

Internet Access and Use among Homeless and Indigent Drug Users in Long Beach, California

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ABSTRACT

There has been a growing interest in using the Internet to access a variety of populations for prevention education and health care. It is not clear that this is viable for homeless and other marginalized populations. The purpose of this study was to describe Internet access and use among a sample of homeless and indigent drug users. A brief questionnaire was developed to assess computer ownership, use, email, and Internet access and use. Participants were recruited through a community-based human immunodeficiency virus (HIV) prevention program. 265 participants completed the questionnaire. While 55% had ever used a computer in their lifetime, only 25% had ever owned a computer, 24% had ever had their own email account, 33% had access to a working computer in the last 30 days, 10% had sent or received email in the last 30 days, and 19% had surfed or accessed information on the Internet in the last 30 days. Logistic regression predicting lifetime use of a computer showed predictive factors of having completed high school (Odds Ratio [OR] = 4.5; 95% Confidence Interval [CI] = 2.41, 8.38) and number of days used amphetamines in the last 30 days, per 5 days of use (OR = 1.64; 95% CI = 1.18, 2.27). Inversely related were age, per 5 years of age (OR = 0.78; 95% CI = 0.65, 0.93) and number of days used marijuana in the last 30 days, per 5 days of use (OR = 0.97; 95% CI = 0.76, 0.99). Very low access and usage suggest that Internet-based public health education models be reexamined for this population. The association with amphetamine use may indicate a facilitating effect of amphetamine by heightening awareness and increasing wakefulness.

INTRODUCTION

THERE ARE NUMEROUS reports suggesting that 41–65% of the more than 100 million Americans who are Internet users have accessed the Internet for health information.^{1–3} The benefits of health information accessed over the Internet are numerous. It provides information and social support to many people who are dealing with disease, such as breast cancer or human immunodeficiency virus (HIV).^{4,5}

While the benefits of Internet education can be great, problems associated with health education over the Internet exist. Exploitive web sites selling unproven remedies can lead to poor health outcomes.⁵ Most of the web sites with the best and most complete information are written above the average reading level of the public.^{6,7} Even more problematic, information over the Internet is not accessible to everyone. A “digital divide,” or gap between those who are enjoying the benefits of the

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Internet and those who are not, has been discussed since the late 1990s.^{3,8} Recent surveys suggest that about one-third of the U.S. population does not have access to the Internet.⁹ Older Americans, ethnic minorities, women, and individuals of low socioeconomic status and lower education are being left behind in this digital age.^{10,11}

The present study seeks to describe the Internet access and use of a population that was accessing services at an HIV prevention clinic, the majority of whom were homeless and indigent, in Long Beach, California. The purpose of this study is to determine whether Internet-based public health education is a viable option for this population. Another goal was to assess whether a model predicting Internet use would replicate the White versus non-White differences reported by Kalichman et al. in their study of Internet access and use of people living with HIV-AIDS reported in 2002.¹⁰

METHODS

Participants

Participants ($n = 265$) were recruited through a community-based intervention for HIV-negative and HIV-positive drug users at the Center for Behavioral Research and Services in Long Beach, California. Eligibility requirement for the sample was engaging in drug use in the last 30 days. The sample had a mean age of 43.28 years ($SD = 8.75$) and was 73% (186/254) male. Sixty-two percent (157/253) of the sample self-identified as homeless, and 90% (230/255) self-reported as indigent (income of less than \$1,000 a month). The ethnicity of the sample was 62% (153/248) Black, 19% (48/248) White, 15% (38/248) Hispanic, 2.5% Native American (6/248), 0.8% Asian/Pacific Islander (2/248), and 0.4% other (1/248). The sexual orientation of the sample was 79% (200/252) heterosexual, 5% (13/252) gay, 2% (5/252) lesbian, and 13% (13/252) bisexual. Participants were given groceries and \$10 in McDonald's coupons as incentives to participate in the study.

Measures

The Risk Behavior Assessment (RBA), a semi-structured interview, was used to obtain demographic and drug use data.¹² Good reliability and validity of the drug use variables and sexual activity items have been reported.¹³⁻¹⁷ Participants also were given a brief Internet Questionnaire (IQ) that collected data on lifetime ownership and use of a

personal computer, as well as email and Internet access and use.

