

## ABSTRACT

**Objectives.** This study examined tobacco use prevalence, types of tobacco used, interest in quitting, and prior quit attempts among persons in methadone maintenance treatment.

**Methods.** Counselors collected surveys from 84% (550 of 655) of all clients in a 4-county metropolitan area.

**Results.** Most clients (77%) smoked cigarettes. Of the 59 former tobacco users, only 6 reported using a cessation pharmacotherapy to quit. Three quarters of the current smokers had attempted to quit at least once, with an average of 5 attempts. Most smokers (80%) were "somewhat" or "very" interested in quitting.

**Conclusions.** The quit ratio among methadone maintenance treatment clients was 12%, compared with 50% nationwide. To reduce morbidity and mortality, cessation interventions must be developed and disseminated. (*Am J Public Health*. 2001;91:296–299)

# Tobacco Use and Quit Attempts Among Methadone Maintenance Clients

Kimber Paschall Richter, PhD, MPH, Cheryl A. Gibson, PhD,  
Jasjit S. Ahluwalia, MD, MPH, MS, and Kristin H. Schmelzle, MA

Tobacco-related illness is a major cause of death for people who have undergone treatment for alcohol or illicit drug use.<sup>1,2</sup> Smoking rates appear to be very high among patients in methadone maintenance treatment, the treatment of choice for many people with opiate addiction. Although no representative data are available, several surveys have reported prevalence rates of 85% to 98%.<sup>3–5</sup>

Approximately a quarter of a million people in the United States and Europe are enrolled in methadone maintenance treatment.<sup>6</sup> Methadone is one of the most carefully controlled, monitored, and evaluated pharmacologic treatments in the history of medicine.<sup>7</sup> It reduces heroin use, opiate-related deaths, criminality, and rates of HIV infection<sup>6</sup> and is associated with increased employment and increased use of health and social services.<sup>8</sup> However, in national evaluations of methadone maintenance treatment,<sup>9–11</sup> little to no mention is made of monitoring or treating cigarette use among patients, even though smoking is associated with chronic illness and premature death among persons with a history of opiate dependence.<sup>1</sup>

This study was conducted to establish the prevalence of cigarette smoking, and interest in quitting, among methadone clients in a 4-county metropolitan area.

## Methods

### Subjects

Surveys were distributed to clients of methadone maintenance clinics serving 4 urban and suburban counties that span Greater Kansas City. Two of the 5 clinics were public programs, 2 were private and for profit, and 1 was private and not for profit. Eighty-four percent (550 of 655) of all clients served by the clinics completed and returned surveys.

### Measures

The self-administered 12-item questionnaire was designed to place minimal burden on clients and staff. The survey took 3 to 5 minutes to complete and was anonymous. Demographic questions included age, sex, highest grade or level of schooling, racial/ethnic background, and age at which participants first entered methadone treatment. Number of years in methadone treatment was calculated by subtracting age at which participants first entered methadone treatment from current age. This figure was an approximation of current smokers' exposure to methadone treatment, because some clients probably cycled in and out of treatment.

Seven questions about tobacco use were adapted from the Behavioral Risk Factor Surveillance System, the Youth Risk Behavior Survey, and the Mayo Nicotine Dependence Center Questionnaire.<sup>12–14</sup> In general, reliability of tobacco questions from these survey instruments is high.<sup>15,16</sup> The proportion of tobacco users who had successfully quit (quit ratio) was calculated by dividing the number of former tobacco users by the number of current and former tobacco users and then multiplying by 100.

Current cigarette smokers were asked to report the age at which they started smoking

---

Kimber Paschall Richter, Jasjit S. Ahluwalia, and Kristin Schmelzle are with the Department of Preventive Medicine, University of Kansas School of Medicine, Kansas City, and the Kansas Cancer Institute. Cheryl A. Gibson and Jasjit S. Ahluwalia are with the Department of Internal Medicine, University of Kansas School of Medicine.

Requests for reprints should be sent to Kimber Paschall Richter, PhD, MPH, Department of Preventive Medicine, University of Kansas Medical Center, 3901 Rainbow Blvd, Kansas City, KS 66160-7313 (e-mail: krichter@kumc.edu).

This brief was accepted April 13, 2000.

regularly, the number of cigarettes smoked per day, the number of times a quit attempt was made that lasted at least 24 hours, their longest quit attempt, their level of interest in quitting, and whether they would be interested in attending a smoking cessation program offered through methadone treatment. The number of years of smoking was derived by subtracting age at which cigarettes were smoked regularly from current age. This figure was an approximation of current smokers' exposure to tobacco, because some may have been abstinent for a short or long time.

