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Tobacco use among low-income housing residents: Does hardship motivate quit attempts?

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Abstract

Purpose—The purpose of this study was to examine material hardship among smokers to determine whether such hardship was positively associated with current attempts to quit tobacco use.

Methods—We analyzed cross-sectional data from the Health in Common (HIC) Study, an observational study to investigate social and physical determinants of cancer risk-related behaviors among residents of low-income housing in three cities in the Boston metropolitan area. In this study, three indicators of hardship were used: food hardship, financial hardship, and material hardship (food and financial hardship combined). Logistic regression models were used to obtain the odds of currently trying to quit among current smokers in the HIC (N=170) across hardship types experienced, adjusting for socio-demographic and psychosocial factors.

Results—Fully adjusted models revealed no statistically significant association between trying to quit tobacco use and indicators of material hardship: food hardship and financial hardship present (OR =1.33 (0.42–4.2)); food hardship and no financial hardship OR = 3.83(0.97–15.13); financial hardship but no food hardship OR = 0.5 (0.1–2.39).

Conclusions—These findings suggest that even in the presence of material hardship, low-income housing resident tobacco users are not more likely to quit tobacco use; therefore, cessation efforts focused on the financial benefits of quitting may be insufficient to motivate quit attempts among low-income smokers.

Keywords

hardship; tobacco use; low-income; public housing

INTRODUCTION

In the United States, smoking prevalence has decreased steadily with the increase in awareness of the deleterious effects of smoking, changing social norms related to smoking;

shifting perceptions of the tobacco industry, and an increased focus on tobacco control programs (1;2). However, with more than 42 million current smokers in the United States (3), smoking cessation remains an important component of tobacco control efforts. Yet, encouraging smokers to quit is challenging as smokers may experience social cues and cravings for cigarettes,(4–6) and use cigarettes as a form of stress relief (7;8). Across the US population, the prevalence of smoking is higher among those living below the poverty line: 29% of those living below the poverty threshold are smokers compared to 16% of those living at or above the poverty threshold (3). Yet, the specific mechanism through which poverty or low-income status impacts the intention to quit or actual quit attempts remains unclear. The existing evidence suggests that there may be less motivation to quit among low socioeconomic status (SES) smokers compared to those of higher SES (9;10). In particular, the addictive aspect and the perceived psychosocial benefits of smoking may reduce motivation to quit (11). Yet, research also suggests that among low-income smokers, those experiencing financial stress have greater interest in quitting as compared to smokers not experiencing financial stress (12).

Given the financial benefits of smoking cessation among those experiencing hardship, public health efforts have emphasized the money that can be saved by households when quitting smoking (13) and many tobacco control programs have even offered financial incentives for quit efforts (14–17). However, research has shown that an interest in quitting does not always translate into actual quit attempts or smoking abstinence (12). In addition, low-income smokers are less likely to successfully quit smoking when they do make quit attempts (10). For example, research by Caleyachetty (2012) found that struggling to “make ends meet” was negatively associated with smoking cessation success among low-income individuals (18). Similarly, in an ethnically diverse low SES sample, financial strain was found to be associated with lower cessation rates (19). However, it should be noted that across this literature the terms financial stress/strain and material/financial hardship are used interchangeably (20–22) with no standard measure used across studies. Given the lack of an agreed upon definition and measure of hardship in the research literature, it is unclear if previous studies investigating this association are indeed capturing the same “hardship” experience across studies. In the current study, we use the term material hardship to describe multiple domains of hardship (i.e. financial and food), and assert that capturing multiple hardships may help to distinguish specific socioeconomic factors among low-income smokers associated with quit attempts. Such an effort also further explicates the association between hardship and smoking cessation in low-income groups.

The aim for this study was to determine if smokers living in low-income housing and experiencing hardship were more likely currently trying to quit all tobacco use compared to smokers living in low-income housing not experiencing hardship. We hypothesized that hardship across multiple domains would be positively associated with currently trying to quit all tobacco use in this sample, even after adjusting for socio-economic characteristics.

METHODS

Study Design

The Health in Common (HIC) study was a four-year (2005–2009) observational study that examined cancer risk related behaviors among residents of low-income housing developments located in the Boston Metro Area. Details of this study are described elsewhere (23;24). Briefly, participants for the HIC study (N=828) were recruited from the adult population of 20 publicly and privately managed low-income housing developments across three cities in the Boston metropolitan area. The survey response rate averaged 49% across the 20 developments (range: 27–64%).

