Change in Health Risk Behavior Over Time Among Chinese Immigrants

Marianne C. Fahs, PhD, MPH
Nina S. Parikh, PhD, MPH

Brookdale Center for Healthy Aging and Longevity
Hunter College

Acknowledgements

- This work is supported by grant R01-CA93788-01 from the State and Community Tobacco Control Interventions Program, Tobacco Control Research Branch, Behavioral Research Program, Division of Cancer Control and Population Sciences, National Cancer Institute, National Institutes of Health.

- We are grateful for the contributions of the New York City Department of Health, Asian Americans for Equality, American Cancer Society, Westat, Flushing Chinese Business Association, Chinese –American Planning Council, Inc, New York Task Force on Immigrant Health, Association of Asian Pacific Community Health Organizations, Chinese American Independent Practice Association, Charles B Wang Health Clinic, Edward J. Blakely, PhD, K. Michael Cummings, PhD, MPH, Sookhee Oh, Bob Vollinger, MSPH, Kenneth E. Warner, PhD, Carolyn Zhu, PhD, and our bilingual interviewers.

China: The impending Epidemic

- China, with 20 percent of the world's population, produces and consumes about 30 percent of the world's cigarettes[1]
- 1,000,000 deaths a year from tobacco in 2000 in China
- In 2030 tobacco will cause 33 percent of deaths in China[2]

---

1. Ad Hoc Committee on Health Research. Investing in health research and development. The World Health Organization, Geneva, Switzerland (1996).

2. Peto, R., Lopez, A.D., Boreham, J., Thun, M. & Heath, C. Jr. Mortality from smoking in developed countries 1950-2000: Indirect estimates from national vital statistics. Oxford University Press (1994)..

“British American Tobacco Butts into China’s Tobacco Market”

BusinessWeek online

“British American Tobacco says it's poised for expansion in China.” 10/29/02

Taipei Times 9/17/2003

"To maintain our survival, Taiwan Tobacco must soon branch out abroad and China is a very important and lucrative destination," Hwang, Chairman Taiwan Tobacco

Knowledge of Risks Under-Estimated

- ***In a nationwide 1996 survey in China, about two-thirds said they believed smoking did little or no harm. Nearly 60% did not know it can cause lung cancer and 96% did not know it can cause heart disease.[1]***

1. Peto R, Chen Z-M, Boreham J. Tobacco-the Growing Epidemic. Nature Medicine 5:15-17. 1999. The work involved medical researchers from the Chinese Academy of Preventive Medicine (CAPM) and Chinese Academy of Medical Sciences (CAMS), working with researchers from Oxford University, England and Cornell University, USA.

The NYC Chinese Health Study

Methods and Findings

The Asian American Population in US/NYC

- Asian American/Pacific Islanders (AAPIs) are the fastest growing racial/ethnic group in the US.
- Asian American/Pacific Islander population increase: 72% since 1990
- Chinese = fastest growing group within Asians
- 10% of New Yorkers are Asian.

Lew, R. (1998). "A National Effort to Reduce Tobacco Use Among Asian Americans and Pacific Islanders." Cancer Supplement 83(8):1818-1820.

[8]US Census (2000).

Chinese population in U.S.A. and New York City (1990-2000)			
Area	Chinese Population		
	1990	2000	Percent growth
U.S.A.	1,648,694	2,432,585	48%
New York City	240,014	379,809	58%
Bronx	6,693	7,708	15%
Brooklyn	68,905	125,358	82%
Sunset Park	30,639	**71,827**	**134%**
Queens	87,001	147,037	69%
Flushing	16,769	**34,902**	**108%**
Manhattan	72,277	91,588	27%
Chinatown	47,992	54,532	14%
Staten Island	5,138	8,118	58%
Data source: Census 1990 and 2000			

Principle Aims

Aim 1: To estimate smoking prevalence among NYC Chinese Americans.

Aim 2: To assess attitudes and beliefs regarding smoking in the Chinese community.

Aim 3: To describe the tobacco use patterns of Chinese Americans in NYC.

Principle Aims (cont.)

Aim 4:To test the hypothesis that linguistically and culturally-appropriate community-based interventions that increase opportunities to access smoking cessation services, in combination with a culturally-specific community-wide media campaign targeted to Chinese Americans, are more effective in:

1. **changing attitudes and beliefs toward tobacco use among Chinese American nonsmokers and smokers**
2. **increasing cessation activity among Chinese American smokers**
3. **increasing cessation rates among Chinese American smokers**

than is a culturally-appropriate media campaign alone.

Principle Aims (cont.)

Aim 5: To assess the process of building community capacity at the local level to facilitate change and to raise the importance of tobacco as a public health issue in the Chinese community.

