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Smoking among single mothers: Results from Tobacco Use Supplement to Current Population Survey 2006-2007

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ABSTRACT

Background: There is a paucity of research that examines the smoking behaviors of single mothers with dependent children in the United States. The objective of this study was to examine the association of smoking and single motherhood in the United States.

Methods: Cross-sectional data from the 2006-2007 Tobacco Use Supplement to Current Population Survey (TUS-CPS) were used. Analysis was limited to self-respondent women over 18 years of age (n=96,007). Multivariate logistic regression was conducted to estimate the association of current smoking status and single motherhood after adjusting for socioeconomic indicators, race/ethnicity, and age.

Results: Results indicated significant disparities in smoking behavior across women of different marital/motherhood status. After adjusting for the covariates, single mothers (OR 2.08, 95% CI 1.92-2.25) and single women (OR 1.53, 95% CI 1.39-1.68) were at greater risk of being current smokers than the partnered women.

Conclusions: These findings indicate significant disparities in current smoking behavior among women of different marital/motherhood status. Much of the effect of being a single mother remained even after controlling for the covariates. The findings suggest that tobacco control policies and interventions for women should consider differences in smoking behavior related to marital/motherhood status.

INTRODUCTION

In the United States (U.S.) the number of households with children that are maintained by single mothers has increased from 6 percent in 1950 to 23 percent in 2007.[1] In addition in 2007, 17% of U.S. single mothers were living alone with their children who were under the age of 18.[1]

Few studies that explore the smoking related behaviors of single mothers with dependent children have been conducted in the U.S.[2,3] In the U.S., Jun and Acevedo-Gracia[2] found that the daily smoking prevalence was lower for partnered women than single women with children less than 18 years old. The daily smoking prevalence in the U.S. for single women with children less than 18 years was 29.8%, whereas it was 16% for their married counterparts. The multivariate analysis found that smoking was associated with single parenthood after controlling for income level, race/ethnicity and that the prevalence ratio of daily smoking status for single women (PR 1.13 95% CI 1.06-1.22) was higher than the married women (PR 0.83 95% CI 0.78-0.88).[2]

In a study in the United Kingdom (U.K), Graham found that 30% of lone mothers were smokers.[4] Reeves and her colleagues reported that in the U.K. there was a significant difference ($p < 0.0001$) in the smoking prevalence between lone mothers (44%) and mothers living with their partners (24%).[5] In addition, Dorsett & Marsh[6] reported that three-quarters of British lower-class lone mothers who experienced financial hardship were smokers and that the prevalence of smoking was higher among lone mothers across all income quartiles than among those who were never lone mothers.[6] Rahkonen, Laaksonen, and Karvonen[7] reported that in Finland, after adjusting for economic difficulties, household type, and socioeconomic status, there was a significant association between smoking and family type with greater odds of smoking among lone mothers (OR 1.74; 95% CI 1.33-2.28), single women (OR 1.84; 95% CI

1.45-2.35) and married women without children (OR 1.79; 95% CI 1.44-2.23) than married women with children. Similarly, an Australian study showed that single mothers had a higher smoking prevalence of smoking than partnered mothers and women living alone without any children.[8] In another study, Siahpush[9] found single mothers (Odds Ratio 2.1, 95% CI 1.7-2.1) had greater odds of being a smoker than mothers living with their partners. There is a paucity of research that examines the smoking behaviors of single mothers with dependent children in the U.S. The purpose of this study was to explore the association of single motherhood and smoking status in the U.S. The study had two specific objectives: 1) to examine the prevalence of current smoking among single mothers in the U.S., and 2) to investigate the association of smoking status and single motherhood.

METHODS

The study included a sample of 96,007 women 19 years of age or older from the 2006-2007 Tobacco Use Supplement to the Current Population Survey (TUS-CPS). TUS-CPS is administered as part of the US Census Bureau's Current Population Survey (CPS), which is a continuing monthly survey of the Bureau of Labor Statistics. The CPS involves a multistage stratified sample of approximately 56,000 housing units from 792 primary sampling units, most of which comprise a metropolitan area, a large county, or a group of smaller counties. All household members aged 15 years and above are interviewed. Details of the sampling method have been reported elsewhere.[10]

The TUS-CPS data from May and August 2006, and January 2007 was merged to obtain a sufficient sample size for subpopulation analyses, enhance the reliability of the estimates, and increase the power to test the association between variables of interest. The TUS survey

collected responses from self- and proxy respondents. Only self-respondents were eligible to respond to all of the TUS questions. Proxies were only asked to assess smoking status and use of other tobacco products for the intended respondents. To increase the reliability of the response, we limited the analysis of this study only to self-responses. The non-response rates for the self-respondents in the TUS-CPS were 39.3, 39.0 and 35.7 percentages for May 2006, June 2006 and January 2007, respectively.[10]

The outcome variable was smoking status which distinguished current smokers from others. Respondents were asked: “Have you ever smoked at least 100 cigarettes in your entire life?” Those who provided an affirmative answer, were asked “Do you now smoke cigarettes every day, some days, or not at all?” Current smokers were defined as individuals who had smoked at least 100 cigarettes in their life, and smoked everyday or some days at the time of the survey.

