

Correlates of Alcohol Use Among Methadone Patients

Nabila El-Bassel, Robert F. Schilling, Joanne E. Turnbull, and Kuo-Hsien Su

This study examines the predictors of alcoholism among 201 patients from three methadone maintenance treatment programs (MMTPs) in New York City. Using the Michigan Alcohol Screening Test, one-fifth of the sample met criteria for alcohol dependence. Few subjects were currently enrolled in any form of chemical dependency treatment other than MMTP. Alcoholics started to use alcohol at an early age, and almost every alcoholic subject admitted to alcohol abuse before entering MMTPs. More alcoholics than nonalcoholics reported symptoms of somatization, obsessive-compulsive behavior, depression, phobic anxiety, and psychosis. Logistic regression indicated that alcoholism among MMTP patients was associated with years drinking, years of sharing needles, utilization of drug abuse detoxification but not alcohol detoxification, smaller increases in methadone dosage over time, and psychiatric symptomatology. Findings are discussed in terms of their implications for designing more efficacious treatment approaches for dually addicted patients in MMTPs.

Key Words: Alcohol, Methadone, Women, Minorities, Psychiatric Symptomatology, Risk Behavior.

Alcoholism is a common problem among methadone maintenance treatment programs (MMTPs), affecting as many as half of such patients.¹⁻³ Depending on how alcoholism is defined, rates of alcoholism among patients in MMTPs vary between 5% to 49%.⁴⁻⁶ When compared with MMTP patients who do not use alcohol, their alcoholic counterparts evidence higher rates of medical and psychiatric morbidity,^{5,7,8} consume larger amounts of staff and treatment resources,⁹ tend to be involved in more criminal activity,^{5,9} are more likely to continue to abuse illicit drugs,¹⁰⁻¹² have a higher incidence of suicide,^{13,14} and exhibit poorer social functioning.¹⁵

Alcoholism has been cited as a leading factor in discharge from MMTPs. Studies documenting reasons for discharge from methadone maintenance have shown that from 11% to 26% of terminations are attributed to alcohol use.^{5,16,17} Alcoholism accounts for a substantial number of deaths among methadone patients. One study¹⁸ examined mortality rates among methadone patients treated from 1974 through 1977 in New York City. With respect to ethnic-racial and gender differences, rates of alcohol-related deaths per 1000 person-years of methadone treat-

ment were as follows: African-Americans, 8; Hispanics, 5.7; white Anglos, 2.6; men, 5.7; and women, 3.7. In that era, before the AIDS pandemic, alcoholism was found to be the leading cause of death for clients in treatment and the second leading cause of death at posttreatment.

Whether patients began drinking before or subsequent to entering MMTPs has been a topic of debate. Some studies suggest that alcoholism increases among methadone patients after they are admitted to MMTPs,^{14,17,18} whereas others report that excessive drinking usually existed before admission. Some investigators have reported that alcohol use increased by as much as 100% after patients enrolled in MMTPs.^{2,6,18} Such reports, however, are counterbalanced by the many addicts who report heavy alcohol use early on, in many cases beginning as young as 12 or 13 years of age, before or concurrent with the use of heroin and other drugs.^{2,13,19} For example, in a prospective study of 214 patients,²⁰ Kreek reported that 20% were heavy drinkers at the time of their admission to MMTPs. Simpson²¹ reported that 34% of 4463 patients used one or more ounces of alcohol daily before admission to methadone maintenance. Barr et al.¹³ examined the occurrence of alcohol abuse among heroin addicts and whether methadone increases alcohol use in a sample of 586 patients from 10 methadone treatment groups in the greater Philadelphia area and 280 residents in Eagleville's residential therapeutic community. They found that methadone did not increase alcohol consumption, but that alcohol dependence was common. Half of the drug addicts in the study sample had consumed excessive quantities of alcohol at some time in their lives, and 25% reported that they had experienced significant alcohol-related problems.

Whatever the actual prevalence rates and timing of onset, it is clear that methadone patients have high rates of alcohol dependence that adversely affect their program compliance and physical and mental health. Although the prevalence of alcohol abuse and dependence is increasingly acknowledged in MMTP settings, little is known about the variables that may be associated with alcohol use by methadone patients. In an effort to understand this phenomena better, this study examines the predictors of alcoholism among a cohort of 201 MMTP patients. Demographic characteristics, patterns of drug and alcohol use, drug treatment, and psychopathology are considered.

