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Older versus Younger Treatment-Seeking Smokers: Differences in Smoking Behavior, Drug and Alcohol Use, and Psychosocial and Physical Functioning

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Abstract

Quitting smoking benefits older individuals, yet there are few recent data describing older smokers. The goal of this paper was to test a series of hypotheses about differences between smokers age 50 years and older (50⁺) and those younger than age 50 (<50), presenting to the same treatment facility during 2002–2004 for participation in two randomized clinical trials: one exclusively for smokers age 50⁺, and a second open to smokers age 18 and older. As predicted, smokers age 50⁺ were more tobacco dependent, had better psychological functioning, and poorer physical functioning than those <50. Contrary to predictions, there were no differences in motivation to quit cigarette smoking or in alcohol use. Women age 50⁺ were less likely to report marijuana use than women <50, and less likely to receive a positive diagnosis for alcohol abuse than men. Despite higher scores on measures of tobacco dependence, older smokers were less likely to be diagnosed as tobacco dependent or having tobacco withdrawal using DSM-IV criteria. Rates of DSM-IV alcohol abuse and dependence were high in both age groups but were higher for smokers <50. There were no striking differences between studies in reasons for exclusion, but in both, the proportion of individuals excluded due to current antidepressant use was high. Implications for the assessment and treatment of older adults are discussed.

Keywords

tobacco dependence; treatment; older smokers

1. INTRODUCTION

Smoking is a risk factor for 7 of the 14 major causes of death for persons over the age of 65, implicated in cardiovascular disease, cancer, stroke and other cerebrovascular disease, high blood pressure, chronic obstructive pulmonary disease, diabetes, arteriosclerosis, ulcers and cataracts. It is associated with higher prevalence of bronchitis, shortness of breath, coughing, colds, loss of stamina, pneumonia and osteoporosis (Orleans, Rimer, Cristinzio, Keintz, and Fleisher, 1991). Many older adults use multiple medications, and cigarette smoking complicates therapeutic regimes by altering drug metabolism.

Data summarized by Orleans, Rimer, Cristinzio, Keintz, and Fleisher, (1991) and by Gourlay and Benowitz, (1996) indicate that the benefits of quitting are marked in individuals over 50 in their effects on cardiovascular disease. An analysis by Peto, Darby, Deo, Silcocks, Whitley, and Doll, (2000) indicated that men who continued smoking to age 75

had a 15.9% risk of lung cancer at that point; those who had stopped by age 60 reduced the risk at age 75 to 9.9%. Those who quit by age 50 reduced their risk at age 75 to 6%. For women, the comparable figures were a 9.5% risk of lung cancer at age 75 for continuing smokers, reduced to 5.3% for women who stopped smoking at age 60, and 2.2% among women who stopped smoking at age 50. While the degree of benefit for quitting smoking may decrease with increasing age, benefits for most disease states and for longevity are still present even at the oldest ages (Burns, 2000; Taylor, Hasselblad, Henley, Thun, and Sloan, 2002).

There are no recent descriptive studies of older smokers that provide detailed information about older smokers. A survey published in 1990 from the American Association of Retired People (AARP) reported that older smokers (50+ years) were long time (\bar{x} =45 yrs.) smokers who smoked many cigarettes (\bar{x} =23); greater than 1/3 smoked high nicotine brands, and greater than 2/3 indicated that they smoked within 30 minutes of waking. Many were thinking about quitting in the next year (44%), or had tried to quit in the last year (42%) (Rimer, Orleans, Keintz, Cristinzio, and Fleisher, 1990). Descriptive statistics derived from the few, mostly small, smoking cessation trials in this age group published between 1990 and 1997 present a similar picture. Participants report smoking between 24–27 cigarettes per day, with years of smoking ranging from 45–50. Percentages of smokers qualifying as heavy smokers (>25 cigarettes per day) range from 35% to 50%. Many study participants reported having have their first cigarette of the day within 30 minutes of arising, with a range from 36 to 90 (Morgan, Noll, Orleans, Rimer, Amfoh and Bonney, 1996; Orleans et al., 1994; Ossip-Klein, Carosella, and Krusch, 1997; Rimer and Orleans, 1994; Vetter and Ford, 1990).

