Published in final edited form as:

Am J Health Behav. 2014 March ; 38(2): 284–296. doi:10.5993/AJHB.38.2.14.

Beliefs, Experience, and Interest in Pharmacotherapy among Smokers with HIV

Amy McQueen, PhD [Research Assistant Professor],

Washington University School of Medicine, Department of Medicine, Division of Health Behavior Research, St. Louis MO

Enbal Shacham, PhD [Assistant Professor],

Saint Louis University, College for Public Health and Social Justice, Department of Behavioral Sciences and Health Education, St. Louis MO

Walton Sumner, MD [Associate Professor], and

Washington University School of Medicine, Department of Medicine, Division of General Medical Sciences, St. Louis MO

E. Turner Overton, MD [Associate Professor]

University of Alabama at Birmingham, Department of Medicine, Division of Infectious Diseases, Birmingham AL

Abstract

Objectives—To examine beliefs, prior use, and interest in using pharmacotherapy among people living with HIV/AIDS (PLWHA).

Methods—Cross-sectional survey of smokers in a midwestern HIV clinic.

Results—The sample (N = 146) included 69% men, 82% African American, 45% were in precontemplation for quitting, and 46% were interested in using pharmacotherapy. Primary reasons for non-use included cost and a belief that they would be able to quit on their own. Physician's assistance was the strongest correlate of prior use. Perceived benefits and self-efficacy were the strongest correlates of willingness to use pharmacotherapy.

Conclusions—Future interventions should address misconceptions, perceived benefits, and self-efficacy for using cessation aids. Physicians should offer pharmacotherapy to all smokers.

Keywords

attitudes; HIV/AIDS; smoking cessation; pharmacotherapy; nicotine replacement therapy

Cigarette smoking continues to be one of the greatest sources of morbidity and remains the leading cause of preventable death in the US.¹ Although the proportion of adults in the US who smoke has declined over time, some population subgroups report higher rates of smoking than the national average. For example, people living with HIV/AIDS (PLWHA) have 2–3 times higher rates of smoking compared with the general population.² Reasons for

Correspondence Dr McQueen, amcqueen@dom.wustl.edu.

Human Subjects Statement

All materials and procedures were approved by the Human Research Protections Office at Washington University in St. Louis. All interactions with human participants were in compliance with guidelines for the conduct of human subject research.

Conflict of Interest Statement

None.

high rates of smoking are similar to the general population (eg, stress reduction) and conditions prevalent in PLWHA that are commonly associated with smoking (eg, pain, depression, low socioeconomic status).³ Beyond the usual health risks of smoking, PLWHA are at increased risk for developing many smoking-related health problems, including coronary artery disease, COPD, and malignancies.^{4–7} Further, smoking may undermine the benefits of antiretroviral therapy (ART).^{8,9} Due to ART effectiveness and long-term survival, HIV/AIDS has become a chronic disease and a greater focus on preventable morbidity and mortality in this population now exists.^{10,11}

The benefits of pharmacologic cessation aids such as nicotine replacement therapies (NRT) and prescription medications (ie, Chantix, Bupropion) on quit rates are well accepted.^{12,13} Smokers using any of these aids are twice as likely to quit successfully compared with using a placebo.¹² Thus, clinical practice guidelines for treating tobacco use and dependence recommend that all smokers be treated with pharmacotherapy unless contraindicated.¹² Unfortunately, only a minority of smokers (22–32%) use pharmacotherapy when trying to quit.^{14,15} In a prior study, one clinic survey reported that 82% of smokers living with HIV/AIDS were interested in receiving a prescription for nicotine replacement therapy, 69% were interested in a group cessation program, and 56% were interested in both.¹⁶ Unfortunately, less than one quarter of providers caring for PLWHA have formal tobacco treatment training, and seldom promote cessation to their smoking patients.¹⁷ In one study, physicians reported perceived resistance to smoking cessation among PLWHA as their primary barrier to providing cessation services.² Scant published data is available to estimate resistance to cessation aids, especially pharmacotherapy, among PLWHA.

Although there is evidence that providing cessation support is effective even for smokers unmotivated to quit^{18–21} including PLWHA,²² and that generic cessation interventions have been effective among this population,^{23,24} many researchers recommend tailoring cessation interventions for PLWHA to address their multimorbidity, symptom burden, and social culture that is more accepting of smoking.^{25–28} To effectively tailor messages and intervention strategies, understanding the beliefs and behaviors related to smoking cessation in this population is critical for success. Previous studies have reported that smokers living with HIV/AIDS perceived less harm and greater benefits of continuing to smoke.^{26,29,30} Smokers have also endorsed defensive beliefs or rationalizations (eg, “I think I would have to smoke a lot more than I do to put my health at risk”) that discount the health risk and obviate the need for behavior change.^{31–35} In addition to barriers to quitting, it is important to identify barriers to using evidence-based pharmacotherapy in order to improve cessation rates. Even if recommended by a healthcare provider, misconceptions about the risks of cessation aids, low outcome expectations for their effect on abstinence, and medication burden may discourage smokers from using these aids in their quit attempts.³⁶ Thus, interventions need tailored messages to address smokers’ misperceptions related to the use of these cessation aids in order to improve uptake and adherence. Beliefs about pharmacotherapy among PLWHA are lacking in the literature despite examinations of correlates of smoking.^{37–39} Cessation trials involving pharmacotherapy with PLWHA often fail to include self-report dosing information, but a few studies have reported low adherence (39%)⁴⁰ to NRT.^{23,41} Another study reported that only about two-thirds of participants adhered to prescribed NRT during a cessation trial.⁴²

The purpose of this study was to conduct formative research to inform the design of future interventions to improve the use of cessation aids in our clinic population which reports high rates of smoking. Specifically, patients’ experiences with and interest in using evidence-based pharmacologic cessation aids was explored. Given the lack of publications on beliefs about cessation aids among PLWHA, we had 3 primary research objectives rather than a priori hypotheses: 1) Examine smokers’ perceptions of smoking and cessation aids, 2)

Examine smokers' prior experiences with quitting and cessation aids, and 3) Examine smokers' interest in using pharmacologic cessation aids in the future.

METHODS

Population and Setting

Participants were recruited from the Washington University HIV Clinic between August 2010 and March 2011. The Clinic served 1632 HIV infected patients in 2011; 71% were African-Americans, 31% were women, and 88% were between age 25–64. Insurance data showed that 26% of patients had Medicaid, 24% had Medicare, 24% were uninsured, and 26% had private insurance. Previous estimates identified that 45% of this clinic population were current smokers.⁴³

Recruitment and Procedures

A research assistant was onsite up to 2 mornings per week to provide survey packets and remuneration (\$15) to participants. To assure participant privacy, potentially eligible persons were identified by clinic staff at routine appointments and were provided information regarding the study. Clinic staff identified persons with HIV/AIDS, who were 18 years of age or older, and were English-speakers. Interested patients who approached the research assistant were eligible to participate if they were current smokers or quit smoking within the past 12 months. We included people who had recently quit smoking due to their high risk of relapse and the relevance of the survey questions to their recent quit experience. The self-administered survey required about 30 minutes to complete. Participants completed the survey in a semi-private room with the research assistant. Surveys were anonymous. Research information sheets provided information for participants to make an informed decision about participating, but written consent was not requested. Participants were informed that consent to participate was implied if completed surveys were returned. All materials and procedures were approved by the Human Research Protections Office at Washington University in St. Louis.