METHODS

Sample

Between May and August 1991, 120 male and 120 female intravenous drug users from three inner-city methadone clinics in the Bronx and

From the Columbia University School of Social Work (N.E.-B., R.F.S., J.E.T.) and the Department of Sociology (K.-H.S.), Columbia University, New York, New York.

Received for publication September 17, 1992; accepted November 12, 1992.

This study was supported by Grants DA-05356 and DA5-29191 awarded to Dr. Schilling by the National Institute on Drug Abuse.

Reprint requests: Nabila El-Bassel, D.S.W., School of Social Work, Columbia University, 622 West 113th Street, New York, NY 10025.

Copyright ©1993 by The Research Society on Alcoholism.

Alcohol Clin Exp Res, Vol 17, No 3, 1993: pp 681-686

Harlem were invited to participate in a study testing skills-training approaches to reducing drug use and human immunodeficiency virus (HIV) transmission. Of 240 patients approached by MMTP staff, 201 (84%) agreed to complete a 2-hr questionnaire interview.

Measurement

Trained interviewers administered face-to-face surveys covering demographics, present and past drug and alcohol use, and mental health indicators. Data on methadone history and dosage were obtained from patient records.

Demographic variables included age, ethnicity, gender, education, current employment, homelessness, current and past alcohol and drug use, history of drug and alcohol treatment, and whether family members used drugs or alcohol currently or in the past. Respondents were also asked about their length of time on methadone. Because medication levels are potentially important in a clinic population, current methadone dosage and date of program entry were collected from patients' charts. A score to reflect a proportional increase in respondents' methadone dosage was computed by dividing the difference between current methadone dosage and the dosage upon entering into the methadone program, by the dosage at initial entry.

Alcohol Use. Alcohol use was assessed with the Michigan Alcohol Screening Test (MAST),²¹⁻²⁴ one of the most widely used screening instruments for alcohol dependence. Previous studies suggest that problem drinking severity can be measured with adequate degrees of reliability and validity using this instrument, and MAST scores have been found to be related to clinical ratings of the presence or absence of alcohol problems.¹ The MAST consists of 24 quantifiable self-report items to detect alcoholism. Five points or more place the subject in an "alcoholic" category, four points are suggestive of alcoholism, and three points or less indicate the subject is not alcoholic. In our sample, only three subjects were in the "suggestive" category, and these respondents were included in the "alcoholic" grouping. In addition to the MAST, several other measures of alcohol use were administered. **Consumption of alcohol use** was measured by the following two items: "On how many occasions have you had alcohol beverages during the last month?" and "How many times have you had five or more drinks on one occasion during the last 2 weeks?" **Tolerance of alcohol use** was measured by one item: "The last time you drank alcohol did you have: (1) not enough to feel it, (2) enough to feel it, (3) enough to get high, (4) enough to get drunk, and (5) enough to pass out?" Finally, subjects were asked about age **of initial alcohol use** and **length of time using alcohol**.

Drug Use. Participants were asked about their past and current drug use; that is, whether they ever used, whether they used in the last 3 months, and whether they used in the last 7 days. Cocaine use, for example, was assessed as follows: "Have you ever used cocaine?" ("yes-no"); "During the last 3 months have you used cocaine?" ("yes-no"); "During the last 3 months how often did you use cocaine?" (Responses range from 1-8, from "never used the during last 3 months" to "several times a day."); "During the last 7 days have you used cocaine?" ("yes-no"). Similar questions were asked for crack cocaine. Although all forms of cocaine have the same pharmacological effects, some users perceive crack as qualitatively distinct. Crack use may also be associated with HIV risk behavior. Finally, these same questions were asked for injecting, frequenting shooting galleries, and sharing needles.

