

Smoking Among Chinese Americans: Behavior, Knowledge, and Beliefs

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Each year, 4 million deaths—nearly equally divided between developed and developing countries—are attributable to smoking.¹ China alone has almost a million smoking-associated deaths per year,^{2,3} while in the United States the figure is 430 000,⁴ estimated to exceed deaths due to AIDS, car accidents, alcohol, suicides, homicides, firearms, and illegal drugs combined.⁵ Overall, in developed nations, tobacco use contributes to the death of about one third of those aged 35 to 69 years,¹ resulting in a premature loss of 20 to 25 years of life.^{1,6,7}

Cigarette-smoking status and patterns of use among adults in the United States have been systematically monitored through programmatic surveys,^{8–11} analysis of birth certificates,¹² and funded research. The National Health Interview Survey (NHIS) derives annual estimates of health characteristics (including smoking status) through a probability sample of noninstitutionalized civilian adults,⁸ while the Behavioral Risk Factor Surveillance System (BRFSS) provides state-based estimates of cigarette users among persons aged 18 years and older living in the 50 states and the District of Columbia.⁴ However, data are limited for Asian Americans and Pacific Islanders (AAPIs), now counted at more than 11 million^{8,13}—the fastest-growing ethnic minority group in the United States.

The Surgeon General's Report of 1998 is the latest nationwide review of the diverse tobacco control needs of major racial/ethnic minority groups, including AAPIs.¹⁴ The information conveyed by the aggregation of numbers masks important subgroup and regional differences. An understanding of the heterogeneity of cigarette use among AAPI subpopulations is crucial for the formulation of useful health policies and the development of sound intervention programs. The objectives of this report are to describe smoking behavior, knowledge, and beliefs among Chinese Americans and to better understand the factors associated with

Objectives. This report describes and examines factors significantly associated with smoking among Chinese Americans, using multiple logistic regression methods.

Methods. We conducted a population-based survey (n=644, age=40–69 years) in Chicago's Chinatown using a Chinese questionnaire based on the National Health Interview Survey (NHIS).

Results. Smoking prevalence was 34% for males and 2% for females. Some 93% of current smokers had smoked regularly for 10 or more years. Low education (odds ratio [OR]=2.41; 95% confidence interval [CI]=1.31, 4.46), use of a non-Western physician or clinic for health care (OR=2.64; 95% CI=1.46, 4.80), and no knowledge of early cancer warning signs and symptoms (OR=2.52; 95% CI=1.35, 4.70) were significantly associated with smoking among men.

Conclusions. The male prevalence of smoking is higher than those reported in California, the NHIS, and the Behavioral Risk Factor Surveillance System (BRFSS); exceeds the rate for African Americans aged 18 years and older; is comparable with the rate for African American males aged 45 to 64 years; and is far above the Healthy People 2010 target goal of less than 12%. Multisite surveys and smoking cessation campaigns in Chinese are needed. (*Am J Public Health.* 2002;92:1007–1012)

their knowledge and continuing use of cigarettes despite the known harmful effects.

In prevalence studies, “current smoking” (or cigarette use) is defined as having smoked at least 100 cigarettes in one's lifetime and currently smoking. The prevalence of cigarette use in China has been reported to be 33.8% for both sexes,^{15–17} 61% for men aged 15 years and older,^{13,7} and 73% for men aged 40 years and older.³ Three fifths of Chinese male smokers started smoking at 15 to 20 years of age.¹⁵ The target goal in China is to reduce the smoking rate for men aged 15 years and older to below 58%.¹⁸ Obviously, the smoking epidemic in China is on a different order of magnitude than that found in the United States today, where the goal for 2010 is to reduce the prevalence of smoking to less than 12%.¹⁹ For the general US population aged 18 years and older, the prevalence of cigarette smoking has declined from 29% in 1987²⁰ to 26% in 1994²¹ and 24.7% in 1997.¹¹

