

# A Culturally Enhanced Smoking Cessation Study Among Chinese and Korean Smokers

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## Abstract

### English:

*This study assessed the feasibility of and presents preliminary findings on a culturally enhanced, theory-driven smoking cessation intervention for adult Chinese and Korean smokers. A one-group pre-post test design was used. The intervention consisted of behavioral and nicotine replacement strategies. Participants (N=43) were recruited through Asian community networks, Asian Community Cancer Coalition, health clinics and newspaper advertisements. Demographic characteristics, psychosocial factors, mediating variables including self-efficacy and risk perception, smoking cessation and reduction rates, stages of change, tobacco use history, smoking behavior, and program satisfaction were evaluated. At baseline, no participants were in the action stage, whereas 57.7% were in the action stage at 1-week and 61.5% at 3-months follow-up. At 3-months post-intervention follow-up, quit rate was 59%. The psychosocial profile of smokers showed that they were more likely to be receptive about cues, more likely to perceive smoking risks, and less likely to avoid health messages that are inconsistent with their own behavior. Participants reported low levels of distress and moderate levels of self-efficacy in quitting. Overall, the cons of smoking exceeded the pros. A culturally appropriate smoking cessation program for Asian smokers can effectively move smokers between stages of change.*

### Spanish:

*Este estudio determinado la viabilidad de y presenta preliminar resultados en una intervención cultural realizada, teori'a-conducida de la cesación que fuma para fumadores chinos y coreanos del adulto. Un diseño de la prueba del pre-poste del uno-grupo era utilizado. El reemplazo del comportamiento y de la nicotina consistido en intervención estrategias. Reclutaron a los participantes (N=43) a través de comunidad asiática redes, coalición asiática del cáncer de la comunidad, clínicas de la salud y periódico anuncios. Dcaracterísticas emographic, factores sicosociales, variables el mediar incluyendo uno mismo-eficacia y riesgo opinión, cesación que fuma y tarifas de la reducción, etapas del cambio, tabaco utilice la historia, comportamiento que fuma, y la satisfacción del programa fue evaluada. En la línea de fondo, no hay participantes en la etapa de la acción, mientras que 57.los 7% estaban en acción etapa en de una semana y 61.el 5% en la carta recordativa 3-months. En la poste-intervencio'n 3-months la carta recordativa, paró tarifa era el 59%. El perfil sicosocial de fumadores demostrado que eran más probables ser receptivos alrededor señales, más probables percibir riesgos que fuman, y menos para evitar probablemente los mensajes de la salud que son contrarios con su propio comportamiento. Participantes divulgados niveles bajos de la señal de socorro y niveles moderados de uno mismo-eficacia en parar. Total, el contra de fumar excedió los pros. A el programa cultural apropiado de la cesación que fuma para los fumadores asiáticos puede mueva con eficacia a fumadores entre las etapas del cambio.*

**Key words:** Smoking Cessation, Chinese, Koreans

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## Introduction

Asian Americans are the fastest growing and the second largest foreign-born ethnic group in the U.S. today. Between 1990 and 2000, the total population increase was 48% nationwide and represented 4.2% of the U.S. population (U.S. Census, 2002). In one California study, Jenkins reports higher smoking rates among Asian Americans, especially males, than in the general population (Jenkins, 1996). A comprehensive needs assessment epidemiological study conducted in 2000 in the Delaware Valley region of PA and NJ also revealed high smoking rates among various Asian American ethnic groups (Ma *et al.*, 2002). Koreans had an ever smoking rate of 45.9%, and a current smoking rate of 26.8%. Chinese had an ever smoking rate of 33% and a current smoking rate of 24%. The elevated smoking rates among Asian American males are also reflected in other studies which report a 39% rate among Korean Americans (CDC, 1997; Kim *et al.*, 2000) and rates of 34% among Chinese Americans (CDC, 1992; Yu *et al.*, 2002).