Mental Health and Psychological Status. Mental health status was measured using the Brief Symptom Inventory.²⁵ The BSI, a 53-item self-report symptom inventory condensed from the Hopkins' Symptom Checklist,²⁶ is a widely used measure of psychological distress. The **somatization** dimension reflects distress arising from perceptions of bodily dysfunction. The **obsessive compulsive** dimension focuses on intrusive, unwanted thoughts, impulses, and actions. **Interpersonal sensitivity** refers to feelings of personal inadequacy and inferiority, self-depreciation, feelings of uneasiness, and marked discomfort during interpersonal interactions. The **depression** dimension reflects a representative range of indications of clinical depression (e.g., feeling lonely, feeling

blue, feeling no interest in anything). The **anxiety** dimension includes general signs as nervousness, tension, panic attacks, and feelings of terror and feelings of apprehension. **Hostility** indicates thoughts, feelings, or actions that are characteristic of negative affective states of anger, aggression, irritability, rage, and resentment. **Phobic anxiety** reflects a persistent fearful response to a specific person, place, object, or situation that is characterized as being irrational and disproportionate to the situation, and that leads to avoidance or escape behavior. **Paranoid ideation** refers to a disordered mode of thinking. Projective thought, hostility, suspiciousness, grandiosity, centrality, fear of loss of autonomy, and delusions are viewed as primary aspects of this category. **Psychoticism** reflects a withdrawn, isolated, schizoid life-style. The BSI is scored by calculating a total score for each of the nine dimensions and a sum of the 53 items divided by total number of endorsed items to reflect a general severity index score. Internal consistency in this study was 0.73-84 for subscales and 0.96 for the total score.

Data Analyses

Univariate frequency distributions were conducted to describe demographic characteristics, patterns of drug and alcohol use, and psychological and mental health status. Multiple logistic regression was used to assess the predictor variables of alcohol use. The dependent variable was whether or not a respondent met the criteria of diagnosis of alcohol abuse (dichotomized as "yes-no"). Independent variables were demographic characteristics, drug use, and BSI scores. Each dimension of the BSI was used separately for descriptive purposes. To avoid problems of multicollinearity resulting from the high correlation among the nine dimensions, a general severity index score was used in the multiple logistic analyses.

RESULTS

Univariate Analysis

Demographics. Table 1 shows that the sample was comprised primarily of African-American and Hispanic patients who were single and unemployed. By sampling design, half (50.5%, $n = 101$) of the respondents were female. More than half of the total sample reported at least one person in their family as currently abusing alcohol or drugs.

Alcohol Use. Using the MAST, 20.9% ($n = 42$) of the participants were classified as alcoholic. Of these, only four started using alcohol after they entered the methadone program. Alcoholics started using alcohol at an average age of 14 years, and averaged 24 years of alcohol use. By comparison, nonalcoholics started using alcohol at 16 years of age, for an average of 16 years. More than a third (35.7%) of the alcoholic subjects consumed alcohol on 40 or more occasions during the last 2 weeks, with a mean of 8-9 occasions, and 29.5% ($n = 12$, 1 missing) "got drunk" or "high enough to pass out."

Drug Use. Ten percent ($n = 20$) of respondents had used heroin during the last 7 days, 28.4% ($n = 57$) were using cocaine, 30% ($n = 60$) crack, 25% marijuana ($n = 51$), and 9% ($n = 18$) were injecting cocaine or heroin. Of those patients who injected drugs during the last 7 days, eight were sharing needles. Half ($n = 100$) of the total sample shared needles in the past, 8 years on average. Alcoholics and nonalcoholics were not significantly different with respect to use of heroin, cocaine, or crack during the last 7 days. However, alcoholics had shared needles

Table 1. Descriptive Statistics of the Sample Characteristics Variables

Variables	Total sample (n = 201)			Alcoholics (n = 42)			Nonalcoholics (n = 159)		
	n	%	Mean	n	%	Mean	n	%	Mean
Age (yr)			38.01			39.67			37.57
Gender									
Male	100	49.8		25	59.9		75	47.2	
Female	101	50.2		17	40.5		84	52.8	
Ethnic									
White anglo	20	10.0		9	21.4		11	6.9	
Black	86	42.8		18	42.9		68	42.8	
Hispanic	84	41.8		14	33.3		70	44.0	
Other	11	5.5		1	2.4		10	6.3	
Education			High school			High school			High school
Marital status									
Single	69	34.3		12	28.6		57	35.8	
Married	59	29.4		14	33.3		45	28.3	
Separated or divorced	73	36.3		16	38.1		57	35.8	
Living arrangement									
Street or shelter	23	11.4		6	14.3		17	10.7	
Own apartment	126	62.7		26	61.9		100	62.9	
Other people's apartment	52	25.9		10	23.8		42	26.4	
Perceived physical health									
Poor	16	8.0		3	7.1		13	8.2	
Fair	80	39.8		19	45.2		61	38.4	
Good	86	42.8		18	42.9		68	42.8	
Excellent	19	9.5		2	4.8		17	10.7	
Years of drinking			17.84			24.12			16.18
Family member currently using drug or alcohol	87	43.3		19	45.2		68	42.8	
Family member used drug or alcohol in the past	123	61.2		25	59.5		98	61.6	
Outpatient drug detoxification	106	52.7		33	78.6		73	45.9	
Length of time in methadone (yr)			7.18			9.10			6.67
Current dosage amount			61.622			62.41			61.42
Proportional change of dosage amount			+89%			+66.2%			+95.8%
Alcoholics classification									
Nonalcoholics	159	79.1							
Alcoholics	42	20.9							