As far as we could find, there have been no recent randomized controlled trials of smoking cessation interventions for older smokers. One recent, non-randomized study in Australia reported that, among those interested in quitting, use of NRT, male gender, high anxiety, and rejection of ‘more colds and coughs’ as a reason for quitting predicted successful quitting (Tait et al., 2007). Ossip-Klein, McIntosh, Utman, Burton, Spada, and Guido, (2000) studied physician advice to quit given to older smokers, and found that older smokers react favorable to such advice, that that sicker patients were more likely to receive physician advice than those in good health. There have been recent descriptive studies of older smokers. A frequently studied characteristic is the relationship between cognitive functioning and cigarette smoking. The results appear mixed as to whether smoking affects cognitive functioning (for example, (Chen, Wang, Wang, Fuh, Lin and Liu, 2003; Haas, Eng, Dowling, Schmitt, and Hall, 2005; Paul et al., 2006; Razani, Boone, Lesser, and Weiss, 2004; Reitz, Luchsinger, Tang, and Mayeux, 2005)). Data on other characteristics of older smokers as compared to never smokers and former smokers are sparse. Perhaps the most consistent finding is that smoking rates are lowest among the oldest individuals—those 75 years of age and greater (Arday, Lapin, Chin, and Preston, 2002).

Older smokers are proportionately a fast growing segment of the population. For example, Husten, Shelton, Chrisman, Lin, Mowery, and Powell, (1997) noted that although smoking prevalence among adults over 65 declined from 17.9% to 12.0% from 1965 to 1994, the number of smokers aged 65 and over actually increased by 20% (from 3.078 million to 3.687 million) because of population growth in this age group, and a slower rate of cessation.

Older individuals are experiencing better health status, longer work-lives and greater social involvement than in the past (Dingfelder, 2004; Dittman, 2004; Government Accountability Office (GAO), 2005; Greer, 2004) and thus may differ from older smokers of previous generations. A clearer understanding of the characteristics of older smokers may help in the development of improved treatments for this growing age group.

The purpose of the present study was to describe smokers 50 years of age and older who sought treatment between 2002 and 2004 and to compare them to younger smokers (less than 50 years old) presenting to the same smoking treatment facility during the same time period. Two studies were being conducted during that period. One (Study 1, N=403) was limited to smokers 50 years of age and older, the second (Study 2, N=407) was open to smokers age 18 years and older. We selected 50 years of age as the cut-off point to define 'older' to be consistent with the most recent version of the tobacco treatment Practice Guidelines (Fiore, Barley, and Cohen, 2000). We evaluated six hypotheses:

1. Smokers 50 years of age and older (50⁺) would be more tobacco dependent than those under 50 (<50).
2. Smokers 50⁺ would have better psychological and social functioning than those <50.
3. Smokers 50⁺ would be more motivated to quit and maintain complete abstinence than those <50.
4. Smokers 50⁺ would report less alcohol use than those <50.
5. Smokers 50⁺ would report less marijuana use than those <50.
6. Smokers 50⁺ would report poorer physical functioning than smokers <50.

The first hypothesis, that older smokers would be more tobacco dependent, was derived from the existing literature on older smokers, reviewed above. The second hypothesis, that they would have better mental health and social functioning, was derived from the literature suggesting that older adults are less likely to report poor moods and other symptoms of mental health dysfunction than younger individuals (Klapow, Kroenke, Horton, Schmidt, Spitzer, and Williams, 2002). Whether this is due to lesser sensitivity to poor moods, denial of them, or simply less concern about them is unknown (Lebowitz et al., 1997; Lyness, Cox, Curry, Conwell, King, and Caine, 1995). The third hypothesis, that older smokers would be more motivated to quit, was derived from the concept that older smokers would be more likely to have experienced the health consequences of smoking, and therefore would be more motivated to quit. Based on the data that indicates that heavy drinking decreases with age (Satre, Gordon, and Weisner, 2007), the fourth hypothesis proposed that alcohol use would be lower among individuals age 50 and older than those under 50. Similarly, we hypothesized that illicit drug use, as typified by marijuana use, would be less among smokers age 50 and older. Lastly, we anticipated that older smokers would have more problems in physical functioning than younger smokers based on the health changes that are expected to occur with aging.

