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Profile of Internet Access in Active Cocaine Users

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Abstract

Background and Objectives—Web-based interventions have received attention for substance abuse treatment. Few studies have examined Internet use among substance users.

Methods—Internet-use data were examined for 66 participants screened to participate in behavioral pharmacology studies.

Results—A majority of active cocaine users reported regular Internet use. Demographic profiles generally did not impact Internet use, but Internet users were more likely to be younger and report other drug use.

Discussion and Conclusions—Active cocaine users have similar rates of Internet access as the general population.

Scientific Significance—Our findings contribute to the limited data on Internet use in active drug users by demonstrating Internet access in cocaine-using populations, supporting the use of this medium to conduct research and clinical interventions.

Keywords

cocaine; drugs; Internet; substance use; web-based

Background and Objectives

Web-based interventions represent a promising method of health care delivery owing to proliferation of Internet resources and availability. A growing body of literature has examined the efficacy of technology-based platforms for implementing psychosocial interventions for substance use disorders (1). These studies have provided encouraging

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Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

evidence for treatment efficacy and effectiveness, with decreases in use observed across a variety of drug classes (e.g., [2, 3]). Despite the demonstrated potential of web-based interventions for treating substance use disorders, fewer studies have examined the practicality of these interventions as indicated by the rates of Internet access among active drug users. The public health impact of Internet-based interventions will depend on ready Internet access in treatment populations.

National polls estimate that approximately 87% of US adults have access to and regularly use the Internet (4). The few studies reporting Internet access among active drug users have indicated lower rates of access relative to this national average. One study found that only 44% of patients enrolled in substance abuse treatment reported regular (i.e., weekly) Internet use (5). Younger individuals and those with higher levels of education were more likely to report Internet access, suggesting that Internet resources may be limited to particular demographic groups within drug-using populations. In contrast, another study of individuals seeking treatment and enrolled in a phone- and web-based intervention found that over 70% of participants had Internet access at the time of treatment entry (6), but selection bias due to the web-based nature of the study intervention could have inflated this estimate. One study of individuals in psychiatric treatment with co-occurring cocaine use found that despite the moderate levels of computer access (61%), low levels of weekly Internet use were observed (30%; [7]). The small sample size (n = 28) of that study limits its generalizability. Characterizing Internet access among active cocaine users is particularly important because recent evidence indicates that Internet-based approaches could provide an effective mode of treatment delivery for the traditionally treatment resistant cocaine use disorders (2).

Due to the demonstrated potential of web-based interventions in the design and development of substance abuse treatment, additional information regarding Internet access among regular substance users is warranted. The goal of this study was to determine the availability and use of the Internet in active cocaine users.

Methods

Internet-use data were examined for 66 non-treatment seeking participants (27 female) aged 19 to 55, screened during a one-year period (9/1/2013-8/31/2014) to participate in human behavioral pharmacology studies at the University of Kentucky Laboratory of Human Behavioral Pharmacology. Recruitment techniques included formal advertisement, community flyers, and word of mouth. Participants were asked to provide a urine sample upon arrival to the laboratory that was screened for cocaine, THC, opiates, amphetamines, barbiturates, benzodiazepines, methadone, and oxycodone. All participants with a cocaine- or benzoylecgonine-positive urine sample were included in this analysis. Participants were excluded if they had a co-occurring Axis I or II mental health disorder. Screening procedures were approved by the University of Kentucky Institutional Review Board.

The screening process is described elsewhere (8). Briefly, each participant was asked to complete a packet of information that contained information about his or her health and drug use history (e.g., Drug Abuse Screening Test [DAST]). Also included were measures of self-reported drug use that asked participants if they had used each of the drugs included in the

urinalysis in the past 30 days. Participants were then asked to complete an Internet use questionnaire (Supplemental Materials). In this questionnaire participants indicated if they had access to the Internet and, if so, the frequency and location of access (e.g., library, home, school).

Self-reported drug use was recorded dichotomously as using or not using the reported substance in the past 30 days. Urinalysis was similarly treated as positive versus negative sample results. Due to the low proportion of use of specific illicit drugs other than cocaine and marijuana, all other illicit drug use was collapsed into a single group (i.e., Other). Continuous data were analyzed using independent subjects *t*-tests with Internet use (i.e., access versus no-access) as the group factor. A Welsh correction was applied to these analyses to correct for violations of the homogeneity of variance assumption. Categorical data were analyzed using Fisher's exact test in order to control for small cell sizes in some analyses. All significance tests were conducted in SPSS Statistics (SPSS 20 IBM 2011) with $\alpha = 0.05$.

Results

Seventy percent of participants reported regular Internet access and indicated an average of 17 days of use per month (median = 17; range = 1 to 28; standard error of the mean [SEM] = 1.65). Table 1 describes other characteristics of participants with (n = 46) and without (n = 20) Internet access. These participants most frequently reported library use (59%), but also indicated home (37%) and phone (17%) as regular locations of Internet access, with 20% of participants reporting more than one location.

Internet access did not differ as a function of race/ethnicity, education, gender, socioeconomic status, MAST, or DAST scores (Table 1). Younger participants were more likely to report Internet access than older participants, $p = 0.004$, $d = 0.68$. Although the proportion of participants who smoked cigarettes did not differ by Internet access, participants reporting regular Internet use smoked more cigarettes per day than those without access, $p = 0.039$, $d = 0.54$. Number of days of reported cocaine use in the past month and alcoholic drinks per week did not differ between Internet users and non-users, *p* values > 0.16.

