"Heat in Their Intestine": Colorectal Cancer Prevention Beliefs Among Older Chinese Americans

John H. Choe, MD, MPH; Shin-Ping Tu, MD, MPH; Jeanette M. Lim, RN, MPH; Nancy J. Burke, PhD; Elizabeth Acorda, BA; Vicky M. Taylor, MD, MPH

Objective: Data regarding disease prevention behaviors among Asian-American populations are limited. This study explored the beliefs of older Chinese Americans toward colorectal cancer screening modalities, including fecal occult blood testing (FOBT).

Design and Participants: We conducted 30 semistructured, open-ended, qualitative interviews in Mandarin and Cantonese, focusing on colorectal cancer prevention and health-seeking behavior. Participants were Chinese patients 50–79 years of age recruited from a community clinic in Seattle, Washington.

Results: When asked about colorectal cancer prevention, interviewees discussed such concepts as maintenance of positive energy (*qi*) and spirit (*jing shen*) and moderation of exercise and diet. Until prompted, participants did not discuss FOBT. Interviewees believed that colorectal cancer was caused by diets high in foods with "heat" (*huo qi*) or by intestinal toxins from frequent constipation. Participants presumed that FOBT is unnecessary in the absence of symptoms.

Conclusions: Patients in our study expressed beliefs about health promotion and causes of colorectal cancer that differed from Western biomedical concepts. Failure to recognize these different beliefs may create inadvertent confusion among elderly Chinese-American patients. Health promotion programs to increase colorectal cancer screening must incorporate these concepts to improve cultural relevance among Chinese-American patients. (*Ethn Dis*. 2006;16:248–254)

Key Words: Chinese American, Colorectal Cancer, Prevention, Qualitative Interview, Screening

From the Department of Medicine (JC, ST) and Department of Health Services (VT), University of Washington; Division of Public Health Sciences, Fred Hutchinson Cancer Research Center (JC, EA, VT); Program for Appropriate Technology in Health [PATH]; Seattle, Washington (JL); Comprehensive Cancer Center, University of California, San Francisco, California (NB).

Introduction

Cancer of the colon and rectum ranks third among cancer sites in incidence and mortality for both males and females. In 2004, an estimated 146,940 new cases were diagnosed in the United States, and 56,730 persons died of colorectal cancer (CRC).[1] As with other malignancies, survival is closely related to stage at diagnosis[2]; five-year survival from CRC exceeds 90% for those with localized disease, compared to ≈60% when regional lymph nodes are involved and <10% when distant metastases develop.[2,3] Despite the clear advantage afforded by early diagnosis, regional and distant disease represent most newly diagnosed CRC cases in the United States.[1] Randomized controlled trials have provided compelling evidence for the effectiveness of screening with fecal occult blood tests (FOBT).[4,5] The American Cancer Society, American Gastroenterological Association, and US Preventive Services Task Force all recommend routine screening beginning at age 50[4,6,7]; however, in practice FOBT and other CRC screening modalities continue to be underused, particularly by racial/ethnic minority communities and their providers.[3,4]

Despite the clear advantage afforded by early diagnosis, regional and distant disease represent most newly diagnosed colorectal cancer cases in the United States.[1]

Surveys of Asian immigrant communities in the United States indicate low levels of CRC screening, but little published information is available regarding health service, sociodemographic, or cultural factors that contribute to these low rates. The Behavioral Risk Factor Surveillance System indicated that only 12% of age-eligible Asian Americans and Pacific Islanders had undergone FOBT in the previous 12 months.[8] In studies of Korean Americans, only 9%–18% reported having ever had age-appropriate FOBT.[9,10] In another study, only 25% of eligible Filipina women in Los Angeles had completed recommended screening by FOBT or flexible sigmoidoscopy.[11] Past surveys of Chinese Americans have found that 25%–38% reported prior age-appropriate FOBT screening.[12,13]