Paper surveys were formatted for efficient self-administration. Definitions were provided in the survey using a bulleted format: "Nicotine replacement products" include over-the-counter products such as nicotine gum, patches, and lozenges as well as prescription products such as a nicotine inhaler or nasal spray. Cessation "medications" include bupropion, which is also called Wellbutrin or Zyban, and Varenicline, which is also called Chantix. Additionally, a research assistant was present to answer participants' questions and assist them, as needed.

Study Design

This exploratory cross-sectional study was designed to collect formative information to inform future smoking cessation efforts in the clinic. The conceptual model guiding the selection of survey measures is based on Fishbein's Integrated Model of the internal and external influences on health behaviors.⁴⁴ Fishbein extended the traditional theory of planned behavior model,⁴⁵ and we added defensive beliefs (rationalizations for smoking), which have been negatively associated with cessation^{31,46} and may be related to interest and use of cessation aids. Consistent with our 3 study objectives and our exploratory approach, we examined all variables as potential bivariate correlates of attitudes, interest, and use of pharmacotherapy.

Measures

All items developed for this study (without prior evaluation or refinement) are noted, otherwise references are provided for previously used measures. All measures are

appropriate for general audiences; none specifically reference HIV/AIDS. We created mean scores for multi-item scales when appropriate and provide an estimate of internal consistency in our sample (Cronbach's alpha).

Knowledge about smoking and pharmacotherapy—Seven knowledge items (true/false) were based on questions in the 2003 Health Information National Trends Survey, National Cancer Institute materials dispelling the myths about NRT,⁴⁷ and previous studies with smokers.^{32,48} Scale scores reflect the total number of items answered correctly.

Beliefs about smoking and cessation aids

Perceived harm of smoking and NRT: Absolute perceived susceptibility to serious health problems if current smoking habits continue (mean score of 3 items; $\alpha = .81$; response options 1 = very low to 5 = very high) and absolute perceived risk of NRT (1 item; response options: not at all harmful, somewhat harmful, and very harmful) were assessed with measures adapted from the literature.^{49,50} Perceived risk of NRT (mean score of 5 items; $\alpha = .94$) was also assessed in comparison with standard cigarettes on a 5-point response scale ranging from “a lot less harmful” to “a lot more harmful”.⁵¹

To assess the perceived harm and overuse of prescribed medicines in general, we used a mean score of the 8-item *Beliefs about Medicines* Questionnaire (BMQ); response options ranged from 1 = strongly disagree to 5 = strongly agree ($\alpha = .77$).⁵² *Reasons for not using cessation aids* (including medications and counseling) in the past were assessed with 10 items from an existing scale⁵³ and 3 additional items developed for this study (“Cessation aids did not help me before”, “I did not want cessation aids to affect other medications I take”, and “I did not want to add more appointments to my schedule”). Responses ranged from 1 = strongly disagree to 5 = strongly agree. Higher mean scores reflect greater barriers or reasons for not using cessation aids in the past ($\alpha = .85$). *Smoking-related defensive beliefs* (rationalizations) were measured by mean scores reflecting message rejection (5 items; “The medical evidence that smoking is harmful is exaggerated”; $\alpha = .85$), normalizing the harm (5 items; “Smoking is no more risky than lots of other things that people do”; $\alpha = .80$), “worth it” beliefs (3 items; “For me, the benefits of smoking outweigh the harms”; $\alpha = .74$)^{31,32} and disengagement (12 items; “Smoking is unhealthy, but not everyone gets sick from smoking”; $\alpha = .79$).^{54,55} Response options ranged from 1 = strongly disagree to 5 = strongly agree.

Attitudes about smoking cessation aids—Five positively-worded items were averaged to reflect *benefits or pros* ($\alpha = .85$) and 9 negatively-worded items were averaged to reflect *barriers or cons* ($\alpha = .84$) of using pharmacotherapy. Sample items based on prior work⁵⁶ included “would reduce my cravings for cigarettes”, “would provide the help I need to quit smoking”, “would not increase my chances of stopping smoking”, “would increase my chances of getting cancer”, “would give me unpleasant side effects”, “would be addictive”, and “would make me feel as though I had no willpower to stop on my own”. Additional items created for this study included “using medicine to quit smoking would... mean putting unnecessary drugs into my body” and “...interfere with other medications I take”. Response options ranged from 1 = strongly disagree to 7 = strongly agree.

Social influence—*Physician influence* was examined by 2 questions based on those included in the Census Current Population Survey Tobacco Use Supplement, 2006–2007 that ask whether in the past 12 months a doctor has advised the respondent to quit smoking and whether a doctor has provided a prescription or recommendation for cessation aids (yes/no). We developed 2 items for this study to assess individuals' perceived *social support* from their main support person for quitting smoking and for using NRT. Response options

ranged from 1 = not at all true to 5 = extremely true. Two items from the BRFSS (Behavioral Risk Factor Surveillance System) survey assessed whether participants *lived with a smoker(s)* and what kind of *smoke-free policies* are in effect at home.

Self-efficacy for choosing and using smoking cessation aids was assessed with a mean score of 6 items developed for this study based on others in the literature, with response options ranging from 1 = not at all sure to 5 = extremely sure ($\alpha = .90$).⁵⁷ Participants were asked to report how sure they were that they could choose a cessation aid or combination of aids to help them quit smoking; follow the instructions for properly using NRT; ask for help, call a quitline, or talk to a doctor for quit advice or support; continue to use NRT even if they seem expensive; continue to use NRT even if their friends do not support them; and continue to use NRT even if they slip up and smoke a cigarette.

Prior exposure to smoking cessation aids—Similar to prior work,⁵⁸ for each of 19 cessation methods listed, we asked participants to report (yes/no) whether (1) they have *ever used* each of these cessation aids (we did not specify that their use had to be during a formal quit attempt), (2) whether each aid was *ever recommended by a physician*, (3) which, if any, aids they had used had caused any *negative experiences or side effects*, and (4) would be of *interest* for a future quit attempt. Our list of cessation aids included both standard clinical approaches as well as several alternative strategies.^{59–61}

Intention—Previous research has found that for certain behaviors, including substance use,⁶² measures of behavioral expectations are less constrained by social desirability compared with measures of intention.⁶³ Thus, we assessed *behavioral expectations* for quitting smoking, using NRT, using a prescription medication for cessation, and participating in counseling in the next 6 months with 4 single-item measures developed for this study. Response options ranged from 1 = not at all likely to 5 = extremely likely. We averaged the 2 items about pharmacotherapy ($r = .75$, $p < .001$). *Willingness* to quit smoking, use NRT products, use cessation medication, participate in counseling, and consent to genetic testing to determine the best smoking cessation treatment in the next 6 months were assessed using 5 single-item measures developed for this study, based on previous work.⁶⁴ Response options ranged from 1 = not at all willing to 5 = extremely willing. We also averaged the 2 items about pharmacotherapy ($r = .78$; $p < .001$). Participants also were categorized into one of 4 standard stages of *readiness to quit* smoking:⁶⁵ Precontemplation -- no intention to quit within the next 6 months; Contemplation -- seriously considering quitting within the next 6 months; Preparation -- planning to quit within the next 30 days and had 1 quit attempt within the previous year; and Action -- already quit smoking.