The Cognitive-Social Health Information Processing (C-SHIP) model provides a theory-based framework to guide the tailoring of behavior change efforts in a range of health contexts. The cornerstone of the C-SHIP model is that individuals are characterized by stable patterns of reactions to health risk feedback. Two distinctive patterns identified are: monitoring (which involves scanning for and amplification of threatening cues) and blunting (which involves distraction from health threats). Monitors are more likely to respond by exaggerating their risk, overestimating the likelihood of negative outcomes, manifesting greater cancer-specific worries and concerns, and underestimating their own abilities to cope; blunters respond by underestimating their risk and fail to process the importance of health threats from the outset.

An individual's degree of interest in quitting smoking, as formulated in the stages of change model, has been found to mediate health behavioral change, including smoking cessation (Prochaska, Redding & Evers, 1997).

The literature further indicates that interventions that take into consideration culturally relevant barriers or motivators to smoking cessation can enhance intention to quit significantly as well as boost cessation rates (Fiore *et al.*, 1996; Orleans *et al.*, 1998). Few programs however, especially ones targeting Asian Americans, have been developed to address these issues. Hence, major tobacco-related

cancer disparities exist between them and the mainstream U.S. population.

The primary purpose of this study was to assess the feasibility of an enhanced smoking cessation intervention that is culturally adapted to Chinese and Korean adult current smokers. A secondary purpose was to present findings of psychosocial process factors at baseline that mediate smoking cessation in these two Asian American subgroups. Based on an extensive literature review, this study appears to be one of the first studies of its kind to focus exclusively on Chinese and Korean American smokers for cessation.

## Methods

### Research Design

A one group pre-post test design was used. Participants in the intervention condition were asked to complete a baseline assessment and received a brief behavioral intervention, along with nicotine replacement therapy (Fiore *et al.*, 2000). Follow-up was conducted at 1-week, 1-month, and 3-months post-intervention to measure the plausible use of the cessation program.

### Participants Recruitment and Retention

Chinese and Korean smokers (N=43) were recruited during the period from May 2002 through March 2003. Potential participants were recruited through Asian community networks, Asian Community Cancer Coalition, health clinics and print media advertisements in local newspapers. Study participants' eligibility included: 1) being of Chinese or Korean ethnicity; 2) having smoked at least one puff on one cigarette in the past 7 days (i.e. seven-day point prevalence) (National Cancer Institute [NCI], 1989), 3) being age 18 years or older, and 4) owning or having access to a telephone. Participants' exclusion criteria included: 1) current enrollment in substance abuse treatment program, 2) current treatment for cancer, 3) being pregnant, or 4) having been diagnosed with heart disease or high blood pressure. Of the 43 potential participants, 34 smokers agreed to participate and completed the consent form. These included 15 Korean and 19 Chinese participants (among the latter, 2 Cantonese speakers and 17 Mandarin speakers).

### Intervention and Procedures

The program consisted of in-person intervention sessions, and 1-week, 1-month, and 3-months follow-ups post intervention. The initial screening lasted approximately 15 minutes. Potential participants were provided a description of the program and were evaluated for interest in and eligibility for participation. For those who were interested in and eligible for the study, informed consent was obtained,

and the first in-person intervention session was scheduled.

All sessions were administered in the participant's respective native language (Korean, Cantonese, or Mandarin). This strategy enhanced participants' understanding of the intervention contents and encouraged participants to express their thoughts regarding smoking and concerns about quitting with ease. During the intervention, a counselor met with each participant individually for approximately two hours. At the beginning of the session, participants were asked to complete a baseline smoking behavior questionnaire.

The intervention was in accordance with current nicotine addiction treatment guidelines (Fiore *et al.*, 2000). The program was designed to be time-, labor-, and cost-effective, without compromising its efficacy; it entailed smoking cessation advice along with nicotine replacement therapy (NRT). Participants who were interested in the use of NRT were screened for eligibility for nicotine patch use, and were provided usage instructions and free patches. These programmatic features were designed especially for underserved and hard-to-reach minority populations.

