures 1 and 2. Each of the approximately 400 experienced sales agents was instructed to recruit three male and three female policyholders who smoked cigarettes, wanted to quit, and planned to try to quit in the next year, for a "study of how Black smokers quit on their own" and not to mention that an intervention was to be tested. Participants (one per household) had to be age 21 years old, able to read well enough to complete the baseline questionnaire without much help, and likely to maintain their policies, live in the district, and be willing to participate in the study for the next year. Participants signed a consent statement affirming that they understood the recruitment brochure, which promised "complete confidentiality" and "absolutely no effect on your insurance rates or coverage". The brochure informed prospective participants that "we may give you some things to read and ask your opinions" and "we may call to ask you some questions or talk with you over the phone for a short time". Recruitment materials and Control subject questionnaires made no other mention of the planned interventions or the randomization in order to avoid intentional postpostment of quitting that may occur among prospective quitters who anticipate receiving assistance. All procedures were approved by the UNC School of Public Health Institutional Review Board.

**Randomization**

NC Mutual's four regional directors paired sales districts as if for a sales competition, considering such factors as geographic location, numbers of agents and sales managers, management style, and overall district performance. One district in each pair was randomly assigned to the Intervention condition through a procedure that ensured that the number of Intervention participants and Control participants would differ by fewer than 10% within each region. After the date for Intervention district agents to deliver the *QFL* materials, Intervention participants were individually randomized to receive telephone counseling calls ("Active Counseling") or only the invitation to call the *QFL* Advisor ("Passive Counseling"). (Figure 1) The quitting program was made available to Control participants after the 12-month follow-up.(Figure 2)

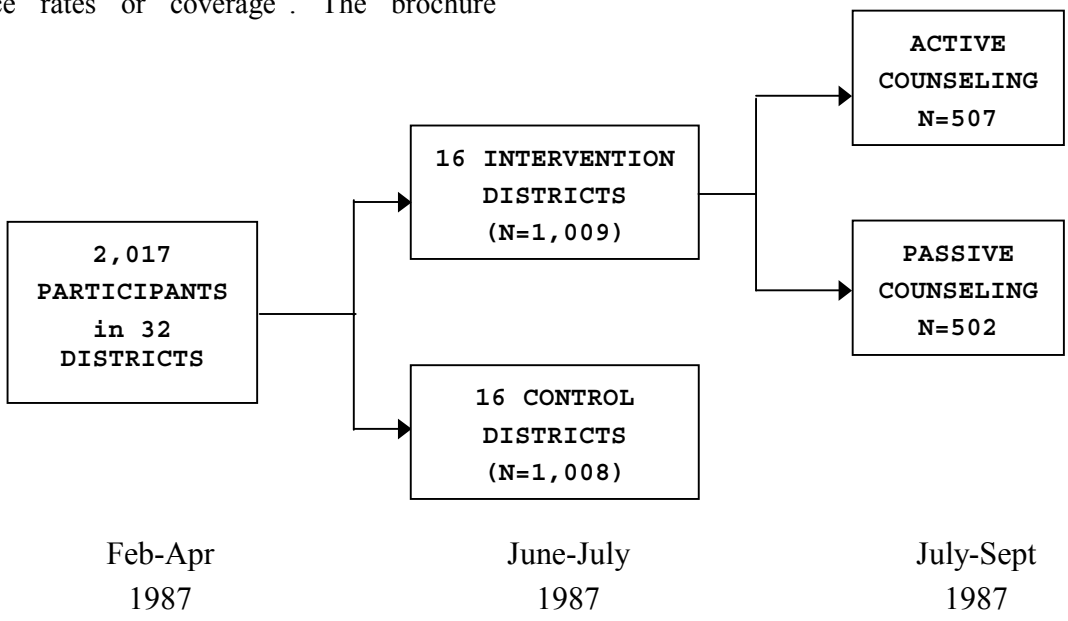


**Figure 1. Study design**

**Data collection**

The baseline questionnaire contained 53 variables related to smoking and quitting history, current tobacco use patterns, nicotine dependence[19], desire to quit, confidence in ability to quit, physical and emotional well-being, perceived stress, smoking-related physical symptoms and chronic conditions, pros and cons of smoking[20], and social support. Standard measures recommended for self-help treatment trials[21] were used where possible.