Actual ability in performing intended behaviors may be influenced by several potential moderators. *Nicotine dependence* was assessed by the Fagerstrom Test of Nicotine Dependence (6 items).⁶⁶ Two items assessed respondents' *General Medication Adherence*⁶⁷ (yes/no): "Do you ever forget to take your medicine?" and "Are you careless at times about taking your medicine on schedule?" Two questions from national surveys measured *income adequacy* (comfortable, have just enough to make ends meet, do not have enough to make ends meet) and types of *medical insurance*. We included 2 questions from the AUDIT⁶⁸ to assess general alcohol use: 1) frequency "How often do you have a drink containing alcohol?" (never; monthly; 2–4 times or less per month; 2–3 times per week; 4 or more times per week), and 2) quantity "How many drinks containing alcohol do you have on a typical day when you are drinking?" (0 or less than a full drink; 1 or 2; 3 or 4; 5 or 6; 7 to 9; 10 or more). Moderate drinking was defined as no more than 4 drinks in one day and no more than 14 drinks in a week for men, and no more than 3 drinks in one day and no more than 7 drinks per week for women.⁶⁹

Covariates—Additional variables that may be correlated in this sample with smoking dependence and willingness to use pharmacotherapy were explored as covariates. Questions from national surveys were used to assess *demographics*: sex, age, race/ethnicity, marital status, education (less than high school, high school graduate or GED, some college or vocational training, bachelor's degree, post-graduate education), and perceived health status (1 = excellent, 5 = poor). Participants reported *current smoking status* (everyday, some days, not at all) and smoking history (eg, years smoked, quit attempts).

Data Analysis

Descriptive statistics were used to describe the sample and survey responses. Research questions were addressed with a variety of correlation analyses. Zero-order correlations and regression analyses were used to examine associations between continuous variables. Independent samples t-tests and analyses of variance (ANOVA) were used to assess mean group differences on continuous variables (eg, groups based on prior use of pharmacotherapy and readiness to quit). Binary logistic regression analyses were used to assess correlates of dichotomous variables. Rather than report the results of chi-square analysis, we report statistically significant odds ratios with 95% confidence intervals to identify the specific increased or decreased probability of group membership. To reduce the likelihood of Type I errors due to multiple analyses, we used $p < .01$ to determine statistical significance.

RESULTS

Sample

The 146 patients who completed the survey were reflective of the clinic as a whole: 69% were men and 82% were African American. Most participants were single, unemployed, and had at least a high school education (Table 1). Most participants smoked daily, had tried to quit smoking in the past, were moderate to highly dependent on nicotine, and were moderate drinkers⁶⁹ (Table 1).

Smokers' Perceptions of Smoking and Cessation Aids

Knowledge—On average, smokers were knowledgeable about smoking and cessation aids. A majority of smokers knew that smoking causes cancer and reported awareness of the efficacy of cessation aids (Table 2). However, many smokers had misconceptions about NRT.

Beliefs—The average *absolute perceived harm* of smoking was moderate and suggests some doubt or defensiveness (Table 2). Few smokers thought using NRT for a short time while trying to quit smoking would be very harmful, and a majority of smokers perceived NRT to be less harmful than cigarettes (Table 2). Although some smokers in this sample struggled with *medication adherence* in general (Table 1), they had only modestly negative attitudes toward medicines in general (Table 2). Of the reasons provided to smokers for why they might not have used cessation aids in the past, smokers more strongly endorsed the beliefs that cessation aids would cost too much and that they thought they would be able to quit or reduce smoking on their own (Table 2). Defensive beliefs used to counterargue the risks of smoking were fairly low and the strongest ratings were for disengagement (Table 2). Disengagement beliefs were positively correlated with the other measures of defensive beliefs: message rejection ($r = .45, p < .001$), minimize the harm ($r = .47, p < .001$), and “worth it” beliefs ($r = .54, p < .001$).

Attitudes, social influence, and self-efficacy—Smokers perceived greater benefits than barriers to using pharmacotherapy (Table 2). Although most respondents reported being *advised* by a doctor in the past year to quit smoking, a minority reported that a doctor *assisted* them by providing prescriptions or recommendations for cessation aids (Table 2). About 50% of participants lived with smokers. Only a quarter of participants had rules against smoking anywhere inside their home, another 27% had some restrictions, and 40% had no restrictions. Smokers had modest self-efficacy for using cessation aids, which was lowest for *choosing* a cessation aid ($M = 2.70$, $SD = 1.44$).

Correlates of attitudes about pharmacotherapy—Perceiving greater benefits or pros of using pharmacotherapy to quit smoking was associated with having more: education, perceived harm of smoking, disengagement beliefs, social support, and self-efficacy (Table 3). Perceiving greater barriers or cons to using pharmacotherapy to quit smoking was associated with greater: perceived risk of using pharmacotherapy vs. cigarettes, perceived harm of medicines in general, defensive beliefs, and perceived benefits of using pharmacotherapy (Table 3). Smokers planning to quit in the next month (preparation stage) perceived significantly more cons of using pharmacotherapy compared with contemplators and precontemplators, who did not differ.

Smokers' Prior Experiences with Cessation Aids

Table 4 reports participants' experiences with a variety of cessation aids. Less than half of participants reported ever using pharmacotherapy, and most of those participants reported using more than one product. Because we were interested in any use of pharmacotherapy in particular (even if not during a formal quit attempt), we include all participants in this analysis. The most frequently used strategies for quitting were the same strategies participants endorsed as those most recommended to them by physicians (ie, pharmacotherapy, cold turkey, and cutting down). Negative experiences or side effects were reported for all cessation strategies (Table 4).

Correlates of prior pharmacotherapy use—Greater prior use of pharmacotherapy was associated with a physician's prescription for pharmacotherapy and greater income adequacy (Table 3). Smokers' level of nicotine dependence also was positively associated with smokers' self-report of receiving a physician's recommendation or prescription for pharmacotherapy ($OR = 1.27$, $p < .01$).

Smokers' Interest in Using Cessation Aids for Future Quit Attempts

Regarding future quit attempts, participants were most interested in previously used and recommended strategies (ie, pharmacotherapy, cutting down or cold turkey) (Table 4). Expectations and willingness to use evidence-based cessation aids in the next 6 months were modest (Table 2) and highly correlated ($r = .66$, $p < .001$). Most respondents did not have a plan to quit in the next 12 months (45% in the precontemplation stage of change) and only 3 had already quit smoking (Table 2).

