Contemporary Clinical Trials 47 (2016) 12–21

Contents lists available at ScienceDirect

Contemporary Clinical Trials

journal homepage: www.elsevier.com/locate/conclintrial

A clinical trial to examine disparities in quitting between African-American and White adult smokers: Design, accrual, and baseline characteristics

Nicole L. Nollen [a,*], Lisa Sanderson Cox [a], Qing Yu [b], Edward F. Ellerbeck [a], Taneisha S. Scheuermann [a], Neal L. Benowitz [c,d,e,f], Rachel F. Tyndale [g,h,i], Matthew S. Mayo [b], Jasjit S. Ahluwalia [j]

[a] Department of Preventive Medicine and Public Health, University of Kansas School of Medicine, Kansas City, Kansas, United States
[b] Department of Biostatistics, University of Kansas School of Medicine, Kansas City, Kansas, United States
[c] Division of Clinical Pharmacology and Experimental Therapeutics, University of California, San Francisco, San Francisco, California, United States
[d] Department of Medicine, University of California, San Francisco, San Francisco, California, United States
[e] Department of Bioengineering, University of California, San Francisco, San Francisco, California, United States
[f] Department of Therapeutic Sciences, University of California, San Francisco, San Francisco, California, United States
[g] Center for Addiction and Mental Health, University of Toronto, Toronto, Ontario, Canada
[h] Department of Psychiatry, University of Toronto, Toronto, Ontario, Canada
[i] Department of Pharmacology, University of Toronto, Toronto, Ontario, Canada
[j] Department of Epidemiology, Rutgers School of Public Health, Piscataway, New Jersey, United States

ARTICLE INFO

Article history:
Received 23 September 2015
Received in revised form 24 November 2015
Accepted 3 December 2015
Available online 5 December 2015

Keywords:
Smoking cessation
African-American
White
Disparities
Varenicline

ABSTRACT

Background: African-Americans smoke fewer cigarettes per day than Whites but experience greater smoking attributable morbidity and mortality. African-American–White differences may also exist in cessation but rigorously designed studies have not been conducted to empirically answer this question.
Methods/design: Quit2Live is, to our knowledge, the first head-to-head trial designed with the primary aim of examining African-American–White disparities in quitting smoking. Secondary aims are to identify mechanisms that mediate and/or moderate the relationship between race and quitting. The study is ongoing. Study aims are accomplished through a 5-year prospective cohort intervention study designed to recruit equal numbers of African-Americans (n = 224) and Whites (n = 224) stratified on age (<40, ≥40) and gender, key factors known to impact cessation, and all within a restricted income range (≤400% federal poverty level). All participants will receive 12 weeks of varenicline in combination with smoking cessation counseling. The primary outcome is cotinine-verified 7-day point prevalence abstinence from smoking at week 26. Secondary outcomes are cotinine-verified 7-day point prevalence abstinence from smoking at weeks 4 and 12.
Discussion: Findings from Quit2Live will not only address if African-American–White disparities in quitting smoking exist but, more importantly, will examine mechanisms underlying the difference. Attention to proximal, modifiable mechanisms (e.g., adherence, response to treatment, depression, stress) maximizes Quit2Live's potential to inform practice. Findings will provide an empirically-derived approach that will guide researchers and clinicians in identifying specific factors to address to improve cessation outcomes and reduce tobacco-related morbidity and mortality in African-American and White smokers.
Trial registration number: ClinicalTrials.gov: NCT01836276

1. Introduction

Racial and ethnic disparities in smoking-related disease and death are well-documented. African-Americans use fewer cigarettes per day than White Americans [1–3], yet they have the highest incidence rates for all cancers combined, higher overall cancer mortality rates, and twice the rate of premature death attributable to cardiovascular disease compared to Whites [4,5]. African-American smokers also have a 43–55% higher relative risk of smoking-attributable lung cancer compared to Whites and are at higher risk for nearly all smoking-related chronic diseases [6–8].