Although data on smoking are available from BRFSS and NHIS interviews conducted in English, the small sample size of AAPIs has hampered precise estimates. Researchers often have to pool data sets across years or

concatenate disparate samples from different locations in order to obtain crude estimates for AAPIs, as was done in the Surgeon General's Report on tobacco use in 1998.¹⁴ The report showed a smoking rate for AAPIs of 23.8% from 1978 to 1980, which dropped to 15.3% in the period 1994 to 1995,^{14,21} only to increase to 16.9% in 1997.¹¹ These results differ from that based on a recent BRFSS survey of AAPIs in the 10 states where they are most populous; this revealed a smoking prevalence of 10.7%,²² with sevenfold variation by state (4.7% in Maryland, 36.1% in Oregon). The sample size was too small to produce meaningful statistics for AAPI subpopulations, but studies in several localities showed heterogeneous smoking prevalence for different subgroups, ranging from 9.1% among Chinese Americans²³ to 23.1% among Southeast Asians.²⁴

Nearly 1 of every 4 AAPIs is of Chinese descent. Despite the high prevalence of tobacco use in China and the fact that the overwhelming majority (83%) of Chinese Americans aged 18 years and older are foreign born,²⁵ the smoking prevalence reported for Chinese Americans is low—between 9.1%

and 10.9%.^{23,25,26} Below, we review some important factors that have been reported to be associated with cigarette use among AAPIs and, specifically, Chinese Americans.

Sex

Some 27.6% of men and 22.1% of women in the United States are current smokers.¹¹ Among AAPIs, population-based estimates mask a two- to fivefold sex difference—from 32.5% for men vs 14.7% for women in the 1978–1980 NHIS to 25.1% for men vs 5.8% for women in the 1994–1995 NHIS.¹⁴ Reported rates of smoking among AAPI men include 32.8% for Cambodians,²⁴ 38.5% for Koreans,²⁷ 39% for Chinese,²⁸ 41.7% for Vietnamese, and 51.2% for Laotians.²⁴ Intra-group sex variation is especially dramatic for Chinese Americans—28.1% for men vs 1.2% for women in Oakland²⁹ and 16.5% for men vs 2.6% for women in San Francisco.²³

Age

NHIS trend data show that smoking tends to be higher among persons younger than 55 years and lower among older adults. Prevalence tends to be highest in the 25- to 44-year age group for the general US population, AAPIs, and Chinese.¹⁴ However, among Chinese men in California, only a minimal age difference in smoking prevalence exists for persons aged 25 years and older.^{14,30}

Education

Cross-sectional surveys in the United States have established an inverse relationship between education level and smoking.^{14,30–32} Data from China have shown a similar gradient (43% prevalence among the college educated, 53% for high school graduates, 68% for illiterates).³³ In the United States, an inverse association in the prevalence of smoking among AAPIs by level of education was reported in the California survey.^{14, 31} Data on AAPIs from the 1994–1995 NHIS, however, do not strongly support the inverse association between education and smoking prevalence (less than high school education, 13.3% prevalence; education beyond high school, 14.4% prevalence), and in the 1989–1991 Oakland BRFSS survey the association is inconsistent, with no smokers at the “some college” level.^{14,29}

Spoken English Fluency

Among immigrants, the ability to speak English varies inconsistently with smoking status.^{32,34} The 1990–1991 BRFSS in California found that 31.8% of Chinese not fluent in English were smokers, a rate somewhat lower than that found for Vietnamese (36.6%).²⁹ Just how strongly associated spoken English fluency is with smoking among Chinese Americans living outside of California remains to be studied.

Usual Source of Health Care

Lack of access to mainstream health care systems has been a problem for underserved populations. Low smoking prevalence has been reported from an analysis of patients at the Kaiser Permanente Health Plan in California,^{26,31} but past studies on Chinese American smoking^{23,24} did not examine the net effect of source of care.