We used the following categories for marital/motherhood status: single mothers, partnered mothers, single women without children, partnered women without children, and other women. Single mothers were defined as females who had at least one dependent child and were widowed, divorced, separated, never married, or married with an absent spouse. Partnered mothers were defined as females having at least one dependent child and were married with a spouse present in the household. Single women without children were defined as females who had no dependent children and were widowed, divorced, separated, never married, or married with an absent spouse. Partnered women without children were defined as females who had no dependent children and were married with a spouse present in the household.

Race/ethnicity was categorized into non-Hispanic white, non-Hispanic black, Hispanic, Asian, and other. Equivalized income was computed using the Luxembourg Income Study's

formulation and grouped into quartiles.[2] Education was grouped into no high school diploma, high school diploma, some college but no degree, associate degree, and higher education.

Occupation was grouped into managerial/professional occupation, service and sales related occupation, blue collar occupation (includes agriculture, construction, maintenance and other occupation), unemployed and not in the labour force.

The analyses were performed using Stata version 10.1. Three hundred and eighty-five respondents that had an indeterminate smoking status were dropped from the analysis.

Multivariate logistic regression was conducted to estimate the association of current smoking status and single motherhood after adjusting for the effect of age, race/ethnicity, equivalized income, education, and occupation of the respondents. All regression analyses used weighted data and robust standard errors to account for the complex sampling design.

RESULTS

Sample Characteristics

Sample characteristics are presented in Table 1. From a study sample of 96,007 women 19 years of age or older, 10.95% were single mothers, 5.42% were single women without children, 23.48% were partnered mothers, and 27.95% were partnered women without children. There were 19.83% women of aged 19-29 years, 69.46% were non-Hispanic Whites and about 44% had a high school diploma or less, 24.39% were in the lowest income quartile, and 4.19% were blue collar workers.

Table 1 Sample characteristics and percent current smoker

Variables	% in sample (N=96007)	% Current smoker (N=96007)
Marital/motherhood status		
Single mothers	10.95	27.77
Partnered mothers	23.48	13.13
Single women without children	5.42	18.45
Partnered women without children	27.95	13.00
Other women	32.20	17.87
Age		
19-29 years	19.83	20.00
30-39 years	17.88	17.26
40 years or more	62.28	15.18
Race/ethnicity		
Non-Hispanic white	69.46	18.64
Non-Hispanic black	12.00	15.04
Hispanic	12.21	9.18
Asian	4.49	4.46
Others	1.84	23.98
Equivalized Income		
Lowest quartile	24.39	23.18
Second quartile	19.90	19.06
Third Quartile	21.88	15.37
Highest Quartile	20.48	9.90
No information	13.36	12.52
Education		
No high school diploma	13.85	20.89
High school diploma	30.08	21.30
Some college but no degree	19.71	18.32
Associate degree	9.69	16.44
Higher education	26.67	7.54
Occupation		
Managerial/Professional	23.53	11.22
Service/Sales	30.49	20.79
Blue collar	4.19	23.50
Unemployed	3.03	31.94
Not in the labour force	38.76	14.40

Table 1 also presents the percentage of current smokers by categories of explanatory variables. The study revealed that 27.77% of single mothers were current smokers where 13.13% of the partnered mothers smoked cigarettes at the time of the survey. About 18.45% of the single women without children were current smokers compared to 13% of their partnered childless

counterparts. Younger women were more likely to be current smokers than older women. The percentage of the current smokers decreased with increasing equivalized income with the highest burden of current smoking (23.18%) in the lowest income quartile. Similarly, the number of current smokers decreased as educational attainment increased, with an exception for those smokers with a high school diploma where the current smoking rate was found to be the highest (21.30%). Women working in managerial and professional occupations smoked less than women in other fields of employment. Unemployed women comprised had the highest rates of current smoking in the study sample.

Logistic regression of current smoking

Table 2 provides crude and adjusted odds ratios for the association of marital/motherhood status and all other covariates with smoking status. Bivariate results revealed that the risk of smoking was markedly higher among single women compared to all other categories of women. The odds of smoking were 2.6 times (OR 2.57, 95% CI 2.41-2.75) larger for single mothers than for partnered women without children. The odds of smoking among partnered mothers (OR 1.01, 95% CI 0.95-1.07) were similar to that of the partnered women without children. After adjusting for covariates, single motherhood was still strongly associated with smoking status, however the odds ratio was attenuated to 2.08 (95% CI 1.92-2.25). Single mothers, followed by, single women without children had the lowest risk of smoking. In an analysis not shown here, we changed the reference category from partnered women without children to single women without children and observed that the odds of current smoking behavior was 36% larger (OR 1.36 CI 1.23-1.52) for single mothers than single women without children. This puts the emphasis upon the higher vulnerability of single mothers compared to any other groups of women.