Correlates of willingness to use pharmacotherapy—Reported willingness to use pharmacotherapy to quit smoking in the next 6 months was positively correlated with greater education, knowledge, absolute perceived harms of smoking, social support, self-efficacy, perceived benefits of pharmacotherapy, prior use of pharmacotherapy, and greater readiness to quit (Table 3). Post-hoc comparisons showed that precontemplators reported significantly less willingness to use pharmacotherapy than smokers in contemplation or preparation stages, which were no different (Table 3).

DISCUSSION

The purpose of this formative study was to examine patients' potential barriers to using pharmacotherapy to inform future cessation intervention strategies for PLWHA engaged in regular health care. Only a quarter of our sample was preparing to quit smoking, and nearly half was interested in using pharmacotherapy for a future quit attempt. Additionally, nearly half of participants had used cessation aids in the past, suggesting greater acceptance of pharmacotherapy than reported rates of uptake in the general population,^{14,15} and among African Americans specifically.⁷⁰ This level of interest is promising and possibly due to the existing level of engagement with the healthcare system in this sample. We identified factors such as knowledge, attitudes, self-efficacy, and external support as important targets for future clinic-based interventions to increase cessation aid use among PLWHA.

A basic understanding of the reduced health risks of using NRT compared with cigarettes is important for adherence and quit success.⁵⁸ Most participants in our study knew that pharmacotherapy reduces cravings and increases quit rates, but results suggest that clinic interventions may need to correct patient's specific misperceptions about NRT being addictive and nicotine causing cancer to increase knowledge regarding safety and efficacy and maximize uptake of recommended cessation aids. Additionally, smokers should be informed about and encouraged to combine NRT products as needed for best results (eg, nicotine patch and lozenge or gum).⁷¹⁻⁷³ These findings suggest that a provider-based intervention that offers information and resources for using pharmacotherapy to quit smoking would likely be successful in increasing successful quit attempts for PLWHA engaged in regular healthcare. Importantly, we did not find strong smoking defenses in our sample and such beliefs were not associated with willingness to use cessation aids; thus, physicians should not expect much resistance from patients to interventions offering pharmacotherapy.

Beliefs about pharmacotherapy were more positive than negative, and perceived benefits were strongly correlated with greater willingness to use pharmacotherapy. Readiness to quit was positively associated with both perceived barriers and willingness to use pharmacotherapy. People preparing for a quit attempt may more acutely recognize the barriers to smoking cessation and be more willing to accept pharmacotherapy compared with precontemplators. In this study, perceived barriers were not associated with willingness to use pharmacotherapy, which may be similar to the experience of overcoming barriers to adhere to antiretroviral therapy in this population.

Interventions designed to increase smokers' self-efficacy for quitting smoking in general, may in fact undermine their intentions to use pharmacotherapy, perhaps due to unrealistic perceptions of control.⁷⁴ This focus on self-efficacy for quitting could exacerbate our finding that participants felt they could quit on their own as a primary reason for not using cessation aids in the past. Our measure of self-efficacy in this study focused on confidence in being able to effectively use pharmacotherapy. Our results suggest that future interventions should attempt to improve smokers' self-efficacy for using pharmacotherapy, including choosing product(s) that best suit their needs and that are not prohibited by health-related contraindications or drug-drug interactions (eg, bupropion is contraindicated for people with seizure disorders or on MAOIs).⁷⁵ Having HIV/AIDS or taking medications used to treat HIV/AIDS is not a contraindication itself for any recommended pharmacotherapy product(s); however, precaution may be taken when prescribing bupropion to PLWHA taking high dose protease inhibitors.^{6,26} Currently, "there are no well accepted algorithms to guide optimal selection" or efficient tools to help smokers identify cessation aids based on both medical and personal factors.¹²

Physician assistance was associated with greater prior use of pharmacotherapy and social support was associated with willingness to use pharmacotherapy, which highlights the importance of others in a smokers' attempt to quit and adoption of specific cessation methods.^{14,15} However, less than a third of participants reported receiving a physician's recommendation or prescription for pharmacotherapy. PLWHA have a well-demonstrated, higher prevalence of smoking and see healthcare professionals routinely; therefore, they should receive assistance to quit as part of a comprehensive approach to care.⁷⁶ The opportunity to intervene with smokers in this population is tremendous and even brief interventions would likely benefit patients.^{12,24} Several studies have shown significant abstinence rates among trial participants not planning to quit,^{18–22} suggesting that treating smokers in anticipation of a future quit attempt may be more effective than waiting for smokers to publicly commit to a quit date. This may be important in our sample, which reported low rates of preparation for quitting compared with other results of clinic surveys in the literature,^{2,16,38} but higher than a low income cohort in New York.²⁹ Our sample was predominantly low income and finances played a role in prior use of pharmacotherapy and will need to be addressed in future interventions, because ability to pay may moderate the intention-behavior link.⁷⁷

Limitations

This study was designed as a formative exploration of the prior experiences and willingness to use pharmacotherapy in a population with high smoking rates; thus, our measures may not have accounted for unique conditions and concerns of PLWHA smokers living with HIV/AIDS. Although a research assistant was available to aid participants, if patients with low health literacy chose not to participate due to perceived difficulty of a self-administered survey, sampling bias may exist. Further, our participants were mostly low-income, Medicaid and/or Medicare patients. Our convenience sample of smokers from a single clinic may not be representative of the larger population of smokers living with HIV/AIDS. Additionally, the socio-demographics of our sample reflects our clinic population, which is largely comprised of low income, African American, urban men. Only 3 respondents had quit smoking in the past 12 months so no comparisons between smokers and people who had recently quit could be made. Additionally, no data were collected about sexual orientation, time since diagnosis or treatment for HIV, comorbidity, perceived stress, or perceived prevalence of use of pharmacologic cessation aids among other PLWHA, all of which may have an impact on willingness and ability to adhere to pharmacologic treatments and successfully quit smoking. Additional formative work could include qualitative interviews to more deeply examine barriers and receptivity to different proposed clinic-based strategies to improve smokers' use of evidence-based cessation aids.

Conclusions

A study of beliefs, experiences, and willingness to use cessation aids among PLWHA has not been previously reported in the literature. Although increased knowledge about cessation aids is associated with greater utilization,^{51,78,79} interventions designed to facilitate the use of cessation aids among PLWHA may require the provision of both education and tailored messages to address smokers' misperceptions and reported barriers, and improve smokers' self-efficacy for using cessation aids that will help them quit successfully. Additionally, despite the availability of NRT over the counter, clinicians are especially instrumental in smokers' use of pharmacotherapy and should consistently offer to assist smokers to quit regardless of their stated plans to quit.^{18–21}

Acknowledgments

We thank the clinic staff and patients for their support of this research. We thank Stephanie Tower for assisting with data collection. The first author is supported by a Mentored Research Scholar Grant from the American Cancer Society (MSRG-08-222-01-CPPB).