Also, although we did not have specific hypotheses about them, we obtained diagnoses of Major Depressive Disorder, Alcohol Abuse and Alcohol Dependence, and Nicotine Withdrawal and Nicotine Dependence at baseline. We examined the frequency of diagnostic category by age group.

To better understand older smokers in the community, we examined the reasons for excluding subjects from the research. Our comparisons were based on the exclusionary data from Study 1, the study of patients age 50 and older and those of Study 2, the study open to patients 18 years and older, to determine if there were different reasons for individuals not being accepted into the study.

2. METHODS

2.1. Participants

Participants (N=810) were drawn from two clinical trials for the treatment of tobacco dependence. These trials took place at a university-affiliated smoking treatment clinic in a large, urban area in the western part of the United States. Participants were recruited through advertising, public service announcements, flyers, and direct mailing. In order to be eligible for either study, participants needed to smoke a minimum of 10 cigarettes per day. Descriptive statistics for individuals age 50 and older and those under 50 are shown in Table 1.

In Study 1, the protocol consisted of a 12-week course of behavioral group and pharmacological intervention (nicotine gum and sustained release bupropion). Participants were randomly assigned to one of four treatment conditions for the remaining 40 weeks of follow-up treatment. In Study 2 the protocol consisted of a 12-week behavioral group treatment and pharmacological intervention (nicotine patch and sustained release bupropion). Participants were randomly assigned to one of five treatment conditions for the remaining 40 weeks of follow-up treatment.

2.2. Variables and Measures

2.2.1. Tobacco Dependence—Tobacco dependence, evaluated in the first hypothesis, was determined by three variables: Number of cigarettes smoked per day in the past week at baseline, years of regular smoking, and total score on the Fagerström Test of Nicotine Dependence (FTND). The FTND measures smoking behaviors indicative of physical dependence and is frequently used in smoking treatment research (Heatherton, Kozlowski, Frecker, and Fagerström, 1991). We opted not to include the diagnostic classification of nicotine dependence and withdrawal as indicators of dependence because it had not predicted outcome for us in earlier studies, and more general validity concerns (for example, (Hughes, 2006)).

2.2.2. Psychosocial Functioning—Psychosocial functioning was measured by four instruments: (1) The Profile of Mood States (POMS) is a 65-item measure, which yields scores on six subscales (depression, tension, anger, confusion, fatigue and vigor). The Total Mood Disturbance score (TMD) is calculated by summing the first five scales and subtracting the vigor scale score (McNair, Lorr, and Droppleman, 1992), with higher scores indicating a higher level of mood disturbance. (2) The Perceived Stress Scale (PSS) is a 14-item Likert scale measuring the degree to which situations in one's life are appraised as stressful, with higher scores indicating higher levels of perceived stress. The PSS has good reliability and has shown excellent validity in its correlations with two life-events scale. (Cohen, Kamarck, and Mermelstein, 1983). (3) The Social Participation Index (SPI) was used to determine the participant's level of social interaction. The SPI consists of six indices addressing general structure support derived from a social network inventory (Havassy, Hall, and Wasserman, 1991). (4) The SF-36 Mental Health Composite Score of the Medical Outcomes Study Short Form (SF-36) provides an overall measure of emotional health by creating a standardized composite score based on four subscales: Vitality, Social Functioning, Role-Emotional, and Mental Health, with higher scores indicating a higher level of functioning. It is widely used measure of health functioning, has been evaluated in many and diverse samples, and shows satisfactory reliability and construct validity (Ware, 1996).