Building on a well-established cognitive-behavioral model, the intervention was tailored to the target group's distinctive pattern of health-related beliefs and values; it focused primarily on participants' cognitive-affective reactions to smoking and cessation. Participants were encouraged to explore their risk perceptions of cancer and other smoking-related diseases, were probed for their expectancies of and beliefs in quitting (e.g., reasons for quitting and ability to quit), and their values and goals (e.g., benefits of quitting and concerns about coping with withdrawal symptoms). Those who were ready to quit were encouraged to set a quit date, and the counselor addressed self-regulatory/coping issues with them, including past smoking cessation efforts, the identification of personal smoking triggers, and proposed strategies for overcoming personal barriers to quitting. Those who did not attempt to quit were reminded of the importance of smoking cessation as it related to their personal health.

Follow-up assessments were conducted at 1-week, 1-month, and 3-months post-intervention. Follow-up measures were designed to assess changes in participants' psychosocial factors, stages of change and smoking behaviors.

#### **Data Collection and Measurements**

Baseline data were collected through in-person interview prior to initial intervention session. The counselor asked participants questions and recorded their answers on a specially designed questionnaire. All follow-up data was obtained via telephone.

*Baseline measures.* Each participant's smoking behavior was evaluated prior to the in-person intervention. Participants were evaluated on demographic characteristics (race, sex, age, marital status, annual income, and education level). Attentional style was measured using a Monitor-Blunter Style Scale (Miller, 1995) to elicit monitoring/blunting responses to a structured stress-evoking scenario. Mediating variables assessing participants' cognitive-affective responses to cancer risk and smoking cessation included risk perception (four items to measure the degree to which individuals believe that they are at risk for adverse health consequences of continued smoking, e.g., vulnerability to cancer, cardiovascular disease), self-efficacy (four items modified from the well-validated Multidimensional Health-Related Control and Self-Efficacy Scale (MHCES; Marshall, 1991), and decisional balance (eight items of pros and cons of quitting). Emotional distress was measured using the six-item short form of the Profile of Mood States (POMS; McNair, Lorr & Droppleman, 1992) to assess affective distress concerning quitting smoking. The POMS provided an index score of anxiety, depression, anger, vigor, fatigue, and confusion, and had been used to assess affect in the context of smoking cessation interventions (Cinciripini *et al.*, 1996). It is a widely used measure of affect and has been shown to possess good reliability and validity (McNair *et al.*, 1992).

Baseline nicotine dependence was measured using the Fagerstrom Test for Nicotine Dependence (FTND), stage of change, and quit history. The FTND is a self-report scale with good internal consistency ( $\alpha = .64$ ) and test-retest reliability ( $r = .88$ , Pomerleau *et al.*, 1994). The measures included time between waking up and first cigarette smoked, whether the participants felt it was difficult to refrain from smoking in smoking-forbidden places, the cigarettes/cigar/pipe most difficult to give up, the number of cigarettes/cigar/pipe smoked on a typical day, whether they still smoked when so ill in bed most of the day, and whether they smoked more frequently during the first hours after waking than during the rest of the day.

Readiness to change regarding smoking cessation was assessed using Prochaska *et al.*'s (1992) stage of change model, which classifies individuals as precontemplation (i.e., not considering quitting in the next 6 months); contemplation (i.e., considering quitting in the next 6 months); preparation (i.e., considering quitting in the next 30 days); action (i.e., quit smoking for less than 6 months); and maintenance (i.e., quit smoking for more than 6 months).

The main outcome measure was the point prevalence abstinence from smoking. Participants were asked to report whether they smoked even one puff of one cigarette in the past seven days prior to contact at each assessment point (1-week, 1-month, and 3-months follow-up time points). The secondary outcome measures included number of quit attempts, and program feasibility and acceptability. Program plausibility was measured by participants' levels of satisfaction with the intervention, the degree to which they would recommend the intervention to others, and whether the program met their expectations.

