

Examining the Crack Epidemic and Subsequent Drug Policy through

Identifying Trends in Outpatient Substance Abuse

Treatment for Crack Use/Abuse: 1995 - 2005

Mimi M. Kim, PhD¹ Nadine J. Barrett, PhD, MA, MS² Keon L. Gilbert, PhD³

Yhenneko J. Taylor, MS⁴ Paul A. Godley, MD⁵ Daniel L. Howard, PhD⁶

¹North Carolina Translation and Clinical Sciences Institute at the University of North Carolina at Chapel Hill, and the Center for Biobehavioral Health Disparities Research at Duke University

²Duke Cancer Institute, Duke University

³Saint Louis University School of Public Health, Salus Center

⁴University of North Carolina at Charlotte, and the Carolinas HealthCare System, R. Stuart Dickson Institute for Health Studies

⁵University of North Carolina at Chapel Hill, School of Medicine

⁶Public Policy Research Institute and Department of Sociology, Texas A&M University

Abstract

Disparities in the crack/cocaine discourse have changed drastically since its inception over 30 years ago. Since the late 1980s, research examining this particular abuse has become more complex as both nationally and globally crack use/abuse has been examined within various contexts. Crack use has often been framed as an African American problem in part resulting from the high volume of African Americans seeking treatment for illnesses associated with their crack-cocaine use, and more African Americans dying from crack-cocaine overdose. This logical fallacy persists despite evidence showing African Americans have lower substance use/abuse compared to Caucasians. Given the impact of the crack epidemic as well as its related drug policies on African American communities and their families, further examination of crack use/abuse is necessary. This study will discuss the crack epidemic historically and examine crack use among clients of a large sample of outpatient substance abuse treatment units over a decade period between 1995 and 2005.

Keywords: crack, cocaine, outpatient substance abuse treatment, policy

The Crack Era

In a review of substance abuse trends in the United States, Schulden and colleagues (2009) reported illicit drug use reached a peak in the 1970s, with a decline in the 1980s, and then a rise in the 1990s that has since remained stable. These trends strongly suggest a pattern of illicit drug use that typically initiates in adolescent years. Further, the Healthy People 2020 agenda also identifies an alarming increase in drug use among adolescents, particularly prescription drug use, over the past 5 years

(United States Department of Health and Human Services, USDHHS, 2010).

Acknowledgements:

This research was supported by NCMHD P60 MD000244-01 & NHLBI R21-HL087770-01-02.

Address correspondence to:

Mimi M. Kim, PhD, Research Investigator
University of North Carolina at Chapel Hill
Cecil G. Sheps Center for Health Services
Research, 725 MLK Jr. Blvd., CB 7590
Chapel Hill NC 27599-7590

Email: mimi@unc.edu

Current research suggests that though the crack era began in the 1980s and has declined since early 2000, as recently as 2008, drug users, including those addicted to crack, still reported drug use as a problem, reported conflict over drugs, reported higher levels of conflict than others, and were the most likely to have broken up with their partner (Golub et al., 2010). Still, in 2005, as many as 22 million Americans struggled with substance abuse and as high as 95 percent of those individuals are believed to be unaware of their problem, as cited by the Healthy People 2020 national health agenda (USDHHS, 2010). This suggests that, despite some documenting a decline in crack use, the epidemic may still be highly unrecognized and therefore unresolved.

Initially, crack emerged as a low-cost mechanism to replace cocaine, and became widespread in inner cities characterized with many social challenges including extreme poverty, lack of resources, and high rates of unemployment and low-literacy (Howard, 2003a; Howard et al., 1996). As the crack era grew, it became a significant part of the economic and social structure in inner cities (Howard, 2003a; Howard et al., 1996). Economically, it became one of the primary drugs of the street drug market, while simultaneously becoming a primary source of interpersonal violence, HIV/STDs, prostitution, family disruption, and community breakdown (Bourgois, 1996; Johnson, Dunlap & Tourigny, 2000; Golub, et al., 2010; Celentano & Sherman, 2009).

During the crack era, crack-cocaine received immense attention as researchers, social workers, substance abuse counselors and politicians sought to address this growing epidemic. Policies like the “War on Drugs” were implemented, resulting in more interventions and outreach programs. For many black communities, struggling with several social challenges, crack-cocaine presented additional challenges and opportunities to identify ways to empower families within these communities. Since 2000, there has been a decline in crack cocaine use/abuse within a context of overall

stable and alarming rates of illicit drug use (Howard, 2003a; Howard et al., 1996). The attention and focus of resources once allocated to the crack epidemic has declined, and some speculate it may be as a result of generational experiences that essentially deterred future generations from engaging in crack use (Dunlap et al., 2006; Golub et al., 2010). Similarly, recent findings suggest that younger generations have substituted crack for marijuana (United States Department of Health and Human Services, 2010). Other researchers are fearful of an increase in crack use/abuse and call for more evidence-based interventions to address and accurately assess the issue (Werb, et al, 2010).

Common risks for addiction to crack or cocaine may result from a genetic-predisposition, family history, environment, prior drug exposure, and physical abuse (Fuller et al, 2001, Falck et al, 2008; Slomka et al 2008). In addition, many people become addicted to crack because it is cheap, easily accessible and provides a significant psychoactive effect. This may, in turn, result in an increased propensity to unsafe sexual practices. Addiction can lead to respiratory compromises, chest pains, cardiovascular disease, strokes, comas, hyperthermia, and involuntary convulsions (Devlin & Henry, 2008). Smoking crack among adolescents showed a transition from smoking crack exclusively to a period of using heroin or cocaine and subsequently moving to injection drug use, which is a risk factor for HIV/AIDS and hepatitis-C (Fuller et al, 2001).

