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ORIGINAL PAPER

Initiating HIV Care: Attitudes and Perceptions of HIV Positive Crack Cocaine Users

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Abstract There is limited data on the initiation and use of HIV care services by HIV-positive crack cocaine users. We analyzed data from a study of 286 recently infected HIV-positive persons recruited from 4 U.S. cities. Participants completed an Audio Computer Assisted Self Interview (A-CASI) regarding HIV care knowledge, attitudes, beliefs and practices related to the initiation of HIV care. In multiple logistic regression analysis, higher scores on an assessment of knowledge, attitudes and beliefs regarding HIV care, and Hispanic race were positively associated with initiating HIV primary care. Crack cocaine use in the past 30 days and male gender were negatively associated with initiating care. Injection drug use was not associated with initiation of care. Targeted interventions for crack cocaine users, including drug treatment, may be required to provide optimal HIV primary care use in this population.

Keywords HIV primary care · Crack cocaine use · Access to care · Minorities

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Introduction

It is estimated that following testing positive for HIV, approximately one-fourth to one-third of HIV infected persons delay seeking HIV primary care, often until their disease has progressed and acute treatment is needed (Glynn & Rhodes, 2005). Accessing HIV primary care is a prerequisite to initiating highly active antiretroviral therapy (HAART) as well as prophylactic treatment for potentially life threatening opportunistic infections. The former has been directly associated with significant decreases in HIV related morbidity and mortality (Mocroft et al., 2003; Palella et al., 1998; Schneider et al., 2005).

Due to a variety of barriers, some population subgroups are less likely to access HIV primary care. Members of minority communities, substance abusers, and women are among those that have disproportionately lower access to care (Anderson &

Mitchell, 2000; Kalichman, Graham, Luke, & Austin, 2002; Shapiro et al., 1999). Substance abuse in particular is an important barrier to accessing HIV care and most studies to date addressing HIV disease progression, utilization of care, and adherence among drug users have focused on injection drug users (IDUs) (e.g., Celentano et al., 1998; Strathdee et al., 1998). Fewer studies have focused on the HIV care utilization patterns of crack cocaine smokers.

Crack use, a significant risk factor for HIV infection due to accompanying high-risk sexual behaviors (Edlin et al., 1994; Wilson, Minkoff, DeHovitz, Feldman, & Landesman, 1998) is associated with certain characteristics that may exacerbate HIV care barriers faced by substance abusers in general. While crack cocaine users have similar chaotic life circumstances to other drug users, e.g., poverty, crime, family dysfunction and violence (Boyd & Mieczkowski, 1990; Celentano et al., 1998; Sherman & Steckler, 1998), the short and intense nature of the crack high (Stone, 2000) and the lack of an effective legal substitute to aid in cessation (such as methadone) are characteristics that make this sub-group of substance abusers unique. At the same time, crack cocaine users are usually poor, uninsured minorities with low levels of education, members of traditionally underserved groups, with lower rates of health services in general (Boyd & Mieczkowski, 1990; Metsch et al., 1999; Sterk, 1999). The few studies that have examined the role of crack cocaine use in relation to HIV care have recruited their samples from HIV outpatient care sites and/or HIV service organizations (Melchior et al., 2001), or focused on the use of antiretroviral therapies or adherence to antiretroviral therapies as the dependent variables (Berg et al., 2004; Cohen et al., 2004; Kalichman et al., 2002; Sharpe, Lee, Nakashima, Elam-Evans, & Fleming, 2004). The present study offers an opportunity to examine the role of crack cocaine as a potential barrier to initiating care among persons living with HIV. The study analyzes data from ARTAS (AntiRetroviral Treatment Access Study), which enrolled recently diagnosed persons living with HIV in 4 cities in the U.S. The study enrolled HIV-positive persons who had either minimal or no involvement with the HIV care system.