Knowledge of Early Cancer Warning Signs and Symptoms

Studies on Chinese American smoking behavior have apparently not examined the association between smoking status and early cancer warning signs and symptoms (i.e., change in bowel or bladder habits, a sore that does not heal, unusual bleeding or discharge, thickening or lump in breast or elsewhere, indigestion or difficulty swallowing, obvious change in wart or mole, nagging cough or hoarseness). We examined them as part of our objectives.

METHODS

Sample

This study is part of a larger Asian American Cancer Control Developmental Project.^{27,35} A list of Chicago's Chinatown residents was generated by merging several files, including compiled surnames, telephone directories, and Chinese newspaper subscribers. A 2-stage probability sampling method was used to randomly select Chinese households from the defined sampling frame.³⁶ Of all eligible individuals enumerated by telephone, one person from each household was randomly selected for an interview. Eligibility was defined by age (40–69 years), self-classified ethnicity (Chinese), and residence within the defined boundary of Chinatown.

Budgetary constraints restricted eligibility criteria to the age group most likely to benefit from the use of cancer screening tests.

Instrument

We constructed both Mandarin and Cantonese Chinese versions of the Cancer Control Supplement Questionnaire used in the 1987 NHIS. Several translators independently produced parallel translations, which were back-translated for verification of accuracy and comprehension of technical terms. Differences in meanings were identified, discussed, and resolved. In-depth probes, think-aloud methods, and focus groups were used to ensure the conceptual equivalence and comprehensibility of the final survey instrument.³⁷ We conducted mock interviews and pretests to finalize the survey instrument using subjects whose socio-demographic characteristics resembled those of Chinatown residents but who resided elsewhere in Chicago. Photographs of tobacco products (type, size, brand) were prepared for use during interviews.

Data Collection

The major Chinese-language newspapers in Chicago provided media publicity about a forthcoming health study. No mention was made of cancer or smoking so as not to taint responses. Letters were mailed out to introduce the project and to explain the random sample selection process, the voluntary nature of survey participation, the confidentiality of the interview, and a phone number to call if householders had questions. Trained interviewers conducted the survey in Chinese at each respondent's home after written informed consent was obtained.

Statistical analysis was performed with SAS (SAS Institute Inc, Cary, NC) and SPSS (SPSS Inc, Chicago, Ill). Group differences were compared by χ^2 test. Multiple logistic regression analysis was performed to evaluate the factors associated with smoking behavior, knowledge, and beliefs in order to take into account the effects of potential confounding variables.

RESULTS

Sample Characteristics

A total of 644 Chinese completed the survey, representing a response rate of 80%. Sex

TABLE 1—Demographic Characteristics of Study Sample of Chinese Americans Living in Chicago's Chinatown, by Sex

| Characteristic | Male (n = 312) | Female (n = 332) |
|---------------------------------------|-------------------|---------------------|
| Age, y | | |
| Mean | 53.3 | 54.5 |
| SD | 9.1 | 9.0 |
| Range | 40–69 | 40–69 |
| Education, % | | |
| ≤ 6 y | 30.4 | 53.9 |
| > 6 y | 69.6 | 46.1 |
| Marital status, % | | |
| Married | 93.6 | 80.4 |
| Not married | 6.4 | 19.6 |
| Usual source of health care, % | | |
| No care | 55.4 | 49.4 |
| Traditional Chinese medicine | 4.8 | 6.9 |
| Western-style pharmacy | 2.9 | 2.4 |
| Clinics | 14.4 | 16.0 |
| Western MD's office | 22.4 | 25.3 |
| Spoken English fluency, % | | |
| Not at all/poorly | 59.9 | 77.4 |
| Makes do/can speak moderately or well | 40.1 | 22.6 |
| Length of residence in US, y | | |
| Mean | 11.4 | 10.7 |
| SD | 10.2 | 10.3 |
| Median | 8.0 | 7.0 |

Note. Total percentage may not add to 100 due to rounding.

differences by age were minimal but quite substantial in terms of education (Table 1). About half of each sex did not have a regular source of health care. The vast majority could not speak any English or spoke it poorly; most (males, 65.3%; females, 56.9%) did not have any religious affiliation (data not shown).