There are many possible reasons for the higher tobacco-related disease burden in African-American smokers. On average, African-Americans take in 30% more nicotine per cigarette smoked [9] and are exposed to higher levels of select lung carcinogens (e.g., 1-hydroxypyrene) at lower levels of smoking compared to Whites [10]. Greater exposure per cigarette smoked may be due, in part, to the

* Corresponding author at: Department of Preventive Medicine and Public Health, University of Kansas School of Medicine, 3901 Rainbow Boulevard, Mail Stop 1008, Kansas City, Kansas 66160, United States.
E-mail addresses: nnollen@kumc.edu (N.L. Nollen), lcox@kumc.edu (L.S. Cox), qyu@kumc.edu (Q. Yu), eellerbe@kumc.edu (E.F. Ellerbeck), tscheuermann@kumc.edu (T.S. Scheuermann), neal.benowitz@ucsf.edu (N.L. Benowitz), r.tyndale@utoronto.ca (R.F. Tyndale), mmayo@kumc.edu (M.S. Mayo), j.ahluwalia@rutgers.edu (J.S. Ahluwalia).

http://dx.doi.org/10.1016/j.cct.2015.12.001
1551-7144/

preference for menthol cigarettes among African-American smokers. Menthol has a cooling sensation that reduces the irritant quality of cigarette smoke and may facilitate deeper inhalation and greater exposure to nicotine [11]. Another plausible reason for the higher tobacco-related disease burden is that, although African-Americans are more likely to attempt to quit smoking in a given year, they are less successful [12,3].

The decreased likelihood of success for African-American smokers has been attributed to the fact that they are less likely than Whites to receive provider advice/assistance to quit [13–16] and to be prescribed smoking cessation pharmacotherapy to aid in their attempts [17,12, 18]; however disparities in smoking cessation have persisted for African-American smokers in clinical trials where pharmacotherapy and quitting assistance have been provided [19–22]. To-date, no known trials have been conducted with the primary aim of prospectively examining African-American–White differences in cessation. Existing trials have often enrolled unequal proportions of African-American and White smokers and, because examination of racial differences in cessation was not the primary aim, were underpowered to make such comparisons [19,22]. Others have relied on self-reported abstinence [23, 24], which is prone to misreporting and overestimation of abstinence [25–28], reported abstinence at early (e.g., Weeks 1–4) but not later time points (e.g., Week 26) [29,30], or been conducted in special treatment settings (e.g., Veterans Affairs patients, smokers in the criminal justice system) which limits generalizability of the findings [23,31]. Existing studies have also not been stratified by race on age or gender or ensured recruitment of African-American and White smokers of comparable socioeconomic status (SES) [20,21], all key factors known to impact smoking cessation [32,24,33–38]. Mechanisms underlying African-American–White differences in quitting are also not well understood. Multiple factors, including demographic (e.g., socioeconomic status) [29,33,36,37] and smoking characteristics (e.g., menthol, nicotine intake) [39–42], adherence and/or response to treatment (e.g., reductions in withdrawal, craving) [18,17,27,31,43], psychosocial (e.g., psychological distress, perceived and contextual disadvantage, stress) [44–46,24,47–53], and biological factors linked to nicotine metabolic inactivation (e.g., CYP2A6, 3hydroxycotinine/cotinine) [54–58] have been studied as they relate to cessation in African-Americans and Whites, separately, but few studies have explored the relative importance of these factors in explaining African-American–White differences in quitting.

The current clinical trial, Quit2Live, is designed explicitly to address these gaps. Quit2Live uses a stratified design to recruit an equal number of African-American and White smokers across gender and age, provides the same treatment to all participants (varenicline plus counseling), and will biochemically confirm smoking status at multiple time points. In addition, because the majority of US adult smokers are of lower socioeconomic status [32] and lower socioeconomic status adversely impacts cessation [59], Quit2Live recruits participants within a restricted income range [≤400% federal poverty level (FPL)]. This paper describes the study design, enrollment, and baseline characteristics of participants in the trial.