Sales agents recorded the Uniform Product Code (UPC) for the participant's usual cigarette brand, for identification of brand characteristics including nicotine content as reported by the Federal Trade Commission and other sources. Follow-up questionnaires covered smoking status and important pre-quitting behaviors and quitting precursors[12,21]. All questionnaires were extensively pretested for readability and ease of self-administration.

Agents delivered and retrieved the baseline questionnaire at the time of recruitment and the follow-up questionnaires in three waves, at 4, 8, and 12 months after recruitment. (In the Intervention districts, the quitting guide was presented when the 4-month questionnaire was retrieved, so that the 4-month questionnaire represents a pre-intervention assessment.) Participants signed the front of the 8- and 12-month questionnaires to acknowledge receipt of an accompanying "Guarantee of Confidentiality" reaffirming the assurances of confidentiality, no effect on insurance, and no obligation, and adding that if the participant was chosen to give a saliva sample, it would be tested only for nicotine and not for alcohol, drugs, or anything else. Additional data came from brief questionnaires asked by Intervention agents at the six-week "reinforcement visit" and from counseling protocols completed during or after each call initiated by the telephone counselor.

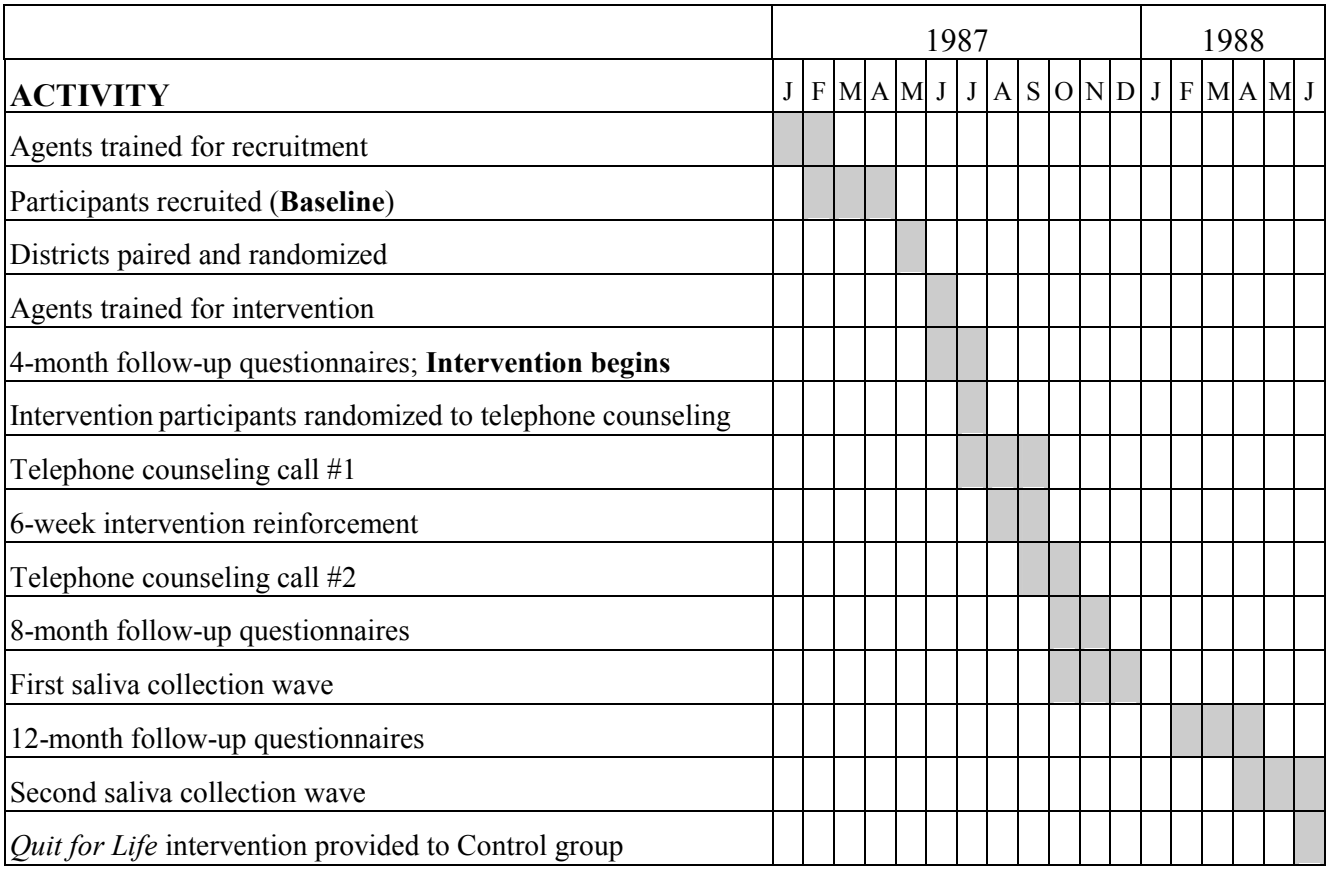


**Figure 2. Timeline of study activities**

**Outcome assessment**

Recommended methods for assessing smoking cessation[21-23] were employed, and are presented in detail[24]. The primary outcome variable was self-reported abstinence from tobacco, defined as a response of "no" to the NCI standard item "Have you smoked a cigarette, even a puff, during the past 7 days?"[21] with no use of other forms of tobacco in the past month. In order to incrase reporting veracity by means of a "bogus pipeline" (respondent tendency to acknowledge behaviors that will be detected anyway[25,26], each follow-up questionnaire began: "Smoking leaves nicotine in your body. If we need a saliva sample to measure your nicotine, what is the best time to call for an appointment?" An independent contractor attempted to collect saliva specimens after the 8- and 12-month follow-ups from a subset of participants chosen by the study coordinator. Specimens were analyzed together under the direction of Dr. Nancy Haley at the American Health Foundation.

