

Short communication

Gender differences in cocaine dependence

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Abstract

Aims: This study examined gender differences among treatment-seeking cocaine-dependent outpatients (e.g., on demographics, psychopathology, and substance abuse). **Participants:** Participants were 2376 adults with cocaine dependence entering a multisite randomized controlled trial of psychosocial therapies. **Findings:** Women, compared to men, had less severe lifetime substance use problems but a higher pattern of psychiatric, medical, social/family, and employment problems; they also had more positive expectations and opinions about treatment. **Conclusions:** Women may be willing to engage in treatment but may have challenging economic and psychosocial concerns over and above their addiction. Published by Elsevier Ireland Ltd.

Keywords: Cocaine dependence; Psychopathology; Gender; Treatment

1. Introduction

The emerging literature on gender differences in cocaine dependence suggests significant concerns about females. For example, females are just as likely as males to progress from first use to dependence (Wagner and Anthony, 2006), but they actually progress more rapidly into substance use disorder (known as a “telescoped course”) (McCance-Katz et al., 1999). Additionally, some studies report that females presenting for treatment have more severe cocaine use problem than males, have more socioeconomic and family-related concerns, and have a higher incidence of comorbid psychiatric conditions, such as depression and posttraumatic stress disorder (McCance-Katz et al., 1999; Najavits et al., 1998; Wong et al., 2002).

While these contributions are valuable, they are inconclusive, especially in light of other studies that have not found significant gender differences (Griffin et al., 1989; Weiss et al., 1997). Moreover, many studies have small sample sizes, limiting their generalizability. Further research is also needed on treat-

ment experiences of males and females, such as expectations and opinions about addiction treatment.

Our study compares cocaine-dependent men and women on numerous variables as part of a multisite randomized controlled trial. The large sample and rigorous diagnostic measurement provide a unique opportunity to evaluate differences in areas such as substance use, psychiatric symptoms, pretreatment expectations, and motivation for treatment.

2. Methods

We studied 2376 cocaine-dependent outpatients on entry into the National Institute of Drug Abuse Collaborative Cocaine Treatment Study (NCCTS), a large multisite randomized clinical trial that investigated the efficacy of four psychosocial treatments for cocaine dependence. We had 1889 participants from the pilot phase and 487 from the main trial, all with data prior to randomization (1593 males and 783 females). A detailed description of the study’s aims, design, and primary outcomes are published elsewhere (Crits-Christoph et al., 1997, 1999).

2.1. Participants

The major inclusion criteria for the pilot and main studies were a principal DSM-IV diagnosis of cocaine dependence (current, or early partial remission), cocaine as the primary drug of abuse, and cocaine use in the 30 days before enrollment. Patients were excluded from the pilot and main studies if they: (1) had a diagnosis of opioid dependence (current, or partial remission); (2) had

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evidence of dementia or other irreversible organic brain syndrome; (3) had a psychotic disorder; (4) had any history of or current bipolar disorder; (5) were at imminent suicide or homicide risk; (6) required psychopharmacological or psychosocial treatment outside of the study's protocol (including hospitalization or residential treatment); (7) continued to receive a psychotropic medication; (8) had any life-threatening or unstable medical illness; (9) had impending incarceration; (10) were psychiatrically hospitalized more than 10 of the past 30 days; (11) were legally mandated to treatment; (12) were more than 12 weeks pregnant; (13) were homeless without a long-term shelter; (14) planned to leave the area within 2 years; (15) were unable to understand forms or give consent, or (16) could not meet demands of the study. In addition, participants in the main study were also excluded if they had a principal diagnosis of alcohol or polysubstance abuse or dependence or were in a halfway house.

2.2. Procedures

Our data are from the pilot and main trial phases. Great attention was paid to the selection and training of study therapists in the pilot phase, which explains the larger sample size during that period. We used all available data prior to randomization. This was a 2-week period during which participants attended an intake and completed an orientation (called "stabilization" in the pilot phase). We included all participants, whether or not they were declared eligible for randomization to active treatment. Those ineligible for randomization would be those who had not completed the orientation/stabilization phase, not completed the intake measures, and/or those who decided not to continue on the study.

2.3. Measures

Our measures are part of the larger battery from the pilot and main phases of the NCCTS. The assessments address multiple domains: diagnoses, substance use, psychopathology, quality of life, treatment utilization, treatment process, and motivation for treatment.

Psychiatric symptoms and history were assessed by the Structured Clinical Interview for DSM-IV (Axis I substance use, affective, anxiety, and eating disorders and Axis II disorders) (Spitzer et al., 1987); the Modified PTSD Symptom Scale (MPSS; Falsetti et al., 1993); the Trauma History Questionnaire (THQ; Greene, 1995); the Brief Symptom Inventory (BSI; Derogatis, 1992); the Hamilton Depression Inventory (Williams, 1988), and the Inventory of Interpersonal Problems (IIPs; Horowitz et al., 1988).

