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Gender Comparisons among Asian American and Pacific Islander Patients in Drug Dependency Treatment

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Abstract

Background—Few studies have focused on Asian Americans and Pacific Islanders (AAPIs), despite indications of increasing substance abuse among AAPIs in recent years.

Objectives—This prospective longitudinal study examined gender differences among AAPIs in treatment.

Methods—The study included 567 (177 women, 390 men) AAPI patients drawn from two prior studies, one with 32 community treatment programs in 13 California counties (CalTOP, 3, 9months), and another project including 36 treatment sites in 5 California counties (TSI, 3, 12 months). Baseline and follow-up assessments utilized the Addiction Severity Index (ASI). A subset of patients was assessed at 3 and 9/12 months (n=106).

Results—Significant gender-related differences were observed at baseline: fewer women than men were employed or never married. More women were living with someone having alcohol and drug problems. Methamphetamine was the primary drug for women and men, followed by alcohol and heroin. Compared to AAPI men, AAPI women reported greater problem severity in family/social relationships (0.18 vs. 0.11, $p<.001$), employment (0.68 vs. 0.56, $p<.001$), and mental health (0.19 vs. 0.14, $p<.01$). Relative to women, AAPI men reported greater treatment

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CONFLICT OF INTEREST

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satisfaction at the 3-month follow-up. Significant improvements at follow-up were observed in family, alcohol, drug, and legal domains for both genders, and in mental health for men only. Compared to AAPI men, AAPI women demonstrated significantly greater improvements in drug problems (Δ ASI=0.07, $p<0.05$).

Conclusions—Gender differences revealed in this study suggest a need for a greater treatment focus on psychiatric problems for AAPI women and drug use problems for AAPI men.

Keywords

Gender difference; Asian American and Pacific Islander; Substance Use; Treatment Outcome

1. INTRODUCTION

About 17.3 million Asian Americans and Pacific Islanders (AAPIs) live in the United States, accounting for 5.6% of the U.S. population (Bureau, 2010). AAPIs are one of the fastest growing groups in the United States, whose population increased by 9.7% from 2000 to 2010 (Bureau, 2010). This growth is accompanied by a rising trend in substance abuse among AAPIs, that according to data from National Survey on Drug Use and Health (NSDUH), the rate of current illicit drug use among Asian Americans aged 12 years old and above increased from 3.1% to 3.5% between 2005 and 2010 (Abuse, 2011). Prior studies have also identified considerable gender differences among the substance-abusing population, furthering recent efforts to develop gender-sensitive treatment strategies, while less is known about how AAPI women and men differ in their problems/needs and treatment outcomes. The present study investigated gender-related differences among AAPI men and women treated in community programs for substance abuse problems.

1.1 Gender Differences in Substance Abuse

Gender differences have been demonstrated in prior substance abuse studies of treatment entry, retention, and outcomes (Green, Polen, Dickinson, Lynch, & Bennett, 2002; B. Pelissier & Jones, 2005). Substance-abusing women are more likely to face problems with limited income, education, job skills, and living with substance-abusing individuals (Y. I. Hser, Grella, C., Evans, E., Huang, Y., Spear, S., 2004; Y. I. Hser, Teruya, et al., 2003; Niv & Hser, 2007). Additionally, they are more likely to suffer from serious psychological disorders, including depression and anxiety (Grella & Joshi, 1999; B. Pelissier & Jones, 2005; Stevens, Andrade, & Ruiz, 2009). In contrast, substance-abusing men are more likely to be involved in criminal activities and experience (Y. I. Hser, Huang, Teruya, & Anglin, 2003; Y. I. Hser, Teruya, et al., 2003; B. Pelissier & Jones, 2005). In terms of treatment entry, men are more likely to enter treatment under duress due to legal requirements, or by referral from family members, while women are more likely to enter treatment by self-referral; loss of child custody is a major concern driving women to enter treatment (Grella & Joshi, 1999). Furthermore, men and women may use substances for different purposes. Women generally pursue substance use to alter feelings about relationships, while men prefer an independently pleasurable experience (Stevens et al., 2009). In term of injecting behaviors, women demonstrate a slower duration of injecting than their male counterparts, and more women than men report daily injection among short-term injectors (Iversen, Wand,

Gonnermann, & Maher, 2010). Previous studies indicated that women are more likely to experience mood disorder and they need more responsive psychiatric services than men. (Shand, Degenhardt, Slade, & Nelson, 2011; Zhang et al., 2013). In terms of treatment outcomes, women and men have similar results in terms of drug use and criminal activities (Messina, Wish, & Nemes, 2000; B. Pelissier & Jones, 2005; B. M. M. Pelissier, Camp, Gaes, Saylor, & Rhodes, 2003). One study found female cocaine abusers showed more lasting treatment outcomes than men in term of reduced drug use (Kosten, Gawin, Kosten, & Rounsaville, 1993).