**Statistical analysis**

Differences between Active and Passive groups were evaluated with Wilcoxon, Cochran-Mantel-Haenszel, and multiple logistic (PROC LOGISTIC) tests using SAS (version 6.04). Randomization tests based on the exact group randomization procedure were conducted for quit rate comparisons between Intervention and Control districts. To control for possible confounding in estimating treatment effects on quitting, we compared crude odds ratios with those from multiple logistic regression models with a binary treatment variable and as many as 18 baseline variables that were associated with both intervention assignment and quit status. The crude and final models were then fit with SAS PROC MIXED (version 6.12,)[29], using the GLIMMIX macro (version 6.12) and a random intercept for sales district, to account for intracorrelation within sales districts. All p-values are two-sided.

## RESULTS

**Baseline characteristics**

By the mid-April 1987 cut-off date, 357 agents had enrolled 2,017 eligible participants (61% female, median age 40 years). Most had completed high school (64%), were employed full-time (55%), and reported household incomes of less than $15,000 per year (57%). In general, participants' sociodemographic characteristics, smoking habits, and quitting history were similar to those of smokers responding to a national survey of NC Mutual policyholders conducted the previous year[6]. Most participants were low-rate smokers (median of 15 cigarettes / day), preferred high nicotine/menthol brands, began smoking within 30 minutes of arising (a measure of nicotine dependence – see reference 30), had tried to quit in the past year, reported high interest in quitting in the next 6 months, thought it would be very hard for them to quit for good, and lacked confidence in their ability to do so. About half reported at least one other smoker in the household; fewer than half expected "very much" social support or help in quitting.

There were only modest differences between Intervention (N=1,009) and Control (N=1,008) groups in education, household income, full-time employment, nicotine dependence, quitting history, serious intent to quit within 6 months, very strong desire to quit, high self-efficacy, health worker advice to quit, and smoking-related symptoms (Table 1 and data not shown). Active Counseling and Passive Counseling groups were highly similar.

**Follow-up**

Four-month (pre-intervention) questionnaire response rates were higher for Intervention participants (96%) than for Controls (86%), probably due to the greater interest in and incentive payment for delivery of the QFL materials. Questionnaire completion rates at 8 months (80%) and 12 months (89%) did not differ by condition. Except where noted, analyses reported are restricted to the 72% of participants (1,462) who responded to all three follow-ups (74% for Active Counseling, 76% for Passive Counseling, and 70% for Control).