#### **Data Analysis**

Data were analyzed with SPSS version 10.0. Descriptive statistics were used to report demographic factors (ethnic group, sex, age, marital status, annual income, and education level). The demographic factors of marital status, annual income, and education level were correlated using a contingency coefficient with smoking status (smoker, reducer, and quitter) at 3-months follow-up after the intervention. Reducers were participants who reported reducing the amount of cigarettes smoked after undergoing the intervention, but had not quit. Smokers continued to smoke as much as they did prior to receiving the intervention. Psychosocial and physiological factors such as the Monitor-Blunter Style Scale (MBSS), Short Profile of Mood States (POMS), risk perception of smoking, self-efficacy, decisional balance (weighing pros and cons) and the Fagerstrom test for nicotine dependence were analyzed. The MBSS consisted of 8 items which were based on a scenario. Four items measured for blunters and four measured for monitors. One point was assigned per response checked and was summed to produce a scaled score, one for blunters (0-4), and one for monitors (0-4). The Wilcoxon test was used to examine the results of the blunters and monitors.

The POMS was measured by 6 items which included a list of terms such as anxious, sad/depressed, confused, energetic, fatigued, and angry. Participants selected from a Likert scale ranging from 0-4, where 0=not at all, 1= a little, 2=moderately, 3= quite a bit, and 4=extremely. Energetic was reverse coded for analysis. A scaled score was produced by summing all the items, with the resulting score being a reactive distress measure. A score of risk perception was developed based on four items of risk statements and participants selected from Likert scale ranging from 1-4, where 1=strongly disagree, and 4=strongly agree. A score for self-efficacy was also determined in this manner. A Decisional Balance score was developed for pros and cons associated with smoking cigarettes. There were eight items, four of which measured pros and four measured cons. Participants selected from a four

point Likert scale, where 1=strongly disagree, and 4=strongly agree. The Wilcoxon test was used to examine the results of the pros and cons of decisional balance.

The Fagerstrom test for nicotine dependence consisted of 6 items. Four items consisted of a yes/no answer with regard to smoking behavior. One item asked how quickly the participant smoking upon waking in the morning, where 0=more than 60 minutes, 1 = 31-60 minutes, 2 = 6-30 minutes, and 3 = less than 5 minutes. One item asked for numbers of cigarettes, cigars, and pipes smoked. These estimates were recoded as 0 = <10, 1 = 11-20, 2 = 21-30, 3 = >31 cigarettes per day. The values of all items were summed to produce a scaled score for each respondent and then the mean of the sample was calculated. A chi-square analysis and contingency coefficient was also reported to show a correlation between smoking status (smoking non-reducers, reducers, and quitters) and three demographic variables (marital status, annual income, education level) at 3-months follow-up. Descriptive statistics were used to describe the stages of change for baseline, and 1-week, 1-month, and 3-months follow-up. The quit history and smoking history was determined at baseline. Descriptive statistics were reported for quit history (attempts in the last three months and past year, physician advice to quit smoking and whether the physician's advice motivates the person, and the number of quit attempts). Separate chi-square analyses were conducted for 1) smoking behavior (smoke regularly, smoke regularly but reduced, smoke once in awhile, used to smoke but quit as a result of the program), 2) smoked even one puff within last week 3) change brands to lower tar/nicotine, 4) number of cigarettes smoked in the last week (Friedman test) and 5) number of quit attempts (Friedman test) since the beginning of the Asian cessation program at baseline, 1-week, 1-month, and 3-months follow-up.

Descriptive statistics were used to report participant satisfaction. Satisfaction of the program was determined by three items and participants selected from a five-point Likert scale, where 1=not at all, 2= a little bit, 3=moderately, 4=quite a bit, 5=very much.

## **Results**

### **Sample Characteristics**

The sample was comprised of Chinese (55.9%) and Koreans (44.1%). The mean age of the participants was 44 years (SD = 17.21; range = 18-77 years). The majority was male (91.2%). Most were married (73.5%), followed by single (23.5%), and separated (2.9%). Approximately 88% of the participants were employed and 66.7% earned \$28,000 or less. About

27% had less than a high school education, 21.7% had a high school education or its equivalent, and 51.5% had a college education (Table 1).

