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THE USE OF FRY (EMBALMING FLUID AND PCP-LACED CIGARETTES OR MARIJUANA STICKS) AMONG CRACK COCAINE SMOKERS

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Abstract

Statistics show that the prevalence of crack cocaine use and embalming fluid and phencyclidine (PCP)-laced cigarettes or marijuana sticks, commonly referred to on the street as “fry” or “wet” is a problem; however, the relationship between these substances of abuse and concurrent polydrug use is unknown. In the present study, a cross-sectional survey was conducted among 426 African-American crack users in Houston, Texas, to investigate the difference between those who concurrently reported lifetime (defined as at least one usage of fry in life) fry use and those who stated they never used fry. The data were analyzed using chi-square and logistic regression analyses. Fry users were significantly more likely than non-users to not have a casual sex partner (92% users vs. 84% non-users, $p \leq 0.05$) and were more likely to have been diagnosed with gonorrhea in the past 12 months (9% users vs. 2% non-users, $p \leq 0.05$). In addition fry users had significantly higher odds of currently trading sex for drugs (OR = 2.30, $p \leq 0.05$), marijuana use (OR = 12.11, $p \leq 0.05$), and codeine (syrup) use (OR = 8.10, $p \leq 0.05$). These findings are important in determining the “cultural novelties” relative to crack and fry use among younger African Americans.

INTRODUCTION

Substantial research has been conducted on crack cocaine users, especially those in the southern part of the United States. A significant chemical stimulator of the sympathetic nervous system, crack cocaine is a highly addictive illicit drug [1] that produces a powerful euphoric and sexually stimulating effect. Several studies have documented the association between people using crack cocaine and not protecting themselves from sexually transmitted diseases [2–5].

The use of crack, alone, is cause for public health concern and its use in conjunction with other substances of abuse may produce more dramatic effects. Limited research, however, has been conducted about crack users who consume other substances such as embalming fluid and phencyclidine (PCP)-laced cigarettes or marijuana sticks, commonly referred to in the southern part of the United States as “fry” or “wet.” The use of fry, also know as “illy” in the northeastern United States, has increased in popularity among youth within recent years [6–8]. Formaldehyde and methyl alcohol are the primary components of fry and are reported to produce physical effects among users including bronchitis, body tissue destruction, brain damage, lung damage, impaired coordination, and inflammation and sores in the throat, nose, and esophagus [9]. Other side effects of PCP use may include hallucinations, “out of body” experiences, impaired motor coordination, depression, extreme anxiety, disorientation,

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paranoia, aggressive behavior and violence, seizures, and respiratory arrest [9]. Peters et al. [10] conducted a drug-use assessment of 494 seventh through twelfth grade students, the results of which showed that 11% of students used fry at least once and 2% reported use in the past 30 days.

A qualitative study conducted by Peters et al. [7] investigated beliefs and norms associated with fry initiation and perceived addiction among 38 youths admitted for outpatient and inpatient drug treatment programs in the spring of 2003. Respondents perceived that fry was highly addictive and that a user could become addicted after only one use. For youths who had previously used fry, their second use occurred either the same day as or the day after their initial use. Respondents perceived fry use to have extremely dangerous consequences, including impaired motor skills, hallucinations, long-term mental health problems, incoherent behavior, paranoia, and aggressive behaviors.

While 2% may be a small number of African-American students who reported current fry use, it is important because of the range of deleterious behaviors related to its consumption. Heretofore, the use of crack cocaine and fry has been investigated separately and, to date, we are unaware of studies that have investigated the relationship between these two substances of abuse. In the present cross-sectional study, a survey was conducted with crack cocaine users in Houston, Texas, to investigate if different “drug experiences” exist among those who concurrently used fry in their lifetime versus those who have never used fry.

METHODS

This study was part of a larger investigation on the efficacy of a psychosocial intervention to increase condom use by heterosexual crack smokers. Data were collected between February 2003 and July 2004 in Houston, Texas. Criteria for study participation included:

1. African Americans between 18 and 40 years old;
2. smoked crack cocaine in past 48 hours;
3. had vaginal sex at least once in the past 7 days;
4. current resident of neighborhood targeted for recruitment; and
5. provided information sufficient for a follow-up interview.

A 48-hour time frame for crack cocaine use was chosen since that was the maximum time cocaine metabolites remained detectable using the test described below. A 7-day time frame for sexual activity was chosen since it allowed for a reasonable probability that a respondent had engaged in sex and allowed a reasonable window for accurate recall. All procedures and data collection forms for the study were reviewed and approved by the university’s committee for the protection of human subjects.