1.2 Substance Abuse Problems among AAPIs

AAPI populations have been viewed as a “model minority” who have low drug use prevalence compared with other ethnic groups (Davis & Aoki, 1993; Price, Risk, Wong, & Klinge, 2002). This stereotype creates assumptions of a lesser need for special health services or culture-inclusive policies in substance abuse treatment (Mercado, 2000). However, substance abuse in the AAPI population may be more of a problem than previously assumed (Fong & Tsuang, 2007). Asian Americans with recent dependence on drugs or alcohol were significantly less likely to report treatment participation in the past 12 months than Caucasian drug users (Sakai, Ho, Shore, Risk, & Price, 2005). Drug use among AAPIs are associated with their ethnic characteristics and immigrant status (Nemoto et al., 1999). Factors influencing individual drug choices included distinct cultural backgrounds, time of immigration to the U.S., pre-existing fears of addiction and needle use, the stigma associated with injection drug use, and the availability of drugs (Nemoto et al., 1999). Additionally, familial expectations and fear of failure are risk factors of drug use among AAPIs (Sekiya, 1989). AAPIs may be inhibited from seeking treatment and other service utilization because of factors such as the stigma of drug use for individual and family, language barriers, and perceptions of substance abuse as a manifestation of weak self-control (Lum, 1982; D. Sue & Sue, 1987; Zane, Takeuchi, & Young, 1994). Cultural norms are pervasive in cultivating population-specific behavioral tendencies, as demonstrated by the effects of cross-generational Americanization, and the interaction between “culture of origin” and “host culture” (Hong, Huang, Sabri, & Kim, 2011). Utilization of treatment by substance-dependent AAPIs is uniquely contingent upon level of acculturation, as measured by place of birth, among other predisposing factors (Sakai et al., 2005).

1.3 Gender Differences among AAPIs

Gender differences can be important factors to consider in treating substance-abusing AAPI patients, as gender roles are distinctive in AAPI cultures. Within the traditional AAPI nuclear family, tightly knit hierarchies establish fathers at the top as the financial providers, while mothers serve as nurturers and caretakers of the “product” of their marriage, the children (Mercado, 2000). Moreover, contrary to Western families, Asian families value interdependency within the family more than independence (Markus & Kitayama, 1991). Therefore, AAPI women might have stronger desire in seeking treatment and demonstrate better treatment outcome. Asian Americans’ individual identities are defined by family roles, with sons being more highly valued than daughters. This gender polarization is likely upheld by expectations of the sons’ future roles as both social representatives of their own parents and as providers in their own families. Moreover, Asian parents also have higher

expectations of their children due to their own difficulties with immigration and assimilation (Sekiya, 1989). Thus, AAPI men might face more pressure from their family to enter treatment than AAPI women. Overall, these gender roles and values may result in gender-based differences in help-seeking, treatment participation, as well as treatment outcomes among AAPI substance-using populations.

This article reports the findings of research designed to address the following research questions: (1) Are there gender differences among the AAPI sample at treatment admission in terms of background characteristics and problem severity in key life domains (family/social relationships, alcohol use, drug use, medical problems, employment, psychiatric problems, and criminality)? (2) Are there gender differences in satisfaction with the treatment received? (3) Are there gender differences in the substance abuse treatment outcomes at follow-up?

We anticipated that AAPI women would generally have lower education levels and employment rates than AAPI men. Additionally, AAPI women would report more psychological problems and family problems, and would be more likely to live with spouses who had substance abuse problems. Similar to men from other ethnic groups compared to women from those groups, AAPI men would show more satisfaction with treatment that featured a utilitarian approach. In terms of treatment outcome, we hypothesized that women and men would reduce drug use and related problems at similar rates in response to treatment. AAPI women might have greater concern about family than AAPI men, and that concern might indicate that AAPI women have stronger treatment needs and could exhibit greater overall improvements.

2. METHODS

2.1 Study Design

This study conducted a secondary analysis of empirical data generated by two research studies in California. Both studies were multi-site prospective studies with the Addiction Severity Index (ASI) repeatedly measured at baseline and follow-up.