**Psychosocial Factors at Baseline**

A Wilcoxon test examined the results of the blunters and monitors. There was a significant difference ( $Z = -3.35, p < .001$ ) between the blunters ( $M=1.52, SD=1.4$ ) and the monitors ( $M=2.62, SD=1.21$ ) on the Monitor-Blunter Style Scale (Table 1). Participants were more likely to be monitors than blunters. This indicates that participants were receptive to health promotion messages and could perceive greater risk of smoking.

An analysis of the Profile of Mood States score ( $M= 7.4, SD=4.19$ ) was calculated on a scale that ranged from 0-24. This was a relative measure of reactive distress. A risk perception scaled score ( $M=12.8, SD=2.1$ ) was calculated which ranged from 4-16. This score indicates a relatively strong perception of risk among participants. A self-efficacy scaled score ( $M=9.3, SD=2.3$ ) was calculated which ranged from 4-16. This score indicates a relatively moderate perception of self-efficacy among participants.

**Table 1. Baseline Sample Demographics and Psychosocial Profile**

Table 1. Baseline Sample Demographics and Psychosocial Profile		
Ethnic Group	(N=34), %	
Chinese	55.9	
Korean	44.1	
Sex		
Male	91.2	
Female	8.8	
Age(Mean, SD)	43.9(17.2)	
18-24	12.1	
25-40	36.4	
41-55	21.1	
56-70	30.3	
70+	6.0	
Marital Status		
Single	23.5	
Married	73.5	
Separated	2.9	
Annual Income		
< 8,000	33.3	
8,001-28,000	33.4	
28,001-50,000	15.2	
50,000+	6.1	
Employed	87.9	
Education Level		
< High School	27.3	
High School, trade school, or Equivalent	21.7	
College/Graduate School	51.5	
Psychosocial Factors at Baseline		
Monitor Blunter Sensitivity Scale	Mean(SD) (N=34)	Z
Blunters	1.5(1.38)	-3.35**
Monitors	2.6(1.21)	
Short Profile of Mood States <sup>a</sup>	7.4(4.19)	
Risk perception of smoking <sup>b</sup>	12.8(2.10)	
Self-efficacy <sup>b</sup>	9.3(2.31)	
Fagerstrom test for Nicotine Dependence	5.0(2.04)	
Decisional Balance <sup>b</sup>		
Pros	11.4(1.86)	-2.05*
Cons	12.5(2.16)	

Note: Mean values represent scaled scores

a Where, 0 = not at all, 1 = a little, 2 = moderately, 3 = quite a bit, 4 = extremely

b Where, 1 = Strongly Agree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

\*p<.05, \*\*p<.001

A Wilcoxon test examined the results of the pros and cons of smoking in decisional balance. There was a significant difference ( $Z = -2.05, p < .05$ ) between the pros ( $M=11.4, SD=1.86$ ) and the cons ( $M=12.5, SD=2.16$ ) of smoking. More participants saw the contraindications for smoking. A scaled score ( $M=5.0, SD=2.04$ ), which ranged from 0-10, was calculated for the Fagerstrom nicotine dependency test. This score indicates a relatively strong sense of nicotine dependence among participants.

**Smokers, Reducers, and Quitters by Demographic Factors**

A contingency correlation coefficient was calculated for the relationship between smoking

status at 1-month and marital status (Table 2). A positive correlation was found ( $c(4) = .50, p < .05$ ), indicating a relationship between the two variables. Quitters and reducers were significantly more likely to be married than single or separated,  $\chi^2(4)=9.5, p < .05$ . The rationale for using 1-month instead of 3-month smoking status is that the 1-month assessment represents a mid-point smoking status post intervention where a behavior change is expected to be observed. In addition, there was a full sample participation at that point ( $N=34$ ).

