Perceived Risks and Benefits of Quitting Smoking in a Sample of Adults Living with HIV/AIDS

Andrea H. Weinberger, PhD,

Ferkauf Graduate School of Psychology, Yeshiva University, Department of Epidemiology and Population Health, Albert Einstein College of Medicine, Address: 1165 Morris Park Ave; Bronx, NY 10461 USA, Phone: (646) 592-4474, andrea.weinberger@einstein.yu.edu

Elizabeth K. Seng, PhD,

Ferkauf Graduate School of Psychology, Yeshiva University, The Saul R. Korey Department of Neurology, Albert Einstein College of Medicine, Address: 1165 Morris Park Ave; Bronx, NY 10461 USA, Phone: (646) 592-4368, Elizabeth.Seng@einstein.yu.edu

Hannah Esan, MA, and

Ferkauf Graduate School of Psychology, Yeshiva University, Address: 1165 Morris Park Ave; Bronx, NY 10461 USA, Phone: (646) 592-4474, hannah.esan@gmail.com

Jonathan Shuter, MD

Department of Epidemiology and Population Health, Albert Einstein College of Medicine, AIDS Center and Division of Infectious Diseases, Montefiore Medical Center and the Albert Einstein College of Medicine, Address: 111 E. 210th Street, Bronx, NY 10467 USA, Phone: (718) 920-7845, JSHUTER@montefiore.org

Abstract

Persons living with HIV/AIDS (PLWH) smoke at high prevalences and experience significant smoking-related consequences. In community samples, perceived risks and benefits of quitting smoking are related to quit motivation and outcomes and are more strongly endorsed by women. This study examined perceived risks and benefits of quitting smoking and the relationship between risks and benefits and quit motivation and confidence in male and female PLWH. One hundred seven PLWH who reported current cigarette smoking completed measures of demographics, smoking, perceived risks and benefits of quitting smoking, motivation to quit smoking, and confidence in ability to quit smoking. The highest endorsed risks of quitting smoking were cravings and weight gain and higher endorsement of craving risks was associated with lower confidence in the ability to quit smoking. Women endorsed overall risks and risks related to negative affect more highly than men. Women and men did not differ in their endorsement of the other risks, the benefits of quitting, or the relationship between risks and benefits and quit motivation or confidence. It may be useful for health care professionals to incorporate information about perceived risks and benefits of quitting smoking into treatment when working with PLWH who want to stop smoking.

Corresponding Author: Andrea H. Weinberger, Ph.D., Ferkauf Graduate School of Psychology, Yeshiva University; 1165 Morris Park Ave, Room #132; Bronx, NY 10461; Phone: (646) 592-4474; Fax: (718) 430-3960; andrea.weinberger@einstein.yu.edu.

Keywords

HIV; AIDS; smoking; perceived risks; cessation; gender

Introduction

Persons living with HIV (PLWH) smoke cigarettes at prevalences two to four times higher than the general population (e.g., Park, Hernandez-Ramirez, Silverberg, Crothers, & Dubrow, 2016). Smoking among PLWH is associated with multiple diseases and greater mortality (e.g., Helleberg et al., 2015; Pacek & Cioe, 2015). An important step in smoking treatment development for PLWH is to identify variables that impact quitting.

Smokers hold beliefs about the risks and benefits of smoking cessation (e.g., weight gain; improved health; McKee, O'Malley, Salovey, Krishnan-Sarin, & Mazure, 2005). In community samples, greater perceived risks of quitting are associated with lower quit motivation, greater withdrawal symptoms, and worse quit outcomes (e.g., Hendricks & Leventhal, 2013; McKee et al., 2005; Toll et al., 2008; Weinberger, Krishnan-Sarin, Mazure, & McKee, 2008). Perceived benefits of quitting are positively associated with quit motivation (McKee et al., 2005; Weinberger et al. 2010). Gender differences in risks/benefits exist with women reporting greater risks and stronger relationships between risks and quit motivation (Hendricks et al., 2014; McKee et al., 2005; Toll et al., 2008) and men evidencing stronger positive correlations between benefits and quit motivation (McKee et al., 2005).

