

Access to the Internet among drinkers, smokers and illicit drug users: Is it a barrier to the provision of interventions on the World Wide Web?

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Abstract

Background. Expanding Internet-based interventions for substance use will have little benefit if heavy substance users are unlikely to have Internet access. This paper explored whether access to the Internet was a potential barrier to the provision of services for smokers, drinkers and illicit drug users.

Methods. As part of a general population telephone survey of adults in Ontario, Canada, respondents were asked about their use of different drugs and also about their use of the Internet.

Results. Pack-a-day smokers were less likely (48%) to have home Internet access than non-smokers (69%), and current drinkers (73%) were more likely to have home access than abstainers (50%). These relationships remained true even after controlling for demographic characteristics. Internet access was less clearly associated with cannabis or cocaine use.

Conclusions. Even though there is variation in access among smokers, drinkers and illicit drug users, the World Wide Web remains an excellent opportunity to potentially provide services for substance abusers who might never access treatment in person because, in absolute terms, the majority of substance abusers do use the Internet.

Keywords: *Internet access, Internet availability, alcohol, cigarettes, drug use, brief interventions, self-help*

1. Introduction

In 2004, 69% of Americans and 73% of Canadians had access to the Internet, with 55% of American and 63% of Canadian adults having Internet access from home [1,2]. Further, two-thirds of those with access to the Internet have been to a health website [3], including individuals who use a wide range of different drugs [4] and who are willing to discuss details of their drug use in web-based forums. Age, education, occupation, income, ethnicity, and race are related to use of the Internet. However, access to the World Wide Web is increasing in all subsections of the population [5]. Further, differences in access among groups are reduced by the availability of public access in schools, libraries and the

workplace [5]. The growing availability of the Internet makes it a potentially ideal medium to improve the accessibility of services for problem drinkers, smokers and illicit drug users in all communities and a variety of such Internet-based services are currently available [reviewed in, 6,7–9].

Despite the high rate of Internet access in the general population and the potential for online treatment at relatively low cost, providing these services online may have minimal public health impact if substance users as a group are less likely to have access to the Internet. Therefore, we assessed the prevalence of Internet access among problem drinkers, smokers, and users of illicit drugs in Ontario, Canada.

2. Method

The CAMH Monitor is an ongoing general population telephone survey [10] that interviews approximately 200 respondents each month. The Monitor employs a two-stage sampling design in which random digit dialing is used to select eligible households and then individual respondents over the age of 18 are selected, based on the adult member of the family with a birth date closest to the date of telephone contact. Respondents are only eligible to participate if they speak English or French. People living in old-age homes, group homes, educational institutions, and penitentiaries are excluded from the sample, as are the approximately 2% of Ontario households without telephones. There is always the concern that marginalized individuals, such as those with severe drug problems, will be over-represented in these excluded groups. However, analysis of the potential bias caused by such non-coverage has indicated that its impact on population prevalence estimates is minimal [11]. Analyses comparing respondents on the Monitor to census data has found that the Monitor, as with most telephone surveys, marginally over-represents younger respondents and those with more education [10,12]. Conduct of the Monitor has been approved by the relevant ethics review board.

Data for the present study were taken from two six-month periods in which questions about Internet use were asked (January–June, 2002, $N = 1215$, effective response rate = 58%; July–December, 2004; $N = 1385$, effective response rate = 59%).¹ This led to a total sample for analysis of 2600 respondents. In both time periods, respondents were asked if they had accessed the Internet or online services at home or elsewhere during the past 12 months. Included in the survey were items asking about cigarette smoking (recoded for this study as nonsmoker/occasional, 1–10 per day, 11–20 per day, and 21 or more), cannabis (never, used but not in the last year, less than weekly in the past year, and weekly or more in the past year), cocaine (never, used but not in the past year, and past year use) and alcohol (past year abstinent, non-problem drinker, problem drinker). Drinking was defined as problematic if the respondent scored eight or more on the Alcohol Use Disorders Identification Test [AUDIT, 13,14]. The AUDIT is a 10-item questionnaire that has been found to reliably distinguish problem drinkers and has been validated for use in general population surveys [10]. In order to account for the complex survey sampling procedure, analyses were conducted using Stata [15]. Proportions, means and standard errors are presented as weighted values. Sample sizes are presented as unweighted values.