Sample

For this investigation we included only current tobacco users from the HIC study (N=170) with complete responses on the hardship questions and the questions asking whether or not they were currently trying to quit all tobacco use. Current tobacco use was assessed by self-report in the HIC study using the NCI Tobacco Screener.(25)

Measures

Outcome variable

Current quit attempt: The outcome variable for this analysis was whether the respondents who were tobacco users were currently attempting to quit using all forms of tobacco. This variable was captured by a dichotomous item asking: Are you currently trying to quit all tobacco use? (Yes/No)

Independent variables—In this study, questions on overall household finances and finances available for food were combined to create a material hardship variable with two domains of hardship: food hardship and financial hardship.

Financial hardship: To assess financial hardship, respondents were asked about how their household's finances work out at the end of the month with possible responses of 'some money left over', 'just enough to make ends meet', or 'not enough to make ends meet'.(26)

Food Hardship: To assess food hardship, respondents were asked to respond to a dichotomous item on whether they had experienced a time when there wasn't enough money for food within the past twelve months (yes/no).(27)

Material hardship: The material hardship measure was a combination of both the food hardship and financial hardship questions. We categorized the responses into the following four categories: "food and financial hardship", "food hardship but no financial hardship", "no food hardship and financial hardship", or "no food or financial hardship".

Socio-demographic Variables: Items to assess potential confounding factors—either based on existing empirical evidence of association to either the outcome variable (currently attempting to quit smoking) or to the hardship variables were also included in this analysis. These variables included the participant's age, income, gender, level of education, marital

status, and race. The final socio-demographic measure was a poverty index that was created by comparing household composition (number of children under 18 living in the household and total number of household residents) and income to the poverty thresholds from the 2008 United States Census. Residents were categorized as either being in poverty or not in poverty as a dichotomous measure using the thresholds found at the following website: <http://www.census.gov/hhes/www/poverty/data/threshld/thresh05.html>

Covariates: Additional covariates included psychological distress, confidence in ability to quit, and number of cigarettes smoked per day. The Perceived Stress Scale (PSS) was used to assess participant's psychological distress. The PSS has been shown to have good internal and test-retest reliability (22). The PSS has items that ask respondents about how much control they have over important things in their lives, whether they feel confident about their ability to handle their own problems; whether they felt things were 'going their way'; and whether they ever felt that difficulties were piling up so high they could not overcome them. The possible responses to these items included the options of 'never,' 'rarely,' 'sometimes,' or 'often.' The lowest categories of 'rarely' or 'never' were combined into a single category, and then the results from the four PSS items were summed into a single scale that ranged from 0 to 12, with higher scores indicating higher amounts of psychosocial stress. Confidence in ability to quit smoking was assessed with a single item asking about their ability to quit smoking with the following response options: 'very,' 'somewhat,' 'little,' and 'not at all.' Total number of cigarettes smoked per day was assessed as a categorical variable with options of one to nine, ten to twenty, or more than twenty.

Statistical Analysis

Univariate and bivariate analyses were conducted to evaluate the distribution of the demographic and socioeconomic variables, and to determine the unadjusted association between hardship and "current quit attempt," as well as the association between socio-demographic characteristics and "current quit attempt." Multivariable logistic regression was conducted to determine the odds of trying to quit tobacco use (current quit attempt) between those reporting hardship compared to those not reporting hardship. Three sets of models were estimated using three indicators of hardship: 1) financial hardship, 2) food hardship, and 3) material hardship. All models were adjusted for socio-demographic characteristics, psychological distress, number of cigarettes smoked per day, and confidence in ability to quit. All analyses were conducted using SAS v.9.2. All study protocols and procedures were approved by the Office of Human Research Administration at the author's institution.

Results

Descriptions of the bivariate analysis comparing socio-demographic variables between the groups of smokers who were currently or not currently trying to quit can be found in Table 1. Among the 170 current smokers in the HIC sample, 95 (56%) were currently trying to quit tobacco and 75 (44%) were not. Comparisons between the two groups revealed few differences across socio-demographic variables. There were slightly more women trying to quit all tobacco compared to men, but this difference was not statistically significant (Table 1). Among those who reported current attempts to quit, there was a significantly higher level

of stated confidence in their ability to quit compared to those who were not currently trying to quit. There was no statistically significant association between income and currently trying to quit tobacco ($p = .23$; Table 1).