REFERENCES

1. US Department of Health and Human Services. The health consequences of smoking: a report of the Surgeon General. Washington, D.C.: Dept. of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2004.
2. Tesoriero JM, Gieryic SM, Carrascal A, Lavigne HE. Smoking among HIV positive New Yorkers: prevalence, frequency, and opportunities for cessation. *AIDS Behav.* 2010; 14(4):824–835. [PubMed: 18777131]
3. Lifson AR, Lando HA. Smoking and HIV: prevalence, health risks, and cessation strategies. *Curr HIV/AIDS Rep.* 2012; 9(3):223–230. [PubMed: 22618079]
4. Lipshultz SE, Mas CM, Henkel JM, et al. HAART to heart: highly active antiretroviral therapy and the risk of cardiovascular disease in HIV-infected or exposed children and adults. *Expert Rev Anti Infect Ther.* 2012; 10(6):661–674. [PubMed: 22734956]
5. Petoumenos K, Worm SW. HIV infection, aging and cardiovascular disease: epidemiology and prevention. *Sex Health.* 2011; 8(4):465–473. [PubMed: 22127031]
6. Rahmanian S, Wewers ME, Koletar S, et al. Cigarette smoking in the HIV-infected population. *Proc Am Thorac Soc.* 2011; 8(3):313–319. [PubMed: 21653534]
7. Vidrine DJ. Cigarette smoking and HIV/AIDS: Health implications, smoker characteristics and cessation strategies. *AIDS Educ Prev.* 2009; 21(Suppl A):3–13. [PubMed: 19537950]
8. Feldman JG, Minkoff H, Schneider MF, et al. Association of cigarette smoking with HIV prognosis among women in the HAART era: a report from the Women's Interagency HIV Study. *Am J Public Health.* 2006; 96(6):1060–1065. [PubMed: 16670229]
9. Grubb JR, Overton ET, Presti R, Onen NF. Reply to Ganesan et al. *J Infect Dis.* 2012; 205(3):518–519. [PubMed: 22124133]
10. Justice AC. HIV and aging: time for a new paradigm. *Curr HIV/AIDS Rep.* 2010; 7(2):69–76. [PubMed: 20425560]
11. Onen NF, Overton ET. HIV and aging: two converging epidemics. *Mo Med.* 2009; 106(4):269–273. [PubMed: 19753918]
12. Fiore MC, Jaen CR, Baker TB, et al. A clinical practice guideline for treating tobacco use and dependence: 2008 update. A U.S. Public Health Service report. *Am J Prev Med.* 2008; 35(2):158–176. [PubMed: 18617085]
13. Cromwell J, Bartosch WJ, Fiore MC. Cost-effectiveness of the clinical practice recommendations in the AHCPR guideline for smoking cessation. Agency for Health Care Policy and Research. *JAMA.* 1997; 278(21):1759–1766. [PubMed: 9388153]
14. Cokkinides V, Ward E, Jemal A, et al. Underuse of smoking-cessation treatments: results from the National Health Interview Survey, 2000. *Am J Prev Med.* 2005; 28(1):119–122. [PubMed: 15626567]
15. Shiffman S, Brockwell SE, Pillitteri JL, Gitchell JG. Use of smoking-cessation treatments in the United States. *Am J Prev Med.* 2008; 34(2):102–111. [PubMed: 18201639]
16. Mamary EM, Bahrs D, Martinez S. Cigarette smoking and the desire to quit among individuals living with HIV. *AIDS Patient Care STDS.* 2002; 16(1):39–42. [PubMed: 11839217]
17. Shuter J, Salmo LN, Shuter AD, et al. Provider beliefs and practices relating to tobacco use in patients living with HIV/AIDS: a national survey. *AIDS Behav.* 2011; 16(2):288–294. [PubMed: 21301950]
18. Aveyard P, Begh R, Parsons A, West R. Brief opportunistic smoking cessation interventions: a systematic review and meta-analysis to compare advice to quit and offer of assistance. *Addiction.* 2012; 107(6):1066–1073. [PubMed: 22175545]

19. Chan SSC, Leung DYP, Abdullah ASM, et al. A randomized controlled trial of a smoking reduction plus nicotine replacement therapy intervention for smokers not willing to quit smoking. *Addiction*. 2011; 106(6):1155–1163. [PubMed: 21226883]
20. Hughes JR, Rennard SI, Fingar JR, et al. Efficacy of varenicline to prompt quit attempts in smokers not currently trying to quit: a randomized placebo-controlled trial. *Nicotine Tob Res*. 2011; 13(10):955–964. [PubMed: 21652735]
21. Moore D, Aveyard P, Connock M, et al. Effectiveness and safety of nicotine replacement therapy assisted reduction to stop smoking: systematic review and meta-analysis. *BMJ*. 2009; 338:b1024. [PubMed: 19342408]
22. Cropsey KL, Hendricks PS, Jardin B, et al. A pilot study of Screening, Brief Intervention, and Referral for Treatment (SBIRT) in non-treatment seeking smokers with HIV. *Addict Behav*. 2013; 38(10):2541–2546. [PubMed: 23787030]
23. Ingersoll KS, Cropsey KL, Heckman CJ. A test of motivational plus nicotine replacement interventions for HIV positive smokers. *AIDS Behav*. 2009; 13(3):545–554. [PubMed: 18066659]
24. Lloyd-Richardson EE, Stanton CA, Papandonatos GD, et al. Motivation and patch treatment for HIV+ smokers: A randomized controlled trial. *Addiction*. 2009; 104(11):1891–1900. [PubMed: 19719796]
25. Benard A, Bonnet F, Tessier JF, et al. Tobacco addiction and HIV infection: toward the implementation of cessation programs. ANRS CO3 Aquitaine Cohort. *AIDS Patient Care STDS*. 2007; 21(7):458–468. [PubMed: 17651027]
26. Nahvi S, Cooperman NA. Review: the need for smoking cessation among HIV-positive smokers. *AIDS Educ Prev*. 2009; 21(3 suppl):14–27. [PubMed: 19537951]
27. Phillips JC, Oliffe JL, Ensom MHH, et al. An overlooked majority: HIV-positive gay men who smoke. *JMH*. 2012; 9(1):17–24.
28. Grover KW, Gonzalez A, Zvolensky MJ. HIV symptom distress and smoking outcome expectancies among HIV+ smokers: a pilot test. *AIDS Patient Care STDS*. 2013; 27(1):17–21. [PubMed: 23305258]
29. Burkhalter JE, Springer CM, Chhabra R, et al. Tobacco use and readiness to quit smoking in low-income HIV-infected persons. *Nicotine Tob Res*. 2005; 7(4):511–522. [PubMed: 16085522]
30. Reynolds NR. Cigarette smoking and HIV: more evidence in action. *AIDS Educ Prev*. 2009; 21(Suppl A):106–121. [PubMed: 19537958]
31. Chapman S, Wong WL, Smith W. Self-exempting beliefs about smoking and health: differences between smokers and ex-smokers. *Am J Public Health*. 1993; 83(2):215–219. [PubMed: 8427326]
32. Oakes W, Chapman S, Borland R, et al. "Bulletproof skeptics in life's jungle": which self-exempting beliefs about smoking most predict lack of progression towards quitting? *Prev Med*. 2004; 39(4):776–782. [PubMed: 15351545]
33. DeSantis AD. A couple of white guys sitting around talking: the collective rationalization of cigar smokers. *J Contemp Ethnogr*. 2003; 32(4):432–466.
34. Nicholas PK, Voss JG, Corless IB, et al. Unhealthy behaviours for self-management of HIV-related peripheral neuropathy. *AIDS Care*. 2007; 19(10):1266–1273. [PubMed: 18071970]
35. Blumberg SJ. Guarding against threatening HIV prevention messages: an information-processing model. *Health Educ Behav*. 2000; 27(6):780–795. [PubMed: 11104375]
36. Robinson W, Moody-Thomas S, Gruber D. Patient perspectives on tobacco cessation services for persons living with HIV/AIDS. *AIDS Care*. 2012; 24(1):71–76. [PubMed: 22250886]
37. Gritz ER, Vidrine DJ, Lazev AB, et al. Smoking behavior in a low-income multiethnic HIV/AIDS population. *Nicotine Tob Res*. 2004; 6(1):71–77. [PubMed: 14982690]
38. Shuter J, Bernstein SL, Moadel AB. Cigarette smoking behaviors and beliefs in persons living with HIV/AIDS. *Am J Health Behav*. 2012; 36(1):75–85. [PubMed: 22251785]
39. Webb MS, Venable PA, Carey MP, Blair DC. Cigarette smoking among HIV+ men and women: examining health, substance use, and psychosocial correlates across the smoking spectrum. *J Behav Med*. 2007; 30(5):371–383. [PubMed: 17570050]
40. Matthews AK, Conrad M, Kuhns L, et al. Project Exhale: preliminary evaluation of a tailored smoking cessation treatment for HIV-positive African American smokers. *AIDS Patient Care STDS*. 2013; 27(1):22–32. [PubMed: 23305259]