Baseline characteristics differed little by response status (respondents to all three follow-ups versus others): mean cigarettes per day (15.2 versus 15.7), 24-hour quit in past year (66% vs. 72%), very strong belief in health benefits of quitting (61% vs. 57%), expected

number of serious problems in quitting (1.5 vs. 1.4), expected help in quitting (7.1 vs. 6.6 on an 11-point scale), number of people who would help in time of trouble (7.0 vs. 6.4), self-perceived health status (27% vs. 31% "fair" or "poor"), report of a smoking-related chronic disease (30% vs. 34%), and even smaller differences for 50 other baseline variables.

**Table 1. Baseline characteristics of participants in North Carolina Mutual *Quit for Life*, 1987, by Intervention versus Control**

| Characteristic (N)* | Intervention (1,009) % or median | Control (1,008) % or median |
|---|---|---|
| DEMOGRAPHIC | | |
| Gender - female | 62 | 60 |
| Age (median years) | 40 | 41 |
| Married (currently) | 38 | 36 |
| Education - completed high school | 62 | 67 |
| Income - greater than $15,000 | 40 | 46 |
| Employed full-time | 52 | 59 |
| SMOKING | | |
| Smoking rate - median cig./day | 15 | 15 |
| Brand nicotine content < 0.7 mg | 16 | 17 |
| Uses other tobacco | 11 | 11 |
| Smokes within 30 minutes or arising | 72 | 65 |
| Health worker advice to quit | 31 | 26 |
| At least 3 lifetime quit attempts | 55 | 57 |
| Quit for 24 hours in past year | 65 | 71 |
| Serious about quitting in 6 months | 84 | 77 |
| Wants to quit "Very much" (10 on 0-10 scale) | 58 | 53 |
| "Extremely confident" (10 on 0-10 scale) will be nonsmoker in 6 months | 33 | 28 |
| How difficult to quit – "very hard" | 35 | 36 |
| Has tried quit-smoking books | 8 | 8 |
| SOCIAL SUPPORT | | |
| Has a non-smoking spouse | 30 | 29 |
| Smoker in household | 51 | 47 |
| How much help expect – "Very much" | 41 | 43 |
| Contact with smokers – None/few | 19 | 18 |
| Have someone to go to if worried Always or most of the time | 58 | 60 |
| Has 2 or fewer people who will help in time of trouble | 35 | 31 |

* Maximum of 7% of observations missing for any item, in either intervention or control group.

**Intervention ratings**

Eighty-nine percent of Active Counseling participants said that their sales agent had gone over the quitting materials with them. About half of all respondents to the six-week reinforcement visit questionnaire said they had put up at least one refrigerator tip sheet; 74% said they had begun the nicotine-fading procedure or quit at least for a while. High percentages rated the tip sheets (84%, 81%, 78%, 77%, respectively, for the four tip sheets) and Quit Kit items (83%) as "somewhat" or "very" helpful. At 8-month follow-up, 60% of Intervention participants said they had used *QFL* materials "Some" or "A lot" (versus "Not at all" or "A little"), and about 70% rated them as providing "Some" or "Very much" help.

At least one acceptable counseling call was completed with 59% of the 507 Active Counseling participants (two calls with 44%). The major obstacles were telephone number problems (no home telephone, wrong number, disconnected: 110), inability to reach the participant on at least three attempts (54), and ineligibility at baseline (22). Participants who could not be reached (all were retained in the analysis) were younger on average, disproportionately male, and less likely to have switched to lower tar/nicotine brand; they consumed alcohol more often and belonged to fewer clubs. The great majority of Active Counseling participants who received a call said that the QFL Advisor was "pretty helpful" (30%) or "very helpful" (54%). The QFL guide's general invitation to call the toll-free Quitline did not prompt calls from participants.

**Pre-quitting and quitting behaviors**

Intervention participants were much more likely to report that they switched brands (58% versus 22%), used non-smoking reminders (49% versus 28%), set a quit date (33% versus 17%), used nicotine gum (18% versus 10%), and talked with a sales agent about quitting (82% versus 59%) (Table 2: percentages are for the 8-month follow-up; 12-month follow-up results were similar). As expected, Intervention participants were much more likely to report having used a quit-smoking book or guide (50% versus 8%). Within the Intervention group, Active Counseling participants were significantly more likely than Passive Counseling participants to report brand switching (62% versus 55%, p=0.040 at 8-month follow-up, 59% versus 50% at the 12-month follow-up, p=0.008), using non-smoking reminders (53% versus 45%, p=0.028), and setting a quit date (39% versus 29% at 8-month follow-up, 48% versus 33% at 12-month follow-up, $P < 0.005$ for both).

