Characteristics of Six-Month Tobacco Use Outcomes of Black Patients Seeking Smoking Cessation Intervention

Anita F. Fernander, PhD
Christi A. Patten, PhD
Darrell R. Schroeder, MS
Susanna R. Stevens, BS
Ivana T. Croghan, PhD
Kenneth P. Offord, MS
Richard D. Hurt, MD

Abstract: Although Blacks experience disproportionately greater morbidity and mortality attributable to smoking than other racially-classified social groups, few studies have examined the impact of clinical interventions for nicotine dependence within this population. The main objective of this study was to examine 6-month outcomes among 146 self-identified adult Black patients who received an individually-tailored nicotine dependence intervention in an academic medical setting. Measures included a baseline demographic questionnaire and telephone follow-up to obtain self-reported 6-month tobacco use status. Univariate analysis was performed to assess the association of baseline patient characteristics with tobacco abstinence at 6 months following the clinic intervention. Of the 146 patients, 83% were seen in an outpatient clinic setting, while 17% were seen as inpatients in the hospital. At baseline, 53% reported smoking an average of 20 or more cigarettes per day, 32% were highly nicotine dependent, and 53% were in the preparation or action stage of change. Six months following the intervention, the 7-day point-prevalence tobacco abstinence rate was 43/146 (29%; 95% C.I. 22% to 37%). An individualized nicotine dependence intervention conducted in an academic medical setting yielded encouraging abstinence rates for Black smokers.

Key words: Black smokers, tobacco abstinence, clinical intervention, nicotine dependence.

Although overall smoking prevalence among Black adults is similar to that of Whites,[1] rates of tobacco-caused morbidity and mortality continue to be highest among Blacks of all racially-classified social groups (RCSGs).[4–7] Reducing

ANITA FERNANDER *is an Assistant Professor at the Department of Behavioral Science in the College of Medicine of the University of Kentucky and can be reached at afern2@uky.edu.* ***CHRISTI PATTEN*** *is an Associate Professor of Psychology in the Department of Psychiatry and Psychology at the Mayo Clinic in Rochester, Minnesota, where* ***DARRELL SCHROEDER*** *is an Assistant Professor of Biostatistics,* ***SUSANNA STEVENS*** *is a Master Statistician,* ***IVANA CROGHAN*** *is an Associate Professor of Medicine,* ***KENNETH OFFORD*** *is a Biostatistician and* ***RICHARD HURT*** *is a Professor of Medicine. Drs. Patten, Croghan, and Hurt are all affiliated with the Nicotine Dependence Center at the Mayo Clinic.*

tobacco use among Blacks is vitally important in decreasing disease and illness disparities between Blacks and Whites. However, while Blacks typically endorse more confidence in being able to stop smoking and are more likely to try to stop smoking than Whites, they are less likely to be successful at achieving long-term smoking abstinence.[8–11]

Interventions for nicotine dependence conducted in a medical setting can increase an individual's likelihood of attaining smoking abstinence.[12,13] Of the few published studies that have examined tobacco abstinence rates following behavioral and pharmacological intervention for nicotine dependence among Blacks, findings have ranged from clinical insignificance to quit rates as large as 22.5% at 10 weeks.[14–16] Of these studies, none were reported to be individually tailored to the patient's needs. The clinical practice guideline suggests that tobacco dependence interventions should account for diverse patient characteristics (e.g., sex, hospitalized vs. nonhospitalized, level of nicotine dependence, stage of change, and medical and psychiatric comorbidity) and patients should be provided with comprehensive options to enable them to achieve success in quitting, including both pharmacotherapy and behavioral therapies.[13]

This study examined tobacco abstinence rates among Blacks 6 months after receiving an individually tailored nicotine dependence intervention. It was hypothesized that abstinence rates following the clinical intervention would exceed rates from previously published studies examining abstinence rates among Black smokers. We also provide descriptive baseline patient characteristics and examine whether these were associated with tobacco abstinence at 6 months.

