

## RESEARCH COMMUNICATION

# Participation in Colorectal Cancer Screening Among Chinese Americans

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## Abstract

**Introduction:** Colorectal cancer (CRC) is the second leading cause of cancer deaths in the United States and the third most common malignant neoplasm worldwide. Chinese Americans are one of the ethnic minority groups who have the lowest rates of CRC screening. The purpose of this study was to describe CRC screening among less acculturated Chinese Americans and to identify factors associated with CRC screening. **Methods:** We performed a review of 383 patients' medical records at a large community health clinic in Seattle's metropolitan area between July 2003 and September 2004. Outcome measurements included receiving fecal occult blood testing (FOBT) in the last 12 months, sigmoidoscopy in the previous 5 years and/or colonoscopy in the past 10 years. Compliance with CRC screening was assessed by documentation in patients' medical records. **Results:** The overall use of CRC screening per guidelines was 40%. Only 72(19%) patients had their FOBT test in the last 12 months. Eighty one patients (21%) had colonoscopy in the last 10 years and eleven (3%) of the patients had sigmoidoscopy in the last 5 years. Chi-square analyses revealed no significant differences between users and non-users of FOBT, sigmoidoscopy, and colonoscopy in terms of age, gender, insurance status or language. **Discussion:** Participation in CRC screening among less acculturated Chinese Americans was lower than rates derived from previous self-reported surveys. Research of effective preventive programs promoting annual FOBT is vital to increasing the use of CRC screening among this population.

**Key Words:** Colorectal cancer screening - Chinese Americans - prevention programs

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## Introduction

Colorectal Cancer (CRC) is the second leading cause of cancer deaths in the United States (US). It is estimated that 150,000 new cases of colorectal cancer will be diagnosed in the U.S. each year and 56,000 persons will die of this malignancy (Jemal et al, 2006). While Asia has lower CRC rates than North America, several studies have shown that migrants' adoption of Western lifestyles, including dietary patterns, leads to a rapid transition towards U.S. rates (Bernstein and Wu, 1998; Whittemore et al, 1990; Yu et al, 1991). In a comparison of CRC incidence rates, Americans had rates four times higher than native Chinese and Chinese Americans had rates three times higher than native Chinese (Yu et al, 1991).

Early detection is important to reducing CRC mortality (Mandel et al, 2000). The US Preventive Services Task Force, the American Cancer Society and the American Gastroenterological Association all recommend CRC

screening for average-risk persons aged 50 or over using one or a combination of the following screening tools: annual fecal occult blood test (FOBT), sigmoidoscopy every five years, double contrast barium enema every five years, or colonoscopy every 10 years (Pignone et al, 2002). Several clinical trials documented that colorectal screening tests improve patient survival (Selby et al, 1992; Hardcastle et al, 1996; Kronborg et al, 1996; Mandel et al, 1999). However, 2001 Behavioral Risk Factor Surveillance System (BRFSS) data showed that only 24% of respondents aged 50 and older had received FOBT in the prior 12 months and 39% had a lower endoscopy within the past five years (Center for Disease Control, 2003). CRC screening studies in Asian Americans show screening rates of 11-31% for FOBT in the past year; 18-41% for sigmoidoscopy in the past five years; and 15-44% for sigmoidoscopy or colonoscopy in the past five years (Ward et al, 2004; Center for Disease Control 1999; Walsh et al, 2004; Jenkins et al, 1990; Sun et al, 2004; Tang et al, 2001; Honda 2004; Maxwell et al, 2000;

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Juon et al, 2003; Kim et al, 1998). It is of note that most of these studies were conducted using convenience sampling methods and relied on self-reports that were not validated through medical record review.

Opportunities to increase CRC screening occurs most likely in primary care (Patel et al, 2004). Yet few studies have reported the actual use of CRC screening rate in minority population. To our knowledge, there is no published data to evaluate Asian American CRC screening in a primary care setting. In conjunction with a randomized controlled trial to improve FOBT screening in Chinese Americans, we conducted a chart review to determine the use of CRC screening tests by Chinese American patients in a large community clinic, and examined the relationship between selected demographic factors and participation in CRC screening tests.