In order to determine factors associated with initiation of HIV primary care, we examined the use of crack cocaine, the use of injection drugs, and sociodemographic factors, knowledge, attitudes and beliefs regarding HIV care. In this study, we hypothesized that crack cocaine use would be an independent deterrent to initiating HIV primary care.

Methods

Participants

In conjunction with the Centers for Disease Control and Prevention, we examine baseline data from the ARTAS randomized clinical trial that sought to evaluate a case management intervention to link persons to HIV care (Gardner et al., 2005). Baseline interviews were conducted in 4 U.S. cities (Atlanta, Baltimore, Los Angeles, and Miami) from March 2001 to May 2002. Eligibility required that participants recently tested HIV-positive; were age 18 years or older; had been to an HIV primary care provider no more than once in the past and were not on antiretrovirals; and were able to provide informed consent. An HIV primary care visit was defined as a visit to a physician, nurse practitioner or physician assistant for HIV-related medical care such as CD4 count, viral load, tuberculin skin test, prophylaxis, etc. Participants were recruited as early as possible after a positive HIV test, ideally within 6 months after diagnosis. In the last 7 months of recruitment, eligibility was expanded to allow individuals whose positive HIV test was older than 6 months to enroll. Participants were recruited from a variety of sources, including health department testing centers, STD clinics, hospitals, and community-based organizations. These recruitment locations and eligibility criteria were chosen in an attempt to represent individuals recruited from non-HIV primary care settings, and who have not been fully engaged in HIV primary care. At the baseline interview, participants received a small monetary incentive to complete an Audio Computer Assisted Self Interview (A-CASI) with questions available in English and Spanish. Each question was displayed on a computer monitor as an audio recording of the question was played via headphones. Participants used touch-screen technology or a mouse to answer questions; a staff member was available to provide assistance if needed. Questions covered demographics, past medical history, current and past drug use, knowledge, attitudes, and beliefs regarding HIV treatment, social support, barriers to care, and sexual behavior. The CDC Institutional Review Board (IRB) and all local IRBs approved the study. A more detailed description of ARTAS and its methodology has been reported elsewhere (Gardner et al., 2005).

Measures

The dependent variable in this analysis was the initiation of HIV primary care - a binary measure coded as ‘‘yes’’ if the individual had made an appointment with

or had seen an HIV care provider no more than once since being diagnosed; it was coded as ''no'' if the individual had not yet made an appointment or had never seen an HIV provider.

Independent variables: Active crack cocaine use was defined as having smoked crack in the last 30 days and active injection drug use was defined as having injected heroin or cocaine in the last 30 days. Three persons who primarily injected drugs but also had smoked crack at least once in the last 30 days were classified as injectors. Depression was measured by the 20-item CES-D scale (Radloff, 1977). A knowledge, attitudes and beliefs (KAB) score regarding HIV care was created from the mean of 21 Likert scale questions (1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree and 4 = strongly agree), reversed coded when necessary, where a higher score represented more positive KAB values for HIV care ($\alpha = .85$). Knowledge questions were fact-based (e.g., high T cells are good for my health) and scored accordingly. Attitudes were scored with higher points for answers reflecting involvement in health care, positive attitudes toward the health care system, and acceptance of mainstream medical treatment for HIV. Beliefs were scored as positive if they rejected inherent bias in the health care system (e.g., men get better health care than women). A score for barriers to access to HIV care was created from the mean of 20 yes/no items describing possible barriers (e.g., lack of transportation); higher scores reflected more barriers ($\alpha = .81$). Social support was measured by the mean of 24 binary items, which included disclosure of HIV status to employers, parents, siblings, and other relatives as well as whether or not the participant had friends to help with problems such as being able to loan money, provide food, and reminders about doctor appointments. Reverse coding was used as needed in order to reflect positive social support measures.

In order to determine if recruitment site was a confounder, it was included as covariate in the analysis. Recruitment sites were grouped into 4 different categories: (1) community based testing centers which include public health clinics, sexually transmitted disease clinics and community based organizations, (2) medical treatment facilities including inpatient units, outpatient private offices and emergency rooms, (3) drug treatment centers and (4) other settings which included blood banks, other research settings and self-referral from advertising.