Methods

Mayo Clinic Nicotine Dependence Center intervention. The Nicotine Dependence Center (NDC) treatment model is a comprehensive intervention that combines behavioral, addiction-related, and pharmacologic approaches.[1,21] The intervention consists of one brief session that lasts between 45 and 60 minutes. The intervention is provided in an individual format by a Master's-level trained counselor. Patients complete a comprehensive tobacco use questionnaire prior to the intervention. The questionnaire assesses such items as age of tobacco use initiation, number of years of tobacco use, previous quit attempts, average number of tobacco products used per day, brand and type of tobacco product used, time of day of most frequent tobacco use, and length of period after awakening of first tobacco use. The counselor assesses the patient's degree of nicotine dependence and stage of change. The Fagerström Test for Nicotine Dependence (FTND) is used to assess nicotine dependence.[17] Stages of change for smokers include precontemplation (the period of time before an individual is even thinking about changing), contemplation (when behavior change is in the near future but no action is taken), preparation/action (when there are plans for change in the next 30 days and attempts at change have been made or the first 6 months after the desired change has been made), and maintenance (the period when the behavior change is maintained beyond 6 months).[18] Based on the intervention, a treatment plan individualized to

the patient's inpatient/outpatient status, specific needs (e.g., medical, psychiatric comorbidities), nicotine dependence, and stage of readiness is then developed by the counselor. The counselor recommends behavioral strategies, such as limiting places or times where the patient uses tobacco, and chemical dependence strategies, such as taking one day at a time to control urges and cravings. However, the intervention is not culturally tailored. If patients are ready to set a stop date (preparation or action stages of change) pharmacological therapies are routinely recommended, unless contraindicated. If pharmacologic therapy is indicated, the patients' physician facilitates prescribing those medications. During the time period studied, the pharmacological therapies recommended by the NDC were the nicotine patch, nicotine gum, or buproprion. Only local patients who are interested and ready to set a stop date are scheduled for a post-intervention outpatient session with a nicotine dependence counselor (approximately 10% of all patients). Of this 10%, very few (6–7%) actually attend the consultation and attend an average of three sessions after the initial consultation.[2] During the study time period, data on the type of interventions recommended and whether patients followed through with the recommendations were not entered into the electronic databases.

Outcome assessment consists of telephone calls at one, three, and six months following the initial consultation by trained interviewers who are not associated with provision of the intervention. To obtain six-month outcome, up to three contact attempts are made for each patient. For the first two attempts, if an answering machine is reached, or if someone other than the patient answers and the patient is not available, a simple message is left requesting that the patient return the call using a toll free number. In order to protect patient confidentiality, the message does not include any information identifying the Mayo Clinic or the NDC. The patient's self-reported tobacco use status is obtained at each contact. Although no specific advice or counseling is provided to patients during the call, encouragement and support to maintain abstinence or to make another stop attempt is provided. The information collected on the patient's self-reported tobacco use status six months after the nicotine dependence intervention is maintained in a database. However, because of changes in programming and staffing, not all patients who form the basis of this report were contacted at the six-month follow-up; thus, database follow-up information was somewhat inconsistent across subjects (this is addressed in further detail below). Biochemical confirmation of smoking status was not obtained.

Patients. This study was approved by the Mayo Clinic Institutional Review Board. It included 146 self-identified Black smokers who were 18 years of age or older who received an initial nicotine dependence consultation from the Mayo Clinic NDC between April 1988 to September 2000. Patients are seen either as inpatients or outpatients attending the NDC. The patients were identified by use of a cross-referencing procedure conducted between an existing NDC database of patients seen by the NDC staff and the Mayo Clinic registration database. All NDC patients who self-identified as Black in the Mayo Clinic registration database were considered. Patients were excluded if they denied general research authorization for use of their medical records for research (1 patient was excluded for this reason). The majority of the patients were from the urban Midwest.

Procedures. Due to inconsistent 6-month follow-up information in the existing database, study patients were sent a tobacco use follow-up survey in the fall of 2001 (anywhere from 1 to 13 years following their initial consult; among survey respondents, the median time from NDC consult to follow-up was 5.8 years (interquartile range 3.7 to 8.8 years; range 1.5 to 13.3 years). The follow-up survey assessed current tobacco use as well as demographic and tobacco use information relevant to the time the patient was seen at the NDC. For information relevant to the time the patient was seen at the NDC, the data collected via the baseline questionnaire were used when available and the data collected via the follow-up questionnaire were used to fill in missing information.