Comparison With NHIS Data

We compared our findings with those reported for the general US population in the 1997 NHIS¹¹ using comparable criteria of defining smoking status (Table 2). The prevalence of current smoking was higher among men in Chicago's Chinatown (33.6%) than in the NHIS sample (27.6% among men aged 45 to 64 years, the group closest in age to our sample). Since Chinese American women

TABLE 2—Cigarette Smoking Status Among Chinese Americans Living in Chicago's Chinatown and Among 1997 National Health Interview Survey (NHIS) Respondents, by Sex

| Sample and Sex | % Never Smokers ^a | % Former Smokers ^b | % Current Smokers ^c |
|-------------------|------------------------------|-------------------------------|--------------------------------|
| Chinese Americans | | | |
| Men (n = 312) | 40.1 | 26.3 | 33.6 |
| Women (n = 332) | 96.1 | 1.8 | 2.1 |
| NHIS respondents | | | |
| Men | 45.5 | 26.9 | 27.6 (27.6) ^d |
| Women | 58.9 | 19.0 | 22.1 (21.5) ^d |

Note. Data on NHIS respondents are from the 1997 NHIS of adults aged 18 years or older from all racial/ethnic groups.¹¹ Despite changes in the 1997 NHIS, questions on smoking remained unchanged.

^aNever smokers were respondents who had not smoked at least 100 cigarettes in their lifetime.

^bFormer smokers were persons who had smoked at least 100 cigarettes but no longer smoked at the time of interview.

^cCurrent smokers were persons who reported having smoked at least 100 cigarettes during their lifetime and who smoked every day or some days at the time of the interview.

^dNumbers in parentheses are for persons 45 to 64 years old as reported in reference 8. Corresponding figures for former and never smokers were not published. Data for persons aged 40 to 69 years were not tabulated.

were predominantly nonsmokers (96.1%, vs 58.9% of women in the NHIS), only data for males are presented below.

Smoking Behavior of Chinese Males

The percentage of Chinese American men who had smoked a pipe or cigar at least 50 times in their lifetime was 11% and 3%, respectively. Only 1 man was a current pipe smoker; 2 were current cigar smokers. Five percent of Chinese men had used chewing tobacco at least 20 times in their lifetime; only 2 were current chewers. Three persons reported that they had used snuff or betel nut (another addictive substance commonly used in Asia) at least 20 times in their lives and were still using them. Betel nut is the fruit of *Areca catechu*; it is usually sprinkled with calcium oxide, salt, and powdered root of liquorice and served wrapped in a tobacco leaf, which is chewed and then spat out.

On average, current smokers started smoking at 19 years of age (former smokers at 19.9 years). For current and former smokers combined, the starting age ranged from 7 to 52 years (median=18.5). The most common reasons given for smoking (multiple responses allowed) were habit (40%), addiction (36%), enjoyment (14%), and social functions (11%). Among the current smokers, 93% had smoked cigarettes regularly for more than 10 years; only 5% had smoked for 10 years or less. About 39% of the smokers reported lighting up a cigarette immediately after awakening,

28% within an hour of awakening, and 25% within 1 to 5 hours of waking up. Marlboro (29.5%) and Viceroy (25.7%), followed by Winston (14.3%) and Kent (12.4%), were the preferred brands; some 4.8% smoked the brand 555 and 3.8% reported having no brand loyalty. Smokers tended to favor non-mentholated (93.3%), filter-tipped (97.1%), and soft-pack (79%) cigarettes. Preference for regular-size cigarettes ran high (83.8%). Most popular were regular cigarettes (61%), followed by light cigarettes (36.2%). Some (44%) smoked half a pack to a pack of cigarettes a day, and 42% smoked less than half a pack a day.