## Materials and Methods

Our study was based at a community clinic providing primary medical services to Asian and Pacific Islanders in Seattle's metropolitan area. The clinic recorded over 28,000 medical visits in 2005 and over half (54%) of their patients were of Chinese descent. Using the clinic's medical records system, we identified 1,240 Chinese patients between 50 and 78 years of age who were registered at the clinic. Between July 2003 and September 2004, Chinese patients were recruited to enroll in a randomized trial when they had a scheduled clinic appointment. We successfully approached 386 patients and conducted a retrospective review of their medical records. The focus of this review was to describe the CRC screening behaviors of these 386 subjects who were screened for eligibility for the trial. Details of the patient recruitment procedure for the trial are described in detail elsewhere (Tu et al, 2006). To examine CRC screening by less acculturated Chinese Americans, three subjects who speak fluent English were excluded in the analysis.

Study procedures were approved by the Human Subjects Review Committee of the University of Washington. We followed the CRC screening recommendations of the U.S. Preventive Services Task Force and the American Cancer Society. Outcome measurements included FOBT in the last 12 months, sigmoidoscopy in the last five years, or colonoscopy in the last 10 years (US Preventive Services Task Force, 2002; American Cancer Society, 2002). Compliance with CRC screening was assessed by documentation in patients' medical records.

A trained health educator reviewed the handwritten medical records and recorded all relevant information using a chart audit form. FOBT screening was considered complete if all three stool samples were returned with result documented in patient's medical record. Colonoscopy or sigmoidoscopy procedures were considered complete only when the result was documented in patients' medical records. Demographic variables including age, gender, type of insurance and language spoken were also recorded. The primary care provider was consulted whenever questions

**Table 1. Participant Characteristics (N=383)**

Characteristics	n	%	
Age	50-64	192	50.1
	> 65	191	49.9
Gender	Male	141	36.8
	Female	242	63.2
Insurance Status	None	20	5.2
	Public	323	84.3
	Private	40	10.5
Language	Cantonese	311	81.2
	Mandarin	72	18.8

were encountered (e.g. illegible handwriting, missing data). Random quality checks (5% of all charts) were performed by the first author to ensure that the information extracted was accurate.

Data analysis was conducted using SAS version 9.1. We performed descriptive statistics then chi-square analyses to determine: 1) the use of CRC screening per guidelines; and 2) differences between patients who have and have not undergone CRC screening tests with respect to selected demographic characteristics.

## Results

This study's sample consisted of 383 patients with 141 men and 242 women. The average age was 64 (SD= 8). Almost 90% had no insurance or rely on public health insurance including the Washington State Basic Health Care Plan (A state-sponsored program that provides health care coverage to low-income Washington State residents). All subjects spoke languages other than English. Detailed participant characteristics are shown in Table 1.

### Use of Colorectal Cancer Screening Tests

Out of a sample of 383, only 152 patients had received some type of colon cancer screening per guidelines. The overall use of CRC screening tests per guidelines was 40%.

**Table 2. Use of CRC Screening Tests (N=383)**

Screening behavior	n	%
1. FOBT#		
Never had FOBT	153	40.1
FOBT in the last 12 months*	72	18.9
FOBT > 1 year but < 5 years	148	38.7
FOBT > 5 years	9	2.4
2. COLONOSCOPY#		
Never had colonoscopy	299	78.7
Colonoscopy in last 10 years	81	21.3
Colonoscopy > 10 years	0	0.0
3. SIGMOIDOSCOPY#		
Never had sigmoidoscopy	366	96.8
Sigmoidoscopy in last 5 years	11	2.9
Sigmoidoscopy >5 years	1	0.3
4. CRC screening per guideline**	152	39.7

\* At chart review prior to clinic visit \*\* FOBT within last 12 months OR Sigmoidoscopy in last 5 years OR Colonoscopy in last 10 years # missing data not included in the analysis

**Table 3. Socio-demographic Factors Related to FOBT Screening Within the Last 12 Months (N=72)**

		n	(%)	P-value
Age	50-64	40	20.8	0.39
	> 65	32	16.8	
Gender	Male	21	15.0	0.19
	Female	51	21.1	
Insurance Status	None	5	25.0	0.75
	Public	59	18.3	
	Private	8	20.0	
Language	Cantonese	57	18.4	0.76
	Mandarin	15	20.8	

With respect to individual screening tests, only 72 (19%) patients had their FOBT test done in the last 12 months and 157 (41%) had FOBT screening at an interval of more than a year. One hundred fifty three (40%) patients had never had FOBT screening. Two hundred ninety-nine (79%) subjects never had colonoscopy, with only eighty-one (21%) patients having colonoscopy in the last ten years. Three hundred sixty-six (97%) patients never had sigmoidoscopy. For those who had sigmoidoscopy, eleven (3%) patients had sigmoidoscopy performed in the last five years and one patient (<1%) had the examination more than five years ago. Data on the use of CRC screening tests are given in Table 2.