**Table 2. Demographic Factors By Baseline, Smokers, Reducers, and Quitters At 1 Month Follow-Up**

	Smokers			$\chi^2$	c
	Nonreducers (N=2), %	Reducers (N=9), %	Quitters (N=18), %		
Marital Status					
Single	100.0	12.5	21.1		
Married		75.0	78.9		
Separated		12.5	---	9.5*	.50*
Annual Income					
< 8,000	100.0		38.9		
8,001-28,000		25.0	33.3		
28,001-50,000		25.0	16.7		
50,000+		25.0	---		
Unemployed/school/retired		25.0	11.1	13.1	.57
Education Level					
< High School		3.6	33.3		
High School, trade school or Equivalent		3.6	27.8		
College/graduate school	7.1	21.4	38.9	4.8	.38

c=Contingency coefficient

$r_s$  = Spearman correlation

\* $p < .05$

**Stages of Change**

At baseline, 2.9 % of participants were in the pre-contemplation stage, 8.9 % in the contemplation stage, 88.2% in the preparation stage, and 0%, in the action stage (Table 3). At 1-week follow-up, 57.7% reported being in the action stage. Of those who continued to smoke after the intervention at 1-week follow-up, 7.7% reported being in the pre-contemplation stage, 0% in the contemplation stage, 34.6% in the preparation stage. At 1-month follow-up there were 67.9% in the action stage and of those who continued to smoke, 7.1% were in the pre-contemplation and 10.7 % in the contemplation

stages, and 14.3% in the preparation stage. At 3-months follow-up, 61.5 % were in the action stage, while 3.9 % of current smokers were in pre-contemplation and 15.4 % in contemplation, and 19.2 in the preparation stage.

**Tobacco Use History and Smoking Behavior**

Participants attempted to quit less than one time ( $M=.61, SD=1.09$ ) within the last three months and less than two times ( $M= 1.58, SD = 2.17$ ) within the last year prior to initiation of the smoking cessation program (Table 3). Approximately 47.0% of participants were advised by their physician to quit smoking, but that advice motivated them only a little or moderately to do so ( $M=2.72, SD=1.5$ ). About 3%

had previously tried smoking cessation programs and, on average, had attempted eight times to stop smoking prior to the current smoking cessation program.

There was a significant reduction in regular smokers from baseline (79.4%) to 1-week (11.5%), 1-month (6.5%), and 3-months (7.4%) follow-up. There was also a significant increase in reported smokers who had reduced cigarette use from baseline (20.6%) to 1-week (25.8%) and 1-month (25.8%) follow-up. Approximately 57% to 61% of participants reported quitting smoking from baseline to post intervention.

There was a significant reduction in participants reporting that they had smoked even one puff of a cigarette within the last 7 days, ( $\chi^2(3)=25.9$ ,  $p<.001$ ). Further, a Friedman test results showed a significant reduction in the number of cigarettes smoked from baseline ( $M=97.2$ ,  $SD=67.7$ ) to 1-week ( $M=26.6$ ,

$SD= 37.3$ ), 1-month ( $M=22.7$ ,  $SD=39.6$ ), and 3-months ( $M=24.9$ ,  $SD=48.3$ ) follow-up, ( $\chi^2(3)=33.0$ ,  $p<.001$ ). With regard to quit attempts, participants reported that they had tried to quit since completing the cessation program at 1-week ( $M=1.12$ ,  $SD=1.6$ ), 1-month ( $M=4.6$ ,  $SD=8.9$ ), and 3-months ( $M=7.8$ ,  $SD=20.2$ ) follow-up, but a Friedman test revealed that these differences in quit attempts from 1-week to 3-month follow-up were not statistically significant. Approximately 36 to 46% reported switching to lower tar/nicotine brand cigarettes.

#### **Program Satisfaction**

At 1-week, 1-month, and 3-month follow-up participants indicated that they were satisfied ( $M = 4.17$  to  $4.31$ ) with the cessation program, that it had met their expectations ( $M=3.9$  to  $4.5$ ), and that they would recommend it to others ( $M = 4.1$  to  $4.5$ ) (Table 3). Responses to each were based on a scale of 1 = not at all to 5 = very much.