3. Results

Internet access was high in both 2002 and 2004 (72.6% and 78.3%, $\chi^2 = 8.7$, 1 df, $p < 0.01$). Combining both years, 24.7% accessed the Internet only from home, 42.2% accessed the Internet at home and elsewhere, and 7.8% only accessed the Internet elsewhere (25.1% of the combined 2002/2004 sample did not access the Internet at all;

16 respondents with missing data).² As the purpose of this paper is to explore whether access to the Internet is a barrier to the provision of services on the World Wide Web, a measure of regular Internet access was needed. Thus, only those respondents who claimed home access to the Internet were assumed to have ready access to the Internet and to not have a lack of Internet access as a barrier to the provision of services.³ In 2002, 62.7% of all respondents had home Internet access and in 2004, 72.0% had such access ($\chi^2 = 19.5$, 1 df, $p < 0.001$).

Table I displays the demographic characteristics of all 2584 respondents, comparing those who had home Internet access (67.5%) to those who did not (32.5%). As can be seen, there were substantial differences between those with and without home access to the Internet. Compared to those without home access, those with home access were younger (t -test = 199.3, $p < 0.001$), more educated ($\chi^2 = 170.3$, 1 df, $p < 0.001$), more likely to be married ($\chi^2 = 16.7$, 1 df, $p < 0.001$), full-time employed ($\chi^2 = 48.3$, 1 df, $p < 0.001$), to live in an urban setting ($\chi^2 = 9.3$, 1 df, $p < 0.01$), and to have a household income of CAN\$30,000 or more ($\chi^2 = 69.2$, 2 df, $p < 0.001$).

Table II displays the proportion of respondents who had home Internet access by smoking, current drinking and illicit drug use status. For cigarettes, the more the respondent smoked, the less likely he or she was to have home Internet access ($\chi^2 = 7.2$, 3 df, $p < 0.001$). For alcohol and cannabis, current users appeared more likely to have home Internet access as compared to those who were abstinent ($\chi^2 = 32.4$, 2 df, $p < 0.001$ and $\chi^2 = 10.3$, 3 df, $p < 0.001$, respectively). There were no significant differences ($p > 0.05$) for cocaine use status, in part because of the small number of cocaine users in the sample.

A logistic regression analysis was conducted to examine the association of home Internet access with demographic characteristics, smoking, drinking, and illicit drug use ($F = 20.15$, 19/2123 df, $p < 0.001$). Table III presents the results of this analysis. Of the demographic variables, age, education, marital status, urban residence and household income all exhibited the same association with home Internet access observed in the bivariate analyses. For cigarettes, compared to nonsmokers, respondents who smoked 11 or more cigarettes per day were less likely to have Internet access. For drinkers, compared to those who were abstinent in the last year, current non-problem drinkers were more likely to have home access. There was no significant relation between home Internet access and cannabis or cocaine use in the logistic regression.

Table I. Demographic characteristics of respondents who did or did not have home access to the Internet.

	Home Internet Access		<i>p</i>
	No (<i>N</i> = 998)	Yes (<i>N</i> = 1586)	
Mean (SE) age	52.7 (0.7)	41.3 (0.4)	.001
% (SE) male	43.7 (1.9)	45.7 (1.5)	N.S.
% (SE) some post secondary education	40.7 (1.9)	71.6 (1.3)	.001
% (SE) married	58.5 (1.9)	68.1 (1.4)	.001
% (SE) full-time employed	41.9 (1.9)	59.2 (1.5)	.001
% (SE) urban residence	82.2 (1.3)	86.8 (0.9)	.01
Household income ^a			
% (SE) < \$30,000 household income	24.9 (1.6)	8.3 (0.8)	
% (SE) Don't know/refused	25.8 (1.7)	17.8 (1.1)	.001

Note: Percentages and standard errors are based on weighted data. Sample sizes are unweighted data. ^aA separate category for respondents who did not provide their household income was employed in order to avoid the loss of a substantial proportion of respondents from the analysis.

Table II. Home access to the Internet by drinkers, smokers and illicit drug users.

