Knowledge and Behaviour Regarding Heart Disease Prevention in Chinese Canadian Immigrants

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ABSTRACT

Objective: Although Chinese are one of the fastest growing minorities in Canada, there is little information about heart disease prevention behaviour in Chinese immigrants. Our objective was to examine the knowledge and practices of Chinese immigrants regarding heart disease prevention.

Methods: 504 randomly selected Chinese adult immigrants participated in a community-based, in-person survey in Vancouver during 2005. The survey included questions on heart disease prevention knowledge and practices.

Results: Although respondents were quite knowledgeable about heart disease risk factors, their behaviours to reduce heart disease risk were generally low. Thirteen percent of respondents consumed five or more servings of fruit/vegetables per day; 37% engaged in regular physical activity; 54% never used tobacco; 81% had received a blood pressure check in the past 2 years; and 54% had received a cholesterol test in the past 5 years. Differences were found in these behaviours by gender, age, English fluency, birth country and duration of residence in North America. The associations are presented between these demographic variables and heart disease prevention behaviours.

Conclusion: Heart disease prevention programs are needed in Chinese immigrant populations, especially aimed at increasing fruit/vegetable consumption and regular physical activity. Efforts are also needed to decrease tobacco use and to increase cholesterol testing.

Key words: Heart diseases; health knowledge, attitudes, practice; Asian Continental Ancestry Group; emigration and immigration

La traduction du résumé se trouve à la fin de l'article.

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The Canadian population has grown largely by net international migration,[1] with Chinese being the fastest growing minority population. Over 1 million ethnic Chinese are now living in Canada.[2] However, the health status and health needs of immigrants to Canada are poorly understood. Cultural beliefs and practices are foundational to behaviours intended to promote good health, and Canada's health and social service system must accommodate these cultural differences and offer culturally appropriate alternatives.[3]

Cardiovascular disease, though less frequent, remains a significant health problem among Chinese Canadians.[4,5] Risk factors for heart disease include low fruit/vegetable consumption, low physical activity, tobacco use, hypertension, and hyperlipidemia.[6,7] Because little is known about knowledge and behaviour regarding heart disease prevention for Chinese Canadians, we conducted a needs assessment survey in 2005 for Chinese men and women residing in Vancouver, British Columbia. The findings are presented for heart disease prevention knowledge and practices in Chinese immigrants.

METHODS

Study sample and survey procedures

A Community Advisory Committee of 3 physicians and 4 representatives from Chinese organizations advised the research team throughout the study. Our survey sample was drawn from 10 east Vancouver postal code areas with high proportions of Chinese residents. Chinese households were identified by applying a previously validated list of Chinese last names to the 2004 electronic Vancouver telephone book.[8] We then randomly selected for survey 1,500 households in the target postal code areas.

Individuals were eligible for survey if they were Chinese (regardless of country of origin); age 20 to 64 years; and able to speak Cantonese, Mandarin, or English. Selected households received an introductory letter and then each household was approached by a trained trilingual Chinese interviewer in order to identify eligible adults and to conduct the in-person interview in the language of choice. We randomly assigned households to those where male interviewers asked to speak with a man, and female interviewers asked to

speak with a woman. When a household included two or more eligible adults, the interviewer selected the person with the nearest birthday. Respondents were offered $20 as a token of appreciation. Interviewers made at least five in-person attempts at contacting each household, including daytime, evening, and weekend attempts.

The analysis was restricted to Chinese adults born outside of North America.

Survey instrument

The survey questionnaire was developed in English, translated into Chinese using standard procedures, and pre-tested.[9] Respondents specified their age, educational level, English fluency level, country of birth, and, if foreign-born, number of years of residence in North America. Each respondent was also asked if he/she thought the following increased, did not increase/decrease, or decreased a person's risk of heart disease: eating fruit and vegetables, doing physical activity, smoking, having high blood pressure, and having a high cholesterol level.

Respondents were then queried about their usual fruit/vegetable consumption during the previous 30 days, as assessed by a modified version of the instrument used in the National 5-A-Day for Better Health program.[10] A series of six questions were asked about consumption of: pure orange/grapefruit juice, other pure fruit juices, fruits, green salads, potatoes (excluding fried potatoes), and vegetables (other than green salads and potatoes). Each participant was then asked how often and how long they had engaged in physical activity during the last 30 days.

The survey questionnaire also addressed tobacco use, history of blood pressure checks, and history of cholesterol testing. Respondents were asked if they had smoked 100 or more cigarettes in their lifetime and, if so, whether they had smoked cigarettes during the last 30 days. Each respondent was also asked if he/she had ever had a blood pressure check and, if so, when the blood pressure was last checked. Similarly, respondents were asked if they had ever had a cholesterol test and, if so, when they last had one.

The project was approved by the Research Ethics Board at the University of British Columbia.