2.2.3. Motivation to Quit—Motivation to Quit was determined by two items from the Thoughts About Abstinence Scale (Hall, Havassy, and Wasserman, 1990; Hall, Havassy,

and Wasserman, 1991): an item assessing desire to quit smoking, rated on a scale of 1 to 10; and a categorical item asking subjects to endorse one of six goals with respect to quitting, ranging from having no goal, to goals of partial or temporary abstinence and complete and total abstinence. This instrument has been used to study opiate and stimulant users, tobacco smokers, and has construct validity (Hall, Havassy, and Wasserman, 1990; Hall, Havassy, and Wasserman, 1991; Hall et al., 2006).

2.2.4. Alcohol and Marijuana Use—Alcohol use was measured by two items asking the number of days the individual had an alcoholic drink and the average number of drinks per day. Marijuana use was determined by a single self-report item, assessing the number of days of the week that the individual had used marijuana in the past week.

2.2.5. Physical Functioning—The Physical Composite Score of the SF-36 was used to determine the extent to which health status limited ability to perform physical activities such as walking. The Physical Composite Score of the SF-36 is comprised of scores from four subscales: Physical Functioning, Role-physical, Bodily Pain, and General Health with higher scores indicating a higher level of physical functioning. It has been widely used in a variety of samples, and has good psychometric properties (Ware, 1996).

2.2.6. Diagnostic Data—Diagnoses of Major Depressive Disorder (MDD), Alcohol Abuse and Dependence, and Nicotine Withdrawal and Dependence were determined by use of the Computerized Diagnostic Interview Schedule (C-DIS) (Robins, Cottler, Bucholz, Compton, North, and Rourke, 2000). The C-DIS is a widely used instrument based on the diagnostic categories as described in the Diagnostic and Statistical Manual of the American Psychiatric Association, Version IV (American Psychological Association, (APA) 1994).

2.2.7. Exclusions—Data on reasons for exclusion for participation were taken from two sources. The first were clinic phone logs. For each phone contact with the clinic recruiting phone number, staff completed a screening questionnaire. If a subject did not meet any of the exclusionary criteria, the study was explained to them and they were invited to an orientation meeting. For subjects who were excluded, reasons for exclusion were recorded. Second, at a pretreatment assessment, potential participants were given a screening physical and provided blood for an SMA-12 assay, a standard blood chemistry screening test. The C-DIS depression and dysthymia sections were administered to check for current MDD and bipolar disorder. Subjects could be excluded for current MDD or bipolar disorder, or if the screening physical or laboratory assays indicated a medical condition that precluded participation in the study.

2.3. Statistical Methods

Both studies 1 and 2 included smokers age 50 and over. There were no statistically significant differences between the two studies of smokers age 50 and over on the baseline variables, so we combined the data from the two studies.

The model for hypothesis testing was to predict the baseline variable as a function of age group, gender, and age group x gender. Generalized Linear Models (GLMs) were used for continuous descriptive variables. Logistic regression models were used for dichotomous descriptive variables.

To control the familywise error rate when conducting planned comparisons, we employed the Bonferroni test to obtain a new per comparison significance level ($\alpha_B = .05/\text{number of comparisons}$). The first hypothesis, that smokers 50⁺ would be more dependent than those <50, was tested by three GLMs with cigarettes smoked per day, number of years regular

smoker, and FTND score as the dependent variables ($\alpha = .017$). The second hypothesis, that smokers 50+ would have less mood and mental health dysfunction than those <50, was tested using POMS TMD score, Mental Health Scale of the SF-36, the Perceived Stress Scale and the Social Participation Index ($\alpha = .0125$). The third hypothesis, that smokers 50+ would have a stronger desire for abstinence than smokers <50, was tested by evaluating two items from the Thoughts about Abstinence Scale (Hall, Havassy, and Wasserman, 1990): desire to quit, and a goal of permanent abstinence ($\alpha = .025$). The fourth hypothesis, that smokers 50+ would drink less than those <50, was evaluated by comparing the number of days of alcohol use in the week preceding the baseline assessment and the average number of drinks per occasion, ($\alpha = .025$). The fifth hypothesis, that marijuana use would be less frequent in smokers 50+ than those <50, was compared by a single test of use versus not during the week preceding the assessment. The final hypothesis, that smokers 50+ would have poorer physical functioning than those <50 was determined by a single GLM. Designating category by age group, we determined by sample percentage and compared via chi-squared tests.