Recruitment

Neighborhoods having high rates of drug use were targeted and confirmed through interviews with local key informants knowledgeable about patterns of illicit drug use in the city and referrals were used to recruit study participants [11]. The places where crack smokers congregate and introductions for the outreach workers were also provided by key informants. Trained research assistants contacted potential participants in the field, describe the purpose of the project, and distributed risk reduction pamphlets that included condoms. Potential participants were asked by research assistants to take part in a health-related study. If they affirmed willingness to participate, they were provided with the location of a data collection center to go to for screening.

Individuals presenting at a data collection center for screening were informed about the purpose of the study, informed that their participation was voluntary, that they could refuse to answer any question without penalty, and asked for their consent to be screened. Individuals meeting the study criteria and who provided consent for screening were asked to provide a urine sample that was tested for cocaine using ONTRACK test kits. If the sample tested negative for cocaine use, the participant was deemed ineligible for participation. If the sample tested positive for cocaine, they were asked to provide written informed consent. The interview followed.

Of the 1,110 individuals screened, 426 (41%) met eligibility criteria. Among those deemed ineligible, 64% had not had sex in the 7 days prior to screening, and 12% tested negative for cocaine use. The remainder were ineligible for reasons, such as not within the specified age range, living outside the target neighborhoods, or being too incoherent to respond to screening questions. No significant differences in gender, age, or reported frequency of drug use were found when those who were admitted to the study were compared to those who did not meet screening criteria.

Measures

Confidential data collection was conducted by trained research assistants using the Peer Outreach Questionnaire (PRQ). The PRQ was developed by the investigators and used in previous studies with drug using populations [12,13]. Measures in the PRG include self-reported sociodemographic characteristics, drug use behaviors, sexual behaviors, condom use, and attitudes toward condom use with specific sexual partners. Forty-eight hour test-retest of the measures generated by a sample of 50 individuals matching the study criteria reported above showed that the instrument produces reliable and valid data [14–17]. The duration of the PRQ was approximately one hour. Study eligible participants were paid $25 as compensation for their time and travel expenses.

RESULTS

Sample

The data were analyzed to examine the association between crack cocaine users' socio-demographics and lifetime fry use (used fry at least once in lifetime), sexual behaviors and fry use, and other drug use and fry use using Fisher's exact and chi-squares tests. The level of significance was alpha = .05. In all small-celled cross-tabulations, the Fisher's and chi-square tests produced the same results (Table 1). The majority of participants were male for both fry users (68%), non-fry users (60%), single, and considered themselves not to be homeless. Overall, most of the participants were not working (52% users vs. 46% non-users) and had incomes of approximately $7,000 or less annually (71% users vs. 76% non-users). These differences were not significant. Differences in average age and education were assessed using independent sample *T*-tests. Users were significantly younger on average than non-users (32.3 years vs. 34.0 years, $p < .003$). Educational attainment was similar and non-significant between both groups (11.4 years among users vs. 11.2 years among non-users). Sixty-six percent of the respondents reported that they were lifetime polydrug users. Of this group of self-reported polydrug users, 40% stated that they used fry in their lifetime. In addition, 5% of crack cocaine users state that they currently used fry.

Fry users were significantly more likely than non-users to not have a casual sex partner (92% users vs. 84% non-users, $p \leq 0.05$) (Table 2). Fry users were significantly more likely to have used marijuana (98% users vs. 80%, non-users $p \leq 0.001$); codeine cough syrup (60% users vs. 18%, non-users $p \leq 0.001$); and methamphetamines (13% users vs. 4%, non-users $p \leq 0.01$). In addition, users were significantly more likely to have been diagnosed with gonorrhea in the past 12 months (9% users vs. 2% non-users, $p \leq 0.05$) (Table 3).

Logistic Regression

After chi-square tests were conducted, variables with a significant bivariate association with cocaine use at the $p \leq 0.20$ level (gender, age, having a casual sex partner, having ever traded sex for money, currently trading sex for drugs, ever using marijuana, codeine, methamphetamines, previous 12-month diagnosis of gonorrhea and trichomonas) were then entered simultaneously into regression models predicting past month fry use among cocaine users. Logistic regression analyses indicated that females were less likely to report themselves as fry users (OR = .35, $p \leq 0.05$). Fry users also had significantly higher odds of other high risk behaviors including currently trading sex for drugs (OR = 2.30, $p \leq 0.05$), marijuana use (OR = 12.11, $p \leq 0.05$), and codeine syrup use (OR = 8.10, $p \leq 0.05$) (Table 4).