for a longer period of time (mean = 7.7) than nonalcoholics (mean = 3.3; $t = -4.12$, $df = 199$, $p < 0.000$).

Current Alcohol and Drug Treatment. Alcoholic patients had been enrolled in methadone treatment for more years (mean = 9.10) than nonalcoholics (mean = 6.67; $t = -2.31$, $df = 199$, $p < 0.02$). Among alcoholic patients, 2 were currently enrolled in any form of outpatient alcohol detoxification treatment (outside of a methadone clinic), 3 in outpatient drug detoxification treatment, 11 in Narcotics Anonymous (NA) and 3 in Alcoholics Anonymous (AA). Among nonalcoholic patients, none was currently in drug detoxification treatment, and 24 were currently enrolled in NA.

Past Alcohol and Drug Treatment History. More alcoholics than nonalcoholics reported that they had been in drug detoxification treatment in the past ($\chi^2 = 14.64$, $p < 0.001$). Of the 42 alcoholics, 52.3% had been enrolled in alcohol detoxification treatment in the past and 78% ($n = 33$) in outpatient detoxification drug treatment. Among nonalcoholics, 45.9% ($n = 73$) had been in drug detoxification treatment in the past. Interestingly, 18 of the 22 alcoholics who were in alcohol treatment in the past had also participated in drug detoxification in the past. Thirteen of these 18 respondents had been in drug detoxification before entry into alcohol detoxification.

Psychological and Mental Health Status. Table 2 shows that alcoholics scored higher than nonalcoholics on six subscales of the BSI: somatization, obsessive-compulsive

Table 2. *T* Test—BSI by Classification of Alcoholics

Variables	Nonalcoholic (n = 159)	Alcoholic (n = 42)	2-Tail probability
Subscale of BSI			
1. Somatization	0.702 (0.702)	0.968 (0.763)	0.031
2. Obsessive-compulsive	0.949 (0.824)	1.274 (0.932)	0.028
3. Interpersonal sensitivity	0.972 (0.861)	1.250 (1.121)	0.083
4. Depression	0.977 (0.846)	1.286 (0.975)	0.043
5. Anxiety	0.804 (0.695)	1.155 (0.828)	0.006
6. Hostility	0.696 (0.675)	0.843 (0.746)	0.220
7. Phobic anxiety	0.472 (0.646)	0.710 (0.689)	0.038
8. Paranoid ideation	1.095 (0.940)	1.196 (0.912)	0.533
9. Psychoticism	0.747 (0.760)	1.048 (0.940)	0.031
Average score of BSI	0.825 (0.626)	1.109 (0.727)	0.012

SD in parentheses.

behavior, depression, anxiety, and phobic anxiety and psychotic symptoms.

Logistic Regression Analysis

As shown in Table 3, alcoholism classification was associated with years of drinking, sharing needles in the past, past drug detoxification treatment, changes in methadone dosage and psychiatric symptomatology. Interestingly, current methadone dosage was not associated with being alcoholic, but nonalcoholics tended to have larger increases over time than alcoholics in their methadone dosage.

Consistent with the univariate analysis, alcoholics tended to be more psychologically distressed than nonalcoholics. However, both alcoholic and nonalcoholic methadone patients are more psychologically distressed than the normal population.^{25,27,28} Demographic variables (e.g., gender, ethnicity, age, level of education, marital status, and living arrangement), current drug use, and family members' current or past use of drugs or alcohol were not associated with alcoholism classification.