2. Methods

2.1. Study design

Quit2Live is a 5-year prospective cohort intervention study, stratified on race (African-American, White) and, within race, on age (<40, ≥40) and gender, with the primary aim of examining differences in quitting between African-American and White smokers and secondary aims of identifying mechanisms (e.g., demographic, smoking, treatment process, psychosocial, and biological factors) that explain the relationship between race and quitting. All participants will receive 12 weeks of varenicline in combination with 6 sessions of smoking cessation counseling. Because women and younger smokers are less likely to quit smoking than their male or older counterparts [34,35,38], Quit2Live will stratify on these factors, along with race, to ensure recruitment of African-American and White smokers who are comparable on key covariates known to impact cessation. Using the stratified design, 56 participants will be recruited into each of the 2 race by age and gender cohorts. The schedule of enrollment, intervention, and assessment activities is displayed in Table 1. The primary outcome is cotinine-verified 7-day point prevalence smoking abstinence at month 6. All study visits will be completed at Swope Health Central, a Federally Qualified Health Center located in Kansas City, Missouri. Methods of recruitment, screening, enrollment, and retention are identical and do not vary by race. Study procedures are approved and monitored by the University of Kansas Medical Center (KUMC) IRB (#00001602).

2.2. Recruitment

Recruitment started in February 2013 and ended in May 2015. Final 6-month follow-up will be completed in November 2015. Participants are recruited through clinic- and community-based efforts, including fliers, physician letters, radio, television, and social media ads, and word-of- mouth referrals from current and former participants.

2.3. Eligibility

Eligible participants are non-Hispanic African-American or White adults, 18 years of age or older who smoke 3–20 cigarettes per day on 25 days or more during the preceding month, and are interested in quitting smoking, taking varenicline for 3 months, have a functioning telephone, and are willing to complete all study-related requirements. Individuals are excluded if they have a medical contraindication for varenicline, which includes being pregnant or breastfeeding, renal impairment, currently taking the blood thinner warfarin, history of panic or anxiety disorder, psychosis, bipolar disorder, or an eating disorder, being treated for depression in the last year, receiving treatment for alcohol or other drugs in the past year, known allergy or sensitivity to varenicline, being treated for a heart attack or any acute cardiovascular event in the past two months, and/or being diagnosed with angina or arrhythmia in the past two months. Individuals are also excluded if they have used a tobacco product other than cigarettes (e.g., cigars, cigarillos, smokeless tobacco) in the past 30 days, are planning to move from the Kansas City area during the 6 month study period, have used varenicline in the preceding three months, are unwilling to refrain from use of other smoking cessation pharmacotherapies during the study period, have unstable housing (e.g., lived in a shelter, on the street, or in a detoxification center), or another smoker in the household is enrolled in the study. Varenicline carries an FDA black box warning for neuropsychiatric complications (i.e., depressed mood, suicidal behavior), therefore, the Patient Health Questionaire-2, a commonly used depression screener [60,61], is administered to all individuals. Those scoring 3 or higher are excluded because of concern that varenicline could exacerbate underlying depressive symptoms. Participants are also excluded if the total yearly income for all people in their household places them at >400% of the FPL [62].

2.4. Screening and consent

Interested individuals contact us by telephone and are screened for eligibility by study staff. Those who are provisionally eligible after the phone screening are scheduled for final, in-person eligibility screening, which consists of pregnancy testing on women who are not postmenopausal or sterilized, assessment of willingness to use birth control to avoid pregnancy while taking varenicline among these same women, and assessment of active suicidal ideation over the preceding two weeks. Individuals who are eligible following final, in-person screening participate in a consenting interview conducted by study staff. Those providing written informed consent are enrolled into the study and immediately participate in baseline (Week 0) activities (described below).