Statistical Analysis

The aim of the analysis was to examine whether crack cocaine was independently associated with initiating care in the study sample. First, we examined the associations between a selected set of independent variables and the dependent variable initiation of HIV care. Associations were assessed using χ^2 or Fisher's exact tests for categorical independent variables and *t*-tests for continuous variables. Multiple logistic regression was then employed to assess the independent association between crack use and initiation of HIV care. The method of generalized estimating equations (GEE) were used in the multivariate logistic regression to capture correlation induced by clustering within site. Empirical standard errors calculated from the GEE were used for all tests from the multiple logistic regression analysis. Variables that were associated with initiating HIV care ($P \leq .15$) in the bivariate analysis were included in the multiple logistic regression model. Age, gender, race/ethnicity, depression and self assessed health status were included in the model regardless of the *P*-value in bivariate analysis, as control variables or important confounding factors, based on previous study findings and literature reports (Fleishman et al., 2005; Gebo et al., 2005; Kalichman et al., 2002; Shapiro et al., 1999). There were no multicollinearity problems (as assessed by variance inflation factors < 6) nor any significant interactions.

Results

Table 1 describes the characteristics of the 286 respondents in this analysis as well as the bivariate associations of these characteristics with initiation of HIV care. The sample was composed predominantly of individuals who were more than 35 years of age, African-American and Hispanic, and mostly male. Fifty percent reported an income of $5,000/year or less, the majority had no health insurance, and 70% rated their current health status as good to excellent. Participants recruited in Los Angeles were more likely to initiate care compared with those from other cities, and Hispanics were more likely to initiate care compared with other racial and ethnic groups. Gender, age, marital status, level of education, insurance, and employment status were not associated with initiating care. The KAB score was positively associated with initiating care. Crack cocaine users and IDUs were less likely to initiate care than non-drug users. Initiation of care was not significantly associated with depression, homelessness, having a regular source of health care, perceived social support, or perceived barriers to care. Almost 80% of the sample had known of their HIV-positive status for 6 months or less; these individuals were more likely to initiate HIV primary care. Patients

Table 1 Bivariate associations between independent variables and initiating HIV care