Table 3. Multiple Logistic Regression: Predictors of Alcohol Dependence

Variable	B	Signifii	Odds ratio (95% CI)
Age	-0.06	0.17	0.94 (0.66, 1.03)
Gender	-0.11	0.64	0.69 (0.30, 2.66)
Ethnicity		0.12	
White	2.94	0.05	16.99 (0.99, 366.10)
African-American	1.47	0.26	4.33 (0.31, 61.15)
Hispanic	1.32	0.33	3.76 (0.26, 55.20)
Education	0.09	0.52	1.10 (0.63, 1.45)
Marital status		0.81	
Single	0.01	0.99	1.01 (0.32, 3.16)
Married	0.33	0.57	1.39 (0.44, 4.34)
Living arrangement		0.40	
Street or shelter	0.28	0.73	1.32 (0.26, 6.26)
Own apartment	0.78	0.20	2.17 (0.67, 7.05)
Perceived physical health	-0.07	0.82	0.93 (0.49, 1.76)
Years of drinking (adjusted by age)	5.49	0.00	243.24 (10.09, 5665.51)
Whether family member currently using drug or alcohol	0.04	0.94	1.04 (0.40, 2.66)
Whether family member used drug or alcohol in the past	-6.62	0.20	0.54 (0.21, 1.37)
Years shared needles	0.09	0.01	1.10 (1.02, 1.18)
Detoxification treatment for drug	1.53	0.00	4.61 (1.64, 12.96)
Length of time in methadone	0.01	0.89	1.01 (0.93, 1.09)
Current dosage amount	0.02	0.25	1.02 (0.99, 1.05)
Proportii change of dosage amount	-0.73	0.05	0.46 (0.23, 1.02)
How often used heroin in the past 3 months	-0.24	0.17	0.79 (0.57, 1.10)
How often used cocaine in the past 3 months	0.06	0.56	1.06 (0.66, 1.26)
How often used crack in the past 3 months	-0.06	0.32	0.92 (0.78, 1.08)
BSI	0.02	0.05	1.02 (1.00, 1.03)
Intercept	-5.72	0.07	(0.00, 1.49)

Goodness-of-fit: $\chi^2 = 154.226$, $df = 177$, $p < 0.6906$. Model: $\chi^2 = 67.346$, $df = 23$, $p < 0.0000$. CI, confidence interval.

* Years of drinking is adjusted by the following equation: years of drinking = (number of years drinking alcohol)/(age).

DISCUSSION

One-fifth of the methadone patients in this study were classified as alcoholics. However, most MMTP patients abused alcohol before enrolling in methadone maintenance. Alcoholics and nonalcoholics did not differ on demographic characteristics, current drug use, or family members' past or present use of alcohol or other substances. Compared with nonalcoholics, alcoholic subjects in MMTP more often started to abuse alcohol at an early age and admitted to alcohol abuse before MMTP enrollment. Less than 15% of MMTP patients were currently enrolled in drug or alcohol treatment or 12-step programs. Characteristics associated with alcoholism among MMTP patients included years of drinking, past drug detoxification, a smaller proportional increase in methadone dosage, psychiatric symptomatology, and years of needle-sharing.

These results confirm previous research findings on prevalence and nature of alcoholism and alcohol abuse among methadone patients.^{2,16,17} Few patients classified as alcoholic received treatment for their alcoholism. Yet alcoholics were more likely than nonalcoholics to have previously been in detoxification treatment for other substances. This paradox may be partially explained by the restricted and limited access to alcohol programs for dual users, and by practices in many alcoholism treatment programs of taking heroin addicts off methadone, and often discouraging or refusing to treat alcoholics who abuse other drugs. Or, perhaps alcoholics, more than nonalcoholic patients, are accepting or compliant with respect to other treatment modalities. The lack of treatment for alcoholism among alcoholic methadone patients is underscored by the finding that few alcoholic subjects were currently participating in any form of drug or alcohol detoxification, or 12-step program. Alcoholic methadone patients have traditionally been discouraged from attending AA or NA, although some 12-step groups have been more accepting of methadone-maintained patients in recent years.²⁹

The results of this study suggest that this population not only suffers from dual addiction, but also from additional psychiatric symptoms,³⁰ which may be independent or alcohol-induced. Univariate and multivariate findings revealed that alcoholics compared unfavorably to nonalcoholics with respect to psychiatric symptomatology. Because the findings are correlational, reported psychopathology might be an alcohol-induced artifact that is secondary to dependence. Definitive statements regarding the presence of psychopathology in alcohol-dependent methadone addicts are unreliable, given the difficulty of assessing chronic alcohol users.