#### Socio-Demographic Factors Related to CRC Screening Tests

There were no significant differences regarding age between those who had undergone FOBT in the last 12 months and those who had not. There was no gender differences found on the use of FOBT. We found no differences on the insurance status, or language used between clinic patients who used and did not use FOBT in the last 12 months. Subjects who were compliant with FOBT screening did not differ on these variables from those who were not compliant (Table 3). Similar results were also found in the use of sigmoidoscopy, colonoscopy and CRC screening tests (Table 4).

## Discussion

### Comparative Use of FOBT, Sigmoidoscopy and Colonoscopy

The overall use of CRC screening tests at this large community clinic is below the projected target of 50% set forth by Healthy People 2010 (US Department of Health and Human Services, 2002). In this sub-population, the use of CRC screening tests has not improved when compared to reported trends from recent National Health Interview Survey data (Swan et al, 2003; Seeff et al, 2004). CRC screening in this study was also lower than previous studies based on patient self-report (Walsh et al, 2002; Zapka et al, 2002; Ioannou et al, 2003; Walsh and Terdiman 2003). According to the 2001 Behavioral Risk Factor Surveillance Survey about 24% of people over age 50 reported screening with FOBT within 12 months (Center for Disease Control, 2003), in comparison only 19% of Chinese Americans in our study reported having FOBT in the last 12 months. The percentages of men and women who had a FOBT in the past 12 months in our study were also comparatively lower than the 27% reported by Ruffin (Ruffin et al, 2000). Our findings are also consistent with those of others, showing that rates of CRC screening in primary care are low (Blair et al, 1998; Walsh et al, 2002; Hawley et al, 2004).

In the present study, only 81 (21%) participants had received colonoscopy, including both diagnostic and screening. While CRC is best detected by colonoscopy for moderate to high risk patients, it is not cost-effective to screen average-risk populations when bowel preparation, sedation and risks were taken into account (Araujo et al, 2001). Many primary care providers, including those at ICHS, prefer FOBT as the CRC screening modality with colonoscopy as the diagnostic procedure to investigate or treat premalignant lesions (Lee et al, 1999; Pignone et al, 2002). At ICHS, screening colonoscopy will only be performed with provider's referral upon patients' request.

An extremely low volume of sigmoidoscopies were

**Table 4. Socio-demographic Factors Related to the Use of CRC Screening Tests**

	FOBT					Sigmoidoscopy					Colonoscopy					CRC screening tests				
	User*		Non-user**		P value	User		Non-user		P value	User		Non-user		P value	User		Non-user		P value
n	%	n	%	n		%	n	%	n		%	n	%	n		%	n	%	n	
Age																				
50-64	106	55.2	86	44.8	0.06	4	2.1	185	97.8	0.54	38	19.9	153	80.1	0.57	75	39.1	117	60.9	0.88
>65	124	64.9	67	35.1		7	3.7	182	96.3		43	22.8	146	77.3		77	40.3	114	59.7	
Gender																				
Male	88	62.4	53	37.6	0.54	6	4.3	134	95.7	0.34	35	24.8	106	75.2	0.24	58	41.1	83	58.9	0.73
Female	142	58.7	100	41.3		5	2.1	233	97.9		46	19.3	193	80.8		94	38.8	148	61.2	
InsuranceStatus																				
Public	197	61.0	126	39.0	0.58	10	3.1	310	96.9	0.36	69	21.6	251	78.4	0.77	128	39.6	195	60.4	0.53
Private	21	52.5	19	47.5		0	0.0	39	100		7	17.5	33	82.5		14	35.0	26	65.0	
None	12	60.0	8	40.0		1	5.3	18	94.7		5	25.0	15	75.0		10	50.0	10	50.0	
Language																				
Cantonese	189	60.8	122	39.2	0.64	9	2.9	299	97.1	1.00	68	22.1	240	77.9	0.55	124	39.9	187	60.1	0.98
Mandarin	41	56.9	31	43.1		2	2.9	68	97.1		13	18.1	59	81.9		28	38.9	44	61.1	

\* compliance with CRC screening per guidelines \*\* non-compliance with CRC screening per guidelines

performed, despite ICHS' offer of flexible sigmoidoscopy, in fact, the volume was much lower than in a survey of self-reported CRC screening (Tang et al, 2001). Availability of equipment should improve recommended use of sigmoidoscopy (Subramanian et al, 2004), but this was not evident in our study, as ICHS has the necessary equipment. Low utilization of sigmoidoscopy at ICHS may be related to the fact that only two primary care providers were trained to perform the procedure. Lack of training and logistic difficulties have been identified as deterrents to the performance of sigmoidoscopy (Lewis and Asch 1999; Cheng et al, 2002). Furthermore, performing routine sigmoidoscopies in a fast-paced primary care practice is challenging (Schroy et al, 1999). Patient attitudes about the procedure may be another factor influencing its utilization. Although the procedure is generally acceptable, patients often cite pain and distention as two major discomforts (Blom et al, 2004). The controversy about sigmoidoscopy's efficacy as compared to screening colonoscopy may further compromise the use of sigmoidoscopy as a screening tool (Lieberman et al, 2000; Walsh and Terdiman 2003).