Survey. All subjects were mailed an introductory letter with the survey. Patients were instructed to return the survey using a postage-paid envelope. Telephone follow-up was attempted for all patients who did not respond to the mailed survey. The telephone interviewer followed a structured interview form that incorporated the assessments and questionnaires included in the mailed survey; the subject's verbal responses were recorded.

Tobacco use status at six months following the NDC consult and current tobacco use status were assessed in the follow-up survey. Additional information was also collected regarding tobacco use and demographics at the time participants were seen at the NDC, including whether they smoked menthol cigarettes, state of residence, self-report of urban vs. rural residence, self-report as to whether the patient resided in a racially segregated or a racially integrated neighborhood, level of education, and whether the patient was a native-born U.S. citizen.

Tobacco use outcome. Self-reported seven-day point-prevalence tobacco abstinence at six-months following the NDC intervention was the primary treatment outcome. Patients with six-month follow-up information available in the NDC database were considered abstinent from tobacco if they self-reported no tobacco use for the seven-day period prior to the follow-up contact. This definition of point-prevalence abstinence is consistent with recent consensus statements from the Society for Research on Nicotine and Tobacco Subcommittee on Abstinence Measures.[19] The six-month outcome has become the standard for assessing intervention effects in smoking cessation clinical trials.[19] For patients with missing information in the NDC database, six-month outcome information was obtained from the follow-up survey. Patients were considered abstinent at six months if they answered *no* to the question *Were you smoking at six months after your consultation with the Nicotine Dependence Center counselor?* Among patients with six-month abstinence information available from both the NDC database and the follow-up survey (n=35) the overall percentage agreement between the two abstinence measures was 80% (kappa=0.60, 95% C.I. 0.34 to 0.85). Patients who had missing information in the NDC database and who did not complete the follow-up survey (due to inability to contact or refusal to participate) were classified as using tobacco for the 6-month outcome.

Data analyses. The sample size (n=146) for this investigation was based on the number of self-identified adult Black tobacco users who received a nicotine dependence consultation between April 1988 and September 2000. An initial logistic

regression analysis was performed to confirm that the rate of tobacco abstinence at six months following the NDC consultation did not change over calendar time. For this analysis, tobacco abstinence at six months was the dependent variable and calendar date of NDC consultation was the independent variable. After verifying this assumption, additional univaritate analyses were performed to assess the association of baseline patient characteristics with tobacco abstinence at six months following the NDC consultation. With characteristics defined categorically, as presented in Table 1, the tobacco abstinence rate at six months following the NDC consultation was compared across groups using an exact test. To assess the potential influence of classifying patients with missing data as smokers, this analysis was repeated with these patients excluded.

Table 1.

UNIVARIATE ANALYSIS OF CHARACTERISTICS ASSOCIATED WITH ABSTINENCE FROM SMOKING 6 MONTHS FOLLOWING NICOTINE DEPENDENCE INTERVENTION

Characteristic	N	Tobacco abstinence[a] (%)	p-value[b]
OVERALL	146	29 95% C.I. 22 to 37	
DEMOGRAPHICS			
Age at consultation (years)			.650
<40	43	28	
40–49	45	24	
50–59	26	31	
60+	32	38	
Sex			1.000
Male	74	30	
Female	72	29	
Residence at consult[c]			1.000
Segregated	12	42	
Integrated	56	38	
Marital status			.681
Single	31	23	
Married or living with someone	76	32	
Widowed, divorced, or separated	33	30	
Education			.449
Less than high school graduate	61	26	
High school graduate or more	72	33	

(Continued on p. 418)