Quitting Attempts

Among current smokers, 47% had made at least one serious attempt to quit; of these, 59% had tried more than once. The most commonly used method for quitting was "cold turkey" (76%), followed by reduced smoking (25%) and using Nicorette, a non-prescription gum used as nicotine replacement therapy (PharmacieAB, Stockholm, Sweden) (14%). Unsuccessful quitting attempts were attributed to addiction (20%), the fact that "others smoke so [they] go along" (18%), and social functions (10%). Forty-eight percent of current smokers claimed that they could quit any time if they really wanted to, but a large percentage (42%) admitted that they could not quit. Nearly half of the current smokers (47.6%) reported having been advised by their doctors to stop smoking.

TABLE 3—Frequency and Percentage of Never Smokers and Current Smokers Among Chinese American Men Living in Chicago’s Chinatown, by Selected Demographic Variables (n = 230)

| Characteristics | n | Never Smoker | | Current Smoker | |
|--|-----|--------------|------|----------------|------|
| | | (n = 125) | % | (n = 105) | % |
| Age, y | | | | | |
| 40–54 | 129 | 77 | 61.6 | 52 | 49.5 |
| 55–69 | 101 | 48 | 38.4 | 53 | 50.5 |
| Education, ** y | | | | | |
| ≤6 | 68 | 25 | 20.0 | 43 | 41.0 |
| >6 | 162 | 100 | 80.0 | 62 | 59.0 |
| Spoken English fluency* | | | | | |
| Not at all/poorly | 132 | 61 | 48.8 | 71 | 67.6 |
| Makes do/speaks moderately or well | 98 | 64 | 51.2 | 34 | 32.4 |
| Length of residence in US, y | | | | | |
| <10 | 131 | 74 | 59.2 | 57 | 54.3 |
| ≤10 | 99 | 51 | 40.8 | 48 | 45.7 |
| Usual source of health care** | | | | | |
| None/Eastern medicine/Western pharmacy | 148 | 68 | 54.4 | 80 | 76.2 |
| Clinics/Western MD’s office | 82 | 57 | 45.6 | 25 | 23.8 |
| Knowledge of cancer warning signs** | | | | | |
| No knowledge | 157 | 73 | 58.4 | 84 | 80.0 |
| Knowledge of 1 or more signs | 73 | 52 | 41.6 | 21 | 20.0 |

*P < .01; **P < .001, based on χ^2 test for comparing 2 categories of each characteristic by smoking status.

TABLE 4—Relationship Between Selected Demographic Variables and Current and Never Smoking Status Among Chinese American Men Living in Chicago’s Chinatown^a (n = 230)

| | Current vs Never Smokers OR (95% CI) |
|--|--|
| Education (elementary or less = 1) | 2.41 (1.31, 4.46)* |
| Usual source of health care (not using clinics or Western MD’s office = 1) | 2.64 (1.46, 4.80)* |
| Knowledge of cancer warning signs (no knowledge = 1) | 2.52 (1.35, 4.70)* |

Note. OR = adjusted odds ratio; CI = confidence interval.

^aMultiple logistic regression analysis using stepwise selection. Current smoker is coded as 1. Variables not selected into the model are age, spoken English fluency, and years of residency in the United States. Hosmer–Lemeshow goodness-of-fit test P = .9653.

*P < .01.

Contrast Between Never and Current Smokers

Being a current smoker was significantly associated with low level of education, poor spoken English fluency, not using clinics or a Western doctor’s office as a usual source of health care, and having no knowledge of even 1 early cancer warning sign or symptom (Table 3). About 14% of both smokers and never smokers had an immediate family member who had had cancer. Age and years of residence in the United States were not significantly associated with smoking status. Only 27% of smokers owned their homes, compared with 46% of never smokers (data not shown).

Factors Associated With Smoking Status

We used multiple logistic regression analysis to evaluate the effects of selected independent variables on smoking status (current vs never), after adjusting for the presence of other variables considered important from our literature review. Age, education, spoken English fluency, years in the

United States, usual source of care, and knowledge of early cancer warning signs and symptoms were dichotomized. Only education, usual source of care, and knowledge of early cancer warning signs and symptoms were statistically significant when stepwise selection using log-likelihood criteria was applied (Table 4). Interaction terms were examined and did not substantially improve the model fit.

