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Positive smoking cessation-related interactions with HIV care providers increase the likelihood of interest in cessation among HIV-positive cigarette smokers

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Abstract

Smoking cessation has proven to be a challenge for HIV-positive smokers. Patient and provider characteristics may provide barriers to smoking cessation. We aimed to identify characteristics associated with interest in cessation as well as characterize use of, current interest in, and provider recommendations for smoking cessation modalities. Data came from 275 HIV-positive smokers recruited online. Half (49.1%) of the sample was interested in quitting; daily smoking was associated with decreased likelihood of interest in cessation, whereas making a lifetime quit attempt, receiving encouragement to quit from an HIV care provider, and greater frequency of discussions regarding cessation with HIV care providers were associated with increased likelihood of interest in cessation. Nicotine replacement therapy was the most commonly used (42.9%), generated the most interest (59.1%), and was the most commonly clinician-recommended (70.7%) cessation modality. Findings emphasize the importance of the healthcare provider-patient relationship for smoking cessation promotion in HIV-positive smokers.

Keywords

smoking; cessation; HIV; comorbidity; Amazon Mechanical Turk

Introduction

Cigarette smoking is highly prevalent (40%–75%) among persons living with HIV (PLWH) (Mdodo et al., 2015; Pacek, Harrell, & Martins, 2014; Pacek, Latkin, Crum, Stuart, & Knowlton, 2014a). Among PLWH, smoking is associated with poor health (Freiberg et al., 2010; Madeddu et al., 2013; Vandenhende et al., 2015), poor adherence to and decreased effectiveness of antiretroviral therapy, and poor HIV treatment outcomes (Feldman et al.,

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2006; O’Cleirigh et al., 2015; Shuter & Bernstein, 2008). Smokers with HIV lose more life years to smoking than to HIV (Helleberg et al., 2013).

Most (63%–74%) HIV-positive smokers are interested in quitting (Mamary, Bahrs, & Martinez, 2002; Pacek, Latkin, Crum, Stuart, & Knowlton, 2014b). However, characteristics of HIV care providers may impede cessation. Compared to non-HIV care providers, they are less likely to assess patients’ smoking status or interest in quitting (Duval et al., 2008; Tesoriero, Gieryic, Carrascal, & Lavigne, 2010), which may stem from beliefs that patients lack interest in quitting (Horvath, Eastman, Prosser, Goodroad, & Worthington, 2012; Tesoriero et al., 2010), limited smoking cessation training (Konfino, Mejia, & Basombrio, 2012; Shuter, Salmo, et al., 2012), and limited confidence in their ability to impact smoking behavior (Crothers et al., 2007). Healthcare providers represent a critical link to smoking cessation interventions—particularly for PLWH, who routinely have contact with healthcare providers. Two studies suggest that HIV-positive smokers are more likely to attempt cessation following HIV diagnosis if a healthcare provider implements a cessation intervention (Berg et al., 2014) and experiencing a physician-delivered smoking status assessment increases readiness to quit (Amiya et al., 2011). Beyond this, little is known about how patient-provider interactions impact interest in quitting smoking among PLWH.

We explored the influence of sociodemographics, substance use, and interaction with healthcare providers on interest in quitting smoking. We also characterized lifetime use of and interest in smoking modalities and characterize the modalities recommended by HIV care providers.

Methods

Data Source

Data were from an online survey—advertised/conducted on Amazon Mechanical Turk (MTurk). To participate, individuals registered on MTurk were required to have a 95% approval rating from prior MTurk tasks, be 18 years old, and reside in the United States. Participants completed a screening questionnaire to determine eligibility, including: lifetime HIV diagnosis; having smoked 100 lifetime cigarettes; and having smoked one cigarette within the past month. Eligible participants were given a code to access the survey, hosted by Qualtrics (Provo, UT). The survey was active from March 16-May 14, 2015. Participation was voluntary and anonymous. The Johns Hopkins University Institutional Review Board approved this study.

Measures

Sociodemographic characteristics—Sociodemographic variables included sex, age, race, income, marital status, and education.

HIV characteristics—We assessed participants’ age at and length of time since HIV diagnosis. Participants reported current use of antiretroviral therapy (yes/no).

Smoking characteristics—We assessed participants’ CPD, days smoked within the past month, and past month daily smoking. Participants reported age at smoking initiation,

number of years of smoking, and lifetime cessation attempt(s). Summing participants' time to first cigarette (TTFC) upon waking (<5 minutes=3, 5–30 minutes=2, 31–60 minutes=1, >60 minutes=0) and CPD (10=0; 11–20=1; 21–30=2; 31=3) produced the Heaviness of Smoking Index (HSI; (Heatherton, Kozlowski, Frecker, Rickert, & Robinson, 1989).