The California Treatment Outcome Project (CalTOP) was funded by the Center for Substance Abuse Treatment as part of the national Treatment Outcomes and Performance Pilot Studies Enhancement (TOPPSII) (Evans & Hser, 2004; Y. I. Hser, Evans, & Huang, 2005). Baseline data were collected in-person for more than 20,000 patients from 43 programs in 13 counties over a period of 2 years from 2000-2002. Baseline measures excluded clients who were in short-term detox programs, mandated programs for driving while intoxicated, and those who dropped out of their programs before assessment for treatment planning was completed. A random sample of 3,314 patients was then targeted for follow-up so as to avoid significant discrepancies between the follow-up and baseline samples. After excluding those ineligible (due to death, incarceration, deportation, or inability to continue), 2,850 participants were randomly selected to complete the 3-month follow-up phone interview. For the 9-month follow-up phone interview, we obtained a 78% completion rate, after targeting the original 3,314 patients plus an additional 400 who were

not included at the 3-month follow-up. After excluding those who were ineligible, 2,730 patients completed the interview.

The Treatment Systems Impact and Outcomes (TSI) study drew 7,416 voluntary participants from 36 treatment sites in 5 California counties over 3 years (2004-2006) (Y. I. Hser, Teruya, et al., 2003). The TSI was designed to implement an in-depth evaluation of the effects of Proposition 36, which provided treatment for drug abuse in lieu of incarceration for non-felony offenders in California. Treatment programs were framed as multi-level systems, and ranged from residential, drug-free outpatient, day treatment, methadone maintenance, and detoxification. The baseline assessments were gathered through in-person interviews and a random sample among those who agreed to participate received telephone interviews at the 3-month and 12-month follow-up.

2.2 Participants

The two studies provided a substantial number of AAPIs (N= 567, 178 women and 389 men) and enabled investigation of their needs for substance abuse treatment services and treatment outcomes. The study sample included 454 AAPIs from the CalTOP study (145 women and 309 men) and 113 AAPIs from the TSI project (32 women and 81 men). The sample size of the follow-up analysis was 106, composed by 78 CalTOP participants (25 women and 53 men), and 28 TSI participants (10 women and 18 men). We analyzed treatment satisfaction data based on 58 subjects (19 women and 39 men) from CalTOP who completed the 3-month survey.

2.3 Instruments and Measures

2.3.1 Addiction Severity Index (ASI)—The ASI is a standardized instrument assessing seven domains: family and social relationships, alcohol use, drug use, medical status, employment, psychological and legal (McLellan, Luborsky, Woody, & O'Brien, 1980). A composite score can be calculated for each of the seven scales with graduated severity values, ranging from 0 to 1. The ASI is a widely accepted method of evaluating substance abuse severity used in various populations and settings.

2.3.2 Treatment Service Review (TSR) and Satisfaction—The TSR is a self-report survey and includes questions on the number and type of services received by the patient (McLellan, Alterman, Cacciola, & Metzger, 1992). Additional items were added to assess participant satisfaction with treatment in terms of timely services, convenience of location, counselor rapport, contentment with treatments for each dimension of the ASI, HIV/AIDS prevention and counseling, and overall satisfaction. The satisfaction scale was graded from 0 to 5, with higher values indicating greater satisfaction.

2.4 Statistical Analysis

Normal distribution of continuous variables was examined using a normal quintile plot. Group differences between women and men were tested using t-tests for continuous variables and Chi-square (X^2) tests for categorical variables. Paired t-test was conducted to examine changes in problem severity. Gender differences were examined by ANCOVA for each continuous outcome variable, controlling for demographic and substance abuse history

differences. Characteristics difference between participants from CalTOP and TSI were examined at baseline, and baseline characteristics between those who were successfully followed up and those who were lost to follow up are compared. Effect size for a t-test and ANCOVA analysis was calculated by Cohen's d and Eta-square. SAS 9.2 software was used to conduct data management and analysis in this study.

3. RESULTS

We examined the characteristics difference between participants from CalTOP and TSI at baseline. These two samples did not show any significant difference in demographic factors, socioeconomic factors as well as history of drug use. Comparing with those who were lost to follow up, AAPIs with younger age and receiving residential treatment were overrepresented at follow-up.