Statistical analysis

Analysis was conducted in SAS-Version 9.1 on a Windows 2003 server, logistic regression predicting lifetime use of a computer was run, and Odds Ratios (OR) were calculated. The Akaike Information Criterion and Schwartz Criterion assisted in model development.

RESULTS

Results showed that 55% (146/265) of the participants had used a computer in their lifetime, while only 24% (65/265) had ever owned a computer in their lifetime, and fewer still 19% (51/265) had accessed the Internet in the last 30 days.

Logistic regression analysis revealed that age, educational level, number of days using marijuana in the last 30 days, and number of days using amphetamines in the last 30 days were significant predictors of lifetime computer use. Having completed high school and the number of days amphetamines were used in the last 30 days, per 5 days of use, were both predictive factors for lifetime computer use: $OR = 4.76$, 95% $CI = 2.53, 8.88$, $p < 0.001$; and $OR = 1.64$, 95% $CI = 1.18, 2.27$, $p < 0.01$, respectively. Protective factors (inverse relationship) for lifetime computer use were age, per 5 years of age, and the number of days used marijuana in the last 30 days, per 5 days of use: $OR = 0.78$, 95% $CI = 0.65, 0.93$, $p < 0.01$; and $OR = 0.97$, 95% $CI = 0.76, 0.99$, $p < 0.05$, respectively. The Hosmer-Lemeshow goodness-of-fit test provided evidence of good calibration for the model with a non-significant result, $\chi^2(8) = 14.77$, $p = 0.06$. The discrimination of the model was tested by the Receiver Operator Characteristic (ROC) curve, and the area under the curve was an acceptable 0.73.¹⁸

Multiple logistic regressions were then run for White and non-White groups separately to see whether different models would result for each group. Among Whites, only education, having completed high school, was a significant predictor of Internet use: $OR = 5.90$, 95% $CI = 1.54, 22.64$, $p < 0.01$. Among non-Whites, education, having completed high school or not, was again a significant predictor of Internet use: $OR = 5.28$, 95% $CI = 2.78, 10.02$, $p < 0.001$. Also among non-Whites, the number of days used marijuana in the last 30 days, per 5 days of use, was a significant protective factor of Internet use: $OR = 0.88$, 95% $CI = 0.77, 0.99$, $p < 0.05$;

age, per 5 years of age, was also a significant protective factor of internet use: $OR = 0.72$, 95% $CI = 0.60, 0.86$, $p < 0.001$.

DISCUSSION

The results of the present study find that the "digital divide" is still a major obstacle in implementing Internet-based public health education. Among the current sample, where over 90% reported receiving less than \$1,000 dollars a month and were active drug users (use in the last 30 days), less than 20% had accessed the Internet in the last 30 days. It is probable that the number of respondents who had accessed the Internet in the last 30 days for health-related information, as opposed to email or entertainment, would be smaller still. Medical Internet sites have proven to be very useful in many studies^{10,19,20}; however, indigent drug-using populations are among those most at risk for contagious disease and least likely to have Internet access. Therefore, alternative educational programs must continue to exist and be developed.

In comparisons between the current sample and the Kalichman et al.¹⁰ sample of HIV-positive people, some differences were noted. Among minorities, Kalichman et al.¹⁰ found that income was the only significant predictor of Internet use, while among non-minorities' income, education, and gender were found to be significant predictors of Internet use. In our sample, income was not a significant factor for either the White (corresponding to Kalichman's non-minorities) and non-White groups (corresponding to Kalichman's minority groups), while it was present in both models in the Kalichman et al.¹⁰ study. This is not surprising, however, due to the truncated range of income in our sample with over 90% of our respondents self-reporting as indigent: defined as less than \$1000 a month. Education, having completed high school or not, was the largest predictor of Internet use for both Whites and non-Whites in our sample. In fact, it was the only significant predictor for Whites in our sample. Among non-Whites, the ages of the respondents and the number of days used marijuana in the last 30 days were protective factors of Internet use as well. A limitation of the current study is that our internally developed Internet Questionnaire has yet to have its psychometric properties reported.