Drug Type (sample size)	Home Internet Access % (Standard Error)	<i>p</i>
<i>Cigarettes</i>		
Nonsmoker/occasional (2085)	69.3 (1.2)	
1 to 10/day (143)	67.1 (4.4)	
11 to 20/day (216)	61.3 (3.8)	
21 or more/day (135)	48.1 (5.1)	.001
<i>Alcohol</i>		
Abstinent (483)	50.3 (2.8)	
Non-problem drinker (1671)	73.5 (1.2)	
Problem drinker (312) ^a	69.6 (3.0)	.001
<i>Cannabis</i>		
Never (1571)	63.0 (1.4)	
Prior to past year (689)	74.3 (2.0)	
Less than 1/week (216)	76.2 (3.4)	
Weekly or more (76)	80.0 (4.8)	.001
<i>Cocaine</i>		
Never (2354)	67.6 (1.1)	
Prior to past year (138)	68.9 (4.5)	
Past year (32)	81.2 (7.9)	N.S.

Note: Percentages and standard errors are based on weighted data. Sample sizes are unweighted data. ^aProblem drinking defined as a score of 8 or more on the AUDIT.

Table III. Logistic regression predicting respondents who did or did not have home access to the Internet.

Predictor	B (SE)	<i>p</i>
Age	- 0.05 (0.01)	0.001
Male	0.04 (0.13)	N.S.
Some post-secondary education	0.95 (0.13)	0.001
Married	0.53 (0.14)	0.001
Employed	- 0.13 (0.14)	N.S.
Urban residence	0.32 (0.16)	0.04
Household income ^a		
% (SE) < \$30,000 household income	- 1.15 (0.18)	0.001
% (SE) Don't know/refused	- 0.32 (0.16)	0.05
Year - 2004	0.69 (0.12)	0.001
<i>Cigarettes</i>		
1 - 10/day	- 0.28 (0.27)	N.S.
11 - 20/day	- 0.45 (0.22)	0.04
21 or more/day	- 0.54 (0.26)	0.04
<i>Alcohol</i>		
Non-problem drinker	0.80 (0.16)	0.001
Problem drinker ^b	0.28 (0.23)	N.S.
<i>Cannabis</i>		
Prior to past year	0.25 (0.16)	N.S.
Less than weekly/past year	0.03 (0.25)	N.S.
Weekly or more/past year	0.71 (0.45)	N.S.
<i>Cocaine</i>		
Prior to past year	- 0.23 (0.30)	N.S.
Past year	0.09 (0.77)	N.S.

Note: Values are based on weighted data. ^aA separate category for respondents who did not provide their household income was employed in order to avoid the loss of a substantial proportion of respondents from the analysis. ^bProblem drinking defined as a score of 8 or more on the AUDIT.

4. Discussion

Home Internet access is common in Ontario, Canada. As with other analyses investigating Internet access [5], there were wide variations in access between those with different demographic characteristics. This study found that, in addition to demographic characteristics, respondents' cigarette, alcohol and cannabis use status were also associated with home Internet access. Specifically, regular smokers were less likely to have home Internet access than nonsmokers. In contrast, current drinkers were more likely to have home Internet access than abstainers. For both these drugs, these relationships remained true even when the variance associated with other demographic characteristics was removed. Cannabis use also displayed a positive relationship with Internet access in bivariate analysis but this relationship was no longer significant in the logistic regression containing other potential predictors of Internet use.

There were several limitations to these analyses. First, because the purpose of this paper was to explore whether lack of Internet access could act as a barrier to the provision of services on the World Wide Web, the primary variable of interest was regular Internet access. Home Internet access was used as a proxy for regular Internet access. While this choice is defensible, it is unknown exactly what home Internet access means, making it possible that some regular Internet users were missed while others were included who did not have regular access. Also unknown is the type of access respondents had (e.g. dial up, high-speed) and the limitations that type of access might have on the usability of different services [16]. Second, whether the Internet user feels comfortable receiving help for substance use concerns on the Internet may be as or more important than regular access. Thus, issues such as privacy are probably central to the use of online services. This issue cannot be addressed in the present study. However, it is clear from these analyses that, for many cigarette smokers, problem drinkers and illicit drug users, Internet access is readily available, making it worthwhile to consider expanding the provision of services for substance use concerns through the World Wide Web.

Notes

¹Effective response rate equals total number of completed interviews divided by the total number of eligible households.

²Patterns of results were similar for respondents in the 2002 and 2004 surveys. Therefore, we combined the two samples to allow for a larger sample of illicit drug users. Year of survey was employed as one of the predictors in the logistic regression predicting access to the Internet described in the Results section.

³Analyses were also conducted using all respondents with any Internet access and, beyond slightly higher proportions, the pattern of results remained similar. The other rationale for using home access as the primary variable of interest was the assumption that Internet access at home might provide more privacy than access from work or other public locations.

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