Variables	Total $N = 286$ (%)	Initiating HIV care $N = 141$ (%)	Not initiating HIV Care $N = 145$ (%)	Test statistic[a]
Study site				
Atlanta	76 (26.6)	43 (30.5)	33 (22.8)	27.4**
Baltimore	61 (21.3)	20 (14.2)	41 (28.3)	
Los Angeles	86 (30.1)	58 (41.1)	28 (19.3)	
Miami	63 (22.0)	20 (14.2)	43 (29.7)	
Age				
>35 years	171 (59.8)	81 (57.5)	90 (62.1)	.6
≤35 years	115 (40.2)	60 (42.6)	55 (37.9)	
Gender				
Male	204 (71.3)	102 (72.3)	102 (70.3)	.1
Female	82 (28.7)	39 (27.7)	43 (29.7)	
Race/Ethnicity				
Black/non-Hispanic	171 (59.8)	78 (55.3)	93 (64.1)	10.8*
Hispanic	74 (25.9)	48 (34.0)	26 (17.9)	
Others	17 (5.9)	6 (4.3)	11 (7.6)	
White/non-Hispanic	24 (8.4)	9 (6.4)	15 (10.3)	
Married, common law, live with partner	55 (19.3)	28 (19.9)	27 (18.8)	.1
Single/Never married/Separated/divorced/widowed	230 (80.7)	113 (80.1)	117 (81.3)	
Education				
Less than high school	128 (48.5)	63 (50.8)	65 (46.4)	.5
High school or more	136 (51.5)	61 (49.2)	75 (53.6)	
Work status				
Not/Occasional work	193 (68.0)	92 (66.2)	101 (69.7)	.3
Full/Part/Home Worker/Student	91 (32.0)	47 (33.8)	44 (30.3)	
Drug use in past 30 days				
Crack use	50 (17.5)	19 (13.5)	31 (21.4)	12.7**
IDU	31 (10.8)	8 (5.7)	23 (15.9)	
No use	205 (71.7)	114 (80.9)	91 (62.8)	
Depression				
No	122 (42.7)	64 (45.4)	58 (40.0)	.8
Yes	164 (57.3)	77 (54.6)	87 (60.0)	
Homeless				
No	266 (93.7)	133 (95.0)	133 (92.4)	.8
Yes	18 (6.3)	7 (5.0)	11 (7.6)	
Knowledge about HIV care score				
Mean(S.D)[b]	3.3 (.5)	3.4 (0.4)	3.2 (0.5)	3.5**
Income				
≤$5,000	137 (51.3)	66 (50.4)	71 (52.2)	0.1
>$5,000	130 (48.7)	65 (49.6)	65 (47.8)	
Have insurance				
No	238 (83.8)	119 (85.0)	119 (82.6)	0.3
Yes	46 (16.2)	21 (15.0)	25 (17.4)	
Regular source of care				
No	142 (50.2)	67 (47.9)	75 (52.5)	0.6
Yes	141 (49.8)	73 (52.1)	68 (47.6)	
Social support score:				
Mean (SD)[b]	1.3 (0.2)	1.3 (0.2)	1.3 (.2)	–.5
Barriers to HIV care				
Mean (SD)[b]	1.5 (0.2)	1.5 (.2)	1.5 (.2)	.1
Provider–Patient relationship Don't like doctors/clinics				
No	157 (85.8)	59 (85.5)	98 (86.0)	.01
Yes	26 (14.2)	10 (14.5)	16 (14.0)	
Likely to start HIV care next month				
Unlikely	36 (12.7)	14 (10.0)	22 (15.4)	1.8
Likely	247 (87.3)	126 (90.0)	121 (84.6)	
STD				
No	215 (75.4)	105 (74.5)	110 (76.4)	.1
Yes	70 (24.6)	36 (25.5)	34 (23.6)	
Self assessed health				
Poor–Fair	87 (30.5)	42 (29.8)	45 (31.3)	.1
Good–Excellent	198 (69.5)	99 (70.2)	99 (68.8)	

Table 1 continued

Variables	Total $N = 286$ (%)	Initiating HIV care $N = 141$ (%)	Not initiating HIV Care $N = 145$ (%)	Test statistic[a]
Length of diagnosis				
$G \leq 6$ months	218 (76.2)	119 (84.4)	99 (68.3)	10.3**
$G > 6$ months	68 23.8)	22 (15.6)	46 (31.7)	
Referral location				
PH/STD/Community org	139 (49.6)	80 (58.4)	59 (41.3)	20.4**
Inpatient/ER/Private office	54 (19.3)	31 (22.6)	23 (16.1)	
Drug treatment center	15 (5.4)	7 (5.1)	8 (5.6)	
Other place	72 (25.7)	19 (13.9)	53 (37.1)	

Column numbers (%) did not add up to N (100) due to missing value (rounding)

[a] χ^2-test

[b] Two sample t-test

* $P < .05$. ** $P < .01$

referred to the study from blood banks, other research studies or self-referred after seeing advertisements for the study were less likely to initiate care than those who were referred from drug treatment centers, public health departments and STD clinics, community organizations or medical treatment facilities.