### Procedure

Clinic counselors distributed surveys to their clients during their routine visits. Clients returned surveys either to a counselor or to a box at the methadone dispensing window. Counselors avoided surveying the same client more than once.

### Statistical Analysis

Descriptive statistics were calculated with SAS.<sup>17</sup> Frequencies and percentages were calculated for all categorical variables. Means, medians, SDs, and ranges were computed for continuous variables. Age was grouped into 5 categories. We used 5 racial/ethnic categories but in analyses combined these into 2 groups—White and people of color—to maximize

power to examine differences in smoking behaviors between racial/ethnic minority and White persons. Confidence intervals and hypothesis tests were constructed with Minitab (Minitab, Inc, State College, Pa) to examine sex and racial/ethnic differences in tobacco use. Inferential statistics included  $\chi^2$  analyses and *t* tests.

## Results

### Sample Characteristics

The majority of participants (52%) were aged 40 to 49 years (Table 1). The age range was 18 to 86 years. Sixty-three percent of the sample was male. Most respondents (81%) were White. Forty-two percent had some post-high school education. The number of years in methadone maintenance varied considerably among participants, with treatment spans of less than 1 year to 37 years. The population was not distributed homogeneously among clinics; women were significantly more likely than men to use public clinics ( $\chi^2=10.966, P<.001$ ), and people of color were more likely than Whites to attend public clinics ( $\chi^2=32.254, P<.001$ ).

### Tobacco Use

Among all 550 respondents, 78% currently used some form of tobacco, 11% were

former tobacco users, and 11% reported never using any form of tobacco (data not shown). No significant differences were found between Whites and people of color regarding proportions of people who currently used tobacco. When we analyzed the proportion of smokers within sex, a higher proportion of women (84%) than men (75%) were current tobacco users ( $\chi^2=5.944, P=.015$ ) (data not shown).

The quit ratio was 12%. Most former tobacco users had quit on their own, without any aid. Only 6 of the 59 former tobacco users reported using any pharmacotherapy to quit smoking: 4 with nicotine patches and 2 with nicotine gum. The quit ratio differed by race/ethnicity; 20% of the people of color but only 10% of the Whites had successfully quit ( $\chi^2=7.438, P=.006$ ).

### Cigarette Use

The cigarette smoking prevalence rate was 77% (Table 2). Most (98%) current tobacco users smoked cigarettes (data not shown). Only 12% of the tobacco users used other tobacco products. Cigarette smokers reported smoking an average of 20 (SD=12) cigarettes per day. No significant differences between males and females were found in number of cigarettes smoked. However, people of color smoked fewer cigarettes per day than did Whites (average of 17 and 24, respectively;  $t=5.72, P<.001$ ).

**TABLE 1—Profile of Participants**

Sociodemographic Characteristics <sup>b</sup>	Total Sample (N=550) <sup>a</sup>		Current Tobacco Users (n=430) <sup>c</sup>		Nonusers (n=118)	
	No.	%	No.	%	No.	%
Sex						
Male	346	63	259	60	85	73
Female	202	37	170	40	32	27
Age, y						
18–29	27	5	21	5	6	5
30–39	136	25	109	26	27	23
40–49	286	52	222	52	63	54
50–59	84	15	65	15	18	15
≥60	12	2	9	2	3	3
Racial/ethnic background						
White	443	81	355	83	88	76
African American	76	14	52	12	22	19
Other	25	5	19	4	6	5
Educational background						
High school or less	316	58	256	60	60	52
Post-high school	229	42	171	40	56	48
Years in methadone treatment <sup>d</sup>	10	0–37	10	0–37	10	0–33
Methadone program type						
Public	265	48	208	48	56	47
Private	285	52	222	52	62	53

<sup>a</sup>Subsample sizes for survey items differed slightly owing to nonresponse. For sex, n=548; for age, n=545; for ethnic background, n=544; for educational background, n=545; for years in methadone treatment, n=530; for methadone program type, n=550.

<sup>b</sup>Missing values were not included in calculations; unless otherwise indicated, chart shows frequency (percentage).

<sup>c</sup>Two persons did not indicate whether they were current tobacco users or non-tobacco users.

<sup>d</sup>Median (range).