**Table 2. Pre-quitting and quitting actions reported at 8 months follow-up, North Carolina Mutual *Quit for Life*, 1987-1988, by Intervention versus Control**

| Action reported at second follow-up (N) | Intervention group (757) % | Control group (705) % | P-value* |
|---|---|---|---|
| Cut down cigarettes/day | 87 | 81 | 0.023 |
| Switched to a lower tar or nicotine brand | 58 | 22 | <0.001 |
| Used non-smoking reminders | 49 | 28 | <0.001 |
| Set a definite quit date | 33 | 17 | 0.007 |
| Used nicotine gum | 18 | 10 | <0.001 |
| Talked about quitting with family, friends, or co-workers | 77 | 69 | 0.080 |
| Talked with NC Mutual agent about quitting | 82 | 59 | <0.001 |
| Went to a quit-smoking clinic or program | 1 | 3 | 0.021 |
| Used a quit-smoking book or guide | 50 | 8 | <0.001 |
| Asked a doctor or nurse about quitting | 14 | 16 | 0.278 |

* From GLIMMIX macro, ver. 6.12, SAS Institute, Inc.

**Quitting outcomes**

Overall, 6.2%, 9.5%, and 13% of participants reported tobacco abstinence at the pre-intervention 4-month, the post-intervention 8-month, and the concluding 12-month follow-ups, respectively (Table 3). During each four month interval, about 6%-7% of smokers quit and 32% of abstainers relapsed. Intervention participants had higher self-reported abstinence rates than did Control participants. The 12.0% overall Intervention quit rate at 8 months was approximately 75% greater than the 6.8% rate for Controls. In the multilevel (PROC MIXED) analysis, the Intervention-Control odds ratio was about 1.7 (95% confidence interval 1.0-2.8) without covariables (p=0.05 [randomization test p=0.07]) and 1.8 (1.0-3.2) with 11 covariables in the model. At 12 months, the 14.8% overall Intervention quit rate was 32% greater than the 11.2% for Controls. The odds ratio from the multilevel logistic model was about 1.3 (0.9-1.9) without covariables (p=0.19 [randomization test p=0.13]) and 1.2 (0.8-1.9) with 17 covariables.

Quit rates in the Active Counseling condition exceeded those in the Passive Counseling condition by a relative 31% (13.6% vs. 10.4%, p=0.18) at 8 months but by only 3% at 12 months. This "intention-to-treat" analysis, however, is limited by the substantial proportion of Active Counseling participants who could not be counseled and who quit at lower rates (11.3% at 8 months; 10.0% at 12 months) than did participants who were counseled (15.2%, p=0.288; 18.3%, p=0.027). In multiple logistic analyses to control for predictors of quitting associated with whether or not Active Counseling participants were counseled (covariables with p>0.40 in a full model were removed to reduce the number of observations dropped due to missing data) showed that receiving telephone counseling, compared to being in the Passive Counseling condition, was associated with a higher quit rate at 8 months (15.2%, multiple logistic odds ratio (OR)=1.56, p=0.100), but not at 12 months (18.3%, OR=1.05, p=0.835).

**Verification of self-reported abstinence**

Despite various measures to allay concerns as well as monetary incentives for both the sales agent (to facilitate the appointment) and the participant, the contractor was able to obtain specimens from only 31% of Intervention and 31% of Control participants reporting nonsmoking from whom collection was attempted (at either follow-up). Cotinine levels above 20 ng/ml were found for 18% (14/80) of the participants who reported abstinence both at follow-up and again at the time of sample collection.