Logistic regression models were used to obtain the odds of currently trying to quit among current smokers ($N=170$), adjusting for socio-demographic and psychosocial factors previously found to be associated with trying to quit smoking (i.e., psychological distress, confidence in ability to quit, total number smoked per day). When comparing those currently trying to quit tobacco use and those not trying to quit there was no association with food hardship ($OR=2.36$ ($0.91-6.09$)). Similarly, there was no association between financial hardship and those trying to quit smoking ($OR=0.62$ ($0.24-1.58$)). Finally, in the model exploring the association between the combined material hardship variable with stated current quit attempt, there was no statistically significant association found: 1) for food hardship and financial hardship present ($OR=1.33$ ($0.42-4.2$)); for food hardship and no financial hardship $OR=3.83$ ($0.97-15.13$); for no food hardship and financial hardship $OR=0.5$ ($0.1-2.39$) (See Table 2).

Additional Analysis

Given the lack of a statistically significant association between current quit attempt and the hardship measures, we also conducted exploratory analyses to examine the association between the hardship variables and an additional outcome variable: confidence in ability to quit. Similar to results of previous analyses with current quit attempt as the outcome, no statistically significant associations were found (See Tables 3–4). However, it should be noted that those who were confident in their ability to quit were more likely to smoke fewer cigarettes than those who were not confident (Table 3). We also explored the material hardship variable as continuous with no change in the reported results.

DISCUSSION

In the present study, we investigated the association between three hardship indicators and currently trying to quit all tobacco use in a sample of tobacco users in low-income housing developments in the Greater Boston Metro area. The hypothesis tested was that hardship across multiple domains would be positively associated with currently trying to quit tobacco use. However, the results did not support the hypothesis. In particular, the results of this study revealed that there was no statistically significant association between trying to quit all tobacco use and the three indicators of material hardship among tobacco users in the HIC study.

The findings of this study are consistent with previous studies that found that despite the financial benefits of quitting, smokers experiencing financial difficulties (18) or financial stress (12) were not more likely to be currently trying to quit compared to smokers not experiencing financial difficulties or financial stress (*the cited authors' terms used here for hardship*). The aforementioned studies used samples from the general population across the range of socioeconomic status, and the unique contribution of our study is the use of a sample from the low-income housing population. Additional research is necessary to further understand why hardship may not necessarily be a motivator for current quit attempts; in

particular, further exploration of the social context of smoking behavior of this population to investigate smoking as a coping resource and a means of social connection (28) may help to explicate mechanisms that potentially influence quit attempts. In the present study, subsequent analysis of additional factors such as confidence in ability to quit smoking, were not found to be statistically significantly associated with hardship and therefore did not elucidate our finding that hardship was not associated with current quit attempts. Nevertheless, studying material hardship as it relates to smoking behavior is important as even amongst those who quit, those who experience hardship are more likely to begin smoking again (29).

There are limitations to this analysis that should be recognized. This study is cross-sectional and causal relationships cannot be evaluated. Additionally, it is possible that respondents may not always be forthright in describing their financial problems (30) and therefore there is the possibility of misclassification bias amongst respondents reporting on their financial situations. Lastly, the response rate of 49% for the HIC study, though consistent with previous studies in low-income housing developments (31) suggests that our results may not generalize to the larger low-income housing population.

However, this study also possesses a number of strengths, which make it an important contribution. First, the participants of this study, low-income housing residents, are frequently the targets of public health campaigns, so understanding the relationship between hardship and smoking behaviors in these communities is an important area of study. This study also builds upon a growing literature examining the differences between perceptions of the benefits and motivations to quit tobacco use amongst smokers experiencing hardship (e.g., to save money), and the actual behaviors and motivations of the smokers experiencing material hardship (13). Finally, this study takes the opportunity to expand the ways that hardship is measured by using multiple indicators to operationalize hardship that combine both financial and food hardship.

CONCLUSION

These findings suggest that tobacco cessation efforts focused solely on financial aspects of quitting may not be sufficient to motivate quit attempts among low-income smokers. In particular, given the “addictive” component of smoking and the perceived psychosocial benefits that some may derive from smoking, the benefit of saving money, even if one is experiencing hardship, may not necessarily motivate actual quit attempts. Additionally, research in economics suggests that smoking expenditures may actually “crowd out” other expenditures in the household (32); that is, spending on tobacco can be considered a higher priority for smokers in the household over other expenses, perhaps even basic necessities. Consistently, recent research also suggests that current low- and high-income smokers are becoming less price sensitive to the cost of cigarettes.(33) The findings of our study, and similar studies, suggest that the decision to quit is unlikely to be motivated by financial factors alone even among very low-income smokers. Thus future research efforts are needed to explicate the financial resources management processes of low-income households to better understand the potential financial burden that tobacco expenditures exert on the low-income household, as well as the mechanism(s) through which quit attempts are made.