Table 1. *(continued)*

Characteristic	N	Tobacco abstinence[a] (%)	p-value[b]
Appointment location			.560
Clinic	85	33	
Hospital	23	22	
Nicotine dependence center	30	27	
SMOKING HISTORY			
Average rate in the six months before consultation			.354
≤19 cigarettes per day	66	33	
≥20 cigarettes per day	76	25	
Type of cigarettes[c]			.201
Menthol	47	43	
Nonmenthol	23	26	
Pre-consultation stage of readiness			.115
Precontemplation/contemplation	57	23	
Preparation/action	63	37	
Fagerström test for nicotine dependence (FTND) score			.245
≤5	75	28	
≥6	35	17	
Age started using cigarettes regularly			.711
≤17	60	30	
≥18	81	27	
Number of prior attempts to stop smoking			.102
None	23	13	
1–5	94	34	
6 or more	19	21	
Longest period of previous abstinence from smoking			.966
<1 day	20	30	
1–30 days	50	24	
2–11 months	33	27	
1 year or more	12	25	

[a]Patients with missing tobacco abstinence outcome (n=34) are classified as using tobacco. If these patients are excluded the overall abstinence rate is 38%. When the analysis was repeated after excluding those with missing outcomes the results were not markedly different.
[b]P-value from exact test comparing abstinence across groups.
[c]Residence at consult and type of cigarettes were obtained from the follow-up survey. These data area only available for those patients that responded to the survey.

Results

Baseline characteristics. There were 147 self-identified Blacks 18 years of age or older seen at the NDC between April 1, 1988 and September 30, 2000. Of these, 146 (over 99%) were included in the current investigation (1 patient was excluded because s/he denied general authorization for use of his/her medical records for research). For these 146 patients (74 male, 72 female) baseline characteristics are summarized in Table 1. Mean age at the time of the intervention, plus or minus the standard deviation, was 47.6±13.3 years. Most (54%) patients were married or living with a significant other at the time of their consultation, and 54% had at least a high school diploma. The majority (83%) was seen in an outpatient setting. Fifty-three percent of the sample reported smoking 20 or more cigarettes per day and 53% were in the preparation or action stage of change. Based on the FTND score, 32% were highly nicotine dependent (i.e., score of 6 or greater). Fifty-seven percent of the sample reported smoking initiation at age 18 or above. Eighty-three percent had made at least one prior attempt to stop smoking, while 39% reported their longest period of abstinence in a previous quit attempt was greater than 2 months.

Survey response rates. Of the 146 patients (including those with information and those without information in the NDC database), 72 (49.2%) completed the follow-up survey (23 by mail and 49 by telephone), 17 were found to be deceased, 13 were contacted but refused to complete the survey, and 44 could not be contacted. Among survey respondents, the median time from NDC consult to follow-up was 5.8 years (range 1.5 to 13.3 years). Of those completing the follow-up survey, the vast majority (82%) reported residing in a racially integrated neighborhood at the time of their NDC intervention. There was no evidence suggesting subjects who completed the follow-up survey differed from those who did not with regard to other characteristics listed in Table 1 (Fisher's exact $p>.27$ in all cases).

Tobacco use outcomes 6 months following NDC consultation. Tobacco use status at 6 months following NDC consultation was obtained for 112 patients (78 from the NDC database and 34 from the follow-up survey due to missing information in the NDC database). Of these 112 patients, 43 (38%) reported smoking abstinence at 6-month follow-up. Using an intent-to-treat analysis, including all 146 patients and assuming those with missing outcome information were smokers, the overall smoking abstinence rate at 6 months following the intervention was 29% (95% C.I. 22% to 37% using normal approximation). Among the 72 survey respondents, 26 (36%) patients reported current abstinence from all tobacco products at the time of the follow-up survey while 46 (64%) reported current smoking.

Univariate analyses were performed to assess potential predictors of tobacco use abstinence at 6 months following the NDC intervention (see Table 1). These analyses failed to identify any baseline characteristics that were significantly associated with smoking abstinence 6 months following the NDC intervention. Pre-consultation stage of change revealed a trend for a higher percentage of abstinence among those in the preparation/action stages compared with those in the precontemplation/

contemplation stages. Similar findings were obtained when subjects with missing outcome information were excluded from the analysis.

