Exploring the influence of rural status on sociodemographic, behavioral, and psychosocial characteristics of smoking during pregnancy

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INTRODUCTION

Smoking during pregnancy is a consistently prevalent problem in the United States, with severe risk potential for health consequences to mother and fetus and a 370-million-dollar average health care toll. Although smoking prevalence has been on a downward trend over the last few decades, rural-dwellers have slower rates of decline. Exploring individual differences in pregnant smokers may provide new avenues for treatment targeting and intervention techniques, but these differences will be most effective if they are translatable to both urban and rural-dwellers. The purpose of this study was to explore conventional and behavioral economic variables as a function of urban/rural status, as these variables may relate to the higher smoking prevalence and lower quit success that have been observed among pregnant women living in rural regions. This study explored individual differences in nicotine dependence, sociodemographics, and measures of cigarette demand among a national sample of pregnant women living in urban versus rural areas.

METHODS

Participants

- N = 401 pregnant women who completed an intake assessment to assess eligibility for a smoking cessation trial.
- Women are categorized by whether they identify living in an urban (N = 213) or rural (N = 63) county.

Conventional Predictors

- Sociodemographics (age, race, educational attainment, marriage status, working for pay outside home).
- Smoking history (age at first cigarette)
- Nicotine dependence (cigarettes per day, time to first cigarette)

Hypothetical Cigarette Purchase Task

- Assesses hypothetical demand for cigarettes across a range of increasing prices.

Kirby Delay Discounting Task

- Measures rate at which subjective value of money declines with time (logk).

DATA ANALYSIS PLAN

- Bivariate analyses were conducted to determine which variables are associated with urban or rural status using t-tests for continuous variables and chi-square tests for categorical variables. Those variables that are significantly associated with antepartum quit attempts at the bivariate level were included in the regression modeling detailed below.
- Forward elimination stepwise logistic regression predicting antepartum quit attempts will be conducted using participant characteristics that differed significantly in the bivariate analyses including the CPT demand indices.

RESULTS

Table 1. Demographics, smoking characteristics, and behavioral economic measures among participants as a function of urban or rural status

Characteristic	Rural Status (N = 213)	Urban Status (N = 63)	Test Statistic	Significance
Demographics				
Age (years)	31.44	29.67	2.25	**0.0250**
Married (% yes)	44.44	23.94	10.00	**0.0016**
Employed (% yes)	34.92	48.83	3.79	0.0516
Race/Ethnicity			8.14	**0.0433**
% Non-Hispanic White	85.71	72.77		
% Non-Hispanic Black	3.17	17.37		
% Hispanic	4.76	4.69		
% Other	6.35	5.16		
Education			0.93	0.6271
% < 12 years	9.52	12.21		
% = 12 years	63.49	58.81		
% > 12 years	26.98	30.99		
Smoking Characteristics				
Cigarettes per day pre pregnancy			4.62	**0.0315**
% < 10 per day	7.76	15.02		
% ≥ 10 per day	95.24	84.98		
Cigarettes per day antepartum			2.96	0.0854
% < 10 per day	33.33	45.54		
% ≥ 10 per day	66.67	54.46		
Time to first cigarette after waking pre-pregnancy			0.00	0.9451
% ≤ 5 minutes	46.03	45.54		
% > 5 minutes	53.97	54.46		
Time to first cigarette after waking antepartum			2.594	0.1073
% ≤ 5 minutes	25.40	16.43		
% > 5 minutes	74.60	83.57		
Made at least one antepartum quit attempt			0.89	0.3460
% Yes	33.33	39.91		
% No	66.67	60.09		
Usual brand of cigarettes contains menthol			8.40	**0.0038**
% Yes	55.56	44.44		
% No	44.44	64.79		
Behavioral Economic Measures				
Delayed Discounting			-1.81	0.0721
logK-value	-1.90	-1.68		
Cigarette Purchase Task				
Intensity	1.17	1.13	1.25	0.2111
Omax	0.80	0.48	-0.33	0.7413
Pmax	-0.20	-0.11	-1.09	0.2747
Breakpoint	0.00	0.14	-1.77	0.0779
Alpha	-1.56	-1.65	1.11	0.2671

RESULTS

Table 2: Final adjusted model predicting urban or rural status. Probability modeled by urban status.

Characteristic	Point Estimate	OR	CI (95%)	Significance
Age	-0.067	0.935	[0.88-0.99]	**0.0187**
Married	-0.886			**0.0066**
Yes		Reference		
No		0.420	[0.23-0.79]	
Smoking menthol cigarettes	0.745			**0.0167**
Yes		Reference		
No		2.107	[1.14-3.88]	

OUTCOMES

- Bivariate analyses indicate that relative to urban areas, rural-dwelling pregnant smokers were older, less likely to smoke menthol cigarettes, smoking more cigarettes per day, were more likely to be non-Hispanic white, and were more likely to be married (all p <.05).
- Variables that remained significantly associated with rural-dwelling pregnant smokers in the stepwise regression model were older age, more likely to be married, and less likely to smoke menthol cigarettes (all p <.05).

DISCUSSION

- Several sociodemographic and smoking history variables, excluding cigarettes per day and time to first cigarette after waking, differ among women as a function of urban/rural status, and may contribute to smoking disparities between pregnant women living in urban versus rural areas.
- Behavioral economic measures of the reinforcing value of cigarettes, however, do not appear to be influenced by urban or rural status.

Acknowledgements: This project was supported by COBRE P20GM103644 award from NIGMS, and NIDA T32DA007242