Interestingly, it appears that alcoholics receive methadone treatment different from that of nonalcoholic patients. In this sample, nonalcoholics tended to have a higher increase in the amount of methadone dosage than alcoholics. Current methadone dosage was not associated with being alcoholic, but the difference between current

methadone dosage and dosage upon program entry was associated with being alcoholic. To explain the direction of any relationship between methadone dosage and alcoholism among methadone patients requires further investigation beyond the scope of this study. A possible confound, however, may be related to the time when the alcoholic patients entered MMTPs. Some years ago, it was accepted practice to recommend lower methadone dosages. Current treatment practices, at least in New York City, have to some extent been influenced by the many studies showing poor outcomes associated with low dosage. Thus, cohorts that began MMTPs earlier may have higher gain scores when compared with cohorts that entered methadone maintenance later. Conversely, it is possible that those patients who remain in MMTPs over long periods were given appropriately high dosages of methadone initially, thus mitigating any apparent dosage-increase bias related to earlier low-dosage practices.

The results of this study are tempered by two overarching limitations. First, the sample selection raises questions about the generalizability of the findings. That is, the selected participants in this study may not be representative of all patients in methadone clinics in New York City or other areas. Second, self-report data may reflect biases of social desirability related to illicit drug use, altering statistical interactions with alcohol use. The study does not assess the presence of antisocial personality disorder, potentially salient because of the high prevalence of antisocial personality disorder among those who abuse both alcohol and drugs.³¹⁻³³ In recognition of the importance of how antisocial personality disorder might be correlated with early alcohol use and poor treatment response, our ongoing studies have now incorporated an assessment of this problem area.

These findings suggest that alcoholic methadone patients are a psychologically troubled population, who at best receive treatment for a portion of their myriad problems. The findings also suggest that MMTP patients who abuse alcohol might benefit from comprehensive programs designed for their special problems. The coexistence of alcoholism, heroin addiction, and psychopathology among this population presents a challenge for service providers. On the one hand, alcoholism treatment is a poor substitute for methadone maintenance-for those opiate users deemed appropriate for MMTPs. On the other, despite increased understanding of the pervasiveness of alcohol abuse and dependence among MMTP patients, few treatment providers have developed programs or strategies to deal with alcohol use among methadone patients. Moreover, the limited available evidence would suggest that, within MMTP settings, specific interventions for alcoholism are no more effective than standard clinic practices in reducing alcohol consumption." Lacking knowledge about what does work with alcoholic methadone patients, practitioners and program developers are left to ponder what kinds of systems are best equipped

to treat such persons. Therapies directed toward reducing excessive alcohol use could not only help avoid adverse consequences of alcohol abuse and dependence but also indirectly enhance retention in methadone maintenance programs.

The finding that alcoholics had shared needles for a longer period of time than nonalcoholics merits further inquiry. It is plausible that alcohol use is part of a pattern of risk taking, which may also include needle sharing. The increased cumulative risk for HIV transmission is obvious and should be examined in other studies.

Controlled studies have demonstrated that contingent reinforcement interventions are efficacious in MMTP settings.³⁴⁻³⁷ Methadone take-home medication,^{38,39} and methadone dosages self-controlled by clients⁴⁰ have both been identified as program privileges with potential value for promoting change when used in contingent arrangements. If carefully used, such approaches might be useful with alcohol-using MMTP patients, perhaps in conjunction with breathalyzer tests conducted routinely in clinic settings. Some methadone proponents, however, would argue that medication to treat opiate dependence should not be made contingent upon abstinence from alcohol.

In the past, addiction specialists might have asked about the sequence of alcoholism versus opiate addiction. With the mounting evidence that polysubstance use is normative among addicted populations,⁴¹ and the emerging consensus that substance use of any kind is probably undesirable for the bulk of chemically dependent individuals, such heuristics are of less interest to treatment researchers and service providers. Nevertheless, there remain many questions requiring longitudinal designs to track the progression and interaction of alcoholism, heroin addiction, and psychiatric symptoms among individuals who use opiates and alcohol.⁴²

Alcohol use remains one of the most serious challenges to MMTPs, and clinicians and program designers cannot wait for a better understanding of the determinants of alcohol abuse and dependence among methadone patients. Along with research that describes and explores predictors of use, abstinence and relapse, needed are intervention studies that develop and test promising strategies for reducing alcohol use among MMTP populations. Investigators and MMTP staff should collaboratively develop theoretically sound pilot studies that would lead to feasible, yet rigorous intervention trials in MMTP clinic settings. Widely accepted as important elements in the array of addiction treatments, methadone programs are increasingly conscious of the limitations of this single medication in patients who typically abuse alcohol and other nonopiate substances.^{43,44} Now is the time for researchers and treatment providers to work together in finding ways of reducing alcohol use among methadone patients.