3.1 Demographics and Substance Use History

The demographic characteristics of samples at intake are presented in Table 1. No significant gender differences were observed regarding age, education, and living status. AAPI men were younger at age of first drug use ($t = 2.1$, $p < 0.05$). Significantly fewer women were employed ($X^2(2) = 15.4$, $p < 0.001$) or never married ($X^2(2) = 28.7$, $p < 0.001$). As expected, more women than men reported living with others who had alcohol problems ($X^2(1) = 8.8$, $p < 0.01$), or using drugs ($X^2(1) = 12.5$, $p < 0.001$). The main modality in this study was outpatient treatment for both genders, but more women were in residential treatment centers than men ($X^2(2) = 9.9$, $p < 0.01$).

Gender differences in patterns of drug use at intake were significant within the intake sample, including primary drug used ($X^2(6) = 19.5$, $p < 0.01$), frequency ($X^2(4) = 11.6$, $p < 0.05$), and route of drug use ($X^2(3) = 14.6$, $p < 0.01$) (Table 1). Methamphetamine was the primary drug used, followed by alcohol and heroin. However, fewer women reported alcohol use but more women reported heroin use than men. The primary route of drug administration for both genders was smoking. More women utilized injection and inhalation routes, while more men turned to oral administration.

3.2 Gender Differences in Addiction Severity Index at Baseline

Table 2 exhibits gender differences in the Addiction Severity Index (ASI). The mean ASI family composite score for women was significantly higher than that of men ($t = 3.8$, $p < 0.001$). This finding was congruous with two other related family measures, mean days of conflict with family members in the past 30 days ($t = 4.2$, $p < 0.001$), and conflicts with others ($t = 3.7$, $p < 0.001$). Both men and women showed similar severity scores in drug and alcohol use. Although there were slight differences across ASI medical composites, significantly more women reported having chronic medical problems ($X^2(1) = 5.7$, $p < 0.05$). Women reported more employment problems compared to men (ASI, $t = 4.2$, $p < 0.001$).

Women were more likely to have psychiatric problems than men, indicated by a greater psychiatric composite score ($t = 2.7$, $p < 0.01$), particularly in terms of depression ($X^2(1) = 13.9$, $p < 0.001$) and anxiety ($X^2(1) = 6.7$, $p < 0.01$) during the lifetimes, and women were more troubled with deficits in understanding, memory, and concentration in the past 30 days

($X^2(1) = 5.34$, $p < 0.05$) and during the lifetimes ($X^2(1) = 10.66$, $p < 0.01$) (Table 2). More women reported never being in a controlled setting within the past 6 months and fewer women had been in jails ($X^2(3) = 12.3$, $p < 0.01$), totaling to significantly fewer months spent incarcerated during their lifetimes ($t = 2.5$, $p < 0.05$) compared with men.

3.3 Satisfaction with Treatment Services

In general, women and men regularly yielded high satisfaction with treatments received (Table 3). Specifically, men were significantly more satisfied with their counselors' concurrence with them on treatment plans, and their empathy levels ($F(10,28) = 2.88$, $p < 0.05$; $F(10,28) = 2.58$, $p < 0.05$, respectively).

3.4 Treatment outcomes

Table 4 shows the changes in ASI composite scores in each domain between baseline and follow-up. Results from our paired t-tests showed that there were significant improvements in ASI scores from intake to follow-up observed in several areas for both women and men, including Family ($t = -3.1$, $P < 0.01$; $t = -3.7$, $P < 0.001$, respectively), Alcohol (male: $t = -2.6$, $P < 0.05$; female: $t = -2.4$, $P < 0.05$), Drug (male: $t = -4.0$, $P < 0.001$; female: $t = -4.6$, $P < 0.001$), and Legal composites (male: $t = -6.0$, $P < 0.001$; female: $t = -2.8$, $P < 0.01$). However, in terms of psychiatric ASI scores, significant improvements were only shown in AAPI men (male: $t = -2.2$, $P < 0.05$). To examine differential reductions from baseline to follow up, ANCOVA analysis was conducted. Significantly more improvements were observed among women than men in terms of drug problems (ASI = 0.07, $F(10, 81) = 3.98$, $p < 0.001$). We conducted separate GLM models for each ASI score. Baseline ASI scores indicated decent effect sizes from medium to large effects, ranging from 0.4 to 0.6; ASI scores in follow-up period demonstrated small and medium effects ranging from 0.2 to 0.4. In terms of changes in ASI scores from baseline to follow-up, most effect sizes were medium around 0.4.