This study examined perceived risks and benefits of quitting in a sample of PLWH. The first aim was to examine gender differences in risks and benefits. The second aim was to examine the relationship between risks/benefits of quitting and motivation/confidence to quit smoking.

Methods

Participants

Participants were recruited from the Center Positive Living (Montefiore Medical Center, Bronx, New York) between May and September of 2015. Inclusion criteria included: (1) a diagnosis of HIV or AIDS, (2) current cigarette smoking (i.e., smoking 1 cigarette in the past day), (3) age 18 years or older, (4) able to speak and read English, and (5) ability to provide oral informed consent.

Procedures

All aspects of the study were approved by the Montefiore Medical Center Institutional Review Board. The senior author (JS) generated a list of patients with appointments during a particular data collection time slot that was entered into a randomizing generator. Researchers approached each patient on the list in order while balancing the number of male and female participants. Upon completion of the study, participants received a $20 Target gift card.

Measures

Demographics—Demographic questions included age, gender, race/ethnicity, and sexual orientation.

HIV Status—HIV status questions included year of HIV diagnosis and use of antiretroviral medication.

Current Smoking Behavior—Participants reported the frequency and quantity of cigarette smoking, non-cigarette tobacco product use, and past quit attempts. Two items from the Thoughts About Abstinence Scale (TAAS, Hall, Havassy, & Wasserman, 1991) were included: 1) Quit Motivation (1=no desire to quit to 10=extremely high desire to quit) and 2) Quit Confidence (1=not confident to 10=extremely confident).

Perceived Risks of Quitting Smoking—The 40-item Perceived Risks and Benefits Questionnaire (PRBQ; McKee et al., 2005) assessed perceived risks and benefits of quitting smoking on a 7-point Likert Scale (1=no chance, 7=certain to happen).

Six subscales assessed risks: 1) Weight Gain (e.g., "I will gain weight.", 3 items, α=0.595 [Cronbach's alphas are for the current sample]); 2) Negative Affect (e.g., "I will be more irritable.", 3 items, α=0.612); 3) Difficulty Concentrating (e.g., "I will be less able to concentrate.", 5 items, α=0.746); 4) Social Ostracism (e.g., "I will feel uncomfortable around smokers.", 2 items, α=0.308); 5) Loss of Enjoyment (e.g., "I will miss the taste of cigarettes.", 2 items, α=0.703); 6) Craving ("I will desire a cigarette.", 3 items, α=0.787). An overall Risks score was created by averaging all 18 risk items (α=0.863).

Six subscales assessed benefits: (1) Health (e.g., "I will lower my chances of developing lung cancer.", 5 items, α=0.812); (2) General Well-Being (e.g., "I will be healthier.", 4 items, α=0.758); (3) Self-Esteem (e.g., "I will feel proud that I was able to quit.", 4 items, α=0.231); (4) Finances (e.g., "I will be able to save more money.", 2 items, α=0.725); (5) Physical Appeal (e.g., "I will smell cleaner.", 3 items, α=0.730); (6) Social Approval (e.g., "The people who care most about me will approve.", 4 items, α=0.717). An overall Benefits score was created by averaging all 22 benefit items (α=0.872).

Nine investigator-written questions measured aspects of quitting smoking related to HIV (5 items; e.g., "I will be more committed to my HIV care."), mood (2 items, e.g., "I will feel more depressed."), substance use (1 item, "I will be more likely to relapse to use of other substances or drugs."), and pain (1 item, "I will have more trouble managing pain.") using the same 7-point Likert scale as the PRBQ. The internal consistencies were α=0.822 for all 9 items and α=0.818 for the 5 HIV-related items.