In order to examine non-participation by study, we computed frequencies of reasons for exclusion from the study for Study 1 and Study 2 separately. We present statistics on cigarette smoking variables not included in the hypotheses and diagnostic categorizations for descriptive purposes.

3. RESULTS

3.1. Hypothesis Tests

Cigarette smoking variables are shown in Table 2. Of the three variables used to test the hypothesis of nicotine dependence, two were significant in the hypothesized direction. Smokers age 50+ smoked significantly more cigarettes per day ($\bar{x}=20.8$, $SD=8.9$) than those younger than 50 ($\bar{x}=18.4$, $SD=6.8$; $F=10.82$ (3, 809), $p<.0001$). Those age 50+ had smoked regularly for a longer period of time ($\bar{x}=37.9$ years, $SD=8.1$), than those <50 ($\bar{x}=20.2$ years, $SD=7.9$; $F=323.57$ (3, 808), $p<.0001$). Scores on the FTND were not significantly different.

For comparison with the earlier literature, Table 2 shows proportion of participants smoking ≥ 25 cigarettes per day, and proportion smoking within 30 minutes of arising.

The second hypothesis was confirmed by three of the four variables tested. Smokers age 50+ had lower scores on the POMS TMD ($\bar{x}=13.65$, $SD=28.1$) than those <50 ($\bar{x}=22.7$, $SD=29.0$; $F(3, 761)=8.91$, $p<.0001$), and had better mental health functioning as measured by the SF-36 Mental Health Composite Score ($\bar{x}_{50+}=50.6$, $SD=8.8$; $\bar{x}_{<50}=48.5$, $SD=8.9$; $F(3, 757) = 4.77$ $p=.0027$). Smokers age 50+ reported lower levels of perceived stress ($\bar{x}=19.2$, $SD=7.5$) than smokers <50 ($\bar{x}=21.1$, $SD=7.5$; $F(3, 789)=8.28$, $p<.0001$). The two age groups did not differ on level of social participation

The third hypothesis, that there would be differences between the age groups in motivation for abstinence, was not supported. Mean scores on the scaled question assessing desire for abstinence were identical—8.4 for each group ($SD_{50+}=1.6$; $SD_{<50}=1.5$). With respect to abstinence goals, 66.2 % of smokers age 50+ had a goal of total and complete abstinence, as compared 40.5 % of those <50 ($\chi^2=1.90$, $df=1$, $N=803$, $p=.167$).

The fourth hypothesis—that smokers age 50+ would drink less alcohol than those <50 was also not supported. There were no significant differences between the age groups in number of days of reported use ($\bar{x}_{50+}=2.3$, $SD=2.6$; $\bar{x}_{<50+}=1.9$, $SD=2.1$); or average number of

drinks per day ($\bar{x}_{50+} = .75$, $SD=1.1$; $\bar{x}_{<50} = .63$, $SD=.77$). Approximately equal percentages reported some alcohol use in the past year (age 50+, 61%; <50, 67%).

The fifth hypothesis was supported. Smokers age 50+ were significantly less likely to have used marijuana in the 7 days before the baseline assessment (17.3%) than those <50 (52.98%, $\chi^2=8.25$, $df=1$, $N=803$, $p = .0041$). There was also an age x gender interaction with respect to marijuana use ($\chi^2=4.51$, $df=1$, $N=801$, $p = .0336$), however. For subjects age 50+ years, men were more likely to have used marijuana in the past week (21.4%) than women (11.6%). There were no gender differences for those <50 years of age.

The sixth hypothesis that smokers age 50+ would have poorer physical functioning was supported ($\bar{x}_{50+} = 49.1$, $SD=8.9$; $\bar{x}_{<50} = 50.9$, $SD=7.3$).

3.2. Diagnostic Data

3.2.1. Depression Diagnoses—The proportion of participants who were diagnosed with a history of Major Depressive Disorder (MDD) at baseline was 28% for both age groups.