Results from the bogus pipeline strategy were also disquieting. The proportion of "cooperative" responses (e.g., "evenings", "weekends", as opposed to "none", "don't call", or no response at all) to the request for a time to call to arrange a saliva collection appointment declined from 87%, to 75%, to 64% across the 4-, 8-, and 12-month follow-ups. The proportion was lower among Controls and markedly lower among participants reporting abstinence. At the 12-month follow-up, when the differences were greatest, the proportions providing a time to be called were 75%, 58%, 58%, 38% for, respectively, Intervention nonquitters, Control nonquitters, Intervention quitters, and Control quitters). Reported quit rates for participants not providing a time to be called for saliva collection were approximately double those for participants who did, suggesting strong social desirability response bias.

For these reasons, we recomputed the main results after excluding from the analysis self-reported abstainers who did not indicate a time to be called for a saliva collection appointment. These quit rates for Active counseling, Passive counseling, and Control conditions were, respectively, 5.0%, 3.5%, 3.5% at the 4-month (pre-intervention) follow-up, 9.8%, 7.1%, 3.7% at the 8-month (post-intervention) follow-up, and 9.9%, 8.4%, and 4.4% at the 12-month follow-up (Table 3). The PROC MIXED multiple logistic odds ratio comparing Intervention participants to Controls was 2.4 (p=0.001 [randomization test p=0.002]; 95% confidence interval: 1.4-4.1) at the 8-month follow-up. However, at the 12-month follow-up the Intervention-Control odds ratio weakened from 1.9 in a crude PROC MIXED analysis to 1.6 in the analysis controlling for baseline differences. Reported quit rates for those who actually received telephone counseling were higher (11.6% at 8 months, 13.3% at 12 months) than for those who did not (7.0%, p=0.148 and 4.9%, p=0.010, respectively). Multiple logistic analyses comparing participants who received counseling to those randomized to the Passive Counseling condition yielded odds ratios of 2.0 (p=0.036; 1.0-3.6) at 8 months and 1.4 (p=0.262; 0.8-2.7) at 12 months when the self-reported abstainers not providing a time to be called were excluded.

**Table 3. Self-reported abstinence by treatment group at 4-, 8-, and 12-month follow-up in North Carolina Mutual *Quit for Life*, 1987-1988**

| | | Intervention | | | | |
|---|---|---|---|---|---|---|
| | Total | Active counseling | Passive counseling | Control | Odds ratio | 95% CI* |
| | % | % (#) | % (#) | % (#) | | |
| Participants responding to all follow-ups (N): | (1,462) | (374) | (383) | (705) | | |
| First follow-up (4 months) | 6.2 | 8.3 (31) | 5.5 (21) | 5.4 (38) | | |
| Second follow-up (8 months) | 9.5 | 13.6† (51) | 10.4 (40) | 6.8 (48) | 1.8 | 1.0, 3.2 |
| Third follow-up (12 months) | 13.1 | 15.0‡ (56) | 14.6 (56) | 11.2 (79) | 1.3 | 0.9, 1.9 |
| Excluding self-reported abstainers not giving a time to call for a saliva appointment (N§): | (1,365) | (353) | (357) | (655) | | |
| First follow-up (4 months) | 3.9 | 5.0 (18) | 3.5 (13) | 3.5 (24) | | |
| Second follow-up (8 months) | 6.1 | 9.8 (35) | 7.1 (26) | 3.7 (25) | 2.4 ¶ | 1.4, 4.1 |
| Third follow-up (12 months) | 6.9 | 9.9 (35) | 8.4 (30) | 4.4 (29) | 1.6 | 0.7, 3.5 |

* OR and 95% confidence interval from logistic model with a binary treatment variable (Intervention vs. Control) and all covariables (see text), fit using GLIMMIX 6.12, SAS Institute

† P=0.18 compared to Passive Counseling (by chi-square); 14.5% among respondents who received both counseling calls

‡ 18% among respondents who received both counseling calls

§ Respondents who either gave a time to be called or did not report abstinence; these numbers are lowest at the third follow-up (shown here), as the number of people who provided a time declined with each follow-up.

¶ p=0.0013 for $H_0$: OR = 1.0 versus $H_A$: OR ≠ 1.0

## DISCUSSION

The strength of evidence for the effectiveness of the interventions, particularly in respect to abstinence, is tempered by potential attrition bias, likely overreporting of abstinence, and the possibility of delayed quitting by the Control group. Although 28% of participants lacked one or more follow-up questionnaires and non-response was 20% at the follow-up with the strongest intervention effect (8 months), baseline differences between subjects with all follow-ups and those with fewer were generally small, suggesting that loss to follow-up reflected agent, rather than participant factors. Also, 12-month quit rates among the 89% of Intervention and 88% of Control participants who responded to that follow-up (14.8%, 14.3%, and 12.1% for Active Counseling, Passive Counseling, and Controls, respectively) were very similar to 12-month quit rates for participants who completed all follow-up questionnaires.