**Table 3. Stages of Change, Tobacco Use History and Behavior, and Participant Satisfaction**

	Baseline (N=34) (%)	1-Week (N=26) (%)	1-Month (N=28) (%)	3-Month (N=26) (%)	
<b>Stages of Change</b>					
Precontemplation	2.9	7.7	7.1	3.9	
Contemplation	8.9	---	10.7	15.4	
Preparation	88.2	34.6	14.3	19.2	
Action	0	57.7	67.9	61.5	
<b>Quit History</b>	Baseline (N=34)	1-Week (N=26)	1-Month (N=34)	3-Month (N=27)	$\chi^2$
Quit attempts in the last 3 months (Mean, SD)	.61(1.09)	---	---	---	---
Quit attempts in the last year (Mean, SD)	1.58(2.17)	---	---	---	---
A physician told you that you should quit smoking (%)	47.1	---	---	---	---
A physician's advice motivates you to quit <sup>a</sup> (Mean, SD)	2.72(1.5)	---	---	---	---
Previous participation in smoking cessation programs (%)	2.9	---	---	---	---
Number of times tried to quit smoking	8.4 (18.9)	---	---	---	---
<b>Smoking and Quitting Behavior</b>					
Smoke regularly	79.4	11.5	6.5	7.4	
Smoke regularly but reduced	20.6	30.8	25.8	18.5	
Smoke once in a while	---	---	6.5	14.8	
Used to smoke, but quit since the Asian Cessation Program (%)	---	57.7	61.3	59.3	50.9**
Smoked even 1 puff of a cigarette in last 7 days (%)	100.00	33.3	46.4	12.0	25.9**
Number of cigarettes smoked in past 7 days (Mean, SD)	97.2 (67.7)	26.6 (37.3)	22.7 (39.6)	24.9 (48.3)	33.0**
Change brands in past 6 months to lower tar/nicotine (%)	36.4	33.3	46.4	12.0	3.4
Quit attempts since the Asian Cessation Program (Mean, SD)	---	1.12 (1.6)	4.6 (8.9)	7.8 (20.2)	2.7

\* $p<.01$ , \*\* $p<.001$

<sup>a</sup> Where, 1=not at all, 2=a little bit, 3= moderately, 4=quite a bit, 5=very much

## Discussion

The primary purpose of this study was to present preliminary findings on and assess the use of a theory-driven, culturally adapted smoking cessation intervention program for Chinese and Korean American adult current smokers. There is a dearth of information about the stages of smoking cessation behavioral changes in these two ethnic groups.

At the outset, we wish to underscore the fact that our study has demonstrated that the success of recruitment, participation and follow-up was directly attributed to a number of factors that included, first, counselors' training, in particular, their ability to adapt to the educational levels of participants, second, the use of indigenous languages that facilitated participants' comprehension of questions on baseline and follow-up questionnaires and, third, elucidation, on a one-on-one basis, the content of the intervention program.

Our results also indicated that the majority of the smokers in our study were in the contemplation and preparation stages at baseline, reflecting either a desire on the part of participants' to quit or a willingness to try to quit. Follow-ups at all three time intervals of post intervention were consistent with findings reflected in smoking cessation literature: between 57% and 68% of our study participants moved from precontemplation, contemplation, and preparation stages to the action stage and maintained this stage through the three follow-up intervals (Ferguson *et al.*, 2003; Lando *et al.*, 2003; Osinubi *et al.*, 2003; Reeve, Calabro & Adams-McNeill, 2000).

