Systems and Individual Factors Associated with Smoking Status: Evidence From the Health Information National Trends Survey (HINTS)

Lila J. Finney Rutten[1], PhD, MPH; Kay Wanke[1], PhD, MPH; Erik Augustson[1,2], PhD, MPH

[1]National Cancer Institute, [2] Science Applications International Corporation

Background

Although there have been substantial decreases in smoking prevalence over the past 30 years in the U.S., this decline has leveled off in recent years and has not been uniform across sociodemographic subgroups. The majority of smokers report wanting to quit and a sizeable percentage make quit attempts each year. However, rates of successful, sustained quitting are low, typically less than 10%. This coupled with the flattening of cessation rates indicates the need for improved understanding of factors that differentiate between those individuals who are able to achieve sustained cessation vs. those who continue to smoke.

Purpose

The aim of our analysis was to examine whether population-based data demonstrates that tobacco use is associated with:
- sociodemographic characteristics
- health care access
- trust in health care providers
- health status
- self-reported depressive symptomotology

Methods

Data Source
Data were from the 2003 Health Information National Trends Survey (HINTS). HINTS collects nationally representative data every two years on the American public's need for, access to, and use of cancer information.

Survey Items
- **Sociodemographic Characteristics:** sex, age, race, ethnicity, education, income, employment, marital status.
- **Health Care Access, Use and Trust:** insurance, usual source of health care, recent use of healthcare services, trust in information from healthcare providers.
- **Health Status:** perceived health status, cancer history.
- **Depressive Symptomology:** Respondents were asked to rate five point scales the amount of time they experienced each 6 depressive symptoms. Responses were summed into a composite depressive symptoms score ranging from 6 to 30 with higher scores indicating greater depression (Cronbach's alpha=0.81).
- **Smoking Status:** Smoking status was determined from four questions about smoking which classified respondents into three categories:
  1. *Current smokers* include respondents who reported that they have smoked at least 100 cigarettes during their lifetime who also reported currently smoking on every or some days.
  2. *Sustained quitters* include respondents who reported that they have smoked at least 100 cigarettes in their lifetime and had smoked regularly at some point (at least 1 cigarette per day) who also reported that they are not currently smoking and have not smoked for a year or more.
  3. *Never smokers* reported that they had never smoked at least 100 cigarettes during their lifetime.

Data Collection, Response Rates, and Sample
Data were collected from October 2002 through April 2003. The survey was administered to a representative sample of U.S. households using computer-assisted random-digit dialing from all telephone exchanges in the U.S. Exchanges with high numbers of Blacks and Hispanics were over-sampled. Complete interviews were conducted with 6149 adults. The final response rate for the household screener was 55% and the final response rate for extended interview was 62.8%. The sample used in our analyses included 1246 current smokers , 1502 former smokers, and 3277 never smokers.

Data Analysis
- SUDAAN was used to calculate population estimates and confidence intervals (CIs).
- Crosstabulation with Chi square for categorical variables and t-tests for continuous variables to examine bivariate associations.
- Logistic regression analyses to examine the association of the following covariates with smoking status: gender, race, education, age, health insurance status, usual source of health care, use of healthcare services, perceived general health, prior cancer history, trust in information from health care providers, and depressive symptoms.

Results

Table 1: Sociodemographic, health care access, health status and depressive symptoms by smoking status. [a]

	Current Smoker (n=1246)	Sustained Quit (n=1502)	Never Smoker (n=3277)	p-value[c]
	Smoking Status[b]			
Sociodemographics[d]	%	%	%	
Sex				p<.0001
Male	52.5	57.7	41.1	
Female	47.5	42.3	58.8	
Race				p<.0001
Non-Hispanic white	71.9	80.5	67.5	
Non-Hispanic black	10.3	7.9	12.0	
Hispanic	11.1	7.6	14.1	
Other or multiple races	6.7	4.1	6.4	
Income				p<.0001
<$35,000	54.1	39.9	38.6	
$35,000 to $74,999	32.1	33.8	36.0	
$75,000 and greater	13.8	26.4	25.4	
Education				p<.0001
Less than high school	21.2	17.3	14.6	
High school	39.3	30.8	29.6	
Some college	28.8	27.1	25.8	
College graduate	10.7	24.7	30.4	
Age				p<.0001
18-34	36.0	11.8	36.5	
35-64	56.9	58.1	48.8	
65+	7.1	30.2	14.7	
Employment				p<.0001
Employed	63.5	55.4	59.9	
Out of work	10.1	3.9	5.2	
Retired, student, homemaker	18.9	35.7	31.7	
Unable to work	7.5	5.0	3.2	
Marital Status				p<.0001
Married	48.0	70.0	59.9	
Divorced, widowed, separated	22.6	19.1	14.1	
Never married	24.3	8.3	22.1	
Unmarried Couple	5.1	2.6	3.8	
Health Care Access, Use, and Trust				
Health Insurance				p<.0001
No	26.2	8.4	12.3	
Yes	73.9	91.6	87.7	
Usual Provider				p<.0001
No	47.1	25.5	36.1	
Yes	52.9	74.5	63.9	
Saw provider during last 12 months				p<.0001
No	27.3	11.8	17.2	
Yes	72.8	88.2	82.8	
Trust information from provider				p<.0001
A lot	54.3	63.7	65.2	
Not a lot	45.8	36.3	34.8	
Health status				
Perceived health				p<.0001
Excellent/very good	30.3	44.6	48.4	
Good	36.8	33.4	32.4	
Fair/Poor	32.9	22.0	19.3	
Cancer history				p=.0001
No	90.3	84.9	90.8	
Yes	9.7	15.1	9.2	
Depressive Symptoms				
Mean composite score[e]	12.1	10.0	10.4	p<.0001[f]