DISCUSSION

The current study investigated whether crack cocaine users in Houston, Texas had different "drug experiences" among those who reported any lifetime fry users versus those who never used fry. Respondents in the present study who reported both crack cocaine and fry use were significantly more likely to have been female, to have used marijuana and codeine in their lifetimes, and were currently trading sex for drugs compared to crack cocaine users who did not concurrently use fry. The fact that 43% of respondents reported use of fry is a cause for concern, and suggests that its use is widespread in Houston.

Fry is a "cocktail" or combination of marijuana laced with embalming fluid and PCP, a compound that presents a double or triple dose of possibly synergistically acting hallucinogens [10]. Given that marijuana is a major ingredient, it is no surprise, then, that marijuana use was significantly associated with fry use. According to Burnam et al. [18] drug abuse, sexual history, and mental illness are interrelated and require screening and treatment of all these problems concurrently.

According to Peters et al. [10] fry use was believed by respondents to have extremely dangerous user and societal consequences. The present study found that crack cocaine users who had used fry demonstrated behaviors that place them at risk because they had significantly higher odds of currently trading sex for drugs compared to crack cocaine users who had not used fry. This is an area of research that merits closer attention because while we know from studies conducted among "mainstream" populations that substance abuse is related to participation in high risk sexual activity, we do not know the magnitude of this problem among crack cocaine users who concurrently use fry. One might speculate, from an understanding of the physiological effects of these two drugs, that crack cocaine smokers may be using fry to heighten their feelings of security related to trading sex for drugs. A fry-using participant in a qualitative study conducted by Peters et al. [7] stated "I had one friend that would smoke it to stay tight on his game; he sold drugs so it would alert him for anything that may come around like robbing or anything." It is possible that while crack cocaine may stimulate users to have sex; fry may provide them with heightened feelings of security in high risk situations. Another possible reason for this combination of drug use is the related incoherent effect it provides. Several minority participants in the study conducted by Peters and colleagues stated that fry makes them "blank out and/or loose feeling." Consequently, when users exchange sex for money there is a possibility that they would like to be concurrently non-reflective of the high risk sexual encounters.

There are four limitations to the current study. First, its cross-sectional nature limits the ability to make associations or to evaluate directionality of effect, that is, if crack cocaine use leads to fry use or if increased fry use increases the likelihood of crack cocaine use. The need for larger cohort studies to examine the precise nature of any causal relationship among African Americans exists. Second, there were no biological confirmations of respondents' self-reported

fry use. Consequently, uncertainties can be debated on the honesty of some respondents; particularly on sensitive topics related to stigmatized behaviors such as fry use. Third, only lifetime fry use was used to investigate associations. Consequently, respondents' time of fry consumption cannot be estimated, and we cannot assess whether use was simultaneous with other drugs. Fourth, the participants in the current study were taken from one large metropolitan city in Texas making the results less generalizable to similar populations in other areas in Texas or in the United States where regional differences exist. Larger studies with longer-term follow-up conducted across different regions of the United States are needed to accurately estimate the prevalence of illicit drug use among African-American crack cocaine users and to comprehend the roles illegal use of fry and crack cocaine have in society and in self-medication for crack users. Fifth, although this study found significant associations with fry use among crack cocaine use, it is possible that the results could be confounded with polydrug use. It is important to understand fry use in its context, and specifically if it is used generally or in specific situations such as sex work (defined as the exchange of drugs or money for sex). The high prevalence of use also raises questions not only about context but also about supply, including whether it is sought out or offered.

Fry is a street drug that may have negative health consequences. The important benefit of this study to the field is to show the need for national surveillance of fry and other drugs of abuse among crack cocaine users. Because drug abuse, sexual history, and mental illness are interrelated, treatment programs must require screening and treatment of all these problems concurrently. In addition, they must be knowledgeable of additional substances such as fry that place their patients at greater need for long-term HIV/STI and mental health surveillance. Larger studies are needed to accurately estimate the prevalence of illicit drug use among crack users and in the general population. More research with longer-term follow-up conducted across different regions of the United States is needed to comprehend the roles illegal use of fry and crack cocaine have in society and in self-medication for crack users.