Statistical Analysis

Descriptive statistics were evaluated for all variables. Differences in proportions for men and women were evaluated using chi-squared or Fisher's exact test and differences in means were evaluated using Student's t-test or Mann-Whitney U test for ordinal variables or variables that violated equivalence of variance assumptions. Pearson correlations evaluated relationships between quit confidence/quit motivation and perceived risks of quitting;

Spearman correlations evaluated relationships between quit confidence/quit motivation and perceived benefits of quitting. The Bonferroni correction was used to account for multiple comparisons.

Results

Sample Characteristics

One-hundred thirteen participants completed consent procedures. Five people reported they were not current smokers after consent procedures and one person completed no questions resulting in a final analytic sample of 107 participants (men, 49.5%; women, 50.5%). See Table 1 for sample characteristics. The sample was primarily heterosexual and identified as either African-American or Latino/a. More women identified as heterosexual and fewer women identified as homosexual compared to men ($\chi^2(2)$=15.15, p=0.001). Fewer women than men reported graduating from high school ($\chi^2(2)$=10.92, p=0.004). Male and female participants did not differ on smoking characteristics. Participants reported a moderately high level of quit motivation and moderate level of quit confidence. Women reported a significantly higher level of quit motivation than men (t(106) = 2.40, p = 0.018). There was no gender difference in quit confidence.

Perceived Risks and Benefits of Quitting Smoking

The most highly endorsed risks of quitting were cravings and weight gain (Table 2). Compared to men, women reported greater endorsement of overall risks of quitting and risks related to managing negative affect.

With regard to HIV-related beliefs about quitting (Table 3), participants endorsed that it was likely that their T-cell count would go up, they would be less likely to get infections, and they would be more committed to their HIV care if they quit smoking. Participants endorsed that it was not likely that they would relapse to other drugs or have more trouble managing pain if they quit smoking. There were no gender differences in HIV-related beliefs about quitting.

Perceived Risks and Benefits of Quitting and Motivation to Quit Smoking

No perceived risk or benefit of quitting smoking was associated with quit motivation. A higher perceived risk of cravings when quitting smoking was associated with lower quit confidence ($r = -0.27$, $p = 0.008$). There were no gender differences in the relationship of perceived risks/benefits to quit confidence or motivation.

Discussion

Cravings and weight gain were the two most highly endorsed perceived risks of quitting smoking and a higher expectation of cravings was associated with lower confidence in quitting. Cravings and weight gain are associated with smoking relapse among community smokers (e.g., Clark et al., 2006; Piper et al., 2011). Interestingly, both weight gain and weight loss are associated with greater odds of abstinence for PLWH (Buchberg, Gritz, Kypriotakis, Arduino, & Vidrine, 2016). A number of normal-weight PLWH view

themselves as underweight (e.g., Sharma, Howard, Schoenbaum, Buono, & Webber, 2006) so weight gain may be seen by many as a benefit. It may be useful to provide behavioral counseling to PLWH who smoke focused on management of cravings and to examine whether cessation-related weight gain is viewed as positive or negative.

Fewer gender differences were found than in community samples (e.g., McKee et al., 2005) similar to a review of smoking and PLWH (Weinberger et al., 2017). Compared to male PLWH, female PLWH more highly endorsed risks of post-quit negative affect. It may be useful to include mood-management components in smoking cessation efforts for female PLWH.

Limitations must be noted. First, our sample included PLWH in New York who were primarily English-speaking Hispanic and non-Hispanic Black adults. Results may not generalize to other PLWH. Second, there was no community sample with which to compare results from PLWH. Third, risks and benefits were examined by gender based on past research finding differences by gender in community samples. Future studies should examine other potential demographic or gender-related variables (e.g., age, race/ethnicity, depression). Finally, the internal consistency reliability estimates were lower than in community samples (Hughes & Naud, 2016; McKee et al., 2005) especially for subscales with a small number of items.

Conclusions

It may be useful for health care professionals to incorporate information about perceived risks and benefits of quitting into treatment when working with PLWH who smoke.

Acknowledgments

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Table 1

Demographic, HIV, and Smoking Characteristics.