41. Stanton CA, Lloyd-Richardson EE, Papandonatos GD, et al. Mediators of the relationship between nicotine replacement therapy and smoking abstinence among people living with HIV/AIDS. *AIDS Educ Prev.* 2009; 21(3 Suppl):65–80. [PubMed: 19537955]
42. Marteau TM, Aveyard P, Munafo MR, et al. Effect on adherence to nicotine replacement therapy of informing smokers their dose is determined by their genotype: a randomized controlled trial. *PLoS ONE.* 2012; 7(4):e35249. [PubMed: 22509402]
43. Mondy K, Overton ET, Tong S, et al. Metabolic syndrome in HIV within a representative U.S. patient population. *Clin Infect Dis.* 2007; 44(5):726–734. [PubMed: 17278068]
44. Fishbein M. The role of theory in HIV prevention. *AIDS Care.* 2000; 12(3):273–278. [PubMed: 10928203]
45. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process.* 1991; 50(2):179–211.
46. Borland R, Yong H, Balmford J, et al. Do risk-minimizing beliefs about smoking inhibit quitting? Findings from the International Tobacco Control (ITC) four-country survey. *Prev Med.* 2009; 49(2–3):219–223. [PubMed: 19573553]
47. National Cancer Institute. [Accessed May 22, 2008] Dispelling myths about nicotine replacement therapy. Available at: <http://cancercontrol.cancer.gov/tcrb/documents/MythsaboutNRTFactSheet.pdf>.
48. Christensen AJ, Moran PJ, Ehlers SL, et al. Smoking and drinking behavior in patients with head and neck cancer: effects of behavioral self-blame and perceived control. *J Behav Med.* 1999; 22(5):407–418. [PubMed: 10586379]
49. Weinstein N, Marcus SE, Moser RP. Smokers' unrealistic optimism about their risk. *Tob Control.* 2005; 14(1):55–59. [PubMed: 15735301]
50. Weinstein, ND. Conceptualizing and measuring risk perception; Paper presented at the Conceptualizing and Measuring Risk Perceptions Workshop; Washington, D.C.. 2003. Available at: <http://cancercontrol.cancer.gov/brp/presentations/weinstein.pdf>.
51. Smith SY, Curbow B, Stillman FA. Harm perception of nicotine products in college freshman. *Nicotine Tob Res.* 2007; 9(9):977–982. [PubMed: 17763115]
52. Horne R, Weinman J, Hankins M. The beliefs about medicines questionnaire: the development and evaluation of a new method for assessing the cognitive representation of medication. *Psychol Health.* 1999; 14(1):1–24.
53. Gross B, Brose L, Schumann A, et al. Reasons for not using smoking cessation aids. *BMC Public Health.* 2008; 8:129–137. [PubMed: 18430206]
54. Kleinjan M, van den Eijnden RJJM, Dijkstra A, et al. Excuses to continue smoking: the role of disengagement beliefs in smoking cessation. *Addict Behav.* 2006; 31(12):2223–2237. [PubMed: 16580150]
55. Dijkstra A, De Vries H, Kok G, Roijackers J. Self-evaluation and motivation to change: social cognitive constructs in smoking cessation. *Psychol Health.* 1999; 14(4):747–759.
56. Vogt F, Hall S, Marteau TM. Understanding why smokers do not want to use nicotine dependence medications to stop smoking: qualitative and quantitative studies. *Nicotine Tob Res.* 2008; 10(8):1405–1413. [PubMed: 18686189]
57. Velicer WF, Diclemente CC, Rossi JS, Prochaska JO. Relapse situations and self-efficacy: an integrative model. *Addict Behav.* 1990; 15(3):271–283. [PubMed: 2378287]
58. Shiffman S, Ferguson SG, Rohay J, Gitchell JG. Perceived safety and efficacy of nicotine replacement therapies among US smokers and ex-smokers: relationship with use and compliance. *Addiction.* 2008; 103(8):1371–1378. [PubMed: 18855827]
59. Barnes J, Dong CY, McRobbie H, et al. Hypnotherapy for smoking cessation. *Cochrane Database of Systematic Reviews*, Issue 10. 2010 Art. No.: CD001008.
60. Thanavaro JL, Delicath TA. Auricular transcutaneous electrostimulation therapy and intensive counseling for the treatment of smoking cessation in a primary care practice. *J Addict Nurs.* 2010; 21(4):215–224.
61. White AR, Rampes H, Liu JP, et al. Acupuncture and related interventions for smoking cessation. *Cochrane Database of Systematic Reviews*, Issue 1. 2011 Art. No.: CD000009.
62. Morojele, NK.; Stephenson, GM.; Rutter, DR.; Quine, L. Addictive behaviours: predictors of abstinence intentions and expectations in the theory of planned behaviour. In: Rutter, DR.; Quine,