There are several sociocultural factors that span the social ecology which pose barriers to crack-cocaine users/abusers seeking health care or substance abuse treatment and completing treatment recommendations. At the individual level, barriers include motivation and treatment readiness, unemployment, insurance status, ability to pay for treatment, transportation, child care and scheduling difficulties (Wechsberg et al., 2007). At an organizational level, barriers include cultural

competency, race/ethnicity of staff, quality and skills of staff, skill-level of staff, and the ability of the staff to conceptualize the myriad of factors that led to the initiation of drug use and its continued addiction (Howard, 2003a). Previous studies of culturally competent substance abuse facilities showed that effective treatment can be achieved for African Americans when these facilities can provide treatment that is culturally congruent with patients by taking into account several factors which include: age, gender, co-morbidities, severity of drug use, social distress, reasons for initiating treatment (e.g. court-mandated, self-motivated), and concurrent drug use/abuse (Howard, 2003a, Howard 2003b). The complex interplay with social, cultural, economic, and policy dynamics that influence the short and long term outcomes of crack abusers have significant implications for African Americans who disproportionately are more likely to have HIV/AIDS and are more likely to prefer crack over cocaine due to costs, and to be involved with the criminal justice system than their white counterparts (Howard, 2003a; Howard et al., 1996).

Drug Policies, Crack, and Cocaine

The crack-cocaine epidemic has had significant policy and health implications for many African American communities. An insidious aspect of crack-cocaine is its low cost compared to pure or powder cocaine. In the 1980s this inexpensive drug became popular in the inner cities which are often characterized by high rates of poverty and other social challenges, making crack-cocaine a viable and cheaper option. The growing use of crack-cocaine ignited a response from policy makers that led to the Anti-Drug Abuse Act that was passed in Congress in 1986. This policy changed the law regarding powder cocaine and crack cocaine offenses by equating 1 gram of crack-cocaine to 100 grams of cocaine. By 1988, an established minimum mandatory sentencing of up to five years was enacted

for individuals charged with possessing crack. This policy primarily impacted street level dealers and abusers who were more likely to possess crack; but, ironically, individuals charged with crack possession received longer sentences than a dealer who possessed 100 times more in cocaine. Moreover, ramifications across social economic lines were also evident as crack is used primarily in inner cities versus suburban neighborhoods. The 1986 Anti-Drug Abuse Act also led to more first time offenders of powder cocaine receiving parole and treatment compared to crack offenders who more often were sentenced to jail. These trends have considerable implications for African Americans, including continued drug use, poor familial and community relations and heightened discord with the criminal justice system.

As a result of the “War on Drugs” during the Reagan and first Bush administrations, many African American children were labeled as “crack babies” and were thought to be emotionally disrupted, cognitively impaired, less likely to socially interact, and more likely to die from sudden infant death syndrome (SIDS) as a result of being exposed to crack or cocaine in-utero (Thompson, et al, 2009). The large scale media attention on the detrimental effects of crack or cocaine on a fetus fueled state and federal policies resulting in the incarceration of many African American women who tested positive for either substance. The threat of criminal punishment created fear among women who would then avoid seeking prenatal and medical care and further exacerbated the existing mistrust between health care professionals and patients (LaVeist et al., 2009). Thus, policies created to deter illegal drug use among women led to many unintended negative consequences, which in some cases, may have been worse than the drug exposure itself, according to Thompson and colleagues (2009). These policy decisions forever linked crack cocaine to criminality with harsh sentencing laws that are more severe for crack than powder cocaine; and,

furthermore, disproportionately affect urban, low income, African American communities and continue to serve as a major deterrent to crack-cocaine users/abusers seeking treatment.

This study examines crack use among clients of a large sample of outpatient substance abuse treatment units over a decade period between 1995 and 2005. Specifically, the study will determine if racial disparities still exist in crack use/abuse. And if so, what are the current trends in crack abuse? The study will also determine what client characteristics and organizational factors are predictors of crack abuse over time. Information along these lines is pivotal to the success of current and future policies and interventions to effectively address crack abuse locally and globally. Interventions and policies that take into account a broader social ecological framework can help reduce the disparity trends in crack use/abuse and reframe how researchers, clinicians, and other practitioners address crack use/abuse in the future in substance abuse and more specifically within the context of crack use and health disparities.

Methods

Sampling Frame

The sampling frame is based on a protocol to identify the most complete list of the nation's outpatient substance abuse treatment units. Further details of the protocol are identified elsewhere (Heeringa, 1996).