In the year 2000, the Center for Disease Control and Prevention (CDC) began a national assessment of the capacity to perform different CRC screening tests and follow up. Using data from the U.S. Census Bureau and the National Health Interview Survey, Seeff estimated that there is sufficient capacity to implement FOBT testing, followed by diagnostic colonoscopy, to provide widespread screening for American individuals, whereas capacity for screening colonoscopy is not established (Seeff et al, 2004).

Selection of CRC screening test was based on patient preferences, available resource, and patient adherence (US Department of Health and Human Services, 2005). With sixty-percent of the participants in this study had FOBT at some point, and seldom use of other screening tests (21% for colonoscopy and 3% for sigmoidoscopy), we suspect that there is preference for the choice of the FOBT test in the population. Results of this study suggest that it may be a realistic and viable option to promote mass screening using FOBT as a primary screening tool. Future studies should focus on patient designed interventions to increase CRC screening by promoting the uptake and repeated use of FOBT for CRC screening.

#### *Socio-demographic factors related to CRC screening tests*

Our results showed no significant differences in selected demographic data between those who participated in CRC screening tests and those who did not. This may reflect the homogenous sample in this study. Both users and non-users shared the same source of health care, which provides structural facilitators that encourage screening. Questions remain why some of them did not get screened. How the message of CRC screening can get across to all eligible patients needs further studied.

Strengthen dissemination of CRC screening to eligible patients is needed to promote the overall screening rate in primary care setting. This included a systematic approach

to organize, implement, and evaluate use of CRC screening tests. For example, making information related CRC screening accessible, documenting receipt of CRC screening programs, tracking of provider recommendations, and recording actual utilization of CRC screening services. Our non-significant results may also reflect the fact that other individual markers such as knowledge, attitudes, and health belief may have stronger influence CRC screening in this population. These markers have to be included in the communication process between providers and patients to increase the screening rate.

A major strength of this chart audit was the detailed review of physicians' notes, consultant notes, and laboratory records. Cross examination between different types of documentation in the medical record for accurate CRC screening was therefore possible. Furthermore, data reviewed from these sources allowed a comprehensive review of utilization of different screening modalities.

Our findings must be interpreted in consideration of several potential limitations. First, the study sample was drawn from patients who had a scheduled appointment; therefore, patients who infrequently attended the clinic were not included in the chart audit. We hypothesize that patients who infrequently attend clinic are less likely to get CRC screening; therefore our results would over-estimate CRC screening at the clinic. Second, our sampling followed the eligibility protocol of an intervention trial, so only one member from households with two or more eligible subjects was randomly selected for the study. Third, it was possible patients may have received CRC screening at other facilities. However, given the excellent interpretation services provided by the clinic, and regulations of the Basic Health Care Plan (patients receive care from one designated clinic); the chance of patients obtaining preventive care at other health care facilities was low. Fourth, this chart review was performed during the implementation of an intervention trial to promote FOBT screening. As there is no year-to-year tracking of CRC screening at the clinic, we cannot provide any insight about the impact of the intervention on the primary care providers' adoption of screening guidelines, resulting in more patients being amenable to screening tests.

Finally, colonoscopy serves both as a screening and diagnostic test. Due to the scope of our intervention study, data extracted from the chart audit could not easily distinguish screening from diagnostic colonoscopy; therefore, our results likely over-estimated CRC screening by colonoscopy.

Findings from our retrospective chart review indicate that participation in CRC screening among less acculturated Chinese Americans remains low and that much work remains to promote CRC screening in this minority group. To improve the overall participation rate, efforts should focus on developing a practical approach to promoting the use of screening tests in routine clinic visits. Given that FOBT was used as the main preventive measure because of its simplicity and affordability, it is important to establish preventive programs of yearly FOBT testing for selected patient

populations until the controversies regarding CRC screening with colonoscopy as the primary modality are resolved. Future studies should investigate predictors for CRC screening in this specific group of Chinese Americans.

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