**TABLE 2—Tobacco Use Characteristics of Methadone Maintenance Clients<sup>a</sup>**

	Frequency	
	No.	%
<b>Current tobacco use characteristics (N = 550)</b>		
Type of tobacco <sup>b</sup>		
Cigarettes	422	77
Cigars	38	7
Chew tobacco	12	2
Pipe	9	1
Snuff	8	1
None	118	21
<b>Current cigarette smoker characteristics (n = 422)</b>		
Cigarettes/day <sup>c</sup> (n = 418)	20	1–80
<15	86	21
15–24	183	44
≥25	149	36
Age started smoking regularly, <sup>c</sup> y (n = 417)	15	5–49
Quit attempts <sup>c</sup> (n = 402)	2	0–99
Length of abstinence (n = 395)		
Never tried	97	25
≤7 days	91	23
8–30 days	47	12
1–6 months	50	13
>6 months	110	28
Interest in quitting (n = 418)		
Very interested	172	41
Somewhat interested	165	39
Not interested <sup>d</sup>	81	19
Would quit through methadone treatment (n = 415)		
Yes	229	55
No	160	39
Maybe	26	6

<sup>a</sup>Missing values were not included in calculations.

<sup>b</sup>Type of tobacco used will add up to more than 100%, because many clients used more than one type.

<sup>c</sup>Median (range).

<sup>d</sup>Two response categories (“not interested” and “not at all interested”) were combined.

### Quit Attempts and Interest in Quitting

Three quarters of the current cigarette smokers had quit at least once for 24 hours. The average number of quit attempts reported was 5 (median = 2). Of the 298 smokers who had tried to quit, 37% remained abstinent for more than 6 months, but almost one third relapsed within 1 week.

No significant differences were found between the number of quit attempts reported by sex or race/ethnicity.

Most current smokers (80%) reported that they were “somewhat” or “very” interested in quitting. Most (61%) indicated that they would consider quitting through a methadone maintenance clinic.

### Discussion

Smoking patterns differed markedly from patterns found in the general US population. Although the prevalence of smoking was somewhat lower than rates reported in other surveys

of methadone maintenance clients, it was 3 times the current US prevalence. The quit ratio (proportion of former to ever smokers) was 12% among methadone maintenance treatment clients; this is 4 times smaller than the current quit ratio of 50% in the US population. The discrepancy in quit rates was, however, not for lack of trying. Survey participants reported an average of 5 quit attempts, some of which lasted 6 months or longer. For a substantial number of clients, it may be the *means* of quitting, rather than the *motivation*, that undermines success.

For instance, only 10% of the former smokers had used pharmacotherapy to quit. This use of pharmacotherapy is similar to that among US smokers but could be considered low, because clients come into contact with treatment providers at least weekly. Because of frequent and long-term contact with treatment providers, methadone maintenance clients are ideal candidates for a combination of pharmacology and behavior therapy, which is more effective than pharmacotherapy alone.<sup>18</sup>

People of color smoked fewer cigarettes per day than did Whites, a difference also found in the general population. This could be in part attributable to differences in how Whites and African Americans smoke cigarettes and metabolize nicotine.<sup>19</sup> Unlike patterns in the general population, significantly more women respondents smoked than men. Women in methadone maintenance treatment may face different barriers to quitting or may experience nicotine addiction differently than men.

Strengths of this study included its large sample size, good response rate, collaboration with multiple clinics, and analysis of sex and racial/ethnic differences. The present survey collected data from multiple public and private clinics in a 4-county region, which may render the findings more representative of all methadone maintenance clients. This is the first study to assess the prevalence of attempts to quit smoking among methadone maintenance treatment clients.

Limitations of the study included poor representation of some racial/ethnic minorities, the brevity of the instrument, and the lack of biochemical verification. Grouping racial/ethnic data into Whites and people of color possibly allowed characteristics of one non-White group to cancel out characteristics of another. Because we used a 1-page instrument, important questions were not included. Future studies could examine clients' reasons for wanting to quit smoking, methods used by current smokers in attempting to quit, the prevalence of mental illnesses among clients, and whether clients used illicit drugs or alcohol.

Clients and providers are increasingly interested in addressing smoking cessation during substance abuse treatment.<sup>20–22</sup> Several studies suggested that addressing tobacco use during drug treatment does not threaten abstinence and might even assist in maintaining it.<sup>23–25</sup> In any population, continued smoking results in high rates of morbidity and mortality. For the sake of the lives of persons in methadone maintenance treatment, future research into smoking behaviors and viable treatment options is imperative. □

### Contributors

K. P. Richter designed, disseminated, and collected surveys and wrote the paper. C. A. Gibson assisted with survey design and supervised data analysis. J. S. Ahluwalia assisted with study design and data interpretation. K. H. Schmelzle analyzed the data. All authors contributed to the writing of the paper.

### Acknowledgments

This study was supported by CSAP grant 6-T26-STO8354 and NIDA grant K01-DA00450.

We thank Carolyn Rowe for helping to develop the survey and Dr Matt Mayo for consultation on survey analysis. For their enthusiasm and strong support,

we are grateful to the clients, staff, and directors of Diagnostic Research and Development, Kansas City Treatment Center, Kansas University Methadone Clinic, Paseo Clinic, and Rodgers' South.