Sample

The unit of analysis was an outpatient substance abuse treatment unit, which is defined as a physical facility with resources dedicated primarily to treating individuals with substance abuse problems (including alcohol and other drugs) on an ambulatory (non-residential) basis. The National Drug Abuse Treatment System Survey (NDATSS)

used a mixed panel design, which combines elements from cross-sectional and panel designs. This analysis focuses on NDATSS data from 1995 to the most recent round of data collection in 2005. This high profile dataset captures service, administrator, and client level data from a unique sample of outpatient substance abuse treatment units infrequently sampled, yet often utilized service sources. The total nationally representative, stratified sample in 1995 consisted of 618 units of which 577 are included in this analysis. Units were excluded for the purposes of this analysis based on either missing data on crack use or missing data on African Americans in the treatment unit. The 2005 NDATSS data consists of 566 treatment units; but again, according to the same missing data criteria, a total of 530 units were included in this analysis. Directors provided information concerning the unit's ownership, environment, finances, parent organizations, and managed care arrangements. Clinical supervisors provided information about staff, clients, and services. Telephone survey procedures were used that extensive research indicates produce highly reliable and valid data (Heeringa, 1996).

Weights

The data were weighted to take into account two factors that could otherwise bias results. First, the units have different probabilities of selection into the sample, depending on when and how they entered the sample. Second, different groups of units had different response rates. An analysis of possible non-response bias was conducted between 1988 and 1990 among 66 eligible treatment units that did not participate in the survey, and between 1990 and 1995 among 37 such units to examine the extent to which units that dropped out of the survey differ from those that remained. The results indicated that there was very little evidence that the data was affected by non-response bias. The weights adjust for these factors. Weights were used in the

descriptive analyses to allow for generalizability of the results to the entire national population of OSAT (Outpatient Substance Abuse Treatment) units. In the repeated measure models using generalized estimating equations (GEE) with a logistic link, unit ownership (private for-profit, private not-for-profit, and public), and total number of clients in the unit were included in all models to account for sampling stratification. Including these variables that account for sample stratification in the models allow for generalizability of the results to the entire national population of OSAT units (Groves, 1988).

Measures

Dependent Variable

Crack use. The dependent variable is the level of crack use over time reported in the total OSAT unit population. The original item asks: *“During the most recent complete fiscal year, what percent of all your unit’s outpatient substance abuse clients had any of the following types of substance abuse as a problem: (Abuse of) crack?”* Based on this item, the dependent variable used here is a dichotomous variable split at the mean percent of the unit’s client population who had problem with using crack (23.27%).

Independent Variables

Client Characteristics. Race/ethnicity of the OSAT units’ clients was obtained from the following question included in the clinical supervisor’s questionnaire: *“Of these outpatient sub-stance abuse clients what percent were African-American, non-Hispanic?”* This item was dichotomized at 50 percent to measure a majority or not of African Americans in the OSAT unit. A continuous variable for the percent of unemployed clients was based on the item that asks, *“Of your unit’s active outpatient substance abuse clients, what percent would you estimate are unemployed?”* A variable

for a majority percentage of clients equal to or greater than 40 years old was created from the following survey questions: *“Of all the outpatient substance abuse clients your unit treated in the most recent complete fiscal year, what percent were in the following age categories? 40-49? 50-64? 65 or over?”* Additional continuous variables were based on the following questions: *“We are interested in the scope of outpatient substance abuse services your unit provides including those provided through a contract with others. In the most recent complete fiscal year, what percent of your unit’s outpatient substance abuse clients...received specific treatment for use of multiple drugs?”*; *“Currently, what percentage of your unit’s active outpatient substance abuse clients have both mental health and substance abuse problems?”*; *“In the most recent complete fiscal year, what percent of your unit’s outpatient substance abuse clients were referred by each of the following: ...courts, police and other law enforcement?”* and *“hospitals, physicians and general health care providers?”*

Characteristics of Service Provision.

Measures of director demographics were obtained from the director’s questionnaire of the survey. Directors were asked the following: *“Are you male or female?”*. Their age was also collected as a continuous variable which is included in this model. Further, a continuous variable for hours spent providing direct therapy is also included and based on the following item: *“Of these hours worked, how many are spent in...providing therapy directly to clients”?*). A dichotomous variable for directors’ education was split as the director having some college education or higher versus less than college. This variable was based on the following original item: *“What is the highest grade of school or year of college you completed?”* Finally, directors were asked if they were certified substance abuse counselors or not based on the following item: *“Do you have a license or certification as a substance abuse counselor?”*

Treatment Characteristics. The various characteristics of treatment provision were measured according to the following questions: *“Does your unit provide outpatient individual therapy for substance abuse clients?”*; *“Does your unit provide outpatient group therapy (not including family therapy) for substance abuse clients?”*; *“What is the average number of months a substance abuse client spends in outpatient treatment at your unit?”* (months); and *“In the most recent complete fiscal year, did any of your unit’s outpatient substance abuse clients receive general medical or mental health care services either directly from your staff or through arrangements with other providers?”*

Organizational Structure. Measures of the OSAT unit’s organizational structure were obtained from the clinical supervisor’s and director’s questionnaire of the survey. A variable for unit ownership was created from the following survey question: *“Is your outpatient treatment unit private for-profit, private not-for-profit, or public?”* An additional continuous variable measuring the number of clients is included based on the following questionnaire item: *“Altogether, what is the total number of clients who received outpatient treatment services of any kind at your unit in the most recent complete fiscal year?”*

Analysis

Analyses for this study sought to investigate the relationship between higher levels of crack use and several domains of covariates for outpatient substance abuse treatment units in 1995 and 2005. The goal was to determine the extent to which service, organizational and client level variables predict a higher level of crack use in outpatient substance abuse treatment (OSAT) units.