Aim 6: To estimate the incremental cost-effectiveness of additional community-based cessation interventions, targeted specifically to Chinese Americans, compared to a targeted media campaign alone.

Behavior Prediction and Behavioral Change Theories

- **Social Cognitive Theory**: self efficacy and outcome expectancies
- **Health Belief Model**: personal susceptibility to a disease with serious consequences, and benefits of preventive action outweigh the perceived barriers
- **Reasoned Action**: intention to perform based on attitudes and beliefs about the consequences and social or normative pressure
- **Transtheoretical Model**: Stages of change progression – precontemplative, contemplative, preparation, action, maintenance

Methodologies

- Quantitative: **Quasi-experimental pre- post-test design with nonequivalent intact comparison groups from two geographically distinct Chinese communities.**
  - **Unit of analysis: Individuals**

- **Qualitative: Community mobilization assessment**
  - **Unit of analysis: Community**

Quantitative Assessment

Population-based representative sample of Chinese households in 2 communities:

intervention = Flushing

control = Sunset Park

- Baseline assessment of a cross-sectional sample

Intervention

- Follow-up assessment of longitudinal cohort at 18 months

Population estimates for the two study sites

Site	ZIP Codes	Chinese population	Chinese households
Flushing	11354, 11355	34,902	9,588
Sunset Park	11204, 11214, 11219, 11220	71,827	16,796

Table 1. Comparison of Population Characteristics among Sunset Park and Flushing Chinese

	Sunset Park	Flushing	P-Value
% Area Population	17.6	14.4	0.247[1]
% Male	69.3	73.4	0.340[1]
% Female	30.7	26.6	0.129[1]
% Born in China	83.2	93.3	0.928[2]
% Retired	16.6	18.5	0.684[2]
Median Age Group	25–34 yrs.	25–34 yrs.	0.163[2]
Median Annual Income	$1–15,000	$2–25,000	0.360[2]
Median Household Size	4 persons	4 persons	0.337[2]
Median Educational Attainment	HS Diploma	Some College	0.375[2]

[1] Probability associated with Chi-square test.
[2] Probability associated with 2-tailed unequal variance t-test

Sample

- Goal: probability sample of Chinese adults within two sites
- Sampling frame consisted of 12,279 Chinese-surname telephone numbers for Flushing and 16,298 Chinese-surname telephone numbers for Sunset Park

Questionnaire Development

- **Consulted standardized surveys and instruments to assess behavior change:**
  - **COMMIT, NHIS, NHANES, BRFSS, state smoking surveys, Addiction scales; health status scales; stage of change models**
- **Visited community organizations**
- **Conducted focus groups**
- **Translated materials (forward & backward)**

Intervention Launched!

FLUSHINGTimes.com

Asian smoking habits study announced at Flushing mall By Cipi Eisenberg 10/16/2003

The Chinese American Smoking Cessation Initiative kicked off its community outreach project at the Flushing Mall last Thursday, the second phase of the nation's largest ever study of the Chinese-American community's smoking habits.

Margaret Chin, Director, Asian Americans for Equality

Dr. Nancy Miller, Assistant Commissioner, NYC Department of Health

Mingder Chang, Director Asian Unit, American Cancer Society

NEW YORK'S HOMETOWN CONNECTION WWW.NYDAILYNEWS.COM
DAILY NEWS

Kick the habit, Chinese urged

By DONALD BERTRAND
DAILY NEWS STAFF WRITER

A new effort to get Chinese-American smokers in the neighborhood to quit has been launched in Flushing. "Quitting smoking is hard but you can do it," **Margaret Chin, deputy executive director of Asian Americans for Equality**, told a group Thursday at Flushing Mall.

Newsday

Seeking to Put Out Smoking Ignorance

Health drive aids Chinese immigrants

By Margaret Ramirez
STAFF WRITER
October 10, 2003

World Journal

二〇〇三年十月十日 星期五 FRIDAY, OCTOBER 10, 2003 世界日報

法拉盛戒菸活動揭開序幕

華人抽菸比率高出其他族裔50% 逾半癮君子缺乏菸害常識 數機構聯合推動戒除

【本報記者邱紹璟紐約報導】繼紐約實施禁止在工作場所內吸菸的規定後，如何推動吸菸者「戒菸」，成爲下一步的重要任務。紐約市健康暨心理衛生局、亞洲人平等會、美華防癌協會和一些院校等單位9日在法拉盛購物中心聯合宣佈「法拉盛華人戒菸活動」的展開，他們以「戒菸雖難，但你能做到」的標語來鼓勵癮君子戒菸，許多單位將陸續展開戒菸相關活動，並教育民衆吸菸對健康的危害。