Our final model indicates that Chinese American men with less than an elementary school education were more than twice as likely as those with a higher level of education to be current smokers, after the effects of usual source of health care and knowledge of cancer signs and symptoms are taken into consideration (odds ratio [OR] = 2.41; 95% confidence interval [CI] = 1.31, 4.46). Likewise, those who did not use clinics or a Western physician’s office for their usual source of health care were more than twice as likely to be current smokers, other things equal (OR = 2.64; 95% CI = 1.46, 4.80). The magnitude of effect was similar for knowledge of early cancer warning signs

and symptoms, after the other 2 variables were controlled for (OR = 2.52; 95% CI = 1.35, 4.70).

Smoking and Alcohol Use

About 70% of the 125 male never smokers were never drinkers; 12% were former drinkers and 18.4% were current drinkers. Among the 105 current smokers, the corresponding percentages of drinkers were as follows: never, 53.3%; former, 19.1%, current, 27.6% (data not shown). The association between smoking and alcohol use is statistically significant ($\chi^2_2 = 6.436$; P < .05).

Knowledge of Smoking and Major Diseases

We asked questions about the association of smoking with 5 major diseases by using a true–false response format. For 3 diseases—bronchitis, lung cancer, and emphysema—more than three quarters of Chinese men (80%, 78%, and 75%, respectively) knew that smoking is a causal factor. For the other 2 diseases—throat or mouth cancer and heart disease—only about half of the respondents were knowledgeable (52% for throat or

mouth cancer and 50% for heart disease). However, knowledge of the association between smoking and throat or mouth cancer, bronchitis, and heart disease by smoking status was not significant (data not shown). For lung cancer and emphysema, knowledge of the disease was significantly associated with the 3 levels of smoking status (current, former, and never). The percentage of those who were aware that smoking causes lung cancer and emphysema was lower among current smokers (69.5% and 71.4%, respectively) than among never smokers (87.2% and 76.8%, respectively), with former smokers showing little variation (75.6% and 76.8%, respectively).

Beliefs About Smoking

We added 2 items to the 5 smoking-belief questions in the NHIS, one designed to capture fatalism and the other to inquire about chewing betel nut. Statistically significant differences in smoking beliefs by smoking status were found only for the following items: (1) “Everything causes cancer, so it does not matter whether one smokes or not” (agreed with by 48% of current smokers, 12% of former smokers, and 13% of never smokers); (2) “Chewing betel nut is harmful to one’s health” (27% of current smokers, 29% of former smokers, and 44% of never smokers); (3) “Most deaths from lung cancer are caused by cigarette smoking” (61% of current smokers, 67% of former smokers, and 79% of never smokers).

Useful Sources of Information

When asked to name their most useful sources of health information, the most often mentioned sources were newspapers (34%), books (25%), doctors (23%), magazines (18%), friends (16%), television (14%), family (10%), and radio (5%). Fewer than 2% of Chinese men named pamphlets and workplace. Asked about what location would be most convenient to them if they were to be offered a 2-hour class on how to reduce their chances of getting cancer, 3 of every 5 Chinese men identified the community center, followed by a local school (28%), church (18%), clubs (4%), and home (4%). Only about 2% named another site (e.g., hospital, senior center, workplace).

DISCUSSION

Several of our findings are noteworthy. First, previous studies have reported low smoking prevalence for Chinese Americans, befitting the image of a “model minority.”³⁸ In reality, their rates vary considerably by nativity, location, and other factors. Our study shows a smoking prevalence for men that is between the low rates reported for Chinese aged 18 years and older^{12,14,23,30} and the high rate reported for Chinese men aged 60 to 96 years.²⁸ The prevalence is not quite half of what is found in China. By US norms, the smoking prevalence of the Chinese American men in our study is high; it exceeds the reported rates for the last decade among African American men aged 18 years and older.^{8,11,14} and is comparable to the rate (39.4%) found for African American men aged 45 to 64 years in the 1997 NHIS.^{8,11} Current smoking prevalence among Chicago’s Chinatown Chinese men aged 40 to 69 years is more than double the desired Healthy People 2010 target goal of less than 12%.