The fact that older people are less likely to use the Internet is consistent with the literature.³ The current study found Internet use is more likely among those who use amphetamines and less

likely among those who use marijuana; these pose some interesting questions and merit further study. Possible explanations are that amphetamine use keeps users awake for long hours at a time and the Internet is used for entertainment while others sleep. Marijuana induced lethargy may be the explanation for the protective factor findings regarding this drug and Internet use. This information may prove useful for future addiction research.

ACKNOWLEDGMENTS

This research was funded in part by the City of Long Beach, Department of Health and Human Services (contract no. 28569).

REFERENCES

1. Baker, L., Wagner, T.H., Singer, S., et al. (2003). Use of the Internet and e-mail for health care information: results from a national survey. *Journal of the American Medical Association* 289:2400–2406.
2. Rainie, L., Packel, D., Fox, S., et al. (2001). *More online, doing more: 16 million newcomers gain Internet access in the last half of 2000 as women, minorities, and families with modest incomes continue to surge online*. Washington, DC: Pew Internet & American Life Project.
3. Wagner, T.H., Bundorf, M.K., Singer, S.J., et al. (2005). Free Internet access, the digital divide, and health information. *Medical Care* 43:415–420.
4. Fogel, J., Albert, S.M., Schnabel, F., et al. (2002). Internet use and social support in women with breast cancer. *Health Psychology* 21:398–404.
5. Kalichman, S.C., Benotsch, E.G., Weinhardt, L.S., et al. (2003). Health-related Internet use, coping, social support, and health indicators in people living with HIV/AIDS: preliminary results from a community survey. *Health Psychology* 22:111–116.
6. Berland, G.K., Elliot, M.N., Morales, L., et al. (2001). Health information on the Internet: accessibility, quality and readability in English and Spanish. *Journal of the American Medical Association* 286:2312–2621.
7. Birru, M.S., Monaco, V.M., Charles, L., et al. (2004). Internet usage by low-literacy adults seeking health information: an observational analysis. *Journal of Medical Internet Research* 6:e25.
8. Hanauer, D., Dibble, E., Fortin, J., et al. (2004). Internet use among community college students: implications in designing healthcare interventions. *Journal of American College Health* 52:197–202.
9. Noble, J.A. (2004). Reaching the one-third of the population not on the Internet. Presented at the Annual Meeting of the American Public Health Association, Washington, D.C.
10. Kalichman, S.C., Weinhardt, L., Benotsch, E., et al. (2002). Internet access and Internet use for health in-

- formation among people living with HIV-AIDS. *Patient Education and Counseling* 46:109–116.
11. Leavengood, L.B. (2001). Older people and Internet use. Generations: *Images of Aging in Media and Marketing* 25: 69–71.
 12. National Institutes on Drug Abuse. (1993). *Risk behavior assessment*. First ICPSR Edition: Inter-University Consortium for Political and Social Research. Washington, DC: U.S. Department of Health and Human Services. National Institutes of Health.
 13. Dowling-Guyer, S., Johnson, M.E., Fisher, D.G., et al. (1994). Reliability of drug users' self-reported HIV risk behaviors and validity of self-reported drug use. *Assessment* 1:383–392.
 14. Needle, R., Fisher, D.G., Weatherby, N., et al. (1995). Reliability of the self-reported HIV risk behaviors of drug users. *Psychology of Addictive Behaviors* 9: 242–250.
 15. Fisher, D.G., Needle, R., Weatherby, N., et al. (1993). Reliability of drug users self-report. Presented at the 9th International Conference on AIDS, Berlin, Germany.
 16. Weatherby, N.L., Needle, R., Cesari, H., et al. (1994). Validity of the self-reported drug use among injection drug users and crack cocaine users recruited through street outreach. *Evaluation and Program Planning* 17:347–355.
 17. Johnson, M.E., Fisher, D.G., & Reynolds, G. (1999). Reliability of drug users' self-report of economic variables. *Addiction Research* 7:227–238.
 18. Hosmer, D.W., & Lemeshow, S. (2000). *Applied logistic regression*, 2nd ed. New York: John Wiley & Sons, Inc.
 19. Seepersad, S. (2004). Coping with loneliness: adolescent online and offline behavior. *CyberPsychology & Behavior* 7:35–39.
 20. Fogel, J. (2004). Internet breast health information use and coping among women with breast cancer. *CyberPsychology & Behavior* 7:59–63.

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