This analysis employed generalized estimating equations (GEE) to simultaneously test for trends across time for each of the characteristics of service provision,

organizational structure, and client characteristics domains using a logistic link function in the GEE analysis (Zeger & Liang 1986). The GEE models allow for assessment of impacts of the primary predictor variables and multiple covariates on the outcome variable (Zeger et al, 1988; Liang & Zeger, 1986). The GEE analysis first looked at the bivariate association of each independent variable with the outcome variable. These results are presented in the “Bivariate Model” column of Table 2. Then, the analysis included the variables in each domain in an individual model and these results are presented in the “Multivariate Model” column also presented in Table 2. Variable reduction was accomplished by including covariates with a p-value less than 0.10 from the domain models in the final multivariable model. Odds ratios produced by this technique estimate the odds of a predicted outcome (e.g., higher percentage of crack use) associated with exposure to independent variables (e.g., director gender, director age). By following this step-by-step process, (i.e. bivariate associations, domain associations, and then multivariate associations) the multi-step analysis lends itself to a comparison of changes in associations while also highlighting significant changes between bivariate associations and two different multivariable contexts. All analyses were generated using Version 9.2.3 of SAS®.

Results

Total Sample Profile

Table 1 shows the sample profile of outpatient substance abuse treatment units (OSAT) for 1995 (n=577) and 2005 (n=530). Results for the baseline sample in 1995 will only be discussed here in addition to any significant differences that were found between the two waves (as indicated by p-values in Table 1). In 1995, the majority of clients in the units were Caucasian, with only 18.5 percent of the

Table 1: Sample Profile of Substance Abuse Treatment Units in 1995 and 2005

Characteristics	1995 (n=577)		2005 (n=530)		p-value ^a
	N(%) or mean	Range(SD)	N(%) or mean	Range(SD)	
Above mean crack use among clients ^b	201 (34.8)		200(37.7)		0.178
Client Characteristics					
Majority of clients (≥50%) Afr.-Am.	107(18.5)		110(20.8)		0.285
% (percent) of clients unemployed	41.7	0-100(26.6)	41.0	0-100(26.9)	0.392
Maj. clients (≥50%) age 40 and older	62(10.7)		111(20.9)		<0.001
% of clients abusing multiple drugs	52.4	0-100(35.9)	60.9	0-100(26.9)	<0.001
% of clients with MH/SA diagnosis	28.1	0-100(23.0)	41.9	0-100(24.1)	<0.001
% clients referred by law enforcement	39.3	0-100(29.4)	41.2	0-100(31.6)	0.013
% clients referred by healthcare provider	7.7	0-90(9.6)	6.6	0-88(9.9)	0.054
Group therapy for standard outpatient therapy clients	540(93.6)		383(72.3)		<0.001
General medical and MH services directly from OSAT staff or arranged with other providers	529(91.7)		491(92.6)		0.703
Director Characteristics					
Male	336(58.2)		259(48.9)		<0.001
Age	45.9	24-68(8.2)	50.0	21-77(8.7)	<0.001
Hours/week providing direct therapy	5.9	0-48(9.6)	6.5	0-60(10.3)	0.664
Some college education or higher	556(96.4)		501(94.5)		0.779
Certified substance abuse counselor	294(51.0)		313(59.1)		0.003
Treatment Characteristics					
Individual therapy for standard outpatient therapy clients	562(97.4)		407(76.8)		<0.001
Group therapy for standard outpatient therapy clients	540(93.6)		383(72.3)		<0.001
Average stay for outpatient treatment	9.8	1-95(13.0)	10.3	1-120(13.3)	0.524
General medical and MH services directly from OSAT staff or arranged with other providers	529(91.7)		491(92.6)		0.703
Organizational Structure					
Public Facility	132(22.9)		102(19.2)		0.769
Number of clients served	690.5	25-9994(960.6)	685.4	7-13800(1118.0)	0.810

^ap-value comparing unit characteristics in 1995 and 2005, from unadjusted logistic GEE model.

^bMean level of crack use=23.27% of clients

MH=mental illness; SA=substance abuse; OSAT=outpatient substance abuse treatment, SD=standard deviation

units with a majority African American population (see Table 1). The mean of reported crack use over the decade was 23.27 percent of the clients. In 1995, 34.8 percent of the units reported above mean crack use among their clients.

In 1995, only about a quarter of the units were public facilities ($n=132$, 22.9%). The number of clients served in 1995 was approximately 691 ($SD=960.6$). The mean percent of unemployed clients in the OSAT units in 1995 was 45.2 percent ($n=261$). Further, the mean percentage of clients above the age of 40 was 50.8 percent ($n=293$) in 1995 compared to a significantly higher percentage of clients in 2005 ($n=360$, 67.9%; $p<.001$). The mean percentage of clients reporting multiple drug abuse in 1995 was 41.6 percent ($n=240$) with a significantly higher number of clients reporting the same in 2005 ($n=270$, 50.9%; $p=.02$). Also, nearly half of the units reported a dual diagnosis of substance abuse and mental illness in 1995 ($n=284$, 49.2%) with a significant increase in 2005 to 395 clients (74.5%; $p<.001$). About half of the units in 1995 reported an above mean percentage of referral from law enforcement ($n=290$, 50.3%). Finally, over one-third of the units had an above mean percentage of clients referred to them by a healthcare provider ($n=209$, 36.2%) with a significant decrease in 2005 ($n=156$, 29.4%; $p=.02$).