Table 2 Adjusted odds ratios from logistic regression of current smoking status on marital/motherhood status, age, race/ethnicity, equivalized income, education and occupation

Variables	Crude Odds Ratios (N=96007)	P value	Adjusted Odds Ratios (N=96007)	P Value
Marital/motherhood status		<0.001		<0.001
Single mothers	2.57 (2.41-2.75)		2.08 (1.92-2.25)	
Partnered mothers	1.01 (0.95-1.07)		1.05 (0.98-1.13)	
Single women without children	1.51 (1.38-1.66)		1.53 (1.39-1.68)	
Partnered women without children	1.00		1.00	
Other women	1.46 (1.38-1.53)		1.34 (1.27-1.42)	
Age		<0.001		<0.001
19-29 years	1.00		1.00	
30-39 years	0.83 (0.78-0.89)		1.04 (0.97-1.12)	
40 years or more	0.72 (0.68-0.76)		0.85 (0.80-0.90)	
Race/ethnicity		<0.001		<0.001
Non-Hispanic white	1.00		1.00	
Non-Hispanic black	0.77 (0.72-0.83)		0.46 (0.43-0.50)	
Hispanic	0.44 (0.41-0.48)		0.26 (0.23-0.28)	
Asian	0.20 (0.17-0.25)		0.24 (0.20-0.30)	
Others	1.38 (1.22-1.55)		1.05 (0.92-1.19)	
Equivalized Income		<0.001		<0.001
Lowest quartile	1.00		1.00	
Second quartile	0.78 (0.74-0.83)		0.83 (0.79-0.89)	
Third Quartile	0.60 (0.57-0.64)		0.73 (0.69-0.78)	
Highest Quartile	0.36 (0.34-0.39)		0.56 (0.52-0.61)	
No information	0.47 (0.44-0.51)		0.56 (0.52-0.60)	
Education		<0.001		<0.001
No high school diploma	1.00		1.00	
High school diploma	1.02 (0.96-1.09)		0.80 (0.75-0.86)	
Some college but no degree	0.85 (0.79-0.91)		0.63 (0.58-0.67)	
Associate degree	0.74 (0.69-0.81)		0.58 (0.53-0.63)	
Higher education	0.31 (0.29-0.33)		0.28 (0.26-0.31)	
Occupation		<0.001		<0.001
Managerial/Professional	1.00		1.00	
Service/Sales	2.08 (1.96-2.20)		1.26 (1.18-1.35)	
Blue collar	2.43 (2.20-2.68)		1.45 (1.31-1.62)	
Unemployed	3.71 (3.33-4.14)		2.04 (1.82-2.30)	
Not in labour force	1.33 (1.26-1.41)		0.78 (0.73-0.84)	

Table 2 indicates that compared to younger women (19-29 years), the odds of smoking in women of an older age group (40 years or more) was 15% less (OR 0.85 CI 0.80-0.90). The odds

of smoking among non-Hispanic black women were 54% less than that of the non-Hispanic white women. Asian women (OR 0.24 CI 0.20-0.30) were almost three-fourth times less likely to smoke than the non-Hispanic white women. There was an inverse relationship between smoking and equivalized income or education. The odds of smoking were two times larger for unemployed women (OR 2.04 CI 1.82-2.30) than for women working in the managerial/professional occupation. Those who were not in labour force were found to be 22% less smokers (OR 0.78 CI 0.73-0.84) than those in the managerial or professional positions.

DISCUSSION

The findings showed that single mothers were at a substantially greater risk of smoking than partnered mothers, single women without children, and partnered women without children, after adjusting for socioeconomic indicators, race/ethnicity, and age. These study findings are consistent with a study on differences in smoking prevalence of single women and married women smokers.[2]

Our study findings reveal that women who are young, less educated, have lower incomes, are unemployed or working in sales/service related occupation, or are blue collar workers are at increased risk of smoking cigarettes. Similar to our results, a recent study found that the rate of current smoking among single mothers was more than twice that of the partnered mothers.[11] These findings illustrate that lower income single mothers, a vulnerable population, are more likely to abuse tobacco and other illegal drugs compared to those with higher income and greater educational achievement.[12]

Consistent with Australian studies by Siahpash,[8,9] we found that the association between single motherhood and smoking persisted after controlling for several indicators of

socioeconomic status. The findings contrast with Dorsett and Marsh's[6] study which showed that, independent of socioeconomic status, there was no "lone mother effect" on smoking.

The study has several limitations. The study was cross-sectional which prevents establishing a causal relationship between smoking behavior and single motherhood. Furthermore, the study cannot tell us whether the relationship between smoking and motherhood is due to the effect of marital status and whether or not the married women had dependent children. The study also cannot tell whether the relationship is simply due to a correlation between marital/motherhood status and smoking. Another limitation is that the TUS-CPS does not provide information on factors such as stress, autonomy, coping behavior, mental health status that may influence whether women smoke.

Despite these limitations, our study can be a guiding tool to understand the vulnerability of single women as smokers. The results may help to design smoking cessation programs for women with an emphasis on single women, regardless of whether they have children. This study also emphasizes the need to consider the socioeconomic and sociodemographic circumstances of single women when designing interventions to reduce the prevalence of smoking. Additional research on the smoking cessation needs of single women in the U.S. can examine the change in smoking behavior among women who become single mothers or single mothers who become partnered.

COMPETING INTERESTS

None.

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