4. DISCUSSION

The findings of the present study reveal several gender-related differences in characteristics among AAPI patients in drug abuse treatment during baseline and at follow-up. Consistent with the gender-related differences found in general population drug users, AAPI women initiated their drug use at a slightly older age (B. Pelissier & Jones, 2005), and they had lower educational achievements and employment rates compared to AAPI men (Chatham, Hiller, Rowan-Szal, Joe, & Simpson, 1999; Green et al., 2002; Grella & Joshi, 1999; Y. I. Hser et al., 2005; Y. I. Hser, Grella, C., Evans, E., Huang, Y., Spear, S., 2004; Y. I. Hser, Huang, et al., 2003). Similar to drug users in the general population, AAPI women were more likely to be married or to report dependent living statuses and to have been living with someone who was using drugs or alcohol (Grella & Joshi, 1999; B. Pelissier & Jones, 2005), while AAPI men demonstrated more criminal involvement (Chatham et al., 1999; Grella & Joshi, 1999; Y. I. Hser et al., 2005; Y. I. Hser, Grella, C., Evans, E., Huang, Y., Spear, S., 2004; Y. I. Hser, Huang, et al., 2003). Although the present study showed AAPI women entered treatment at younger ages than AAPI men, it is not statistically significant, as has been found previous studies (Chatham et al., 1999; Green et al., 2002; Grella & Joshi, 1999; Y. I. Hser et al., 2005; Y. I. Hser, Grella, C., Evans, E., Huang, Y., Spear, S., 2004; Y. I. Hser,

Huang, et al., 2003). From a cultural perspective, AAPI men are highly valued and are held to higher expectations and responsibilities toward their families (Mercado, 2000; Sekiya, 1989). Moreover, stigma associated with individual drug users is also viewed as a stigma affecting the entire family among AAPIs (Markus & Kitayama, 1991; Nemoto et al., 1999). Thus, AAPI men might face more pressure from family members to abstain from drug use and therefore be more likely to be referred to treatment by their families. With respect to the primary drug used, methamphetamine and amphetamines were the most prevalent for both AAPI women and men. This finding is unsurprising, as methamphetamine is widely used in California (Y. I. Hser et al., 2005; Y. I. Hser, Grella, C., Evans, E., Huang, Y., Spear, S., 2004). AAPI men reported more alcohol use, which was consistent with a previous study (Chatham et al., 1999). More AAPI female injectors reported daily injection, which was consistent with the findings of a study in the Australian setting (Iversen et al., 2010). However, different from that study, the present study found more women reported injection as their route of administration which may due to more women than men were recruited from methadone maintenance or residential programs.

In terms of the baseline ASI score, this study found results consistent with prior studies, confirming that women suffered more psychological problems, and faced more employment and family related problems (Green et al., 2002).

According to the 3-month follow-up survey, both women and men were fairly satisfied overall with treatment. Relative to women, men reported greater satisfaction with the attitudes of and concurrence with their counselors. This may due to women prefer an empathic counseling style, while men favor a utilitarian approach in receiving counseling (Fiorentine, Nakashima, & Anglin, 1999).

AAPI patients generally reported lower satisfaction with treatment in term of criminal legal services, family services, and treatment contentment involved HIV/AIDS prevention, compared to other type of services, such as medical services and drug counseling. The clinical implications of our findings indicate that providing culturally competent treatment is needed, which could target mental health issues and communication between counselors and patients, particularly for AAPI women.

Studies that focused on general populations showed both women and men experienced drug, alcohol, and psychiatric improvement after treatment (Chatham et al., 1999; Y. I. Hser, Huang, et al., 2003). Additionally, improvements were observed from baseline to follow-up for both genders in all seven ASI categories among general methamphetamine abusers (Y. I. Hser et al., 2005; Y. I. Hser, Grella, C., Evans, E., Huang, Y., Spear, S., 2004). However, the present study showed improvements in Family, Alcohol, Drug, and Legal composites for both genders, but significant improvement in psychiatric composites occurred only for AAPI men.

Similar with other study, there was lack of significant improvements in medical composites (Y. I. Hser et al., 2005; Y. I. Hser, Grella, C., Evans, E., Huang, Y., Spear, S., 2004), which may be related with non-improvements in employment composite, since employment was the main predictor of better quality of life among methamphetamine-dependent individuals

by a previous study (Gonzales et al., 2011). In terms of psychiatric scores, the women's lack of significant improvements may be partially attributable to cultural standards and population-specific behaviors. First, substance-dependent AAPIs are significantly less likely to self-report a need for treatment (Sakai et al., 2005), and they utilize significantly fewer medical and psychiatric services (Niv, Wong, & Hser, 2007). Second, as evidenced in the 3-month follow-up reports, women were less satisfied with mental health services and their counselors, particularly in terms of concurrence on treatment goals and counselor empathy. Previous research has showed the relationship between client and counselor to be one of the strongest predictors of client engagement in treatment, a factor significantly associated with positive treatment outcomes (Fiorentine & Anglin, 1996; Fiorentine et al., 1999). Third, women with relatively low composite psychiatric scores at baseline were overrepresented in the follow-up interview. Lower starting points consequently limit room for improvement and explain the diminished change from intake to follow-up.