Interest in and reasons for smoking cessation—Participants reported current interest in quitting smoking (yes/no). Individuals who responded “yes” were shown a list of 26 “reasons why someone might want to quit smoking completely.” Participants selected all that applied and their most important reason.

Lifetime use of and interest in smoking cessation modalities—Participants reported lifetime use of various smoking cessation modalities. Individuals interested in quitting reported interest in using cessation modalities. Types of NRT were assessed individually; an NRT variable included nicotine patch/gum/lozenge/inhaler/nasal spray.

Interactions with HIV care providers—Participants reported whether their HIV care provider had ever encouraged them to quit smoking and whether they had suggested specific cessation modalities. Participants responding yes to the latter reported all suggested modalities. Participants reported how often they discussed smoking cessation with their providers (“never-rarely,” “sometimes,” “often-always”).

Statistical Analysis

The sample included 275 individuals. Chi-square (χ^2) and t-tests described differences between groups based on interest in quitting smoking. Logistic regression analyses calculated adjusted odds ratios and 95% confidence intervals for associations between sample characteristics and interest in quitting smoking. Analyses were conducted using STATA SE statistical software version 12.0 (StataCorp, 2011).

Results

Sociodemographic and smoking characteristics

Half (49.1%) were interested in quitting smoking. Individuals interested in quitting were less likely to be daily smokers, χ^2 (1, $N=275$)=8.23, $p=0.004$, and more likely to have made a quit attempt, χ^2 (1, $N=275$)=54.85, $p<0.001$, compared to those not interested in quitting. Participant characteristics are found in Table 1.

Reasons for wanting to quit

The most common reasons for wanting to quit smoking were to: be healthier (66.9%); live longer (59.5%); and feel better (57.1%) (Table 2). The most common “most important” reasons for wanting to quit smoking were to: be healthier (19.5%); live longer (14.3%); and avoid complications related to their HIV diagnosis (13.5%).

Lifetime use of, interest in, and suggested smoking cessation modalities

Forty-three percent reported lifetime use of NRT (Table 3). Additionally, 29.1% of the sample attempted to quit by going cold turkey, and 18.9% used behavioral methods. Use of

bupropion (4.7%) and varenicline (3.6%) was low. Additionally, 15.6% of the sample used e-cigarettes while making a quit attempt. Among individuals interested in quitting, interest in using behavioral methods (59.8%), NRT (59.1%), and going cold turkey (56.1%) were high. Interest in bupropion (26.3%) and varenicline (27.0%) were among the lowest. Forty-four percent of those interested in quitting reported interest in using e-cigarettes.

Interactions with HIV care providers

A greater proportion of persons interested in quitting reported that their HIV care provider had encouraged them to quit smoking, $\chi^2 (1, N=275)=11.24, p=0.001$ and had suggested specific cessation modalities, $\chi^2 (1, N=275)=6.51, p=0.011$. Participants interested in quitting were more likely to discuss smoking cessation “often-always” with their provider, $\chi^2 (2, N=275)=12.52, p=0.002$. Additionally, 65.8% reported that their provider has suggested at least one cessation modality: NRT (70.7%), counseling (34.8%), and behavioral methods (32.0%) were most frequently recommended.

Logistic regression analyses

Daily smokers were 51% less likely (95% CI=0.27–0.89) than non-daily smokers to be interested in cessation (Table 4). Participants who had made past quit attempt(s) were more likely to be interested in quitting (aOR=10.50, 95% CI=5.21–21.14). Individuals whose HIV care provider had encouraged them to quit smoking (aOR=4.02, 95% CI=1.62–9.97) and discussed smoking cessation “sometimes-always” (aOR=2.25, 95% CI=1.03–4.89) were more likely to be interested in quitting.

Discussion

Participants whose providers had encouraged them to quit were more likely to be interested in quitting than those whose providers had not (Berg et al., 2014). Moreover, discussing smoking cessation “often-always” during healthcare visits doubled the likelihood of interest in quitting versus having discussions “never-rarely.” This highlights the crucial role that healthcare providers play in promoting cessation. Some HIV-positive smokers (42%–65%) attempt cessation following diagnosis with HIV (Benard et al., 2007; Burkhalter, Springer, Chhabra, Ostroff, & Rapkin, 2005); time of diagnosis may be a window during which patients are willing to modify smoking behaviors. Findings emphasize the need for consistent smoking cessation intervention by healthcare providers.