Our multiple strategies to overcome the formidable barriers to saliva specimen collection in community-based studies[11,22,31] did not, unfortunately, succeed. The need for biochemical verification in self-help/minimal intervention studies in adults has been questioned[11,22], due to the relatively low demand characteristics of such

studies. Recruitment and follow-up by sales agents may have introduced a demand characteristic, however, since we observed an 18% disconfirmation rate in the highly selected sample providing saliva specimens and much higher reported quitting among participants who did not provide a time to be called for a saliva collection appointment. While the low proportion of reported abstainers providing saliva specimens weakens the findings with respect to abstinence, it seems unlikely that differential overreporting by condition accounts for the observed Intervention effect, since (a) failure to provide a time to be called was more common among Control participants, and (b) excluding participants not giving a time to be called increased, rather than decreased, the quit rate difference. Other studies in minority populations[28] have also reported substantial refusal and disconfirmation rates in both Intervention and Control groups, though Voorhees et al.[32] biochemically confirmed 70% of self-reported quitters.

Finally, even if the higher quit rates in the Intervention groups were due neither to chance, attrition, nor misreporting, the possibility remains that Control participants postponed quitting if they were expecting and waiting to receive quitting assistance. Consistent with this possibility, 66% and 75% of Control participants, respectively, responded affirmatively to 12-month questionnaire items "Did you expect to get information about quitting from *QFL*?" and "Did your agent tell you that you would get information about quitting from *QFL*?". Also consistent with a "wait-list" effect, Control participants who said they expected to receive quitting information were in fact less likely to report abstinence at the 8- or 12-month follow-ups. However, a similar difference occurred for Intervention participants, who had no reason to wait. Also, Control (and Intervention) participants who said they expected information were more likely to report having made two or more quit attempts by their 8-month follow-up and were equally likely to report having quit for 24 hours. Thus the evidence for a "wait-list" effect is weak.

The balance of evidence suggests that the interventions prompted pre-quitting and quitting actions, which is significant since smoking cessation is a "process" rather than an "event"[22,23]), and abstinence, at least temporarily. Proactive telephone counseling calls appear to have amplified or accelerated the effect of the basic intervention. Although the significant differentials in self-reported abstinence associated with the intervention appeared to erode between the 8-month and 12-month follow-ups, this erosion may have been due to overreporting of abstinence by Controls and in any case was not due to greater relapse among Intervention quitters.

The 1996 Agency for Health Care Policy and Research smoking cessation clinical practice guideline[14], based on a meta-analysis of controlled intervention studies, concludes that self-help materials alone are unlikely to be effective. However, very few such studies have been carried out among African American populations with relatively low exposure to preventive health care services. The difference in populations and the involvement of a mediator with whom the prospective quitter has a relationship may account for the positive results observed here.

Proactive telephone counseling has been found generally to boost self-help program effectiveness[13,14], but the difficulty in reaching participants by telephone that we and others[11] encountered remains a significant obstacle for its use in low income populations. In addition, the minimal treatment afforded by brief telephone counseling may have less impact in populations with higher levels of nicotine addiction, economic and psychosocial hardships, and dysphoria[33,34]. Smokers in these situations may require more intensive interventions, perhaps involving personalized motivational or supportive counseling from a health care provider and/or nicotine replacement therapy,[14,35-37,39] if not improvement in life circumstances.

## CONCLUSION

The present study indicates that mediated minimal treatment interventions employing tailored self-help guides may advance the smoking cessation process in underserved populations and that limited telephone counseling may enhance the effect. Results also underscore the methodological challenges in conducting population-based intervention research in underserved, low-income groups. Additional research is needed both to explore more effective methods for reaching and assisting African American smokers – perhaps through minimal contact and self-help treatments mediated by health care providers or lay leaders in church or community-based organizations – and to develop methods of obtaining accurate measures of smoking status in population-based trials.

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