Other than cocaine, the greatest proportion of participants reported marijuana use in the past month. Internet users (78.3%) and non-users (75%) did not differ in self-reported marijuana use or in marijuana urine toxicology, *p* values > 0.759. Self-reported illicit use of other drugs including opiates, benzodiazepines, and amphetamines did differ by Internet access, $p = 0.016$. Specifically, over half (58.7%) of Internet users reported use of these substances, whereas only a quarter (25%) of non-users reported use. Although not significant, similar directionality was observed in the percentage of opioid, benzodiazepine, and amphetamine positive urines as a function of Internet access, with 13% of Internet users, but only 5% of non-users, screening positive for these substances.

Discussion

A majority of active cocaine users screened for participation reported regular Internet use. Demographic characteristics generally did not impact Internet use patterns, but younger individuals were more likely to report Internet access. Internet users were also more likely to report use of drugs other than cocaine. Taken together, these data provide a promising view for dissemination of Internet-delivered interventions (e.g., contingency management or cognitive retraining) for cocaine use disorders (2).

The primary outcome from this study is that Internet access was high among active cocaine users (70%) and not substantially less than national estimates (~87%; [4]). These findings support the notion that web-based interventions could provide an accessible mode of treatment delivery for cocaine use disorders. We surveyed non-treatment-seeking individuals about their drug use during a screening period prior to a decision to enroll in research. Therefore, the reported rates provide a more accurate description of the day-to-day Internet use of an active cocaine user that might benefit from this type of intervention (i.e., outpatient treatment). The highest percentage of participants reported using the library for Internet access. This result is promising as it indicates a willingness to utilize readily available technology services. Including information about the availability of free public services as a part of treatment dissemination and delivery could help increase Internet accessibility in otherwise underserved populations, although issues of privacy makes education about safe Internet-use practices critical for clinical implementation.

Younger participants were more likely to report Internet access, concordant with findings obtained in clinical samples (5) and national samples (4). Higher rates of Internet-based treatment seeking have also been observed in younger substance users (e.g., [9]). These findings suggest that younger participants may be more familiar and comfortable with technology-based treatment. Future interventions could aim to improve treatment accessibility by incorporating age-specific training to facilitate participation for older participants (see [10] for an example of treatment tailoring). Treatment tailoring in this regard may also be important given increases in new technologies (e.g., smartphones) used for Internet access.

Our sample was limited to active cocaine users from a single geographic location. A previous study including treatment-seeking opiate users located on the east coast reported lower rates of Internet access (5), suggesting that Internet access could differ as a function of the primary abused substance, geographic location, demographic characteristics, and/or treatment seeking status. Although not significant, all variables favored higher SES among individuals with Internet access indicating a potential consideration for future research. The relatively small sample size may limit the generalizability and statistical power of the current analysis.

Scientific Significance

The present study provides evidence of Internet use among active cocaine users. Further research will be needed to assess perceptions of web-based interventions and determine the optimal parameters to maximize web-based treatment accessibility, particularly for older

patients. Nevertheless, researchers should remain optimistic about the promise of Internet-based interventions as an innovative form of substance abuse treatment delivery.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Profile of Internet Access of Individuals with Urinalysis-Confirmed Cocaine Use

	Internet Access **No (n = 20; 30%)** ***Mean (SEM)***	**Yes (n = 46; 70%)** ***Mean (SEM)***	***p***
Demographics			
Age (years)	44 (1.2)	38.8 (1.2)	< 0.01
Education (years)	11.2 (0.4)	11.8 (0.2)	0.18
% Female	30%	45.7%	0.28
% Smokers	95%	91.3%	1
% Caucasian	10%	30.4%	0.12
Past Month Income	$552 (148)	$592 (110)	0.83
Past Year Income	$5792 (1310)	$7732 (1242)	0.29
% Employed	15%	22%	0.74
Drug Use Behavior			
MAST	14.7 (2.6)	11.1 (1.6)	0.24
DAST	13.7 (1.7)	11.4 (0.8)	0.24
Cigarettes / day	10.7 (1.5)	14.9 (1.3)	0.04
Drinks / week	33.1 (7.7)	20.8 (3.4)	0.16
Past Year Heavy Drinking Days	54.9 (16.4)	91.1 (27.7)	0.26
COC days / month	15.5 (1.9)	14.3 (1.2)	0.62
% Reported Past Month Use			
THC	75%	78.3%	0.76
Other	25%	58.7%	0.02
% Positive Urines			
COC only	55%	58.7%	0.79
COC and THC	40%	39.1%	1
COC, THC, and Other	5%	13%	0.42

Note. MAST = Michigan Alcoholism Screening Test (range of possible scores = 0 to 53); DAST = Drug Abuse Screening Test (range of possible scores = 0 to 28); COC = cocaine; THC = tetrahydrocannabinol. Heavy drinking days were defined using the NIAAA guidelines of 5 or more drinks for males and 4 or more drinks for females per drinking occasion. Internet access was treated dichotomously as self-reported Internet use in the past 30 days.