Table 2 presents the multiple logistic regression model describing the association between selected variables and initiation of HIV care. After controlling for age, depression, self-assessed health and other variables in the model, 4 factors were independently associated with initiating care. Participants who had higher KAB scores regarding HIV care (AOR 2.30, 95% CI: 1.42, 3.72, $P < .01$) were more likely to initiate HIV care. Hispanics (AOR 2.14, 95% CI: 1.11, 4.14, $P < .05$) and members of ''other'' racial groups (AOR 3.43, 95% CI: 1.43, 8.25, $P < .01$) were more likely to initiate care compared to white non-Hispanics. Individuals referred to the study from medical treatment facilities were more likely to initiate care compared to those referred from other sites (AOR 2.09, 95% CI: 1.43, 3.07, $P < .01$). In contrast, crack cocaine users

Table 2 Multiple logistic regression on initiating HIV care $N = 258$

Variables	Adjusted Odds Ratio	95% CI[a]
Gender		
Male	.85	.65, 1.10
Female	Reference	
Age		
>35 years	1.19	.97, 1.46
≤35 years	Reference	
Race/Ethnicity		
Black/non-Hispanic	1.43	.45, 4.51
Hispanic	2.14	1.11, 4.14*
Others	3.43	1.43, 8.25**
White/non-Hispanic	Reference	
Drug use in past 30 days		
Crack use	.65	.44, .97*
IDU	.56	.29, 1.08
No use	Reference	
Knowledge about HIV care score	2.30	1.42, 3.72**
Length of diagnosis ≤6 months	1.12	.57, 2.21
Depression	.92	.62, 1.37
Self assessed health		
Good–Excellent	.89	.36, 2.18
Poor–Fair	Reference	
Referral location		
PH/STD/Community org	2.45	.86, 7.03
Inpatient/ER/Private office	2.09	1.43, 3.07**
Drug treatment center	1.70	.94, 3.09
Other place	Reference	

[a] CI: Confidence interval

* $P < .05$

** $P < .01$

(compared to non-users) (AOR = .65, 95% CI: .44, .97, $P < .05$) were less likely to initiate HIV care. Injection drug use was not associated with initiation of care.

Discussion

The results of this analysis suggests that crack cocaine use serves as a deterrent to the initiation of HIV primary care. This is one of the first studies that examined the role of crack cocaine use in a sample of participants who had not yet engaged in HIV primary care and had examined initiation of care, rather than use of antiretroviral therapies or adherence, as the dependent variable.

Demographic and behavioral variables were also associated with initiation of HIV care. Hispanics and members of ''other'' racial/ethnic groups, compared to non-Hispanic whites were also more likely to initiate care. Generally, it has been reported that Hispanics have poorer access to care than whites (Shapiro et al., 1999) yet it is better than that of African Americans (Fleishman et al., 2005; Gebo et al., 2005). These demographic variables are not modifiable and probably are proxy variables for unmeasured cultural, social, and environmental factors (Mays, Ponce, Washington, & Cochran, 2003). Persons referred to the study from medical care facilities were also more likely to initiate HIV care. Having a usual place of care has been demonstrated to be associated with initiating care (Turner et al., 2000); it is also possible that persons referred from a medical care facility had more advanced disease for which they were seeking care (Fleishman et al., 2005). The finding that having positive knowledge, attitudes, and beliefs towards HIV care is associated with initiation of care is consistent with health behavior models such as the Health Belief Model and the Theory of Reasoned Action that posit that these theoretical constructs can explain health seeking behaviors (Janz & Becker, 1984). Numerous behavioral interventions have focused on changing knowledge, attitudes and beliefs and some have been successful in changing prevention and care seeking behaviors. However, when it comes to intervening with subgroups such as crack cocaine smokers that have multiple psychosocial needs, intervention approaches may need to look beyond cognitive behavioral models that assume rational and planned behavior.

In this study, crack cocaine users were less likely to initiate care than non-drug users. The identification of crack cocaine use as a barrier to initiation of HIV primary care may be related to the ''master role of the addict'' (Stephens, 1991), defined as the tendency to put the acquisition and use of drugs ahead of other needs (Sherman & Steckler, 1998). Binges of smoking, often for 3 or 4 days without eating or sleeping, are common among crack cocaine users and women frequently engage in unprotected sexual acts in exchange for more crack (Inciardi, 1995). The more frenetic pace of the crack high as well as the lack of a methadone-like substitute for crack make accessing HIV primary care, which requires planning and organization, difficult for active crack users. The findings of this study suggest that the barriers created by crack cocaine use are different than those encountered by IDUs and that specific interventions may be required to bring them into HIV care.