REFERENCES

1. Baden MM: Methadone-related deaths in New York City, in Einstein, S (ed): *Methadone Maintenance*. New York, Marcel Dekker, 1973, pp 143-152

2. **Bihari B**: Alcoholism and methadone maintenance. *Am J Drug Alcohol Abuse* 1:79-89, 1974
3. **Gelb AM, Richman BL, Anand OP**: Quantitative and temporal relationships of alcohol use in narcotic addicts and methadone maintenance patients undergoing alcohol detoxification. *Am J Drug Alcohol Abuse* 5:191-198, 1978
4. **Brown B**: Use of alcohol by addict and nonaddict populations. *Am J Psychol* 130:599-601, 1973
5. **Chambers CD, Bast D, Wader A**: Characteristics of patient retention/attrition, in **Chambers CD, Brill L** (eds): *Methadone: Experiences and Issues*. New York, Behavioral Publications, 1973, pp 109-I 19
6. **Liebson I, Bigelow G, Flamer R**: Alcoholism among methadone patients: A specific treatment method. *Am J Psychiatr* 130:483-485, 1973
7. **Gelb AM, Richman BL, Deyser NP**: Alcohol use in methadone maintenance clinics. *Am J Drug Alcohol Abuse* 6:367-373, 1979
8. **Kreek MJ**: Medical complications between opiates and alcohol. *Ann NY Acad Sci* 362:36-49, 1978
9. **Roszell D, Calsyn D, Chaney E**: Alcohol use and psychopathology in opiate addicts on methadone maintenance. *Am J Drug Alcohol Abuse* 12:269-278, 1986
10. **Maddox JF, Elliott BE**: Problem drinkers among patients on methadone. *Am J Drug Alcohol Abuse* 1:245-254, 1975
11. **McLellan AT, Childress AR, Griffith J**, et al: The psychiatrically severe drug abuse patient: Methadone maintenance or therapeutic community. *Am J Drug Alcohol Abuse* 10:77-95, 1984
12. **Wielland WF, Soal S**: Depression in opiate addicts measured by objective tests, in *Proceedings on the 3rd National Conference on Methadone Maintenance*. Washington, D.C., U.S. Government Printing Office, 1970, pp 75-78
13. **Barr HL, Cohen A**: The problem drinking drug addict, in **Gamer SE** (ed): *National Drug/Alcohol Collaborative Project: Issues in Multiple Substance Abuse (NIDA Services Research Monograph Series)*. Washington, D.C., U.S. Government Printing Office, 1980
14. **Kaufman E**: The relationship of alcoholism and alcohol abuse to the abuse of other drugs. *Am J Drug Alcohol Abuse* 1: 1- 17, 1982
15. **Rounsaville JF, Weissman MM, Kleber HD**: The significance of alcoholism in treated opiate addicts. *J Nerv Ment Dis* 170:479-488, 1982
16. **Gearing FR**: Evaluation of methadone maintenance treatment programs. *Int J Addict* 5:517-543, 1970
17. **Herman J, Appel P**: Alcoholism and methadone treatment: Consequences for the patient and program. *Am J Drug Alcohol Abuse* 11:37-53, 1985
18. **Stimmel B, Cohen M, Sturiano V**, et al: Is treatment for alcoholism effective in persons on methadone maintenance? *Am J Psychiatr* 140:862-866, 1983
19. **Barr HL**: Problem drinking by addicts: An empirical topology, in **Schecter A, Alksne H, Kaufman E** (eds): *Critical Concerns in the Field of Drug Abuse. Proceedings of the Third National Drug Abuse Conference*. New York, Marcel Dekker, 1987
20. **Simpson DD**: Use of alcohol by DARF patients in treatment for drug abuse: 1969-1971 admissions. *IBR Rept. No. 73-7*, Texas Christian Univ. Fort Worth, TX, Table 8, 1973
21. **Selzer MI**: The Michigan Alcohol Screening Test. The quest for a new diagnostic instrument. *Am J Psychiatr* 127:426-443, 1971
22. **Skinner HA, Shey WJ**: Reliability of alcohol use indices: The lifetime drinking history and the MAST. *J Stud Alcohol* 43: 1157-1170, 1982
23. **Zung BJ, Charalampous KD**: Item analysis of the MAST. *J Stud Alcohol* 39:56-57, 1978