[a] Note: column percents do not always sum to 100% due to rounding.
[b] *Current smokers* reported that they have smoked at least 100 cigarettes during their lifetime and are currently smoking on every or some days; *sustained quitters* reported that they have smoked at least 100 cigarettes in their lifetime, smoked at least 1 cigarette per day during the time frame they reported smoking and have not smoked for a year or more; *never smokers* reported that they have never smoked at least 100 cigarettes in their lifetime.
[c] P-value corresponds to X[2] for all categorical variables and t-test for continuous variable.
[d] Note: sample size varies slightly for some variables due to missing data.
[e] Depressive symptoms score ranges from 6 to 30 with higher scores indicating greater depression.
[f] All contrasts significantly different at p<.0001 except for sustained quit vs. never smokers where p<.05.

Table 2: Logistic regression predicting smoking status among current and former smokers[a].

	Model 1 Current Smoker vs. Sustained Quit (n=2577)		Model 2 Never Smoker vs. Sustained Quit (n=4511)		Model 3 Current Smoker vs. Never Smoker (n=4264)	
Sociodemographics	OR	95% CI	OR	95% CI	OR	95% CI
Sex						
Male	1.00	----	1.00	----	1.00	----
Female	0.71	0.56-0.90	0.43	0.36-0.51	1.64	1.35-1.99
Race						
Non-Hispanic white	1.00	----	1.00	----	1.00	----
Non-Hispanic black	0.97	0.65-1.44	0.54	0.40-0.73	1.91	1.36-2.68
Hispanic	1.23	0.82-1.84	0.46	0.34-0.62	3.22	2.22-4.68
Non-Hispanic other	0.61	0.32-1.17	0.56	0.38-0.84	1.13	0.76-1.68
Education						
Less than high school	1.00	----	1.00	----	1.00	----
High school	0.86	0.60-1.24	0.74	0.53-1.04	1.17	0.85-1.59
Some college	0.99	0.71-1.38	0.93	0.67-1.29	1.31	0.98-1.76
College graduate	1.96	1.35-2.84	0.57	0.42-0.76	3.88	2.79-5.39
Age						
18-34	1.00	----	1.00	----	1.00	----
35-64	2.65	1.92-3.67	3.67	2.79-4.81	0.70	0.57-0.85
65+	9.47	5.41-16.57	5.86	4.50-7.62	1.74	1.12-2.71
Health Care Access, Use, and Trust						
Health insurance						
No	1.00	----	1.00	----	1.00	----
Yes	1.75	1.30-2.35	0.84	0.62-1.14	1.93	1.47-2.54
Usual provider						
No	1.00	----	1.00	----	1.00	----
Yes	1.40	1.07-1.85	1.15	0.94-1.41	1.13	0.89-1.42
Saw provider during last 12 months						
No	1.00	----	1.00	----	1.00	----
Yes	2.16	1.53-3.04	1.44	1.10-1.90	1.39	1.01-1.92
Trust information from provider						
Not a lot	1.0	----	1.00	----	1.00	----
A lot	1.40	1.10-1.79	1.00	0.82-1.21	1.36	1.13-1.63
Health Status						
Perceived Health						
Excellent/very good	1.00	----	1.00	----	1.00	----
Good	0.71	0.54-0.93	1.18	0.97-1.43	0.59	0.47-0.72
Fair/Poor	0.60	0.45-0.82	1.39	1.15-1.68	0.46	0.35-0.60
Cancer history						
No	1.00	----	1.00	----	1.00	----
Yes	1.05	0.72-1.52	1.12	0.91-1.39	0.84	0.61-1.16
Depressive symptoms						
Composite score[b]	0.92	0.89-0.95	0.98	0.96-1.01	0.94	0.92-0.96
Model Adjusted Wald F	12.57 (18), p<.0001		54.02 (18), p<.0001		42.99 (18), p<.0001	

[a] *Current smokers* reported that they have smoked at least 100 cigarettes during their lifetime and are currently smoking on every or some days; *sustained quitters* reported that they have smoked at least 100 cigarettes in their lifetime, smoked at least 1 cigarette per day during the time frame they reported smoking and have not smoked for a year or more; *never smokers* reported that they have never smoked at least 100 cigarettes in their lifetime.
[b] Depressive Symptoms score ranges from 6 to 30 with higher scores indicating greater depression.

Conclusions

- A constellation of individual and system factors which may impact smokers' ability to successfully sustain smoking cessation.

- Understanding even the basic association of such factors with smoking status may better prepare providers in their efforts to encourage initiation and continuation of cessation in their patients.

- Awareness of these factors may help treatment personnel better identify individuals in need of additional resources and assist in our efforts to more effectively target the next generation of tobacco control strategies.