AAPI women demonstrated greater drug improvements than AAPI men after about one year of treatment in the present study. This finding may be explained by gender and cultural differences. The AAPI women's role in the family is to act as caretaker, and they traditionally value their family more than themselves (Markus & Kitayama, 1991). These value systems could serve as a vehicle for proactive responses to drug abuse issues, and focused interventions could produce greater improvements during treatment. Similar finding was observed in a cocaine use study that female cocaine abusers demonstrated better treatment outcomes as using less cocaine during 6 month after treatment, even they had more severe drug problems at baseline (Kosten et al., 1993).

In this study, all survey instruments were administered in English, and bilingual staff were available if needed. One limitation of this study lies in the small sample size. This study was powered to conduct gender difference analysis for ASI scores, especially in the baseline period, while effects of the treatment satisfaction comparisons are weakened by limited sample size. To get a larger sample size, we combined data from the Cal-TOP and TSI studies, which are different in some aspects, such as different follow-up periods. Although there were no significant differences between data from CalTOP and TSI in demographics and baseline ASI scores, this combination could still induce potential bias by unmeasured confounding. AAPIs with younger age and receiving residential treatment were overrepresented at follow-up. To reduce the selection bias in this study, we controlled for background differences in pre- and post-treatment outcome analyses through ANCOVA, included age at first drug use, education, employment, marriage status, living with drug addicts or alcohol addicts, treatment modality, primary drug use, frequency of drug use, and route of administration. This study lacked a control group without treatment, thus it could not sufficiently support a causal relationship. However, this study did include participants from a number of diverse treatment programs across California, which may further support generalization of our findings. Additionally, the standardized measures (e.g., ASI) used in this study have been validated in studies with different populations, further supporting more generalizations about our results in relation to the larger population.

Few studies have assessed community-based drug abuse treatment services received by AAPI drug users. To our knowledge, the present study is the first that provides systematic

investigation of gender differences among AAPI substance abusers in treatment. Our study highlights the necessity for developing culturally appropriate and gender-sensitive treatments, particularly for psychiatric problems among AAPI women and drug problems among AAPI men. However, future studies should incorporate adequate measures of acculturation to help further our understanding of the gender differences observed in the present study (S. Sue, Yan Cheng, Saad, & Chu, 2012). . Meanwhile, further study is needed to explore gender differences in drug abuse behaviors within the broader AAPI population (Nagasawa, Qian, & Wong, 2001).

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Table 1

Background characteristics and drug use at baseline

Characteristics	% or Mean (S.D.)		
	Males (N=390)	Females (N=177)	Total (N=567)
<i>Age</i>	34.3(10.06)	33.5(9.81)	34.0(9.80)
<i>Age of First Use</i> [*]	20.9(8.34)	22.5(8.21)	21.4(8.33)
<i>Education</i>			
No High School	72.6	74.6	73.2
High School and Above	27.4	25.4	26.8
<i>Employment</i> ^{***}			
Not in labor force	27.5	41.5	31.9
Unemployed	25.7	27.8	26.4
Employed	46.8	30.7	41.8
<i>Marital Status</i> ^{***}			
Never married	53.1	28.1	50.9
Married/remarried	22.5	24.4	20.5
Separated/windowed/divorced	24.4	41.3	28.6
<i>Living Status</i>			
Homeless	5.7	10.6	7.1
Dependent	20.4	21.9	20.9
Independent	73.9	67.5	72
<i>Living with someone with current Alcohol Problem</i> ^{**}	5.4	13.2	7.9
<i>Living with someone who uses or abuses Drugs</i> ^{***}	7	16.7	10
<i>Treatment Modality</i> ^{**}			
Methadone Maintenance	8.3	10.5	9
Outpatient	73.4	60.8	69.4
Residential	18.3	28.7	21.6
<i>Primary Drug</i> ^{**}			
None	1.3	1.7	1.4
Alcohol	18.6	9	15.6
Cocaine/crack	7.7	9	8.1
Marijuana/hashish	12.4	6.2	10.4
Heroin/Opiates/Synthetics	11.1	18.1	13.3
Methamphetamine/Amphetamine	47.2	52	48.7
Other	1.8	4	2.5
<i>Frequency of Use</i> [*]			
None, past month	44.6	52.4	47
1-3 times, past month	17.6	16.3	17.2
1-2 times, week	13	6	10.8
3-6 times, week	13	8.4	11.6