24. **Zung BJ**: Psychometric properties of the MAST and two briefer versions. *J Stud Alcohol* 40:845-859, 1979
25. **Derogatis LR**: *Brief Symptom Inventory*. Baltimore, Clinical Psychometric Research, 1975
26. **Derogatis LR**: *The SCL-90 Manual 1: Scoring, Administration and procedures for SCL-90*. Baltimore. Clinical Psychometric Research, 1977
27. **Corty E, Ball JC, Myers CP**: Psychological symptoms in methadone maintenance patients: Prevalence and change over treatment. *J Consult Clin Psychol* 56:776-777, 1988
28. **Kosten TR, Rounsaville BJ, Kleber HD**: Relationships of depression to psychosocial stressors in heroin addicts. *J Nerv Ment Dis* 171:97-104, 1983
29. **Obuchowsky M, Zweben JE**: Bridging the gap: The methadone client in 12-step programs. *J Psychoactive Drugs* 19:301-302, 1987
30. **Regier DA, Farmer ME, Rae DS**, et al: Comorbidity of mental disorders with alcohol and other drug abuse. *JAMA* 264:251 I-2518, 1991
31. **Gerstley L, Alterman A, McLellan T, Woody G**: Antisocial personality disorder in patients with substance abuse disorders: A problematic diagnosis. *Am J Psychiatr* 147: 173-178, 1990
32. **Robbins LN, Tipp J, Przybeck T**: Antisocial personality, in **Robins LN, Regier DA**, (eds): *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study*. New York, Free Press, 1991, pp 258-290
33. **Ross H, Glasser F, Germanson T**, et al: The prevalence of psychiatric disorders in patients with alcohol and other drug problems. *Arch Gen Psychiatr* 45:1023-1031, 1988
34. **Bigelow G, Lawrence C, Stitzer M, Wells D**: Behavioral treatments during outpatient methadone maintenance: A controlled evaluation. Paper presented before the American Psychological Association. Washington, D.C., September, 1976
35. **Stitzer M, Bigelow G, Liebson I**: Reducing drug use among methadone maintenance clients: Contingent reinforcement for morphine-free urines. *Addict Behav* 5:333-340, 1980
36. **Stitzer M, Bigelow G, Liebson I**: Reinforcement of drug abstinence: A behavioral approach to drug abuse treatment, in **Krasnegor N**, (ed), *Behavioral Approaches to Analysis and Treatment of Substance Abuse*. NIDA Research Monograph No. 25, DHEW Publication No. (ADM) 79-839. Washington, D.C., U.S. Government Printing Office, 1979, pp 68-90
37. **Stitzer M, Bigelow G**: Stabilization on methadone: **Symptomatology** and discriminability of methadone dose alterations. *Proceedings of the Committee on Problems of Drug Dependence*. Washington, DC.: National Academy of Science, 1976, pp1003-1017
38. **Bigelow G, Stitzer M, Lawrence C**, et al: Narcotics addiction treatment: Behavioral methods concurrent with methadone maintenance. *Int J Addict* 15:427-437, 1980
39. **Stitzer M, Bigelow G, Lawrence C**, et al: Medication take-home as reinforcer in a methadone maintenance program. *Addict Behav* 2:9-14, 1977
40. **Stitzer M, Bigelow G, Liebson I**: Supplementary methadone self-administration among methadone maintenance clients. *Addict Behav* 4:493-503, 1979
41. **Anthony JC, Helzer JE**: Syndromes of drug abuse and dependence, in **Robins LN, Regier DA** (eds): *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study*. New York, Free Press, 1991, pp 116-154
42. **Bickel W, Rizzuto P**: The naturalistic patterns of alcohol consumption in alcoholic methadone patients. *J Stud Alcohol* 52:454-457, 1991
43. **El-Bassel N, Schilling RF**: 15 Month followup of women methadone patients taught skills to reduce heterosexual HIV transmission. *Pub Health Reports* 107:500-504, 1992
44. **Weddington WW**: Towards a rehabilitation of methadone maintenance: Integration of relapse prevention and aftercare. *Int J Addict* 25:1201-1224, 1991