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Table 1

Bivariate Analysis between “currently trying to quit”(Current quit attempt) and socio-demographic characteristics, current smoking behavior, confidence in quitting, and psychological distress

Predictors	Currently trying to quit Tobacco (n=95)	Not currently trying to quit Tobacco (n=75)	p-value**
<u>Food Hardship</u>			
Yes (not enough \$ food)	46(48%)	29(39%)	.20
No (enough \$ food)	49(52%)	46(61%)	
<u>Financial Hardship</u>			
Yes (not enough to make ends meet)	37(39%)	33 (44%)	.80
No (some \$ left over/just enough to make ends meet)	58(61%)	42 (56%)	
<u>Material Hardship</u>			
1. food hardship and financial hardship	26 (27.37%)	21 (28.00%)	0.46
2. food hardship and no financial hardship	20 (21.05%)	8 (10.67%)	
3. no food hardship and financial hardship	11 (11.58%)	12 (16.00%)	
4. no food or financial hardship	38 (40.00%)	34 (45.33%)	
<u>Income (weekly)</u>			
0-100	10(10.8%)	10(13.5%)	0.23
101–250	37(39.8%)	26(35.1%)	
251–500	30(32.3%)	25(33.8%)	
501–750	9(9.7%)	2(2.7%)	
751+	7(7.5%)	11(14.9%)	
<u>Education</u>			
grade	10(11.5%)	9(13.6%)	0.65
some HS	22(25.3%)	13(19.7%)	
HS grad	21(24.1%)	21(31.8%)	
>HS	34(39.1%)	23(34.8%)	
<u>Age</u>			
18–29	19(20%)	21(28%)	0.31
30–39	17(17.9%)	12(16%)	
40–49	18(18.9%)	18(24%)	
50–59	29(30.5%)	13(17.3%)	
60–70+	12(12.6%)	11(14.7%)	
<u>Gender</u>			
Male	18(18.9%)	24(32%)	0.05

Predictors	Currently trying to quit Tobacco (n=95)	Not currently trying to quit Tobacco (n=75)	p-value**
Female	77(81.1%)	51(68%)	
Race			0.63
Hispanic	35(37.2%)	27(36.5%)	
Non-Hispanic White	29(30.9%)	19(25.7%)	
Non-Hispanic Black	19(20.2%)	21(28.4%)	
Other	11(11.7%)	7(9.5%)	
Married			0.62
No	74(77.9%)	56(74.7%)	
Yes	21(22.1%)	19(25.3%)	
Poverty Index			0.90
No	31(33.3%)	24(32.4%)	
Yes	62(66.7%)	50(67.6%)	
Confidence in trying to quit			0.001
Little/not at all	22(23.2%)	34(47.2%)	
Very/somewhat	73(76.8%)	38(52.8%)	
Number of cigs smoked day			0.45
1–9	45(48.9%)	28(39.4%)	
10–19	26(28.3%)	22(31%)	
20+	21(22.8%)	21(29.6%)	
Continuous	11 ± 8 cigarettes (n=92)	13 ± 9 cigarettes (n=71)	0.14
Psychological distress	8.9 (2.9) (n=95)	9.2 (3.0) (n=74)	0.48

* Frequencies (%) presented for categorical predictors and means (std) presented for continuous predictors.

** Chi-Square p-value for categorical predictors and T-test p-value for continuous predictors.

Table 2
Odds ratios testing associations between indicators of material hardship and “currently trying to quit tobacco”

Predictors	Currently trying to quit tobacco predicted by Food Hardship		Currently trying to quit tobacco predicted by Financial Hardship		Currently trying to quit tobacco predicted by Material Hardship	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Food Hardship						
Yes (not enough \$ food)	2.36(0.91–6.09)	0.08				
No (enough \$ food)	Ref.					
Financial Hardship						
Yes (not enough)			0.62(0.24–1.58)	0.32		
No (some/just enough)			Ref			
Material Hardship						
1. food hardship and financial hardship					1.33(0.42–4.2)	0.13
2. food hardship and no financial hardship					3.83(0.97–15.13)	
3. no food hardship and financial hardship					0.5(0.1–2.39)	
4. no food or financial hardship					Ref	

* Models adjusted for socio-demographic characteristics, psycho-social stress, # of cigarettes smoked per day, and confidence in quitting

Table 3

Bivariate Analysis between “confidence in ability to quit” (Outcome variable) and socio-demographic characteristics, current smoking behavior, confidence in quitting, and psychological distress