	Total	Men	Women	Significance
Demographics	**M (SD) or N (%)**	**M (SD) or N (%)**	**M (SD) or N (%)**	
Age	49.7 (8.6)	49.9 (9.5)	49.5 (7.7)	$p = 0.804$
Sexual Orientation[a]				
Heterosexual	74 (71.8%)	28 (54.9%)	46 (88.5%)	$p = 0.001$
Homosexual	19 (18.4%)	16 (31.4%)	3 (5.8%)	
Bisexual/Other	10 (9.7%)	7 (13.7%)	3 (5.8%)	
Race/Ethnicity[b]				
Black, non-Latino/a	45 (42.1%)	22 (41.5%)	23 (42.6%)	$p = 0.383$
Latino/a	52 (48.6%)	24 (45.3%)	28 (51.9%)	
White, American Indian, Other, non-Latino/a	10 (9.3%)	7 (13.2%)	3 (5.6%)	
Highest Grade Completed[c]				
1st–11th Grade	38 (36.5%)	11 (22.0%)	27 (50.0%)	$p = 0.003$
High School Graduate/GED	38 (36.5%)	26 (52.0%)	12 (22.2%)	
Some College or College Graduate	28 (26.9%)	13 (26.0%)	15 (27.8%)	
HIV Clinical Characteristics	**M (SD) or N (%)**	**M (SD) or N (%)**	**M (SD) or N (%)**	
Years Since HIV Diagnosis[d]	18.8 (7.1)	18.5 (6.7)	19.1 (7.5)	$p = 0.702$
AIDS Diagnosis[e]				
Yes	42 (40.4%)	24 (46.2%)	18 (34.6%)	$p = 0.318$
No	62 (59.61%)	28 (53.8%)	34 (65.4%)	
Antiretroviral Medication[f]				
Yes, currently	68 (77.3%)	35 (81.4%)	33 (73.3%)	$p = 0.666$
Yes, in the past	5 (5.7%)	2 (4.7%)	3 (6.7%)	
No	15 (17.0%)	6 (14.0%)	9 (20.0%)	
Smoking Characteristics	**Mdn (IQR) or N (%)**	**Mdn (IQR) or N (%)**	**Mdn (IQR) or N (%)**	
Smoking Days[g]				
Daily	79 (79.8%)	36 (78.3%)	43 (81.1%)	$p = 0.917$
Less than daily	20 (20.2%)	10 (21.7%)	10 (18.9%)	
Cigarettes per Day[h]				
10	49 (47.6%)	25 (49.0%)	24 (46.2%)	$p = 0.925$
< 10	54 (52.4%)	26 (51.0%)	28 (53.8%)	
Other Tobacco use				
Cigar, E-Cigarette, or Pipe	14 (13.0%)	9 (17.0%)	5 (9.1%)	$p = 0.350$
None	94 (87.0%)	44 (83.0%)	50 (90.9%)	
Quit Attempts				
Number of Attempts[i]	1.0 (0.0–4.0)	1.0 (0.0–5.0)	1.0 (0.0–3.5)	$p = 0.576$
Days of Longest Attempt[j]	67.0 (3.0–730.0)	90.0 (11.0–730.0)	30.0 (1.8–365.0)	$p = 0.171$
	M (SD)	**M (SD)**	**M (SD)**	

	Total	Men	Women	Significance
Demographics	**M (SD) or N (%)**	**M (SD) or N (%)**	**M (SD) or N (%)**	
Quit Motivation[k]	7.1 (2.8)	6.5 (3.0)	7.7 (2.4)	$p = 0.018$
Quit Confidence[k]	5.9 (2.9)	6.1 (3.1)	5.6 (2.8)	$p = 0.441$

Key: IQR, interquartile range; M, mean; Mdn, median; SD, standard deviation

[a]Total N = 103, Male N = 51, Female N = 52

[b]Total N = 107, Male N = 53, Female N = 54

[c]Total N = 104, Male N = 50, Female N = 54

[d]Total N = 99, Male N = 49, Female N = 50

[e]Total N = 108, Male N = 55, Female N = 53

[f]Total N = 88, Male N = 43, Female N = 45

[g]Total N = 99, Male N = 46, Female N = 53

[h]Total N = 103, Male N = 51, Female N = 52

[i]Total N = 95, Male N = 45, Female N = 50

[j]Total N = 107, Male N = 53, Female N = 54

[k]Range=1–10 with higher scores reflecting greater motivation to/confidence in quitting smoking; assessed using the Thoughts About Abstinence Scale (Hall et al., 1991)

Table 2

Perceived Risks and Benefits of Quitting Smoking by Gender.