主辦單位表示，會選在法拉盛針對華人展開戒菸運動，是因爲華人男子抽菸的比率比其他族裔高出50%，而且有65%的華人缺乏有關菸害常識。爲表示宣導戒菸的決心，市健康局戒菸小組主席米勒（Nancy Miller）、亞平會行政總監瞿遠義、副行政總監陳倩雯、新大學健康政策研究中心副教授范絲（Marianne Fahs）、美華防癌協會會長楊明德、哥倫比亞大學副教授暨健康局聯絡員雪莉（Donna Shelley）、法拉盛市議員劉醇逸和紐約州長柏德基代表譚順熙等人，昨日共同將一支5呎長的巨型 香菸用力折彎，象徵戒菸者的毅力，揭開活 動序幕。

米勒表示，在可預防的病害中，吸菸是紐約市第一大死因，吸二手菸是第三大死因。范絲談到，紐約市每年有一萬人死於菸害，華人男子吸菸比率最高，而癮君子中有60%試著戒菸。

楊明德表示，美華防癌協會將從本月中旬的每周六中午12時將開戒菸班，其他舉辦戒菸班的還有法拉盛醫院、高雲尼醫院、協和鋁門窗公司、慈濟艾姆赫斯特醫院健康門診中心、角聲中心等。

這一項由聯邦政府撥款的戒菸活動爲期三年，許多社區組織將會合作推出各種形式戒菸活動，主辦單位還設計宣傳品派發醫療機構、商家、餐館等。

亞平會免費戒菸熱線爲（877）227—8833，美華防癌協會將於明年初舉行「戒菸贏百元」比賽，詳情將陸續公佈。

雪莉說，這一戒菸活動是紐約市華人健康調查的一部分，該調查包括資料收集、大型社區戒菸運動和分析華人社區戒菸成效。

該計畫自去年11月展開以來，成功地收集超過二千名市民和社區人士意見。

多個社區單位負責人9日宣佈「法拉盛華人戒菸活動」開，他們共同將一支5呎長的巨型香菸用力折彎，象徵戒者的毅力，揭開活動序幕。（本報記者邱紹璟攝）

"The Great American Smoke-out"
November 20, 2003

AAFE staff and volunteers distributed almost 1,000 flyers to promote the various cessation programs in the community.

"Lunar New Year Parade in Flushing" January 17, 2004

AAFE staff and community residents marched in the Flushing Lunar New Year parade to promote the Quit n' Win contest. Over 2,000 flyers were distributed.

Quit & Win Contest

“Kick Off” Press Conference

1/24/2004

Adjusted Relative Risks for Chronic Conditions (Singh GK, Siahpush M. 2002)

Years in US	Smoking	Obesity	Hyper-tension
<1	.48***	.39***	.34***
1-5	.68***	.55***	.67***
15+	**.82*** **	**.87*** **	**.81*** **

*** p<.01

RANDOM EFFECTS MODEL

The basic framework for the analysis is a multiple regression model, where:

$$y_{mit2\text{-}1} = \alpha + B_X X_i + B_1 X_i + B_2 X_i + B_3 X_i + B_4 X_i + B_5 X_i + B_6 X_i + B_7 X_i + B_8 X_i + B_9 X_i + \upsilon_i + \varepsilon_{it}$$

and

Y = outcome measure score

m = the specific outcome measure (cessation, number of cigarettes per week, etc)

X_i = individual i

$t_{2\text{-}1}$ = post - pre intervention

B_X = a set of dummy variables that indicate whether the individual (X_i) was exposed to particular intervention$_i$ (possibly continuous vars, also, depending on instrument and measure)

B_1 = 0,1 variable indicating residency in Flushing (intervention) or Sunset Park (paired-community)

B_2 = sex

B_3 = income level

B_4 = length of time in US residence

B_5 = education level, (subject to r < with income)

B_6 = stage of change at baseline (4 levels, 0,1 dummies)

B_7 = level of addiction at baseline (Fagarstron Scale)