- L., editors. *Social Psychology and Health: European Perspectives*. Aldershot: Avebury; 1994. p. 47-88.
63. Beck L, Ajzen I. Predicting dishonest actions using the theory of planned behavior. *J Res Pers*. 1991; 25(3):285–301.
 64. Gibbons FX, Gerrard M, Blanton H, Russell DW. Reasoned action and social relation: willingness and intention as independent predictors of health risk. *J Pers Soc Psychol*. 1998; 74(5):1164–1180. [PubMed: 9599437]
 65. DiClemente CC, Prochaska JO, Fairhurst SK, et al. The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. *J Consult Clin Psychol*. 1991; 59(2):259–304.
 66. Fagerstrom KO, Kunze M, Schoberberger R, et al. Nicotine dependence versus smoking prevalence: comparisons among countries and categories of smokers. *Tob Control*. 1996; 5(1):52–56. [PubMed: 8795860]
 67. Toll BA, McKee SA, Martin DJ, et al. Factor structure and validity of the Medication Adherence Questionnaire (MAQ) with cigarette smokers trying to quit. *Nicotine Tob Res*. 2007; 9(5):597–605. [PubMed: 17454716]
 68. Saunders JB, Aasland OG, Babor TF, et al. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption--II. *Addiction*. 1993; 88(6):791–804. [PubMed: 8329970]
 69. National Institute on Alcohol Abuse and Alcoholism. [Accessed July 12, 2013] Overview of alcohol consumption: moderate and binge drinking. Available at: <http://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/moderate-binge-drinking>.
 70. Fu SS, Kodl MM, Joseph AM, et al. Racial/ethnic disparities in the use of nicotine replacement therapy and quit ratios in lifetime smokers ages 25 to 44 years. *Cancer Epidemiol Biomarkers Prev*. 2008; 17(7):1640–1647. [PubMed: 18583471]
 71. Bolt DM, Piper ME, Theobald WE, Baker TB. Why two smoking cessation agents work better than one: role of craving suppression. *J Consult Clin Psychol*. 2012; 80(1):54–65. [PubMed: 22103958]
 72. Loh WY, Piper ME, Schlam TR, et al. Should all smokers use combination smoking cessation pharmacotherapy? Using novel analytic methods to detect differential treatment effects over 8 weeks of pharmacotherapy. *Nicotine Tob Res*. 2012; 14(2):131–141. [PubMed: 22180577]
 73. Shah SD, Wilken LA, Winkler SR, Lin SJ. Systematic review and meta-analysis of combination therapy for smoking cessation. *J Am Pharm Assoc*. 2003; 48(5):659–665.
 74. Willems RA, Willemsen MC, Nagelhout GE, de Vries H. Understanding smokers' motivations to use evidence-based smoking cessation aids. *Nicotine Tob Res*. 2013; 15(1):167–176. [PubMed: 22573725]
 75. Fiore, MC.; Jaen, CR.; Baker, TB., et al. Treating Tobacco Use and Dependence: 2008 update. Clinical Practice Guideline. U.S. Department of Health and Human Services. Public Health Service; 2008.
 76. Zwiebel MA, Hughes V. Smoking cessation efforts in one New York city HIV clinic. *J Assoc Nurses AIDS Care*. 2010; 21(1):11–15. [PubMed: 20123266]
 77. Conner M, McEachan R, Jackson C, et al. Moderating effect of socioeconomic status on the relationship between health cognitions and behaviors. *Ann Behav Med*. 2013; 46(1):19–30. [PubMed: 23436276]
 78. Bansal MA, Cummings M, Hyland A, Giovino GA. Stop-smoking medications: who uses them, who misuses them, and who is misinformed about them? *Nicotine Tob Res*. 2004; 6(Suppl 3):S303–S310. [PubMed: 15799593]
 79. Cummings KM, Hyland A, Giovino GA, et al. Are smokers adequately informed about the health risks of smoking and medical nicotine? *Nicotine Tob Res*. 2004; 6(Suppl 3):S333–S340. [PubMed: 15799596]

Table 1

Sample Characteristics

	N = 146 ^a	%
<i>Sex: Men</i>	100	68.5
<i>Age (Range 20 to 63)</i>	M = 40.5	SD = 10.8
<i>Race</i>		
White	14	9.6
Black/African American	120	82.2
Other	12	8.2
<i>Marital status</i>		
Married/ living with a partner	27	18.5
Single/never married	89	61.0
Widowed/divorced/separated	28	19.2
<i>Current employment status: Unemployed</i>	114	78.1
<i>Education</i>		
Less than high school	32	21.9
High school grad or GED	71	48.6
Post high school education	42	29.0
<i>General Health Status</i>		
Excellent/very good	38	26.0
Good	60	41.0
Fair/poor	47	32.2
<i>Do you smoke cigarettes?</i>		
Yes, every day	108	74.0
Yes, some days	35	24.0
No, not at all	3	2.1
<i>How many years have you smoked?</i>	M = 18.5	SD = 10.9
<i>Have you ever tried to quit smoking? Yes</i>	107	73.3
<i>How many times have you tried to quit in the past 12 months?</i>		
Of the 45% who reported 1 quit attempts in past 12 months:	N = 66, M = 5.1	SD = 8.1
<i>Fagerström test for nicotine dependence</i>	M = 4.68	SD = 2.1
0–4 Low dependence	56	38.4
5 Moderate dependence	18	12.3
6–10 High dependence	67	45.9
<i>Frequency × quantity of alcohol use</i>		
Non-drinker	30	20.5

	N = 146 ^a	%
Moderate	92	63.0
Heavy	10	13.0
<i>Income adequacy</i>		
Comfortable	22	15.1
Have just enough to make ends meet	59	40.4
Do not have enough to make ends met	64	43.8
<i>Insurance</i>		
None	11	7.5
Private	8	5.5
Medicare and/or Medicaid	89	61.0
Other	36	24.7
<i>General medication adherence</i>		
Ever forget to take medicine	64	43.8
Careless at times about taking medicine on schedule	50	34.2

^aValues may not equal the total sample size due to missing data

M=Mean, SD=Standard deviation

Table 2**Descriptive Statistics of Survey Responses**

Knowledge (true/false)	Sum M = 3.89	SD = 1.33
	% Correct	
It is easy to get addicted to nicotine replacement products (false)	52.1	
Nicotine replacement and cessation medications can double a smoker's chances of quitting successfully (true)	65.8	
Only one nicotine replacement product can be used at a time (false)	26.7	
All nicotine replacement products require a doctor's prescription (false)	58.2	
Nicotine causes cancer (false)	32.9	
Smoke from cigarettes causes cancer (true)	72.6	
Nicotine replacement and cessation medications help smokers quit by reducing smoker's cravings for cigarettes (true)	80.8	
Beliefs		
Absolute perceived risk of smoking (1–5 very low-very high)	M = 3.75	SD = 0.95
Absolute perceived risk of using NRT for a short time while quitting	12% very harmful	43% somewhat harmful 41% not at all harmful
Comparative perceived risk (NRT vs. cigarettes)	65% Less harmful	17% No difference 14% More harmful
Beliefs about Medicines Questionnaire (General negative attitude; 1–5 SD-SA)	M = 2.49	SD = 1.08
Reasons for not using cessation aids in the past (1–5 SD-SA):	M =	SD =
Did not know where to get help in order to use cessation aids	2.61	1.61
Was worried about what other people would think about me if I used cessation aids	1.89	1.30
Thought it would take too much time and energy to use cessation aids	2.39	1.45
Did not want to admit to myself that I needed cessation aids	2.62	1.63
It was unpleasant or embarrassing to use cessation aids	2.07	1.34
I did not feel able to talk to others about my smoking	2.10	1.37
I thought cessation aids would cost too much	3.15	1.66
I did not know that cessation aids existed	2.02	1.35
I believed cessation aids would not help me with my attempt to give up or reduce smoking	2.50	1.42
I thought I would be able to quit or reduce smoking on my own	3.53	1.54
Cessation aids did not help me quit before	2.52	1.45
I did not want cessation aids to affect other medications I take	2.62	1.52
I did not want to add more appointments to my schedule	2.37	1.45
Defensive beliefs about smoking (1–5 SD-SA)		
Message rejection subscale	2.07	0.99
Normalize the harm (jungle beliefs) subscale	2.72	1.11
Worth-it beliefs subscale	2.05	1.02
Disengagement scale	2.99	0.81
Attitudes (1–7 SD-SA)		
Benefits/pros of pharmacotherapy subscale	M = 4.26	SD = 1.44