Discussion

This study provides new information on the outcomes of Black smokers receiving an individually tailored nicotine dependence intervention primarily as outpatients in an academic medical setting. The 6-month abstinence rate of 29% and lower end of the 95% confidence interval, 22%, is greater than rates reported in intervention studies of Black smokers treated in medical settings, where rates have ranged from 2% to 18%.[14–16,20] The rate of abstinence among participants in this study is similar, if not greater, than the NDC overall program abstinence rate of 22%.[21] While the tobacco abstinence rate observed in this study is encouraging, the majority of the patients continued to smoke, reinforcing the need to develop more effective interventions among all smokers, including Black smokers.

We considered using an untreated control group or a comparison group of non-Black tobacco users receiving clinical services at the NDC. Although studies examining processes among racially-classified social groups (RCSGs) have traditionally used other RCSG comparison controls, researchers are now focusing on within-group designs to examine processes among specific RCSGs. It is thought that the best way to control for and to examine processes within RCSGs is to hold race constant by conducting studies within RCSGs.[22] It would also be difficult to interpret the implications of group differences if they existed, in that the overall goal of this work was to examine the effectiveness of this intervention among Black tobacco users. Another limitation is that the study design did not allow for a matching of specific tobacco cessation protocols, thus it is not possible to assess the effectiveness of specific tailoring among Blacks seeking tobacco cessation treatment.

Although not statistically significant, we observed a trend for a higher percentage of smokers in the preparation or action phase of change to report abstinence at six months. While further research is needed, the findings are consistent with previous studies we have conducted among general NDC patient samples where patients at a more advanced stage of change were more likely to be abstinent at six-month follow-up.[23,24] Among Black smokers participating in a door-to-door household survey,[25] stage of change was associated with age, number of prior cessation attempts, confidence in becoming a nonsmoker, scales measuring the pros and cons of smoking, perceived desires of others, believing quitting would improve health, and number of doctor visits in the past year. Furthermore, those in the preparation stage reported more prior cessation attempts and smoked fewer cigarettes per day than those in the precontemplation and contemplation stages.

The baseline characteristics of these Black smokers, including age of smoking initiation and type of cigarette smoked, are consistent with findings from previous studies. For example, studies have shown that Blacks are more likely than Whites to initiate regular smoking postadolescence (and at a later age than Whites)[26,27] and are more likely than Whites to smoke menthol cigarettes than nonmenthol cigarettes.[28–30] Unlike previous literature that reports lower daily cigarette consump-

tion among Blacks,[29,31] the majority of Blacks in this study smoked more than 20 cigarettes per day. However, these inconsistencies may be due to the variability in assessment methods utilized across studies. At baseline, the vast majority of Blacks in this study reported prior attempts to stop smoking, but 61% were unable to remain abstinent longer than 30 days. This finding is consistent with literature that reveals that Blacks are less likely to be successful at achieving long-term smoking abstinence than their White counterparts.[8–11]

The examination of Mayo Clinic patients in this study as well as the tailored and variable nature of the treatment that patients received after their intervention at the NDC limits generalizability. However, this is also a strength in that the intervention is tailored to characteristics recommended by the Clinical Practice Guidelines[32] and this is a state-of-the-art treatment for nicotine dependence. Due to the tailored nature of the intervention, treatment variables were not randomly distributed among the study subjects. Because this study was not conducted as part of a research protocol with rigid treatment algorithms, it was not feasible in this clinical setting to assess whether patients followed through with treatment recommendations and/or abstinence. Since no data were collected on whether patients followed through with recommendations or on subsequent treatments received for nicotine dependence, this study best reflects the characteristics and outcomes of Black patients who were seen once in an academic medical setting. Furthermore, due to the setting, we were unable to assess the impact of the use of pharmacotherapy versus behavioral interventions among this sample. Thus it is unclear which type of intervention strategies used may have been most effective in achieving abstinence among these Black smokers. During the study time period, data on the type of interventions recommended and on whether patients followed through with the recommendations were not entered into the electronic databases. It is important to note that the intervention that patients received at the NDC is not culturally tailored, an avenue that might be usefully explored in future intervention development. However, currently the Clinical Practice Guidelines[32] do not recommend tailoring the treatment to the patient's specific ethnic or cultural background. Moreover, all patients were seen in an academic medical setting (as opposed to a community outpatient setting, for example) which limits the extent to which results can be generalized. However, the treatment plan is matched to the patient's stage of change. If patients were ready to set a stop date (preparation or action stages of changes), unless contraindicated, most were routinely recommended to use the nicotine patch or nicotine gum since these were the only pharmacological therapies for smoking cessation recommended by the NDC during the majority of the time period studied (prior to bupropion coming out on the market in 1997). Based upon the proportion of patients in the preparation or action stages of change (see Table 1), at least half the patients in the sample were likely recommended pharmacological therapy. While this is not meant to imply that all patients in these stages of change should receive pharmacotherapy, the Clinical Practice Guidelines[32] do recommend that unless contraindicated it should be offered to all patients.

