Determinants of smoking-related weight concern in smokers participating in a community-based cessation program

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BACKGROUND

Concern about weight gain is a barrier to smoking cessation, but how it relates to physical activity (PA) behavior and perceptions is unclear. This has implications for targeting PA as a cessation strategy. We analyzed baseline data of a cessation trial of 392 adults who received nicotine patch and cessation counseling and were randomized to community-based PA or general wellness counseling. The association of PA behavior and perceptions were examined in relation to two outcome measures of weight concern.

METHODS

Design: Baseline data were analyzed from a cessation trial of 392 adults who received nicotine patch and cessation counseling and were randomized to community-based PA or general wellness counseling. The volunteer sample consisted of 392 smokers (62% female, 67% white, 50.5% married/partnered, 75.3% employed, mean age 44.6, mean BMI 28).

Measures: Outcomes were 1) use of smoking to control weight ("control"; continuous score) and 2) anticipating relapse if weight gain occurred ("relapse"; yes vs. no) using validated instruments. Exposures were self-reported PA and PA perceptions (self-efficacy, enjoyment of organized and unorganized PA, personal and environmental barriers). Covariates were known determinants of post-cessation weight concerns including socio-demographics, psychosocial variables, smoking behavior and perceptions, diet, and BMI.

Analyses: From bivariate models examining main and sex interaction effects, significant variables were entered into a generalized linear regression model or a logistic regression model to identify determinants most strongly associated with control and relapse, respectively.

RESULTS

Mean "control" score was 1.78 (SD 1.13) on scale from 0-5 (greater = more weight concerned). 55.6% were weight concerned using the dichotomous "relapse" measure. Both control and relapse were significantly (p<0.05) associated with being female (standardized b= 0.52, SE=0.10), white (-0.12, 0.05), and less motivated to quit (-0.14, 0.05). Higher control scores also were associated with engaging in less moderate intensity physical activity (-0.10, 0.05) and higher BMI (0.21, 0.05). A significant interaction indicated that men with higher BMI anticipated relapsing if weight gain occurred, but no such association was found for women (OR=2.54, 95% CI= 1.42-4.56). No other PA behaviors or perceptions were associated with weight concerns.

Table 1. Bivariate Correlations

Variables	Control		Relapse	
	R	P	R	P
Co-variates				
Sex (male vs female)	**-.31**	**<.0001**	**-.27**	**<.0001**
Race (nonwhite vs white)	**-.10**	**.04**	**-.23**	**<.0001**
Married / Partnered	-.002	.96	.04	.43
Employed	-.02	.70	-.07	.15
BMI	**.23**	**<.0001**	**.19**	**<.0001**
Perceived Stress	**.13**	**.01**	.05	.31
Total social support	-.01	.79	.009	.86
Depressed Mood (CES-D)	**.13**	**.01**	-.01	.79
Profile of Moods States: Tension	.08	.14	.03	.49
Profile of Moods States: Depression	.07	.19	.007	.89
Profile of Moods States: Anger	.07	.18	.07	.18
Profile of Moods States: Fatigue	.08	.12	.08	.12
Profile of Moods States: Confusion	**.14**	**.01**	-.05	.33
Profile of Mood States: Vigor	**-.09**	**.08**	-.04	.42
Total years smoking	-.01	.85	.03	.52
Number of prior quit attempts	-.08	.13	.03	.52
Number of cigarettes per day	-.06	.25	-.04	.44
Fagerstrom Test Nicotine Dependence	**-.003**	**.96**	-.02	.67
Nicotine Withdrawal Symptoms	**.17**	**.001**	.08	.13
Tempt to smoke in negative social situations	**.14**	**.01**	**.12**	**.02**
Tempt to smoke in positive social situation	**.08**	**.10**	.06	.25
Tempt to smoke habit	.093	.11	.01	.84
Motivation to quit smoking	**-.12**	**.02**	**-.10**	**.05**
Confidence in quitting smoking	**-.13**	**.01**	**-.15**	**.003**
Decisional Balance to quit smoking	.04	.41	.06	.26
Social support (positive) to quit smoking	.04	.42	.05	.33
Social support (negative) to quit smoking	-.03	.53	**-.12**	**.02**
Saturated fat intake	.04	.45	**.11**	**.03**
Alcohol use	-.02	.67	.01	.86
Physical Activity (PA) Variables				
Environmental barriers to PA	**.11**	**.03**	.02	.70
Personal Barriers to PA	**.09**	**.07**	**.10**	**.06**
Perceived barriers to exercise	**.25**	**<.0001**	**.18**	**.0003**

Table 1. Continued

Variables	Control		Relapse	
	R	P	R	P
Enjoyment of PA	-.04	.44	**-.12**	**.02**
Enjoyment of organized PA	-.003	.95	**-.10**	**.04**
Enjoyment of unorganized PA	**.08**	**.10**	.009	.86
Self efficacy for exercise	-.04	.39	-.004	.93
Enjoyment of walking	**.13**	**.01**	.08	.12
Moderate PA / minutes per week	**-.14**	**.01**	**-.12**	**.02**
Vigorous PA minutes per week	**-.12**	**.02**	-.03	.61
Strength training minutes per week	.07	.15	.002	.97
Flexibility training minutes per week	-.002	.96	.44	.04

Table 2. Predictors of Weight Concern (Control) – Linear Regression

Variable	B (Standardized)	SE	p
Sex (male = 1/female=0)	-.52	.10	<.0001
Race (nonwhite=1 / white=0)	-.12	.05	.02
BMI	.21	.05	<.0001
Motivation to quit smoking	-.14	.05	.006
Moderate PA (minutes per week)	-.10	.05	.03

Table 3. Predictors of Weight Concern (Relapse) – Logistic Regression

Variable	OR	95%	p
Sex (male = 1/female=0)	-.29	.17,.49	<.0001
Race (nonwhite=1 / white=0)	-.39	.23,.66	.0004
BMI	1.24	.93,1.64	.14
Motivation to quit smoking	.77	.59-1.00	.05
BMI*Sex	2.54	1.42-4.46	.002

Significant variables (p<.1) added to final models in bold.

CONCLUSION

Smoking to control weight was associated with engaging in less moderate intensity physical activity but was not associated with perceptions about physical activity. Anticipating relapse if weight gain occurred was not associated with physical activity behavior or perceptions. These results indicate that concerns about post-cessation weight gain are unlikely to influence engagement in PA in the context of a community-based smoking cessation program.