Data analysis

Total fruit intake was estimated by summing fruit and juice, and total vegetable intake by summing salad and vegetables; these amounts were then combined to be consistent with national recommendations.[11] Respondents who reported that they did physical activity for 30 minutes or more at least five days a week were defined as being physically active; those who indicated they had smoked at least 100 cigarettes in their lifetime, and had smoked during the last 30 days, were defined as current smokers; and those who indicated they had smoked at least 100 cigarettes, but had not smoked recently, were defined as former smokers.

Analysis of variance, the chi-square test, and Fisher's exact test (when necessary) were used to assess statistical significance in bivariate comparisons;[12] and linear and unconditional logistic regression models were used to summarize the independent association of individual factors on heart disease prevention strategies.[12,13] All demographic variables were included in multivariable analyses with no variable selection.

RESULTS

Study group

A total of 504 persons participated in the study, representing 59% of the reachable and eligible households. The proportions interviewed in Cantonese, Mandarin, and English were 73%, 20%, and 7%, respectively. Most respondents were women, between 45 and 64 years of age, with no post-high school education, fluent in English, born in China, and living in North America for at least 10 years, as shown in Table I.

TABLE I

Study Group Characteristics (n=504)

Variable	N	%
Gender		
Male	217	43
Female	287	57
Age (years)		
20-44	196	39
45-64	304	61
Education (years)		
≤12	334	67
>12	166	33
English fluency		
Well	329	65
Not well	174	35
Birth country		
China	275	55
Other	228	45
Years in North America		
<10	128	26
≥10	373	74

Number of participants with missing values: age=4, education=4, English fluency=1, birth country=1, years in North America=3.

Knowledge

The overwhelming majority knew that low fruit/vegetable consumption (91%), high blood pressure (94%) and high cholesterol (92%) increased the risk of heart disease. Most also knew that lack of physical activity (81%) increased this risk. Interestingly, fewer (78%) knew that smoking was a risk factor for heart disease.

Health behaviours

Daily consumption of fruit/vegetables averaged 3.5 servings (standard deviation: 1.4), with 8%, 26%, 32%, 21%, and 13% of respondents consuming <2, 2, 3, 4, and ≥5 servings per day, respectively. Thirty-five percent of respondents reported no physical activity within the last 30 days, and only 37% were defined as physically active. Twenty percent were current smokers and 26% former smokers. Worthy of note was the much higher smoking rates in men (20% and 26% were current and former smokers, respectively, compared to only 1% and 2% in women). Nearly all respondents (93%) had received at least one blood pressure check, 81% within the previous 24 months. Fewer (56%) reported ever receiving a cholesterol test, 54% within the last five years.

Associations between socio-demographic variables and these behaviours are shown in Table II. Since only 3 Chinese women were current smokers, tobacco use was restricted to men only.

DISCUSSION

The global burden of heart disease is rising among non-European populations.[14] Similarities in prevalence of several modifiable risk factors (smoking, hypertension, hypercholesterolemia) have been reported between Chinese and white Canadian adults.[4] We found that most Chinese Canadian immigrants identified fruit/vegetable consumption, physical activity, blood pressure, and cholesterol level as modifiable risk factors for heart disease, but fewer knew about smoking. Our finding about fruit/vegetable consumption is in contrast to a recent report that fewer

TABLE II

Socio-demographic Factors Associated with Health Behaviours (n=504)

Variable	Fruit/Vegetable Daily Servings		Physically Active		Current Smoker*		Recent Blood Pressure Check†		Recent Cholesterol Testing‡	
	Mean (SD)	p-value§	%	p-value§	%	p-value§	%	p-value§	%	p-value§
Gender										
Male	3.3 (1.4)	**0.01**	35	0.49	20		76	0.02	54	0.59
Female	3.6 (1.3)		39				85		54	
Age (years)										
20-44	3.5 (1.5)	0.52	24	**<0.0001**	29	**0.02**	71	**0.0008**	29	**<0.0001**
45-64	3.5 (1.3)		46		14		88		70	
Education (years)										
≤12	3.4 (1.4)	0.33	43	0.47	28	0.25	86	0.90	53	0.30
>12	3.5 (1.4)		35		17		79		54	
English fluency										
Well	3.6 (1.4)	**0.01**	35	0.76	16	**0.03**	78	0.10	54	0.74
Not well	3.3 (1.2)		43		29		87		55	
Birth country										
China	3.7 (1.5)	**<0.0001**	41	0.20	20	0.51	81	0.99	51	0.70
Other	3.2 (1.2)		34		21		81		58	
Years in North America										
<10	3.6 (1.5)	0.69	35	0.75	28	0.17	73	0.09	35	**0.006**
≥10	3.4 (1.3)		38		18		84		60	

* Restricted to males.
† Within last 2 years.
‡ Within last 5 years.
§ Adjusted for all other socio-demographic variables.

Chinese North American women believed that diet could affect heart disease risk.[15]

As for specific health behaviours, we found lower proportions of Chinese respondents consumed 5 or more servings of fruit/vegetables daily and engaged in regular physical activity, as compared to published data for the BC general population.[16] The proportions of Chinese respondents receiving a recent blood pressure check[17] and who were current smokers (for males only[18]) were similar to the BC general population. Data on cholesterol testing were unavailable for the BC general population.