Characteristics	% or Mean (S.D.)		
	Males (N=390)	Females (N=177)	Total (N=567)
Daily	11.9	16.9	13.4
Route of Administration **			
Oral	24.1	14.8	21.2
Smoking	60.8	58	59.9
Inhalation	9.2	16.1	11.4
Injection	5.9	11.1	7.5

Chi-square test or t-test on gender differences.

*
p<0.05

**
p<0.01

p<0.001

Table 2

Addiction severity at baseline

Characteristics	% or Mean (S.D.)		
	Males (N=390)	Females (N=177)	Total (N=567)
<i>ASI score</i>			
Family Composite Score ***	0.11 (0.18)	0.18 (0.24)	0.13 (0.20)
Alcohol Composite Score	0.10 (0.18)	0.09 (0.18)	0.09 (0.18)
Drug Composite Score	0.11 (0.11)	0.12 (0.13)	0.11 (0.12)
Medical Composite Score	0.13 (0.27)	0.16 (0.27)	0.14 (0.27)
Employment Composite Score ***	0.56 (0.32)	0.68 (0.31)	0.60 (0.33)
Psychiatric Composite Score **	0.14 (0.19)	0.19 (0.23)	0.16 (0.21)
Legal Composite Score	0.18 (0.20)	0.17 (0.20)	0.18 (0.20)
<i>Family and social relationships</i>			
Days of Conflict with Family, past 30 days ***	1.3 (4.59)	3.6 (8.42)	2.0 (6.13)
Days of Conflict with Others, past 30 days ***	0.7 (3.20)	2.3 (7.16)	1.2 (4.84)
<i>Medical Status and Psychiatric Status</i>			
Chronic Medical Problems *	17.4	26.4	20.2
Depression, past 30 days	25.5	30.5	27.1
Depression, lifetime ***	47.8	64.9	53.1
Anxiety, past 30 days	29.4	31.6	30.1
Anxiety, lifetime **	41.0	52.9	44.7
Trouble Understanding, Concentrating or Remembering, past 30 days *	17.7	26.4	20.4
Trouble Understanding, Concentrating or Remembering, lifetime **	24.2	37.9	28.4
<i>Legal Status</i>			
In Controlled Setting, past 30 days (%)			
None	67.9	65.0	67.0
Jail	24.9	22.6	24.2
Alcohol/Drug Treatment	5.4	11.3	7.2
Medical/Psychiatric/Other Treatment	1.8	1.1	1.6
In Controlled Setting, past 6 months (%) **			
No	47.2	52.4	48.9
Jail	43.6	33.7	40.5
Alcohol/Drug Treatment	5.8	12.7	8.0
Medical/Psychiatric/other Treatment	3.3	1.2	2.7
Months Incarcerated, lifetime *	12.7(24.49)	7.4(19.27)	11.0 (23.12)
Days Incarcerated, past 30 days	3.1 (7.10)	3.7 (8.10)	3.3 (7.42)

Chi-square test or t-test on gender differences

*
p<0.05

**
p<0.01

p<0.001

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Table 3

Patient Satisfaction with Treatment at 3 Month Follow-Up

Characteristics	Mean (S.D.)		
	Males (N=39)	Females (N=19)	Total (N=58)
Timely Service	4.36 (0.87)	4.42 (0.84)	4.38 (0.85)
Convenience of Location	4.15 (0.90)	4.26 (1.15)	4.19 (0.98)
Patient Participation in Treatment Plan	4.23 (1.04)	4.11 (1.10)	4.19 (1.05)
Overall	4.41 (0.55)	4.16 (1.01)	4.33 (0.73)
Medical Services	3.92 (0.79)	3.71 (1.38)	3.84 (1.01)
Employment Services	3.79 (1.42)	3.54 (1.27)	3.67 (1.33)
Alcohol Counseling	4.05 (0.76)	3.92 (1.56)	4.00 (1.11)
Drug Counseling	4.41 (0.80)	4.42 (0.84)	4.41 (0.80)
Criminal Legal Services	3.21 (1.32)	3.89 (1.17)	3.43 (1.29)
Family Services	3.50 (1.65)	2.80 (1.62)	3.15 (1.63)
Mental Health Services	4.25 (0.86)	3.58 (1.31)	3.96 (1.10)
HIV/AIDS Prevention/Counseling	3.67 (1.28)	3.53 (1.46)	3.60 (1.35)
Counselor Concurrence on Treatment Goals *	4.00 (1.12)	3.72 (1.45)	3.91 (1.23)
Counselor Empathy Toward Patient *	4.26 (0.99)	3.74 (1.59)	4.09 (1.23)