Over half the sample was male in 1995 ($n=336$, 58.2%) and the median directors' age was approximately 46 years old ($n=45.9$ years, $SD=8.2$). There was a statistically significant difference between the two waves of data for gender (1995, $n=336$, 58.2%; and 2005, $n=259$, 48.9%; $p=0.02$) and age (1995, $n=45.9$ years, $SD=8.2$; and 2005, $n=50$ years, 8.7%; $p<.001$). The unit directors in 1995 reported spending approximately 6 hours per week ($SD=9.6$) offering direct therapy to their client populations. Nearly all of the directors of the units in 1995 reported having some college education or more ($n=556$, 96.4%) and just over half of the directors were certified substance abuse counselors ($n=294$, 51.0%).

There was a statistically significant increase in the number of directors who were certified substance abuse counselors in 2005 ($n=313$, 59.1%; $p<.003$) compared to 1995.

Nearly all of the units in 1995 provided individual therapy for standard outpatient therapy clients ($n=562$, 97.4%). There was a significant decrease in individual therapy provided by the units between the two waves ($p<.001$) with only 407 (76.8) of the units providing individual therapy in 2005. Group therapy was also provided by the large majority of units in 1995 ($n=540$, 93.6%) with significantly less units providing the same in 2005 ($n=383$, 72.3%; $p<.001$). The average stay for outpatient treatment units in 1995 was nearly 10 days ($SD=13.0$) and almost all units provided directly or referred patients to general medical or mental health services in 1995 ($n=529$, 91.7%).

GEE Models with Logistic Link

Bivariate Logistic Models

In Table 2, the first column displays bivariate associations with reported crack use in the OSAT unit across the domains of interest. Tests of statistical significance of each bivariate association were conducted with repeated measure models using GEE with logistic link. A number of variables across the domains were found to be associated individually with crack use over the decade.

Several client characteristics were significantly associated bivariately with higher rates of crack use including: having a majority of African American clients in the unit ($OR=7.42$, $CI=5.29, 10.41$, $p<.001$); a higher percentage of clients who are unemployed ($OR=1.20$, $CI=1.15, 1.27$, $p<.001$); a higher percentage of clients who abuse multiple drugs ($OR=21.14$, $CI=1.10, 1.19$, $p<.001$); and a higher percentage of clients with dual diagnoses of mental health and substance abuse issues ($OR=1.07$, $CI=1.02, 1.13$, $p<.05$).

Table 2: Bivariate and Multivariate Models of Above-Mean Crack Use

	Bivariate Model ^a			Multivariate Model ^a		
	OR	(95% CI)	p-value	OR	(95% CI)	P-value
Director Characteristics						
Male	0.74	(0.58, 0.95)	*	0.73	(0.53, 1.01)	~
Age (unit=10)	0.91	(0.79,1.06)		0.95	(0.79,1.14)	
Hours/week spent providing direct therapy (unit=10)	1.00	(0.88, 1.14)		1.09	(0.93,1.28)	
Some college education or higher	2.38	(1.05, 5.42)	*	2.38	(0.72, 7.87)	
Certified substance abuse counselor	1.01	(0.79, 1.27)		1.04	(0.75, 1.43)	
Treatment Characteristics						
Individual therapy for standard outpatient therapy clients	0.67	(0.36, 1.27)		0.49	(0.24, 1.00)	~
Group therapy for standard outpatient therapy clients	1.96	(1.18, 3.23)	**	1.96	(0.90, 4.25)	~
Average stay for outpatient treatment	1.00	(0.98, 1.01)		0.99	(0.97, 1.01)	
General medical and MH services directly from OSAT staff or arranged with other providers	0.97	(0.62, 1.52)		0.72	(0.41, 1.26)	
Organizational Structure						
Public Facility	1.23	(0.90, 1.69)		1.04	(0.71, 1.53)	
Number of clients served(unit=100)	1.01	(1.00, 1.02)		1.01	(1.00, 1.02)	
Client Characteristics						
Majority of clients (≥50%) African American	7.42	(5.29, 10.41)	***	6.93	(4.61, 10.42)	***
Percent of clients unemployed (unit=10)	1.20	(1.15,1.27)	***	1.13	(1.06,1.21)	***
Majority of clients (≥50%) age 40 and older	0.93	(0.65, 1.32)		0.71	(0.42, 1.21)	~
Percent of clients abusing multiple drugs (unit=10)	1.14	(1.10,1.19)	***	1.14	(1.08,1.20)	***
Percent of clients with MH/SA diagnosis (unit=10)	1.07	(1.02,1.13)	*	1.02	(0.95,1.10)	
Percent of clients referred by law enforcement (unit=10)	1.00	(0.96,1.04)		0.97	(0.91,1.04)	
Percent of clients referred by healthcare provider (unit=10)	1.07	(0.94,1.21)		1.08	(0.89,1.30)	

^aAll odd-ratios adjusted for the effect of time (year)

~p<0.10 *p<0.05 **p<0.01 ***p<0.001

MH=mental illness; SA=substance abuse; OSAT=outpatient substance abuse treatment; OR=odds ratio; CI=confidence interval

Multivariable Logistic Model

The second column of Table 2 presents the results of all the independent variables included in a single, multivariable model. The results of the multivariable model indicate that units with a majority of African American clients (OR=6.93, CI=4.61, 10.42; $p<.001$), a higher percentage of unemployed clients (OR=1.13, CI=1.06, 1.21; $p<.001$), and a higher percentage of clients reporting multiple drugs use (OR=1.14, CI=1.08, 1.20; $p<.001$) are more likely to have a higher (above mean) level of crack use.