Second, age and cohort effects are confounded in the variation of smoking status by age. Since the overwhelming majority of older Chinese are foreign-born non-English speakers, their smoking prevalence is higher than the rate reported for younger cohorts of English-speaking, mostly US-born, Chinese Americans who respond to BRFSS telephone interviews. Studies with extraordinarily large samples are needed to monitor the smoking prevalence of different age cohorts by nativity.

Third, the following methodological differences between our study and others most likely contributed to the differences in the results: (a) we conducted a population-based survey in Chinatown; (b) we sampled adults aged 40 to 69 years; (c) we met face-to-face, not over the telephone, with interviewees; (d) we interviewed in Chinese languages; (e) our survey instrument was standardized—the kind and number of explanations provided to the respondents were rehearsed during training.

Clearly, replication studies are very much needed. However, in designing intervention programs, some thought should be given to the immediately controllable factors (source of health care and knowledge of early cancer warning signs and symptoms). Smokers and

the community at large can benefit from the establishment of smoking cessation programs in Chinese languages.

Except for the NHIS and the BRFSS, which surveyed mostly English-speaking AAPIs, we have found only 2 population-based studies aimed at estimating tobacco use among Chinese Americans, both conducted in California.^{23,29} Given the geographic variability in immigrant compositions, coordinated multisite, large-sample surveys of smoking focused on Chinese Americans—the largest subgroup in the AAPI community—in states or areas where they are most populous is necessary to obtain precise estimates of smoking prevalence, health risks, and health status.

Proclaimed as the single most preventable and controllable factor in morbidity and mortality reduction,³⁹ smoking is one of the important risk factors or causal agents in at least 6 of the top 10 leading causes of death for the nation—heart diseases, cancer, cerebrovascular diseases, chronic obstructive pulmonary diseases, diabetes mellitus, and atherosclerosis, which together account for 69.7% of all deaths.⁴⁰ Among Chinese Americans, heart disease and cancer combined account for 58.3% of all deaths. Cerebrovascular diseases add another 8.4%, bringing the total proportional mortality from tobacco-related deaths for just the 3 leading causes of death up to 66.7%. In the 25- to 64-year age range, cancer is the leading cause of death for Chinese Americans,⁴¹ and cancer of the lung and bronchus is the leading cause of cancer deaths for all ages. Hence, even a small decline in smoking prevalence among Chinese Americans will have a significant beneficial public health impact in reducing morbidity and mortality among AAPIs.

CONCLUSIONS

This is the first population-based study of Chinese American smoking behavior, knowledge, and beliefs, conducted in Chinese and using a standardized instrument that mirrors the NHIS format, to be implemented outside of California. We found that the overall smoking prevalence in our sample of Chicago Chinatown Chinese aged 40 to 69 years was 17.4% (men, 34%; women, 2%). Results of multiple logistic regression analyses show that

the 3 major variables significantly associated with smoking status were education, usual source of health care, and knowledge of early cancer warning signs and symptoms. After these 3 variables were adjusted for, factors identified as important in previous studies (i.e., age, spoken English fluency, and years in the United States) were not significantly associated with being a current smoker. Moreover, nearly half of the current smokers had already been advised by their physicians to stop smoking. "Cold turkey" was the most common quitting method. Future plans for multisite studies on smoking and health should include the development of Chinese-language instruments and interventions for Chinese-speaking Chinese Americans. ■

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Contributors

The Chinese American substudy of the project was conceptualized, designed, and implemented by E.S.H. Yu with the collaboration of E.H. Chen. E.S.H. Yu led the writing of the paper with statistical support from E.H. Chen. K.K. Kim contributed to some aspects of the study and the writing of the paper. S. Abdulrahim performed preliminary analysis on the entire sample, examined the consistency of the responses, and explored factors for smoking behavior.

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