3.2.2. Nicotine Withdrawal and Dependence—For both DSM-IV Nicotine Dependence ($\chi^2=47.52$, $df=1$, $N=803$, $p < .0001$) and Nicotine Withdrawal ($\chi^2=15.11$, $df=1$, $N=803$, $p = .0001$) there were significant differences between age groups. Eighty-four percent of those age <50 were diagnosed as nicotine dependent, but only 62.3% of those age 50+. Similarly, while 53.2% of those <50 years old had a positive diagnosis for nicotine withdrawal, 39.4% of those age 50+ had such a diagnosis.

3.2.3. Alcohol Abuse and Dependence—While 24.6% of participants <50 years old were diagnosed as positive for alcohol dependence, only 17.0% of those age 50+ received the same diagnosis ($\chi^2=6.92$, $df=1$, $N=804$, $p=.0085$). Thirty-two percent of participants age 50+ had a positive diagnosis for alcohol abuse compared to 38.7% of those <50 years old ($\chi^2=3.89$, $df=1$, $N=802$, $p=.0493$). A gender by age group interaction was also found. For smokers age 50+, 41.6% of male participants were diagnosed with alcohol abuse, as compared with 18.5% of women ($\chi^2=26.01$, $df=1$, $N=802$, $p<.0001$). Of those <50 years old, 42.3% of the men and 32.8% of the women received a positive diagnosis of alcohol abuse by DSM-IV criteria.

3.3. Reasons for Exclusion

For Study 1, 1291 of the exclusions came from telephone screening. An additional 83 individuals were screened out at the pretreatment assessments for a total of 1374 potential subjects screened from the study. For Study 2, there were 1378 ineligible participants based on telephone screenings. An additional 47 potential participants were screened out at the pretreatment assessment, for a total of 1425.

In both studies, only three categories of exclusions exceeded 10% of the total exclusions. These were (1) currently using antidepressant medication (age 50+, 22.6% of exclusions; <50, 24.2%); (2) smoking <10 cigarettes per day (age 50+, 12.1%; <50, 15.4%); and (3) medical contraindications (age 50+, 12.7%; <50, 10.2%). Since Major Depression Disorder was not assessed during telephone screening, we can not estimate of the number of potential participants who applied to the program with current MDD. However, at the pre-treatment assessment, 6 of the participants under 50 and 9 participants over 50 were ruled out due to current depression.

4. DISCUSSION

Older smokers (age 50⁺) were heavier smokers than younger individuals. They reported experiencing less stress, better moods, and better mental health than the younger smokers. There was no difference in their levels of social involvement. There were no significant differences in alcohol consumption between the two groups. However, their marijuana use, especially that of the female subjects, was less than that of smokers under 50 years of age. Although these differences reached the preset levels of significance, for the most part they were numerically small since the large sample size provided considerable power.

Despite the small differences, the differences between older and younger smokers on psychosocial variables are consistent. Older smokers' report of their mood states, stressors, and mental health status may have implications for the design of treatment programs. For example, smokers under 50 may experience episodes of poor mood more frequently and be more likely to relapse in response to them simply due to increased event frequency. Emphasis on mood management may be less important for older smokers.

The smoking behavior of older smokers has changed in the past decade. Earlier studies reported mean numbers of cigarettes smoked ranging from approximately 23–27. The mean in the current study was approximately 21, which, while higher than younger smokers entering the clinic, is below that reported previously. Similarly, in the current study approximately 20% of older smokers reported smoking 25 or more cigarettes per day, while previous studies had reported ranges from 35–50%. On other smoking behavior measures, however, subjects entering our clinic were similar to those of 16 years ago. They had smoked for approximately 38 years. Approximately 70% smoked within 30 minutes of arising, within the range reported earlier. They remain a likely population for treatment with NRT, since their level of cigarette intake and years of smoking are higher than for younger smokers.

In both groups, the percentage of individuals with alcohol abuse or dependence is high. Clinically, staff reported that many participants were members of Alcoholics Anonymous (AA) or Narcotics Anonymous (NA). This could reflect variables unique to our clinic—for example, word of mouth referrals among AA attendees. We have no evidence this occurred, however.