Barriers/cons of pharmacotherapy subscale	3.03	1.15
<hr/>		
Social influence	N	%
<hr/>		
Doctor advised you to quit? Yes	106	72.6
Doctor assisted you to quit? Yes	40	27.4
Live with a smoker? Yes	73	50.0
Household smoke-free policies		
Not allowed to smoke anywhere at home	37	25.3
Allowed to smoke in certain places or times at home	40	27.4
Allowed to smoke anywhere at home	31	21.2
No rules	28	19.2
Social support (1=not at all true – 5=extremely true)	M =	SD =
<hr/>		
Social support for quitting smoking	4.20	1.26
Social support for using NRT	3.59	1.50
<hr/>		
Self-efficacy scale (1=not at all sure – 5=extremely sure)	3.09	1.21
<hr/>		
Intentions		
<hr/>		
Behavioral expectations <i>In the next 6 months, how likely are you to... (1=not at all – 5=extremely)</i>		
Stop smoking completely	3.05	1.45
Use NRT or prescription medication	2.73	1.37
Participate in counseling or a support group (in person, by telephone, or online)	2.75	1.46
<hr/>		
Behavioral willingness <i>In the next 6 months, how willing are you to... (1=not at all – 5=extremely)</i>		
Stop smoking if your doctor told you to	3.59	1.49
Use NRT or prescription medication	3.11	1.41
Participate in counseling or a support group (in person, by telephone, or online)	3.01	1.50
<hr/>		
Readiness to quit (stage of change)	N	%
<hr/>		
Precontemplation	66	45.2
Contemplation	39	26.7
Preparation	37	25.3
Action	3	2.1
<hr/>		

M=Mean, SD=Standard deviation, SD-SA = strongly disagree-strongly agree

Table 3

Univariate Associations of Benefits and Barriers about, Prior Use, and Future Willingness to Use Pharmacotherapy

<i>Correlates</i>	Benefits	Barriers	Prior use (Never/ Ever) OR (95% CI)	Willingness
Knowledge	$r = .19, p < .05$			$r = .23, p < .01$
Absolute perceived harm of smoking	$r = .47, p < .001$			$r = .33, p < .001$
Comparative perceived risk (pharma v. cigs)		$r = .47, p < .001$		
BMQ: harms of meds in general		$r = .36, p < .001$	0.71 (0.51 – 0.98) *	
Reasons for prior non-use		$r = .20, p < .05$		
Defenses: Message rejection		$r = .47, p < .001$		
Defenses: Normalize the risk		$r = .20, p < .05$		
Defenses: Worth it beliefs		$r = .42, p < .001$		
Defenses: Disengagement	$r = .22, p < .01$	$r = .42, p < .001$		
Physician prescription/order for pharma			3.73 (1.70–8.16) ***	
Social support for quitting	$r = .29, p < .001$			$r = .23, p < .01$
Social support for using pharma	$r = .27, p < .001$		1.31 (1.04–1.66) *	$r = .37, p < .001$
Self-efficacy for using pharma	$r = .56, p < .001$			$r = .45, p < .001$
Age	$r = -.18, p < .05$			
Divorced/separated/widowed vs. never married			0.33 (0.11–0.98) *	
Education	$r = .24, p < .01$			$r = .22, p < .01$
Health: excellent to poor			1.49 (1.06–2.08) *	
Number of years smoked		$r = -.18, p < .05$		
Nicotine dependence			1.21 (1.03–1.43) *	
Income adequacy: just enough vs. not			2.79 (1.34–5.84) **	
Medicaid vs. any other insurance			2.34 (1.06–5.16) *	
Benefits of using pharma	--	$r = .23, p < .01$		$r = .50, p < .001$
Prior use – pharma (never/ever)	--	--	--	$t(140) = -2.74, p < .01$

<i>Correlates</i>	Benefits	Barriers	Prior use (Never/ Ever) OR (95% CI)	Willingness
				Never M = 2.83 SD = 1.41 Ever M = 3.48 SD = 1.35
Readiness to quit		F(2,137) = 8.14, p < .001		F(2,135) = 5.63, p < .01
<i>Precontemplation</i>		M = 2.90 SD = 1.06		M = 2.70 SD = 1.42
<i>Contemplation</i>		M = 2.65 SD = 1.01		M = 3.37 SD = 1.25
<i>Preparation</i>		M = 3.62 SD = 1.19		M = 3.56 SD = 1.34

Legend: pharma = pharmacotherapy, r= Pearson correlation coefficient, OR=odds ratio, t = Student's t-test, M=mean, SD=standard deviation,

* p < .05;

** p < .01;

*** p < .011

-- variable not included in analysis

Covariates not significant in any model: Cons of using pharma, prior quit attempts, general medication adherence, physician advice to quit

Table 4

Smokers' Prior Experiences and Interest in Various Cessation Aids

	Ever used		Ever recommended by doctor		Negative experiences or side effects		Interest in future use	
	n	%	n	%	n	% of ever used	n	%
Recommended Evidence-based Cessation Aids								
Any pharmacotherapy	64	43.8	50	34.2	39	60.9	67	45.9
Any counseling (individual, quitline, support groups)	32	21.9	19	13.0	21	65.6	38	26.0
Alternative Cessation Strategies								
Quit "cold turkey"	55	37.7	21	14.4	31	56.4	54	37.0
Slowly cutting down cigarettes per day	50	34.2	31	21.2	16	32.0	54	37.0
Electronic cigarette	19	13.0	10	6.8	13	68.4	40	27.4
Self-help (internet, print, videos)	21	14.4	11	7.5	15	71.4	33	22.6
Herbal remedies, teas, supplements	18	12.3	11	7.5	13	72.2	33	22.6
Hypnosis	17	11.6	9	6.2	11	64.7	25	17.1
Auricular therapy	19	13.0	8	5.5	10	52.6	23	15.8
Acupuncture	17	11.6	7	4.8	11	64.7	21	14.4