Severity of substance use and five related problem areas were assessed by the Addiction Severity Index-5th edition (ASI; McLellan et al., 1992a). The Weekly Self-Help Scale (WSH; Weiss and Albeck, unpublished scale) assessed participation in self-help activities. The Recovery Attitudes and Treatment Evaluator-Clinical Evaluation-Research Version (RAATE-CE-R; Gastfriend and Najavits, 1992) evaluated motivation for addiction treatment via structured interview by trained research assistants. Attitude and expectations (Moras and Jones, 1992) assessed attitudes about talking to a therapist and expectations for improvement. Opinions about treatment (Borkovec and Mathews, 1988) addressed general views on treatment. The Treatment Services Review (TSR; McLellan et al., 1992b) quantified amount and type of current treatments.

2.4. Data analyses

We used the chi-square test for categorical variables and the Student's *t*-test for continuous variables. We did not adjust for multiple comparisons as we perceived the risk of Type II error to be greater than Type I error in an exploratory study of this kind.

3. Results

3.1. Significant differences by gender

See Table 1 for a listing of all significant results. In total, we conducted analyses on 64 variables, of which 25 were significant. This 39% rate of significance exceeds the 5% expected

by chance. We found differences on all demographic variables except for race. Women were generally younger, less educated, and without a partner compared to men. They were also more likely to have dependent children and fewer days of employment. Women had fewer years of lifetime substance use (alcohol, marijuana, and hallucinogens), but higher severity in substance-related problem areas (i.e., medical, family/social, employment, psychiatric). Where differences were found in psychopathology, women had higher rates of psychiatric diagnoses and trauma, although men had higher rates of antisocial personality disorder and two subtypes of trauma (crime-related and general). Finally, women had more positive attitudes and expectations toward treatment and participated more in Weekly Self-Help activities.

3.2. Non-significant results

There were several non-significant results in our study: race (50% Caucasian, 47% African-American, and 3% other), legal history, lifetime years of cocaine use, rate of affective and substance use disorders, and ASI alcohol and drug severity.

4. Discussion

This study adds to the growing literature on gender differences in cocaine dependence and improves on previous research through its larger sample, as well as more rigorous and comprehensive assessment. We compared cocaine-dependent men and women on substance use, psychopathology, and treatment variables (utilization and attitudes). Several major differences emerged.

We found that women had greater family/socioeconomic problems, more physical and sexual traumas, three times the rate of PTSD, and twice the rate of any anxiety disorder, compared to men. On the ASI, women were more severe on nearly every problem area (medical, psychiatric, social, employment). In general, these findings indicate that women have important needs over and above their addiction, perhaps suggesting the need for more comprehensive services. However, men had twice the rate of antisocial personality disorder (comparable to existing literature).

On substance use, we found that women had fewer years of substance use than men (alcohol, marijuana, and hallucinogens), but this may be explained by their significantly younger age. On cocaine use, women were comparable to men in both years and severity. Our results on cocaine use are thus consistent with later studies (McCance-Katz et al., 1999; Weiss et al., 1997), which found women and men comparable in cocaine use. Earlier studies had found women to exhibit greater cocaine and drug use severity (Griffin et al., 1989; Lundy et al., 1995), but those likely were reflecting a pattern of usage related to the cocaine epidemic of the 1980s that ultimately subsided in the mid-1990s.

Another major finding was women's more positive engagement with treatment. They held more positive attitudes about treatment, greater expectations for treatment success, and participated more in Weekly Self-Help activities than men. These findings, combined with evidence that women had fewer years