Chinese and Korean American smokers' psychosocial profile at baseline revealed a tendency toward being monitors rather than blunters, that is, they tended to be receptive to cues, perceptive of smoking risks, and amenable to accepting health messages that differ from their own. Participants' scores on perception of risks associated with smoking were high, and their moderately high scores on self-efficacy indicated willingness and ability to quit smoking were they to be provided with the appropriate knowledge, skills, and social support to do so. This is also partially revealed in the fact that they were in the mid range for the nicotine dependency test, an indicator of recognition of dependency. Their relatively low scores at baseline on psychosocial measures also indicated that they were not overly distressed, an affective state that could potentially interfere with participants' attempts to quit smoking (Cinciripini *et al.*, 1996; McNair *et al.*, 1992). These findings corroborate cross-sectional and longitudinal studies that have shown an association between these psychosocial variables and

smoking behavior, leading to the assumption that manipulation of these variables could lead to positive smoking behavior changes (Lafferty, Heaney & Chen, 1999; Dijkstra & De Vries, 2001).

Our findings indicated that prior to intervention, smokers averaged less than one quit attempt in the last three months and about 1.5, in the last year, a finding consistent with previous studies (John *et al.*, 2004; Emmons *et al.*, 2003; Murray *et al.*, 2000). Nearly half of our participants (47.1%) reported that although their physician advised them to quit, the advice had only a moderate effect on their motivation to quit. Many had tried at least three cessation programs and eight quit attempts before the current intervention, findings that are also consistent with those of previous studies (Curry *et al.*, 2003; Kottke *et al.*, 1989). The data leads us to believe that our participants' behavior underscores their dependency on tobacco and an inability to garner enough motivation on their own to alter smoking behavior.

The quit rate among the participants (N=27) who completed 3-months post intervention follow-up is remarkable (59%). However, of the original sample (N=34), the 3-month quit rate is 47% because 20% of the total study participants failed to complete the 3-months post intervention follow-up. Based on pre intervention smoking behavior, we can only assume that those participants who dropped out continued to maintain their smoking behaviors.

Overall, the reported findings on quitting behavior are consistent with a reduction in numbers of cigarettes smoked in the past 7 days and in the number of reported reducer of cigarette use, even when smoking were to be continued. These findings are also consistent with other studies (Hegaard *et al.*, 2003; Borland *et al.*, 2003) that cite higher rates of success of nicotine replacement therapy when the therapy is combined with educational and lifestyle interventions than behavioral interventions alone.

Participants' reaction to the smoking cessation program revealed a high level of satisfaction, ranging from quite a bit to very much. The large majority felt that the program met their expectations and indicated that they would recommend it highly. The overall positive reaction to the cessation program pointed to the feasibility of its application in the Chinese and Korean communities at large.

This study had several limitations. First, its overall objective was to collect preliminary data and to assess the plausibility of conducting a culturally enhanced smoking cessation intervention focused on a limited sample of Chinese and Korean smokers; generalizations based on this sample are therefore limited given the fact that no control group was used to observe changes in participants' smoking

behaviors over time. The credibility of our findings, however, is corroborated by other studies on smoking and quitting behaviors, as well as stages of change in overall smoking behavior.

The second limitation of the study is the absence of biochemical verification of the self-reported smoking abstinence. Although the possibility that a few participants may have misreported their abstinence which cannot be ruled out, the quit rate observed in our study was also similar to those rates reported in other larger studies of Asian American smokers where salivary cotinine testing was used to validate quit status (Lai *et al.*, 2000).

There is today a paucity of research on tobacco cessation in Asian American populations; three studies identified in a literature review focused on Vietnamese and other Southeast Asians (Chen, 2001; Jenkins *et al.*, 1997; McPhee *et al.*, 1995). To our knowledge, this pilot study is the only one that focuses on the larger subset of the Asian American populations, namely, Chinese and Koreans. Findings to date have suggested media-led intervention was less effective than the one-on-one counseling approach to cessation, the focus of this study. Despite its limitations, our study, which is supported by other studies on smoking and quitting behavior, has clearly shown the potential for effective use of a culturally appropriate intervention program in combination with nicotine replacement therapy for smoking reduction, smoking cessation, the movement of smokers from one stage of change to another, and the applicability of such a cessation strategy in Chinese and Korean populations. In future studies, we will employ randomized trial design to counter pilot study limitations. We will also pay special attention to issues of relapse at 3-months follow-up.

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