Outcome Variables (Predictors)	Confident in Ability to Quit Tobacco (n=111)	Not Confident in Ability to Quit Tobacco (n=56)	p-value
Independent Variables			
Food Hardship			
Yes	46 (41%)	28 (50%)	0.29
No	65 (59%)	28 (50%)	
Financial Hardship			
Not enough to make ends meet	43 (38.74%)	27 (48.21%)	0.31
Just enough to make ends meet	47 (42.34%)	23 (41.07%)	
Some money left over	21 (18.92%)	6 (10.71%)	
Financial Hardship II			
Yes (Not enough)	43 (38.74%)	27 (48.21%)	0.24
No (Some \$ left /just enough)	68 (61.26%)	29 (51.79%)	
Material Hardship			
Food Insecurity and financial Hardship	27 (24.32%)	20 (35.71%)	0.50
Food Insecurity only	19 (17.12%)	8 (14.29%)	
Material hardship only	16 (14.41%)	7 (12.50%)	
Neither	49 (44.14%)	21 (37.50%)	
Any Hardship			
Food or financial hardship	62 (55.86%)	35 (62.50%)	0.54
No hardship	49 (44.14%)	21 (37.50%)	
Psychosocial Behavioral Covariates			
Perceived Stress	8.9 (2.8)	9.3 (3.2)	0.4
Currently Trying to Quit			
Yes	71 (66.36%)	22 (40.74%)	0.002
No	36 (33.64%)	32 (59.26%)	
Number of Cigarettes Smoked			
<=9	14 (25.93%)	56 (52.83%)	0.01
10+	50 (47.17%)	40 (74.07%)	
Continuous	10.7 ± 8.9 cigarettes	13.4 ± 7.9 cigarettes	0.06
95% C.I. of mean	(11.3, 15.6)	(9.0, 12.4)	
Sociodemographic Covariates			
Weekly Household Income			0.4

Outcome Variables (Predictors)	Confident in Ability to Quit Tobacco (n=111)	Not Confident in Ability to Quit Tobacco (n=56)	p-value
0-100	16 (14.68%)	4 (7.27%)	
101-250	39 (35.78%)	22 (40.00%)	
251-500	35 (32.11%)	20 (36.36%)	
501-750	9 (8.26%)	2 (3.64%)	
751+	10 (9.17%)	7 (12.73%)	
16 missing			
Education			0.3
Grade School or below, <8 yrs	9 (9.18%)	9 (19.15%)	
Some High School, 9-11.5yrs	25 (25.51%)	8 (17.02%)	
High School, 12 years	26 (26.53%)	14 (29.79%)	
>High School, 13+ years	38 (38.78%)	16 (34.04%)	
Age in Categories			0.7
18-29yrs	26 (24.30%)	10 (18.52%)	
30-39yrs	17 (15.89%)	9 (16.67%)	
40-49yrs	22 (20.56%)	12 (22.22%)	
50-59yrs	29 (27.10%)	13 (24.07%)	
60-70tyrs	13 (12.15%)	10 (18.52%)	
Gender			0.5
Male	23 (21.50%)	14 (25.93%)	
Female	84 (78.50%)	40 (74.07%)	
Race/Ethnicity			0.9
Hispanic	39 (37.14%)	20 (37.04%)	
Non-Hispanic white	32 (30.48%)	15 (27.78%)	
Non-Hispanic Black	24 (22.86%)	12 (22.22%)	
Other	10 (9.52%)	7 (12.96%)	
Marital Status			0.9
Yes	25 (23.36%)	13 (24.07%)	
No	82 (76.64%)	41 (75.93%)	
Poverty Index			0.5
In Poverty	70 (66.67%)	38 (71.70%)	
Not in Poverty	35 (33.33%)	15 (28.30%)	

Table 4

Odds ratios testing associations between indicators of material hardship and “confidence in ability to quit smoking”

Confidence to Quit Tobacco associated with:	OR (95% C.I.)	p-value
Food Insecurity		
Yes	0.71 (0.37–1.35)	0.29
No	Ref	
Financial Hardship		
Some money left over	2.198 (0.787–6.138)	0.32
Just enough to make ends meet	1.283 (0.642–2.566)	
Not enough to make ends meet	Ref	
Financial Hardship II		
Yes (Not enough)	0.679 (0.355–1.299)	0.24
No (Some \$ left /just enough)	Ref	
Material Hardship		
Food Insecur. & Finan. Hardship	0.58 (0.27–1.25)	0.50
Food Insecurity only	1.02 (0.39–2.69)	
Material hardship only	0.98 (0.35–2.73)	
Neither	Ref	
Any Hardship		
Food or financial hardship	0.76 (0.39–1.47)	0.41
No hardship	Ref	

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