An additional limitation of our study is that we relied on retrospective self-report of tobacco use and abstinence. We did not obtain biochemical confirmation of

abstinence because the intervention was implemented as a clinical service and not as a research protocol. More reliable biochemical methods of assessing smoking abstinence, such as measuring nicotine concentrations, might lead to more valid results. Although most clinical programs will likely not include biochemical verification, it is important for such programs to publish their outcomes. Otherwise, their existence and utility for treating nicotine dependence will not be widely disseminated. Another limitation is that data on rates of continuous abstinence from tobacco were not collected. Our findings on tobacco use outcomes should be interpreted in light of some methodological limitations of the study, including reliance on retrospective self-reported tobacco abstinence, non-feasible matched control group, and small sample size. Our small sample size limited our ability to conduct multivariate analyses of baseline factors associated with tobacco abstinence. However, no significant univariate associations were found, making it unlikely that multivariate relationships would be detected.

A strength of the present study is the availability of a cohort of Black smokers treated clinically for nicotine dependence and the ability to provide descriptive baseline and tobacco use outcome information. The findings are noteworthy given the limited number of studies examining individually tailored nicotine dependence intervention for Blacks seen primarily as outpatients in an academic medical setting.

Notes

1. Dale LC, Olsen, DA, Patten, CA, et al. Predictors of smoking cessation among elderly smokers treated for nicotine dependence. Tob Control. 1997 Autumn;6(3):181–7.
2. Sanderson Cox L, Patten CA, Ebbert JO, et al. Tobacco use outcomes among patients with lung cancer treated for nicotine dependence. J Clin Oncol. 2002 Aug 15;20(16): 3461–9.
3. Centers for Disease Control (CDC). Cigarette smoking among adults—United States, 1999. MMWR Morb Mortal Wkly Rep. 2001 Oct 12;50(40):869–73.
4. American Cancer Society (ACS). Cancer facts & figures 2000. Atlanta, GA: ACS, 2000.
5. American Heart Association (AHA). Heart facts 2002: all Americans—Cardiovascular Diseases Still No. 1. Dallas, TX: AHA, 2002.
6. Centers for Disease Control (CDC). Infant mortality and low birth weight among black and white infants—United States, 1980–2000. MMWR Morb Mortal Wkly Rep. 2002 Jul 12;51(27):589–92.
7. Centers for Disease Control (CDC). Annual smoking-attributable mortality, years of potential life lost, and economic costs—United States, 1995–1999. MMWR Morb Mortal Wkly Rep. 2002 Apr 12;51(14):300–3.
8. Vander Martin R, Cummings SR, Coates TJ. Ethnicity and smoking: differences in white, black, Hispanic, and Asian medical patients who smoke. Am J Prev Med 1990 Jul-Aug;6(4):194–9.
9. Stotts RC, Glynn TJ, Baquet CR. Smoking cessation among blacks. J Health Care Poor Underserved. 1991 Fall;2(2):307–19.
10. Royce JM, Hymowitz N, Corbett K, et al. Smoking cessation factors among Afri-