Variable	Men M (SD)	Women M (SD)	Significance
Perceived Risk subscales[a]			
Weight Gain	3.8 (1.6)	4.0 (1.5)	$p = 0.623$
Negative Affect	3.1 (1.6)	4.2 (1.5)	$p = 0.001$
Attention	2.7 (1.6)	3.4 (1.7)	$p = 0.077$
Social Ostracism	3.4 (1.8)	3.6 (1.7)	$p = 0.440$
Loss of Enjoyment	3.2 (1.9)	3.6 (1.8)	$p = 0.365$
Cravings	3.8 (1.6)	4.2 (1.5)	$p = 0.158$
Overall Perceived Risks[b]	3.2 (1.0)	3.9 (1.2)	$p = 0.008$
	Mdn (IQR)	**Mdn (IQR)**	
Perceived Benefit subscales[a]			
Health	5.2 (4.4–6.0)	5.4 (4.6–6.0)	$p = 0.629$
General Well-Being	4.9 (3.8–5.8)	5.3 (4.0–6.0)	$p = 0.362$
Self-Esteem	5.0 (4.1–5.5)	4.9 (4.3–5.8)	$p = 0.933$
Finances	5.5 (4.0–6.0)	6.0 (5.0–6.0)	$p = 0.137$
Physical Appeal	5.0 (4.0–6.0)	5.0 (4.0–6.0)	$p = 0.952$
Social Approval	4.9 (4.0–5.5)	4.5 (3.0–5.8)	$p = 0.999$
Overall Perceived Benefits[c]	4.9 (4.5–5.5)	5.3 (4.6–5.7)	$p = 0.298$

Key: IQR, interquartile range; M, mean; Mdn, median; SD, standard deviation

Note. Subtest p-values are Bonferroni corrected.

[a] measured using the Perceived Risks and Benefits Questionnaire (McKee et al., 2005), range=1=7

[b] mean of the 18 items measuring perceived risks of quitting

[c] mean of the 22 items measuring perceived benefits of quitting

Table 3

Beliefs about Quitting Smoking Related to HIV, Mood, Substance Use, and Pain

Variable	Men Mdn (IQR)	Women Mdn (IQR)	Significance
HIV-related items			
T-cell count will go up.	4.0 (2.0–6.0)	5.0 (3.0–6.0)	$p = 0.123$
My viral load will go down.	3.0 (2.0–5.3)	4.0 (1.0–6.0)	$p = 0.824$
I will be less likely to get infections.	4.0 (2.5–6.0)	5.0 (3.0–6.0)	$p = 0.199$
I will be more committed to my HIV care.	5.0 (2.3–6.0)	5.0 (2.0–6.0)	$p = 0.812$
I will take my HIV medications more reliably.	5.0 (2.0–6.0)	5.0 (1.0–6.0)	$p = 0.794$
Mood-related items			
I will feel more depressed.	3.0 (0.0–5.0)	4.0 (1.5–6.0)	$p = 0.091$
I will feel more anxious.	3.0 (0.3–5.0)	3.0 (2.0–5.8)	$p = 0.231$
Substance use-related item			
I will be more likely to relapse to use of other substances or drugs.	1.0 (0.0–4.3)	1.0 (0.0–3.3)	$p = 0.886$
Pain-related item			
I will have more trouble managing pain.	1.0 (0.0–53.0)	2.0 (0.0–4.5)	$p = 0.117$

Key: IQR, interquartile range; Mdn, median

Range of all items=1=7