Another surprising observation was the high percentage of potential smokers excluded from both studies due to antidepressant use, approximately 23–24% in both studies. There was nothing in the materials used to solicit participants that should have differentially attracted those with depressive disorders or using antidepressants. Neither the clinic nor the studies were identified as being associated with the Department of Psychiatry.

Older smokers smoked slightly more cigarettes than younger smokers, yet a smaller proportion had a nicotine dependence or a nicotine withdrawal diagnosis. There were no significant differences between the age groups in days of drinking or amount per day, yet the older smokers were less likely to have a diagnosis of alcohol dependence or abuse on the C-DIS. These findings led to informal examination of differences in endorsement rates of smokers in the two different age categories for diagnostic category on the C-DIS. The differences on the Alcohol Abuse section of the C-DIS appeared to be driven by a single item concerning the interference of drinking or withdrawal symptoms functioning in school. Examination of the items that comprise the Nicotine Withdrawal diagnosis suggested that older individuals were less likely to endorse subjective withdrawal symptoms than younger smokers. Examination of the Nicotine Dependence and Alcohol Dependence sections of the C-DIS did not provide information that could lead to a more systematic examination of the differences between the two age groups.

Differences between smokers 50 and older and those under 50, even those that were significant, were small. This finding calls into question the Practice Guidelines use of age 50 as the dividing line for older smokers. We did inspect our data to determine whether a different age (for example, 65) would provide a better cut-point, but none emerged. A study in a larger, population based sample, might provide an useful estimate, however. On the other hand, variables correlated with age, such as level of tobacco dependence, may be more important in designing treatment programs than age itself.

Generalization is limited by the restricted nature of the sample, that is, smokers applying to a university based smoking research clinic in an urban setting. This may differentially affect the smokers aged 50 years and older, since problems with mobility may have precluded participation by those in the very oldest age groups who may have concerns that would limit their participation; for example, traveling to the clinic. Nevertheless, they are suggestive of both differences and similarities between the two age groups that should be further explored in the general population.

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TABLE 1
DEMOGRAPHIC VARIABLES FOR TOTAL SAMPLE BY AGE GROUP

	Age <50 x̄ age=38.0 yrs (SD=7.3)	Age 50+ x̄ age=56.7 yrs (SD=5.7)	p-value
	N (%)	N (%)	
Number of participants	349 (43.1)	461 (56.9)	
Gender (Female)	131 (37.5)	190 (41.2)	.2891
Ethnicity (Non-Hispanic Caucasian versus all other)	244 (70.3)	346 (75.7)	.0865
Marital Status			<.0001
Single / Never Married	156 (45.1)	81 (17.8)	
Separated / Divorced / Widowed	63 (18.2)	180 (39.6)	
Married / Live with Partner	127 (36.7)	194 (42.6)	
Educational Level Achieved			.0020
High School Graduate or Less	57 (16.6)	55 (12.1)	
Some College	132 (38.4)	165 (36.3)	
College Graduate	113 (32.9)	134 (29.5)	
Some Graduate School	42 (12.2)	100 (22.0)	
Employment Status			<.0001
Employed	252 (73.0)	301 (66.9)	
Unemployed	58 (16.8)	42 (9.3)	
Retired	4 (1.2)	98 (21.8)	
Homemaker/Not otherwise employed	8 (2.3)	4 (.9)	
Student	23 (6.7)	5 (1.1)	

TABLE 2**CIGARETTE SMOKING VARIABLES**

	Age <50	Age 50+	p-value
Usual number of cigarettes per day	18.44 (6. 8)	20.8 (8.9)	<.0001*
Number of years smoked regularly	20.2 (7.9)	37.9 (8.1)	<.0001*
FTND Total score at Baseline	4.88 (2.02)	4.88 (2.08)	.9781
FTND Smoked within 30 minutes of arising	N=235 (69.5%)	N=316 (70.2%)	.8831
Number (and percent) of subjects reporting >25 cigarettes per day at Baseline	N=35 (10.3%)	N=95 (20.6%)	<.0001

Variables used for test of hypotheses 1 in bold; hypothesized comparison exceeding the set probability level of .017 indicated by *