*** p<0.001, on gender differences controlled for age at first drug use, education, employment, marriage status, living with drug addict(s) or alcohol addict(s), treatment modality, primary drug use, frequency of drug use, and route of administration

* p<0.05, on gender differences controlled for age at first drug use, education, employment, marriage status, living with drug addict(s) or alcohol addict(s), treatment modality, primary drug use, frequency of drug use, and route of administration

Table 4

Changes in ASI Scores (S.D.) from baseline to follow-Up

Characteristics	MALE(N=71)				Female(N=35)				Total (N=106)					
	Pre	Post	Change ^a	Effect size ^e	Pre	Post	Change ^a	Effect size ^e	Pre ^c	Effect size ^f	Post ^d	Effect size ^f	Change ^b	Effect size ^f
Family Composite	0.15 (0.21)	0.07 (0.11)	-0.08 ^{**} (0.21)	0.38	0.21 (0.25)	0.06 (0.11)	-0.14 ^{***} (0.22)	0.56	0.17 (0.22)	0.40	0.06 (0.11)	0.13	-0.10 (0.22)	0.41
Alcohol Composite	0.07 (0.13)	0.02 (0.06)	-0.05 [*] (0.14)	0.38	0.06 (0.15)	0.00 (0.02)	-0.06 [*] (0.15)	0.40	0.07 (0.13)	0.42	0.02 (0.05)	0.37	-0.05 (0.14)	0.41
Drug Composite	0.09 (0.10)	0.03 (0.07)	-0.06 ^{***} (0.12)	0.60	0.11 (0.13)	0.01 (0.03)	-0.10 ^{***} (0.12)	0.77	0.10 (0.11)	0.58	0.03 (0.06)	0.21	-0.07 [*] (0.12)	0.44
Medical Composite	0.10 (0.22)	0.07 (0.20)	-0.04 (0.19)	0.18	0.10 (0.18)	0.11 (0.28)	-0.02 (0.33)	0.11	0.10 (0.21)	0.18	0.08 (0.23)	0.30	-0.03 (0.24)	0.24
Employment Composite	0.55 (0.33)	0.53 (0.31)	-0.03 (0.32)	0.09	0.59 (0.33)	0.54 (0.28)	-0.06 (0.32)	0.18	0.56 (0.33)	0.59	0.53 (0.30)	0.37	-0.04 (0.32)	0.32
Psychiatric Composite	0.16 (0.20)	0.10 (0.19)	-0.07 [*] (0.26)	0.35	0.11 (0.17)	0.13 (0.19)	0.01 (0.24)	0.06	0.15 (0.19)	0.26	0.11 (0.19)	0.20	-0.05 (0.26)	0.26
Legal Composite	0.24 (0.22)	0.07 (0.13)	-0.18 ^{***} (0.25)	0.82	0.15 (0.17)	0.05 (0.10)	-0.10 ^{**} (0.19)	0.59	0.21 [*] (0.21)	0.40	0.06 (0.12)	0.22	-0.15 (0.23)	0.36

^a Paired t-test on change of pre and post scores

^b ANCOVA analysis of change between of pre and post-treatment scores by gender; controlled for age at first drug use, education, employment, marriage status, living with drug addict(s) or alcohol addict(s), treatment modality, primary drug use, frequency of drug use, and route of administration

^c ANCOVA analysis of difference in pre-treatment scores between genders, controlled for age at first drug use, education, employment, marriage status, living with drug addict(s) or alcohol addict(s), treatment modality, primary drug use, frequency of drug use, and route of administration

^d ANCOVA analysis of difference in post-treatment scores for both genders controlled for age at first drug use, education, employment, marriage status, living with drug addict(s) or alcohol addict(s), treatment modality, primary drug use, frequency of drug use, and route of administration

^e Effect size is calculated as mean difference score (before and after treatment) divided by the standard deviation of the initial mean score.

^f Effect size is calculated as Eta-square

^{*} P<0.05

^{**} P<0.01

^{***} P<0.001