Table 1
Significant gender differences

Measures	Males mean (S.D. or n)	Females mean (S.D. or n)	t/χ^2	d.f.
Demographic measures				
Gender ^b	67.0% (n = 1593)	33% (n = 783)	.42**	1
Marital status				
Single ^a	73.2% (n = 1129)	81.4% (n = 612)	18.43**	1
Married/living with a partner ^b	26.8% (n = 413)	18.6% (n = 140)		
Children ^a	57.9% (n = 474)	75.2% (n = 239)	29.26**	1
Age (years) ^b	33.20 (6.78)	31.36 (6.25)	6.43**	1623.81
Education (years) ^b	13.17 (2.05)	12.45 (1.75)	3.70**	213.18
Days worked past month ^b	13.28 (9.94)	6.79 (9.51)	10.23**	609.36
Substance use measures				
Addiction Severity Index (ASI, n = 1532)				
Subscales				
Medical ^a	.16 (.27)	.22 (.30)	-3.32**	527.76
Family/social ^a	.24 (.23)	.29 (.25)	-3.35**	538.44
Employment ^a	.46 (.30)	.66 (.32)	-9.67**	1132.00
Psychiatric ^a	.18 (.20)	.23 (.21)	-3.50**	1138.00
Lifetime alcohol use to intoxication (years) ^b	7.51 (7.96)	5.66 (6.85)	3.90**	655.04
Lifetime cannabis use (years) ^b	8.02 (7.37)	6.38 (6.86)	3.54**	623.72
Lifetime hallucinogen use (years) ^b	.55 (2.08)	.31 (1.14)	2.49*	1019.32
Treatment Services Review (TSR, n = 1242)				
Emotional Problems ^a	1.69 (2.51)	2.08 (2.64)	-2.04*	456.82
Treatment attitude and expectations (n = 1524)				
Attitudes on talking to a therapist ^b	1.52 (.96)	1.40 (.81)	2.21*	688.36
Expectations of improvement ^b	2.70 (.56)	2.81 (.44)	-3.41**	737.19
Opinions about treatment (n = 591)				
Confidence in recommending treatment ^b	6.16 (1.17)	6.56 (.86)	-4.48**	353.56
Weekly Self-Help (n = 584)				
Weekly Self-Help-Duties ^a	4.47 (7.75)	6.51 (9.46)	-2.40*	228.65
Psychopathology measures				
Structured Clinical Interview-DSM-IV ^c				
Axis I Diagnoses				
Any anxiety disorder (n = 824) ^{a,d}	6.9% (n = 42)	12.9% (n = 28)	7.36**	1
Axis II Diagnoses				
Antisocial personality disorder (n = 823) ^b	19.1% (n = 116)	10.1% (n = 22)	9.28**	1
Modified PTSD Symptom Scale				
Posttraumatic stress disorder (n = 574) ^a	3.3% (n = 14)	9.6% (n = 14)	15.90**	2
Brief Symptom Inventory dimensions (n = 782)				
Somatization ^a	.26 (.41)	.38 (.53)	-2.96**	309.72
Trauma History Questionnaire (THQ; n = 612)				
#General disaster traumas ^b	3.60 (2.41)	2.80 (2.05)	3.91**	282.35
#Crime-related traumas ^b	1.45 (1.20)	1.11 (1.10)	3.13**	260.66
#Physical/sexual traumas ^a	.84 (1.09)	1.75 (1.55)	-6.57**	187.41

Note. * $p < .05$; ** $p < .01$. This table only includes significant results; see the text for a list of non-significant results.

^a Females had a higher frequency (single status, dependent children, anxiety disorders)/higher mean (somatization, number of physical/sexual traumas, Weekly Self-Help participation) or were more impaired (ASI composites, emotional problems).

^b Males had a higher mean (age, years educated, days employed, lifetime substance use, disaster/crime traumas)/higher frequency (antisocial personality disorder) or had more negative attitudes, expectations, and opinions regarding treatment.

^c Represent diagnoses at intake.

^d "Any anxiety disorder" does not include PTSD.

of lifetime drug and alcohol use, may suggest a relationship between early engagement in treatment and anticipation that treatment will be successful. Treatment attitudes may also be associated with participation in self-help, as individuals with positive expectations may also be more willing to seek out supplemental recovery activities such as 12-step groups.

Ours is one of the only studies of gender differences in cocaine addiction to address treatment-related variables. Our findings may have particular relevance for engaging women in services that historically have been perceived as male-oriented. Recent studies that have attempted to provide additional services to women to address gender-specific needs have evidenced better

outcomes than traditional treatment (e.g., Morrissey et al., 2005; Gatz et al., 2007). However, more research is needed to address complex issues such as the degree to which treatments need to be gender-specific in content versus merely single-gender in format (e.g., women-only treatment). It is also unclear to what extent men may benefit from their own gender-specific content or format of treatment. Subtypes by gender may also be important to explore (e.g., women and men who may benefit either more or less from gender-specific treatment).

Limitations of this study include the numerous inclusion/exclusion criteria, which likely biased the study toward a less severe sample than might be found in the community; the lack of equal numbers of men and women; the post hoc design; the number of comparisons conducted (which can inflate Type I error); and missing data on some variables. Also, cocaine use patterns may have changed since the 1990s, when our data were collected, which could potentially affect conclusions drawn from this paper.

Nonetheless, this paper offers many strengths, including a larger sample than almost any other study of its kind and more domains of study (e.g., the inclusion of treatment-related variables). Additionally, our sample had more racial diversity and women than previous studies of gender differences in cocaine dependence. It is hoped that future research will further expand on our findings. Ultimately, there remain many unknowns on how and why women differ from men in substance use patterns, and, most important, what types of treatments may be needed to best address their specific concerns. It is also unclear to what degree the substance of choice matters (whether a similar pattern of gender differences would occur for patients dependent on substances other than cocaine).

In sum, results from this study lend support to the notion that cocaine-dependent women and men present to substance abuse treatment with a range of problem areas and treatment needs, many of which appear to be gender-specific. These findings reinforce the need to engage both genders in a manner that will meet their unique needs.

Conflict of interest

The authors have no conflicts of interest.

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