		All Respondents				Flushing - Intervention				Sunset Park - Control				
		Baseline	Follow-Up			Baseline	Follow-Up			Baseline	Follow-Up			
	N [3]	Prevalence	Prevalence	% Change	*sig* [1]	Prevalence	Prevalence	% Change	*sig* [1]	Prevalence	Prevalence	% Change	*sig* [1]	*Site Sig* [2]
All respondents	3,911	17.67	13.59	-23.1	**	19.52	13.76	-29.5		16.90	13.52	-20.0	**	**
Men	2,397	30.29	22.92	-24.3	**	33.31	22.74	-31.7	**	29.05	22.99	-20.9	**	*
Women	1,514	2.19	1.76	-19.6		3.26	2.50	-23.3	**	1.73	1.46	-15.6		
Age Group (Men Only)														
18 to 34	549	25.10	18.73	-25.4	*	27.38	13.00	-52.5	**	24.51	20.22	-17.5		**
35 to 44	615	35.28	28.71	-18.6	**	43.59	33.43	-23.3	*	31.44	26.83	-14.7	**	*
45 to 54	680	37.16	24.62	-33.7	**	41.68	28.04	-32.7	**	34.82	22.82	-34.5	**	
55 & above	552	23.63	20.79	-12.0		15.94	15.17	-4.8		27.26	23.70	-13.1	*	
Education (Men Only)														
Less Than HS	874	36.22	28.45	-21.5	*	38.43	24.44	-36.4	**	35.58	29.46	-17.2	*	**
High School	563	30.70	30.44	-0.8		44.31	37.88	-14.5		26.64	28.03	5.2		
More Than HS	954	24.07	14.13	-41.3	**	26.59	16.13	-39.3	**	22.45	12.91	-42.5	**	
Income (Men Only)														
Less than $10,000	298	33.04	28.06	-15.1		35.53	30.49	-14.2		32.28	27.26	-15.6		
$10,000 - $20,000	628	31.64	29.64	-6.3		37.85	27.46	-27.5		29.54	30.23	2.3		
$20,000 - $40,000	616	32.75	22.71	-30.7	**	39.81	27.70	-30.4	**	29.28	20.44	-30.2	**	**
$40,000 - $60,000	290	22.27	22.11	-0.7		20.30	12.12	-40.3		23.39	27.60	18.0		
More than $60,000	265	19.73	8.67	-56.1	*	21.23	11.50	-45.8	*	18.61	6.95	-62.7		
Marital Status (Men Only)														
Married	1,894	31.12	22.59	-27.4	**	33.92	23.35	-31.2	**	29.85	22.24	-25.5	**	
Not married	490	28.17	22.23	-21.1	*	31.34	19.31	-38.4		27.26	22.98	-15.7		

1. * = p<0.05, ** = p<0.01
2. $H_0 > H_1$
   $H_0 - H_1 = 0$
   H_0 = (Baseline Flushing Prevalence) - (Follow-up Flushing Prevalence)

Regression analyses of intervention effect on smoking prevalence

Independent variables[a]	Odds ratio (95% CI)	P value	Marginal Effect[c] (95% CI)	P value
Intervention[b]		–		0.000
= Interaction of Area *time	NA[d]		-0.028 (-0.03- -0.00)	
Flushing post-intervention			Referent	
Other				
Time period		0.001		0.000
Post- intervention	0.77 (0.69-0.86)		-0.03 (-0.04-0.02)	
Pre- intervention	1.00		Referent	
Site		0.01		0.001
Flushing	1.33 (1.08-1.63)		0.04 (0.02-0.06)	
Sunset Park	1.00		Referent	
Age		0.07		0.03
18 to 34	1.22 (0.98-1.51)	0.04	0.02 (0.00-0.05)	0.01
35 to 54	1.38 (1.02-1.88)		0.04 (0.00-0.07)	
≥55	1.00		Referent	
Income		0.03		0.005
< $20,000	1.51 (1.05-2.18)	0.09	0.05 (0.01-0.09)	0.06
$20-40,000	1.74 (0.88-3.45)		0.08 (-0.00-0.16)	
>$40,000	1.00		Referent	
Education		0.14		0.10
< HS	1.42 (0.86-2.35)	0.21	0.05 (-0.00-0.10)	0.19
= HS	1.42 (0.77-2.64)		0.05 (-0.02-0.12)	
> HS	1.00		Referent	
% years in US		0.003		0.000
<20%	1.31 (1.15-1.51)	0.000	0.04 (0.02-0.05)	0.000
20-35%	1.32 (1.25-1.41)		0.04 (0.03-0.04)	
>35%	1.00		Referent	

Abbreviations: CI, confidence interval

[a] The response control variable is not shown. (0= never and former smokers and 1=current smokers)

[b] The effect of the intervention, measured as the interaction between pre-post time period (0,1) and control vs intervention community (0,1) is interpreted as the additional decline of smoking prevalence by 2.8% in Flushing relative to Sunset Park due to the intervention. The 2.8% decrease that can be attributed to the intervention is significant (p< 0.001).

[c] Independent effect on smoking prevalence calculated using the STATA v9 command 'mfx' [26-29]

[d] Because the intervention effect is measured using an interaction term, odds ratios do not apply.

CONCLUSION

- This is the first representative study of health risk behaviors among Chinese Americans in NYC
- Knowledge is power, effective interventions could save 1,000's of lives
- Unique opportunities for in the rapidly growing Chinese American community

Preliminary Findings Change in Other Health Risk Behaviors Among Older Chinese

- No significant difference in BMI
- No significant difference in physical activity level
- **Statistically significant increase in alcohol use among older Chinese Adults**

The End

Thank you!