NRT was the most commonly used (Pacek, Latkin, et al., 2014a), garnered the greatest interest (Shapiro, Tshabangu, Golub, & Martinson, 2011; Shuter, Bernstein, & Moadel, 2012), and was the most commonly recommended modality by healthcare providers. However, only 43% of the sample used NRT during a quit attempt. Relatively low use may be due to misinformation regarding nicotine’s role in smoking-related morbidity among PLWH (Pacek, Rass, & Johnson, 2017) and misconceptions regarding NRT’s safety (Mooney, Babb, Jensen, & Hatsukami, 2005). Use of pill-based pharmacotherapies was uncommon (Pacek, Latkin, et al., 2014a); we observed lower interest in using and provider recommendations to use bupropion (Pacek, Latkin, et al., 2014b; Shuter, Bernstein, et al., 2012) and varenicline.

Although e-cigarettes are not currently an approved treatment for smoking cessation, 15.6% of participants used and 44% were interested in using e-cigarettes for cessation. Notably, 19.3% of participants whose provider had recommended cessation modalities had recommended e-cigarettes. Though proven cessation modalities should be promoted among PLWH, the tobacco control community should not discourage patients disinterested in such methods from switching to sole use of e-cigarettes, particularly when taking a harm reduction approach.

In terms of limitations, data were collected via self-report, and the cross-sectional design does not allow us to determine causality. Generalizability may be limited due to the online nature of the sample. Nevertheless, this study represents one of the first examinations of specific smoking cessation modalities recommended by HIV care providers (Konfino et al., 2012; Shuter, Bernstein, et al., 2012) and associations between provider characteristics and interest in cessation among PLWH.

This study provides a detailed examination of lifetime use of, interest in, and provider recommendations for smoking cessation modalities. Findings emphasize the importance of the healthcare provider-patient relationship for smoking cessation in PLWH. Findings highlight the need for consistent discussion of and encouragement regarding smoking cessation during healthcare visits, and cessation intervention training for clinicians.

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Table 1.

Characteristics of HIV-positive current cigarette smokers, stratified by current interest in quitting smoking (n=275)

Characteristic	Total Sample n=275	Not Interested in Quitting n=136	Interested in Quitting n=139	p-value
<i>Sociodemographics</i>				
Female	94 (34.2)	44 (32.4)	50 (36.0)	0.527
Age – mean (SD)	29.4 (7.3)	28.6 (5.8)	30.2 (8.4)	0.070
Caucasian	206 (74.9)	108 (79.4)	98 (70.5)	0.225
\$25,000 *	201 (74.7)	100 (76.3)	101 (73.2)	0.553
Not married	213 (77.5)	108 (79.4)	105 (75.5)	0.442
4-year degree	100 (36.4)	44 (32.4)	56 (40.3)	0.171
Illicit drug use	199 (72.4)	101 (74.3)	98 (70.5)	0.486
Taking ARVs	201 (73.1)	102 (75.0)	99 (71.2)	0.480
Length of HIV diagnosis – mean (SD)	5.8 (4.6)	5.6 (4.2)	6.0 (5.0)	0.504
<i>Smoking characteristics</i>				
CPD – mean (SD)	8.1 (9.7)	9 (12.0)	7.2 (6.5)	0.127
Daily smoking	106 (38.5)	64 (47.1)	42 (30.2)	0.004
HIS				
Low	185 (67.3)	92 (67.6)	93 (66.9)	0.896
Moderate-High	90 (32.7)	44 (32.4)	46 (33.1)	
Other tobacco use	194 (70.5)	89 (65.4)	105 (75.5)	0.066
Lifetime quit attempt	189 (68.7)	65 (47.8)	124 (89.2)	<0.001
<i>Interactions with HIV care provider</i>				
Provider encouraged you to quit *	228 (84.8)	102 (77.3)	126 (92.0)	0.001
Provider suggested specific ways to quit *	181 (67.3)	79 (59.8)	102 (74.4)	0.011
Frequency of discussions about cessation *				
Never-rarely	115 (42.8)	68 (51.5)	47 (34.3)	0.002
Sometimes	88 (32.7)	43 (32.6)	45 (32.8)	
Often-always	66 (24.5)	21 (15.9)	45 (32.8)	

Note: Values represent n (%) unless otherwise indicated. Bolded text indicates statistically significant differences

* n=269 for these variables

Table 2.