Initiating HIV care is among one of the multiple needs for intervention with HIV-positive crack users (Klinkenberg et al., 2004). Initiating care does not necessarily mean that crack users will remain in care, or that those who meet eligibility criteria will receive HAART (Cohen et al., 2004; Kalichman et al., 2002). Furthermore, like most active substance abusers they are unlikely to achieve the full benefits of HAART due to poor adherence (Lucas, Cheever, Chaisson, & Moore, 2001). However, initiation of HIV care presents the opportunity to implement a targeted intervention to treat both the HIV disease and the crack addiction. As Samet, Friedmann, and Saitz (2001) suggests, there is a pressing need for a coordinated intervention linking primary care, mental health services and drug treatment for HIV-positive substance abusers. Interventions specific for crack cocaine users ideally would simultaneously focus on prevention, by intervening to decrease high-risk sexual behaviors, increase engagement in HIV care and knowledge of the benefits of HIV primary care while offering opportunities for drug treatment. Improving access to HIV primary care has been shown in some instances to increase access to drug treatment among active crack users. Among drug injectors, participation in drug treatment and case management services has been associated with greater access to HIV medical care (Knowlton et al., 2001; Messeri, Abramson, Aidala, Lee, & Lee, 2002). Participation in drug treatment has been shown to reduce sexual risk behaviors among crack users (Shoptaw, Frosch, Rawson, & Ling, 1997). Additionally behavioral intervention studies carried out in drug treatment settings have been shown to reduce sexual risk behaviors among crack users (McCusker, Stoddard, Zapka, & Zorn, 1993).

In addition to improving access to substance abuse rehabilitation facilities, there is a need to assist former addicts in adapting to a new life without drugs, which may involve housing and job training opportunities. More research should be undertaken to see how

linkage of drug treatment for crack addicts with HIV primary care can be effective in treating both drug addiction and improving HIV treatment outcomes. Much of the research published to date concentrates on IDUs and ''substance abusers'' in general including IDUs, cocaine users, crack users and others, which ignores the issues specific to each different type of substance abuser (Lucas et al., 2001, 2006; Melchior et al., 2001). Without such interventions, it is likely that many crack cocaine users will access HIV outpatient care only when their HIV disease is advanced. At such a point not only will the opportunity to prevent significant morbidity and mortality have been lost, but also the opportunity to impact on risky behaviors and the spread of the HIV epidemic in largely minority communities.

This study has several limitations. We relied on self-reported data, however, the use of A-CASI has been shown to increase accuracy in self-reports (Williams et al., 2000). This is a cross sectional analysis and therefore only measures the view of participants at a specific time period. It is possible that after living with HIV infection for a longer period of time, in some cases adjusting to the diagnosis, participants' plans regarding care will change. It is also possible that in this population of relatively newly diagnosed individuals, HIV primary care appointments may have been arranged for them by a third party social service agency, and may not reflect their own intention to initiate care. However, the standard of care at the participating clinics was passive referral (Gardner et al., 2005) so it is unlikely that many of the study participants received active assistance from third party agencies. Another limitation of this analysis concerns the nature of the study sample, which, by design as part of a randomized trial, excludes established users of primary HIV care. As such, comparisons are being made between non-users and those with minimal utilization of care (including appointment making). However, we feel that the exclusion of established users is mitigated by the fact that a majority of the sample consists of persons diagnosed within the last 6 months; it is reasonable to expect that only one primary care visit would occur, or that only an appointment for care would be made, in that time frame. Despite these limitations however, this analysis contributes to the limited research regarding crack cocaine users and their initiation of HIV care.

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