Discussion

This study examined crack use among clients of a national sample of outpatient substance abuse organizations to determine the association over time of service, organizational, and client level variables. Of the entire sample, there were 577 units in 1995 and 530 units in 2005 after excluding units with missing race and crack use data. Of the included units, over one-third of the units in 1995 were found to have higher levels of crack use while only slightly more had reported crack use in 2005. This is consistent with an apparent trend that crack use has remained fairly consistent since the 1990s.

Organizationally, at baseline (1995) the units were predominately privately owned with a mean number of 691 clients. In terms of the client populations, slightly less than half of the units included client populations that were above the mean in terms of unemployment and dually diagnosed mental health and substance abuse clients. Slightly more than half of the unit clients were above the mean in terms of having clients 40 years or older, and having clients who were referred by law enforcement. There was a significant and noteworthy increase in the percentage of clients who reported multiple drug use and those with dual mental health and substance abuse diagnoses. This increase suggests a documented trend over the decade in terms of increasing multiple

drug use and a growing recognition of the common presence of dual diagnoses among mental health and substance abuse clients.

Having a majority of African American clients in the unit is highly predictive of an above mean level of crack use in the unit. But, it should be noted that only about 16 percent of the units' clients were African American in 1995 and 17 percent in 2005. As a result, though race is highly predictive of a higher level of crack use, the result should be interpreted cautiously given the lack of appropriate racial representation in this sample of units. Further, units with a higher level of client unemployment were more likely to have a higher level of crack use, in addition to units with clients who report multiple drug use and clients with both mental health and substance abuse issues. When comparing the bivariate significant associations with the results of the multivariable model, the multivariate results maintain the significance of race, unemployment, and multiple drug use in predicting higher levels of crack use.

The majority of the units provide individual and group therapy to their client populations, but over the decade these treatment characteristics significantly decreased. This may be a result of a challenging economic climate that has placed pressure on treatment providers and prevents clinicians from providing the necessary and appropriate services for their client populations. But the majority of units over the decade reported providing general medical care and mental health services either directly from OSAT staff or arranged with providers. This suggests that though the units themselves may face challenges to provide the services they were providing, the units possess a strong referral network to ensure their clients are receiving the appropriate services.

In 1995, the majority of the units were supervised by male directors who were younger, educated, and had a mean age of 46 years old. Almost half of the units had directors who provided direct therapy 6 hours a week, and just over half of the unit

directors were also certified substance abuse counselors.

Implications

Consistent with national trends, we found that over half of the patients in outpatient substance abuse treatment facilities were referred by law enforcement, and significantly higher levels of crack use were evident in units that had predominantly African American patients. This highlights two primary issues in the crack abuse/use discourse: the role of legal policy and practice; and, the role of race in better understanding the complexity of crack use and abuse.

Although intended to address the growing challenges of drug use, the War on Drugs in 1986 (i.e. passage of the Anti-Drug Abuse Act of 1986) became a primary area of contention, where race was at the forefront. Recent estimates show that among all illegal drug users only 12 percent are African American and yet African Americans comprise 34 percent of drug related arrests, and 45 percent of those in state prisons (Bureau of Statistics, 2005). Crack use in the general population and among African Americans has been reported to be declining, and crack cocaine policies are often cited as the primary cause for the disparity that persists, given harsher penalties for crack offenses that disproportionately impact African American defendants; this leads to higher rates of arrest and conviction compared to their White counterparts (Moore & Elkavich, 2008).

Yet, in this study it is noteworthy that data suggested some consistency in crack use and in referrals from law enforcement from 1995 to 2005, while having a majority of African American clients in the unit was highly predictive of an above mean level of crack use in the unit. This suggests the importance of the ongoing role of policies that disproportionately impact African Americans.

Since the Anti-Drug Act of 1986 was passed, many advocates, offenders, and policy makers have made pleas to reconsider this policy. Likewise, a fair share of contenders exist who argue for the policy to stay in effect, citing how race and sentencing are separate and are not influenced by each other. Others assert that policy and subsequent penalties are not severe and do not need to be repealed or revised. The negative implications of these policies on African Americans became clear when in 1992 the U.S. Sentencing Commission reported that among all crack and cocaine offenders almost 93 percent and 78 percent respectively, were Black. Historically, African Americans receive longer jail sentences than Whites, and several factors continue to play into this trend, including police engagement in racial and community profiling, the lack of good legal representation, and the discrepancy of crack versus cocaine policies, as well as racism.

The Fair Sentencing Act of 2010 was signed into law by President Obama, and according to some observers it has the potential to have an immense impact on alleviating racial disparities in the sentencing of crack and cocaine use/abuse/possession (Lee, 2010). This law repeals the 100 to 1 ratio of grams of powder cocaine to crack-cocaine and minimum sentence requirements as outlined in the Anti-Drug Abuse Act of 1986. The policy revised the cocaine to crack ratio to 18 to 1 with a complete repeal of the mandatory minimum of simple possession of crack clause. According to advocates this new law may be the first step in the right direction for increased treatment, intervention support, and better outcomes for the disproportionate number of African Americans who are severely punished for crack-cocaine abuse/use.