Reasons for wanting to quit smoking among HIV-positive cigarette smokers currently interested in quitting (n=133)

Reasons for wanting to quit	Select all that apply n(%)	Most important reason n(%)
To be healthier	89 (66.9)	26 (19.5)
To live longer	79 (59.4)	19 (14.3)
To feel better	76 (57.1)	8 (6.0)
I can feel the negative health effects of smoking	74 (55.6)	6 (4.5)
To have better breath	67 (50.4)	2 (1.5)
My doctor told me to quit	66 (49.6)	3 (2.3)
To save the money I spend on cigarettes	64 (48.1)	4 (3.0)
Cigarettes have become too expensive	61 (45.9)	7 (5.3)
To smell better	59 (44.4)	3 (2.3)
So that I would no longer be controlled by my addiction to cigarettes	58 (43.6)	3 (2.3)
To avoid health complications related to my diagnosis with HIV	56 (42.1)	18 (13.5)
To prove that I am strong enough to do it	53 (39.8)	1 (0.7)
To feel more in control	50 (37.6)	1 (0.7)
Because I would like myself better if I quit	49 (36.8)	2 (1.5)
Someone I know died because of smoking	48 (36.1)	7 (5.3)
To show myself that I can quit if I really want to	47 (35.3)	3 (2.3)
Smoking does not fit who I want to be	42 (31.6)	1 (0.8)
To look more attractive	42 (31.6)	1 (0.8)
Someone I know got sick because of smoking	40 (30.1)	4 (3.0)
To make my family/friends happy	38 (28.6)	2 (1.5)
To prove to myself that I'm not addicted to cigarettes	34 (25.6)	0 (0)
Smoking is becoming less socially acceptable	33 (24.8)	1 (0.8)
I don't want to set a bad example for children	31 (23.3)	6 (4.5)
My significant other gave me an ultimatum	27 (20.3)	5 (3.8)
To get praise from people that I'm close to	16 (12.0)	0 (0)
Other	3 (2.3)	0 (0)

Table 3.

Lifetime use of, interest in, and recommended smoking cessation modalities among HIV-positive cigarette smokers

Smoking cessation modality	Lifetime use among smokers with HIV (n=275) n (%)	Interest among individuals currently interested in quitting (n=139) ^a n (%)	Modalities recommended by providers (n=181) n (%)
Nicotine replacement therapy ^b	118 (42.9)	81 (59.1)	128 (70.7)
Nicotine patch	72 (26.2)	57 (41.6)	105 (58.0)
Nicotine gum	76 (27.6)	58 (42.3)	86 (47.5)
Nicotine lozenge	21 (7.6)	40 (29.2)	35 (19.3)
Nicotine inhaler	13 (4.7)	36 (26.3)	31 (17.1)
Nicotine nasal spray	7 (2.5)	34 (24.8)	21 (11.6)
Bupropion	13 (4.7)	36 (26.3)	44 (24.3)
Varenicline	10 (3.6)	37 (27.0)	37 (20.4)
Other medications	0 (0)	35 (25.5)	2 (1.1)
Counseling	14 (5.1)	50 (36.5)	63 (34.8)
Quit line	9 (3.3)	31 (22.6)	29 (16.0)
Behavioral methods	52 (18.9)	82 (59.8)	58 (32.0)
Herbal/alternative methods	7 (2.5)	57 (41.6)	15 (8.3)
Switching to other tobacco products	14 (5.1)	35 (25.5)	13 (7.2)
Cold turkey	80 (29.1)	78 (56.9)	50 (27.6)
Electronic cigarettes	43 (15.6)	61 (44.5)	35 (19.3)
Group therapy	4 (1.4)	56 (40.9)	23 (14.4)

^aData only available for n=137 of 139 individuals interested in quitting

^bIncludes nicotine patch, gum, lozenge, inhaler, and nasal spray; categories are not mutually exclusive

Table 4.

Logistic regression analyses examining associations between sample characteristics and current interest in quitting among HIV-positive cigarette smokers (n=275)

	OR (95% CI)	aOR ^a (95% CI)
Age		
18–25	1.0	1.0
26–34	0.78 (0.45–1.34)	0.65 (0.33–1.26)
35+	1.80 (0.87–3.71)	1.33 (0.55–3.34)
College education	1.41 (0.86–2.31)	1.62 (0.87–3.00)
Daily smoking	0.49 (0.30–0.80)	0.49 (0.27–0.89)
Lifetime quit attempt(s)	9.02 (4.80–17.00)	10.50 (5.21–21.14)
Provider encouragement to quit	3.37 (1.61–7.05)	4.02 (1.62–9.97)
Frequency of cessation discussions		
Never-rarely	1.0	1.0
Sometimes	1.51 (0.86–2.65)	0.71 (0.35–1.42)
Often-always	3.10 (1.64–5.86)	2.25 (1.03–4.89)

Note: Bold text indicates statistically significant findings

^aModel is adjusted for all variables in the table