Study procedures were approved by the University of Kansas Institutional Review Board.

This work is dedicated to the memory of Denise Shea.

---

## References

1. Hser Y, McCarthy WJ, Anglin MD. Tobacco use as a distal predictor of mortality among long-term narcotics addicts. *Prev Med.* 1994;23:61-69.
2. Hurt RD, Eberman KM, Croghan IT, et al. Nicotine dependence treatment during inpatient treatment for other addictions: a prospective intervention trial. *Alcohol Clin Exp Res.* 1994;18:867-872.
3. Berger H, Schweigler M. Smoking characteristics of methadone patients. *JAMA.* 1972;222:705.
4. Best D, Lehmann P, Gossop M, Harris J, Noble A, Strang J. Eating too little, smoking and drinking too much: wider lifestyle problems among methadone maintenance patients. *Addict Res.* 1998;6:489-498.
5. Stark MJ, Campbell BK. Cigarette smoking and methadone dose levels. *Am J Drug Alcohol Abuse.* 1993;19:209-217.
6. National Institutes of Health. Effective medical treatment of opiate addiction. *JAMA.* 1998;280:1936-1943.
7. Stimmel B. Heroin addiction and methadone maintenance: when will we ever learn. *J Addict Dis.* 1999;18:1-4.
8. Nadelmann E, McNeely J, Drucker E. International perspectives. In: Lowinson JH, Ruiz P, Millman RB, Langrod JG, eds. *Substance Abuse: A Comprehensive Textbook.* Baltimore, Md: Williams & Wilkins; 1997:22-39.
9. Hubbard RL. Evaluation and outcome of treatment. In: Lowinson JH, Ruiz P, Millman RB, Langrod JG, eds. *Substance Abuse: A Comprehensive Textbook.* Baltimore, Md: Williams & Wilkins; 1997:499-511.
10. *Federal Regulation of Methadone Treatment.* Washington, DC: Institute of Medicine; 1995.
11. Tims F, Ludford J. *Drug Abuse Treatment Evaluation: Strategies, Progress, and Prospects.* Rockville, Md: US Dept of Health and Human Services; 1984.
12. Remington PL, Smith MY, Williamson DF, Anda RF, Gentry EM, Hogelin GC. Design, characteristics, and usefulness of state-based behavioral risk factor surveillance. *Public Health Rep.* 1998;103:366-375.
13. Kolbe L, Kann L, Collins J. Overview of the Youth Risk Behavior Surveillance System. *Public Health Rep.* 1993;108(suppl 1):2-10.
14. Mayo Nicotine Dependence Center. *Patient Questionnaire.* Rochester, Minn: Mayo Foundation; 1995.
15. Brener N, Collins J, Kann L, Warren C, Williams B. Reliability of the Youth Risk Behavior Survey Questionnaire. *Am J Epidemiol.* 1995;141:575-580.
16. Brownson R, Jackson-Thompson J, Wilkerson J, Kiani F. Reliability of information on chronic disease risk factors collected in the Missouri Behavioral Risk Factor Surveillance System. *Epidemiology.* 1994;5:545-549.
17. *SAS/STAT Users Guide, Version 6.* 4th ed., vol. 2. Cary, NC: SAS Institute Inc; 1990.
18. Hughes J, Goldstein MG, Hurt RD, Shiffman S. Recent advances in the pharmacotherapy of smoking. *JAMA.* 1999;281:72-76.
19. Caraballo RS, Giovino GA, Pechacek TF, et al. Racial and ethnic differences in serum cotinine levels of adult cigarette smokers, Third National Health and Nutrition Examination Survey, 1988-1991. *JAMA.* 1998;280:135-139.
20. Sees KL, Clark HW. When to begin smoking cessation in substance abusers. *J Subst Abuse Treat.* 1993;10:189-195.
21. Karan LD. Initial encounters with tobacco cessation on the inpatient substance abuse unit of the Medical College of Virginia. *J Subst Abuse Treat.* 1993;10:117-123.
22. Hoffman AL, Slade J. Following the pioneers: addressing tobacco in chemical dependency treatment. *J Subst Abuse Treat.* 1993;10:153-160.
23. Shoptaw S, Jarvik ME, Ling W, Rawson RA. Contingency management for tobacco smoking in methadone-maintained opiate addicts. *Addict Behav.* 1996;21:409-412.
24. Campbell BK, Wander N, Stark MJ, Holbert T. Treating cigarette smoking in drug-abusing clients. *J Subst Abuse Treat.* 1995;12:89-94.
25. Burling TA, Marshall GD, Seidner AL. Smoking cessation for substance abuse inpatients. *J Subst Abuse.* 1991;3:269-276.