As underscored in this study, crack cocaine users are often unemployed, living in destitute poverty, and have concurrent drug abuse problems and/or mental health problems (Greenberg & Rosenheck, 2008;

Golembeski & Fullilove, 2005). Other data show that within each state, federal and local criminal justice facilities approximately 87% were substance abusers and 74% were dually diagnosed with mental illness and substance abuse (James & Glaze, 2006). Within each of these characterizations, African Americans are disproportionately represented (Schnavia-Smith, et al., 2009; Bloom, et al, 2003). African American women are overrepresented in the criminal justice system typically on drug related offenses. Women are 3 times more likely than men to have a mental health and substance abuse problem. According to recent studies among incarcerated women, almost 34% of those with mental health problems had used crack in the most recent 6 months prior to incarceration compared to 24% who did not have a mental disorder (James & Glaze, 2006). Like their male counterparts, women are more likely to be unemployed with significant mental health and substance abuse issues, yet women also are more likely to be a parent (Bloom, et al 2003). Despite the evidence of co-occurring disorders, many substance abuse and treatment programs remain fragmented; so, for the African American community these challenges contribute to ongoing instability on both individual and community levels. These trends have significant implications and impact various facets of the public health arena, including substance abuse and mental health treatment practice and policies, the criminal justice court system policies and practice, and community health as it intersects the complexity of race, gender, poverty and other areas of social instability.

Limitations

One limitation of this study is that the treatment units included in the NDATA study only include outpatient programs. Therefore, findings cannot be generalized to residential treatment programs. While this may limit the broad generalizability to policy concerns, the majority of substance

abuse services are provided on an outpatient basis, and, therefore, justifies the importance of these potential findings to the majority of substance abuse services. Also, these data only include information gathered from the supervisors and directors of the units. Future studies that combine unit and client-level data have the potential to more accurately identify the impact of cultural competency from a more balanced perspective. Further, another limitation is the reliance on self-reported data from organization leaders. Finally, the dichotomization of most variables in this model may reduce the level of statistical power possible compared to the inclusion of continuous variables. As a result, the generalizability of the findings and their impact is somewhat limited.

Conclusions

This article contributes data on an apparent trend showing that crack use remained fairly consistent from 1995 to 2005, as did law enforcement referrals into treatment. Moreover, where there was a majority of African American clients being treated, there were a higher percentage of unemployed clients, a higher percentage of clients reporting multiple drugs, and a higher (above mean) level of crack use. This data suggests the manner in which African Americans need specific and comprehensive support, while new policies may help to alleviate the burdens associated with crack abuse/use and biased policies. For African Americans, trust of almost any institutionalized "system" is difficult to overcome as police profile highly populated black communities, as the War on Drugs and other initiatives ostracized the Black community and has built discordant relationships with law enforcement. However, these challenges are not insurmountable. In order to foster more social stability within disadvantaged communities and provide a foundation for seamless transitions for substance abuser into their communities, it is important to accomplish the following: move toward more equitable

drug policies; enhance substance abuse programs so that they are comprehensive, as well as culturally and gender appropriate; and, identify and enhance successful community health programs that take into consideration the social/political/cultural environment of patients (Schnivia-Smith et al., 2009).

In line with the current literature, our findings underscore the relationships between high levels of crack use/abuse among patients in outpatient facilities with concurrent substance abuse, unemployment, and mental illness. Abusing multiple drugs and/or having mental illness with crack abuse increases the likelihood of criminal justice involvement; and, being African American within this context exacerbates the probability of criminal justice involvement. Given the current and historical landscape of crack use/abuse policy, their subsequent implications, and specific impact on African American communities, there is a need for continued examination of crack use/abuse trends. This is especially the case as we move into a political arena in which the Fair Sentencing Act of 2010 has taken effect. The Fair Sentencing Act of 2010, although long overdue in addressing the unintended racial disparities instituted as a consequence of the War on Drugs (i.e. Anti-Drug Abuse Act of 1986), has the potential to address multiple client characteristics that shape crack abuse sentencing trends and treatment data. Meanwhile, there are lessons that may be learned from the War on Drugs policy that can translate across healthcare policy and practice in the future—both locally and globally.

References

Bloom, B., Owen, B., & Covington, S. (2003). *Gender-responsive strategies: Research, practice, and guiding principles for women offenders*. Washington, DC: National Institute of Corrections.

Bourgois, P. (1996). In search of masculinity: Violence, respect and sexuality among Puerto Rican crack dealers in Harlem. *British Journal of Criminology*, 36, 3, 412-427.

Bureau of Justice Statistics. (2005). Trends in Drug Offenses by Race, Retrieved on October 5, 2010 from <http://bjs.ojp.usdoj.gov/index.cfm?ty=tp&tid=3>

Celentano D, & Sherman SG. (2009). The changing landscape of crack cocaine use and HIV infection. *Canadian Medical Association Journal*. 181, 9, 571–572.

Devlin, R.J., & Henry, J.A. (2008). Clinical review; Major consequences of illicit drug consumption. *Critical Care*. 12, 202, 1-7. Retrieved June 10, 2011 from <http://www.biomedcentral.com/content/pdf/cc6166.pdf>

Dunlap E, Golub A, Johnson BD. (2006). The severely-distressed African American family in the crack era: Empowerment is not enough. *Journal of Sociology and Social Welfare*, 33, 1, 115-139.