We found that these proportions for specific health behaviours in Chinese respondents were generally well below the stated provincial goals for healthy living and physical fitness in the BC strategic plan.[19] The exception was the very low smoking rates reported in Chinese women, a finding that has been reported elsewhere.[20-23]

Several of our findings have been reported elsewhere, including higher fruit/vegetable consumption in Chinese women than men,[16,20] and less physical activity in Asian Americans than in other groups.[24-26] In addition, our findings of no association between physical activity and country of birth or recency of immigration are consistent with similar physical activity levels reported in US-born and foreign-born Asians.[27] Also, greater likelihoods of being a current smoker in younger rather than older Chinese men has been reported for British Columbian men in general,[18] of having received a recent blood pressure check in Chinese women rather than men has been reported for British Columbian women,[17] and of having received a recent cholesterol test in long-term rather than short-term North American Chinese residents is consistent with cancer screening literature showing relatively low levels of preventive testing in recent immigrants.[28-30]

One of our findings was inconsistent with the literature. We found no association between fruit/vegetable consumption and recency of immigration, and greater consumption in those with greater acculturation when measured by English fluency. However, a study of Hispanic Americans reported greater consumption of fruit/vegetables among those with less acculturation when measured by the language in which they most commonly spoke or thought.[31] Another interesting finding was the higher level of physical activity in older compared to younger Chinese respondents. This might reflect busy lifestyles in younger persons with work and child rearing; the older respondents' definition of physical activity including involvement in exercise activities; and a low priority being placed on these exercise activities in younger persons. One of these exercise activities was Tai Chi, which is very popular among older Chinese adults in Vancouver.

Study strengths included population-based sampling methods and data collection by personal interviews in the language of the participant's choice. Limitations included: recruitment from one geographic area; possible selection bias resulting from the response rate and the restricted eligibility to households with listed telephone numbers and Chinese participants who speak Cantonese, Mandarin, or English; unverified self-reported health behaviours; and challenges in measuring diet and physical activity. Controversy remains regarding whether to include or exclude potatoes when summarizing fruit/vegetable consumption.[32] We included potatoes in our analysis to allow appropriate comparisons with previous studies. However, a secondary analysis showed that Chinese immigrants, as a group, do not eat potatoes regularly (mean daily servings of 3.4 and 3.5, when potatoes were excluded and included, respectively). Upon the advice of community advisory committee members, we made no attempt to separate moderate and vigorous physical activities because this dichotomy was felt not to be well understood by Chinese immigrants.

In conclusion, a high proportion of Chinese immigrants are not adhering to recommendations concerning fruit/vegetable consumption and regular physical activity. Cholesterol testing was also low. Culturally and linguistically appropriate heart disease prevention programs should be developed, implemented, and evaluated in Chinese immigrant populations, especially aimed at increasing

fruit/vegetable consumption and regular physical activity, and discouraging recent immigrants from adopting unhealthy dietary and physical activity behaviours. Future tobacco cessation efforts directed at Chinese immigrant communities should target younger men, and efforts to increase cholesterol testing should focus on recent immigrants to Canada.

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RÉSUMÉ

Objectif : Bien que les Chinois constituent l'une des minorités dont la croissance est la plus rapide au Canada, on manque d'information sur les habitudes de prévention des maladies coronariennes des immigrants chinois. Nous avons cherché à examiner les connaissances et les pratiques de ces immigrants en matière de prévention des maladies coronariennes.

Méthode : 504 immigrants chinois adultes sélectionnés au hasard ont pris part à une enquête locale effectuée en personne à Vancouver en 2005. L'enquête comportait des questions sur les connaissances et les pratiques liées à la prévention des maladies coronariennes.

Résultats : Les répondants étaient très bien renseignés sur les facteurs de risque des maladies coronariennes, mais ils avaient dans l'ensemble peu de comportements visant à réduire ces risques. Treize p. cent consommaient cinq portions ou plus de fruits et légumes par jour; 37 % pratiquaient régulièrement une activité physique; 54 % ne consommaient jamais de produits du tabac; 81 % avaient fait vérifier leur pression artérielle au cours des deux années précédentes; et 54 % avaient subi un test de cholestérolémie au cours des cinq années précédentes. Des écarts ont été observés dans ces comportements selon le sexe, l'âge, la maîtrise de l'anglais, le pays de naissance et la durée de résidence en Amérique du Nord. Nous présentons les liens entre ces variables démographiques et les habitudes de prévention des maladies coronariennes.

Conclusion : Des programmes de prévention des maladies coronariennes sont nécessaires dans les populations immigrantes d'origine chinoise, surtout pour ce qui est d'accroître la consommation de fruits et légumes et l'activité physique pratiquée régulièrement. Il faudrait aussi prendre des mesures pour réduire le tabagisme et promouvoir les tests de cholestérolémie.

Mots clés : maladies coronariennes; connaissances, attitudes et pratiques liées à la santé; Groupe d'ascendance asiatique; émigration et immigration