can Americans and whites. COMMIT Research Group. Am J Public Health. 1993 Feb;83(2):220–6.
11. Pederson LL, Ahluwalia JS, Harris KJ, et al. Smoking cessation among African Ameircans: what we know and do not know about interventions and self-quitting. Prev Med. 2000 Jul;31(1):23–38.
12. Duncan CL, Cummings SR, Hudes ES, et al. Quitting smoking: reasons for quitting and predictors of cessation among medical patients. J Gen Intern Med. 1992 Jul-Aug;7(4):398–404.
13. Fiore MC, Kenford SL, Jorenby DE, et al. Two studies of the clinical effectiveness of the nicotine patch with different counseling treatments. Chest. 1994 Feb; 205(2):524–33.
14. Windsor RA, Lowe JB, Perkins LL, et al. Health education for pregnant smokers: its behavioral impact and cost benefit. Am J Public Health. 1993 Feb;83(2):201–6.
15. Ahluwalia JS, McNagny SE, Clark WS. Smoking cessation among inner-city African Americans using the nicotine transdermal patch. J Gen Intern Med. 1998 Jan; 13(1):1–8.
16. Allen B Jr, Pederson LL, Leonard EH. Effectiveness of physicians-in-training counseling for smoking cessation in African Americans. J Natl Med Assoc. 1998 Oct; 90(10):597–604.
17. Heatherton TF, Kozlowski LT, Frecker RC, et al. The Fagerstrom Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. Br J Addict. 1991 Sep;86(9):1119–27.
18. Prochaska JO, DiClemente CC. Stages and processes of self-change of smoking: toward an integrative model of change. J Consult Clin Psychol. 1983 Jun;51(3):390–5.
19. Hughes JR, Keely JP, Niaura R, et al. Measures of abstinence in clinical trials: issues and recommendations. Nicotine Tob Res. 2003 Feb;5(1):13–25.
20. Ahluwalia JS, Harris KJ, Catley D, et al. Sustained-release bupropion for smoking cessation in African Americans: a randomized controlled trial. JAMA. 2002 Jul 24–31; 288(4):468–74.
21. Hurt RD, Dale, LC, McClain, FL, et al. A comprehensive model for treatment of nicotine dependence in a medical setting. Med Clin North Am. 1992 Mar;76(2):495–514.
22. Phinney JS. When we talk about American ethnic groups, what do we mean? Am Psychol. 1996 Sep;51(9):918–27.
23. Rohren CL, Croghan IT, Hurt RD, et al. and McClain FL. Predicting smoking cessation outcome in a medical center from stage of readiness: contemplation versus action. Prev Med. 1994 May;23(3):335–44.
24. Ferguson JA, Patten CA, Schroeder DR, et al. Predictors of 6-month tobacco abstinence among 1224 cigarette smokers treated for nicotine dependence. Addict Behav. 2003 Sep;28(7):1203–18.
25. Schorling JB, Roach J, Siegel M, et al. A trial of church-based smoking cessation interventions for rural African Americans. Prev Med. 1997 Jan-Feb;26(1):92–101.
26. Center for Disease Control (CDC). Differences in the age of smoking initiation between blacks and whites—United States. MMWR Morb Mortal Wkly Rep. 1991 Nov 8;40(44):754–7.
27. McGrady GA, Ahluwalia JS, Pederson LL. Smoking initiation and cessation in African Americans attending an inner-city walk-in clinic. Am J Prev Med. 1998 Feb; 14(2):130–7.

28. Cummings KM, Jean CR, Giovino G. Circumstances surrounding relapse in a group of recent exsmokers. Prev Med. 1985 Mar;14(2):195–202.
29. Kabat GC, Morabia A, Wynder EL. Comparison of smoking habits of blacks and whites in a case-control study. Am J Public Health. 1991 Nov;81(11):1483–6.
30. Sidney S, Tekawa I, Friedman G. Mentholated cigarette use among multiphasic examinees, 1979–86. Am J Public Health. 1989 Oct;79(10):1415–6.
31. Benowitz NL, Perez-Stable EJ, Fong I, et al. Ethnic differences in N-glucuronidation of nicotine and cotinine. J Pharmacol Exp Ther. 1999 Dec;291(3):1196–203.
32. Fiore MC, Bailey WC, Cohen SJ, et al. Treating tobacco use and dependence, clinical practice guideline. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service, 2000 Jun.