Falck, R.S., Wang, J., & Carlson, R.G. (2008). Among long-term crack smokers, who avoids and who succumbs to cocaine addiction? *Drug and Alcohol Dependence*, 98, 1-2, 24-29.

Fuller, C.M., Vlahov, D., Ompad, D.C., Shah, N., Arria, A., & Strathdee, S.A. (2001). High-risk behaviors associated with transition from illicit non-injection to injection drug use among adolescent and young adult drug users: A case-control study. *Drug and Alcohol Dependence*, 66, 2, 189-198.

Golembeski, C., & Fullilove, R.E. (2005). Criminal (In)Justice in the City and Its Associated Health Consequences. *American Journal of Public Health*. 95, 1701–1706.

Golub A, Dunlap E, & Benoit E. (2010). Drug use and conflict in inner-city African-American relationships in the 2000s. *Journal of Psychoactive Drugs*. 42, 3, 327-37.

Greenberg, A. & Rosenheck, R. (2008). Jail Incarceration, Homelessness, and Mental Health: A National Study. *Psychiatric Services*, 59, 170-177.

- Groves, R. (1988). *Telephone survey methodology*. New York: Wiley and Sons.
- Heeringa, S. G. (1996). *Outpatient drug abuse treatment studies: Technical documentation*. Ann Arbor MI, Institute for Social Research.
- Howard, D. L., LaVeist, T & McCaughrin, W.C. (1996). The Effect of Social Environment on Treatment Outcomes in Outpatient Substance Misuse Treatment Organizations: Does Race Really Matter? *Substance Use and Misuse*, 31, 5, 617-638.
- Howard, D.L. (2003a). Culturally competent treatment of African American clients among a national sample of outpatient substance abuse treatment units. *Journal of Substance Abuse Treatment*, 24, 89-102.
- Howard, D.L. (2003b). Are the treatment goals of culturally competent outpatient substance abuse treatment units congruent with their client profile? *Journal of Substance Abuse Treatment*, 24, 103-113.
- James. D, & Glaze, L. (2006). Mental health problems of prison and jail inmates. (NCJ 213600). Washington, DC: Bureau of Justice Statistics.
- Johnson, B.D., Dunlap, R., & Tourigny, S.C. (2001). Crack distribution and abuse in New York. *Crime Prevention*, 11, 19-57
- LaVeist T, Williams K, Isaac L. (2009). "Mistrust of Healthcare Organizations is Associated with Underutilization of Health Services." *Health Services Research*, 44. 6, 2093-2105.
- Lee J. (2010). President Obama Signs the Fair Sentencing Act. The White House. Retrieved on August 03, 2010 at 04:58 PM EST. Retrieved June 10, 2011 from <http://www.whitehouse.gov/blog/2010/08/03/president-obama-signs-fair-sentencing-act>
- Liang KY, & Zeger SL. (1986). Longitudinal Data Analysis Using Generalized Linear Models. *Biometrika*. 73, 3-22.
- Moore LD, & Elkavich A. (2008). Whose using and who's doing time: incarceration, the war on drugs, and public health. *American Journal of Public Health*. 98, 5, 782-6.
- Schnavia-Smith H., Toldson, I.A., Godette, D.C., Richardson, J.B, (2009) Mental health, substance abuse, and HIV disparities in correctional settings: Practice and policy implications for African Americans. *Journal of Health Care for the Poor and Underserved*. 20: 2A, Supplement: 6-16.
- Schulden, J.D., Thomas, Y.F., & Compton, W.M. (2009). Substance abuse in the United States: Findings from recent epidemiologic studies. *Current Psychiatry Reports*. 11, 5, 353-359.
- Slomka, J., Ratliff, E.A., McCurdy, S.A., Timpson, S., & Williams, M.L. (2008). Decisions to participate in research: Views of underserved minority drugs users with or at risk for HIV. *AIDS Care*, 20, 10, 1224-1232/
- Thompson, B.L., Levitt, P. & Stanwood, G.D. (2009). Prenatal exposure to drugs: Effects on brain development and implications for policy and education. *Nature Reviews Neuroscience*, 10, 303-312.
- United States Department of Health and Human Services (USHHS,2010). *Healthy People 2020*. Retrieved June 10, 2011 from <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=40>.
- Wechsberg, W.M., Zule, W.A., Rriehman, K.S., Luseno, W.K. & Lam, W.K.K. (2007). African-American crack abusers and drug treatment initiation: Barriers and effects of a pretreatment intervention. *Substance Abuse Treatment, Prevention, and Policy*. 2,10, Retrieved June 10, 2011 from <http://www.substanceabusepolicy.com/content/2/1/10>
- Werb, D., DeBeck, K., Kerr, T., Li, K., Montaner, J., Wood, E. (2010). Modeling crack cocaine use trends over 10 years in a Canadian setting. *Drug and Alcohol Review*, 29, 3, 271-277.
- Zeger, S. L., & Liang, K. (1986). Longitudinal Data Analysis for Discrete and Continuous Outcomes. *Biometrics*, 42, 121-130.

Zeger, S.L., Liang K.Y., Albert, P.S. (1988).
Models for longitudinal data: a generalized
estimating equation approach. *Biometrics*. 44,
1049-1060.