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Table 1

Demographic and Descriptive Sample Statistics by Lifetime Fry Use Status

	Never used fry		Used fry		χ^2
	N	Percent	*N*	Percent	*p*
Race					—
African American	244	100	182	100	
Gender					.11
Male	146	60	123	68	
Female	98	40	59	32	
Marital status					.48
Single	162	66	110	60	
Living with sexual partner of same sex	4	2	5	3	
Separated/divorced/widowed	41	17	31	17	
Married or living as married with partner of opposite sex	37	15	36	20	
Considers self homeless					.33
No	181	74	127	70	
Yes	63	26	55	30	
Work situation					.57
Full-time/part-time/occasional work	111	46	74	41	
Unemployed	111	46	95	52	
Disabled/student/homemaker	16	7	9	5	
Other	6	3	4	2	
30-day income					.48
None	12	5	10	6	
< $200	82	34	50	28	
$200-$599	92	38	69	38	
$600 or more	58	24	53	29	

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Table 2

Prevalence of Lifetime Fry Use by Sexual Behaviors and Other Drug Use

	Never used fry		Used fry		χ^2
Variable	***N***	**Percent**	***N***	**Percent**	***p***
Have a main sexual partner					.28
No	113	46	74	41	
Yes	131	54	108	59	
Have a casual sex partner					**.02**
No	39	16	15	8	
Yes	205	84	167	92	
Ever traded sex for money					.20
No	123	50	80	44	
Yes	121	50	102	56	
Currently trading sex for money					.76
No	152	62	110	60	
Yes	92	38	72	40	
Ever traded sex for drugs					.62
No	142	58	101	56	
Yes	102	42	81	45	
Currently trading sex for drugs					.19
No	183	75	126	69	
Yes	61	25	56	31	
Relationship to last partner					.27
Spouse, like a spouse, lover	90	37	81	45	
Close friend, friend, acquaintance	126	52	84	46	
Customer you like	28	12	17	9	
Used a condom last time had sex with last partner					.69
No	208	85	152	84	
Yes	36	15	30	17	
Ever used marijuana					< **.001**
No	49	20	3	2	
Yes	195	80	179	98	

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	Never used fry		Used fry		χ^2
Variable	***N***	**Percent**	***N***	**Percent**	***p***
Ever used codeine					**< .001**
No	201	82	73	40	
Yes	43	18	109	60	
Ever used methamphetamines					**.001**
No	234	96	158	87	
Yes	10	4	24	13	

*Bold indicates significance ($p \leq 0.05$).

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Table 3

Prevalence of Lifetime Fry Use by Sexually Transmitted Infections

	Never used fry		Used fry		χ^2
	N	Percent	*N*	Percent	*p*
HIV					.48
No	238	98	180	99	
Yes	6	3	2	1	
Tuberculosis					.70
No	241	99	179	98	
Yes	3	1	3	2	
Pneumonia					.41
No	238	98	175	96	
Yes	6	3	7	4	
Syphilis					.57
No	235	96	178	98	
Yes	9	4	4	2	
Gonorrhea					**.02**
No	239	98	170	93	
Yes	5	2	12	7	
Trichomonas (women only)					.13
No	93	95	52	88	
Yes	5	5	7	12	
Vaginal candidiasis (women only)					.13
No	93	95	52	88	
Yes	5	5	7	12	
Pelvic inflammatory disease (women only)					.37
No	96	98	56	95	
Yes	2	2	3	5	

* **Bold** indicates significance ($p \leq 0.05$).

Table 4

Logistic Regression on Reported Cocaine Users Exposure to Fry Use in Last Month and Demographic, Sexual Behavior, and Other Drug Use

	B	SE	Odd ratio	95% CI	χ^2
Constant	.27	2.02	1.31		.89
Female gender*	−1.05	.43	.35	.15–.82	**.02**
Age	−.06	.04	.94	.87–1.01	.10
Have a casual partner	−.19	.65	.82	.23–2.96	.77
Ever traded sex for money	−.42	.67	.66	.18–2.42	.53
Currently trade sex for drugs	.83	.41	2.30	1.04–5.11	**.04**
Ever used marijuana	2.49	1.12	12.11	1.34–107.82	**.03**
Ever used codeine (syrup)	2.09	.40	8.10	3.71–17.67	**.001**
Ever used methamphetamines	−.08	.79	.92	.20–4.36	.92
Current or 12-month diagnosis of gonorrhea	.72	.72	.32	.50–8.40	.32
Current or 12-month diagnosis of trichomonas	.88	.78	.26	.52–11.11	.26

* **Bold** indicates significance ($p \leq 0.05$).