We are conducting a clinic-based project to promote FOBT screening among Chinese Americans. Although controversy continues about the most appropriate screening modality,[7] we chose to promote three-card FOBT kits in favor of other methods (eg, colonoscopy) because this would create the fewest logistical and cost burdens for our participating clinic providers. Because educational materials may contain

Address correspondence and reprint requests to John H. Choe, MD, MPH; Division of General Internal Medicine, Department of Medicine; University of Washington; 325 Ninth Avenue, Box 359780; Seattle, WA 98104; 206-667-7802; 206-667-5977 (fax); johnchoe@u.washington.edu

ethnocentric biases that render them culturally irrelevant, qualitative methods offer a beginning step in the development and evaluation of intervention programs that target racial/ethnic minority populations.[14–16] Qualitative methods allow participants to discuss a range of topics without a rigid framework, which allows identification of new and unanticipated information in greater detail than traditional, more structured methods. We began with a qualitative study to elicit information about CRC prevention according to the linguistic and cultural framework of Chinese Americans. In preparation for our project to promote FOBT screening in this group, this report is focused particularly on those beliefs and behaviors that potentially affect stool screening in our target clinic population.

METHODS

Study Setting

Study participants were recruited from patients of International Community Health Services (ICHS), a community-based healthcare organization that provides primary medical services in Seattle, Washington. In 2001 ICHS recorded >50,000 clinic visits, 70% of which were paid in full or in part by public health insurance.[17] Nearly half (46%) of ICHS patients are of Chinese descent, and most are low income and have limited or no English-language skills.[17] Screening tests including FOBT are offered to patients at reduced cost on a sliding scale based on ability to pay.

Subjects

Thirty participants of Chinese ethnicity were recruited from ICHS. Selected patients were 50–79 years of age and able to speak Cantonese, Mandarin, or English. Our project coordinator (JL) and the clinic's data specialist selected potential participants from the ICHS demographic database to maintain roughly balanced subject numbers of male/female, of Mandarin/Cantonese-speaking, and of younger/older than 65 years of age. Patients were initially contacted by letter from the medical director of the clinic and were then telephoned by a multilingual project staff member. Written informed consent was obtained, and participants were given a $20 stipend in appreciation for their time. Study protocols were approved by the Human Subjects Division of the University of Washington.

Qualitative Interviews

Trained multilingual, bicultural staff (three female, one male) led in-person, semistructured qualitative interviews.[18,19] Although the directions of discussions were largely left to the participants, most interviews began with general beliefs about health and cancer prevention before proceeding to more specific issues about CRC screening. Interviews began with open-ended questions, which were followed by directed probes to elicit further detail about particular responses.[18,19] Before the end of each session, interviewers showed example FOBT kits and probed participants' understanding and past experiences with FOBT.

Interviews lasted approximately one hour and were audiotaped with the consent of participants. Interviewers maintained field notes that were used to annotate transcripts regarding nonverbal content (eg, participants' mannerisms or facial expressions). Each interview was translated into English onto a second audiotape by the original interviewer; these translated audiotapes were then transcribed. These English-language transcripts were then returned to interviewers to be reviewed for accuracy. Mandarin- and Cantonese-speaking research staff compared portions of English transcripts with the original audiotapes to check translation accuracy. Disagreements about specific translated words or phrases were rare; Mandarin- or Cantonese-speaking research staff members discussed any such disagreements until consensus was reached. Transcripts were then entered into N5/NUD*IST (QSR International, Australia) ethnographic software, a commonly used program to manage unstructured qualitative data.

Data Analysis

An initial set of content codes was developed by adaptation of Bastani's Health Behavior Framework (previously known as the Adherence Model). This model represents a synthesis of several of the major theoretical formulations in the area of health behavior change and adherence.[20,21] Additionally, this model includes constructs such as acculturation, self-efficacy, social support, and perceived control. Other authors have used this model to develop survey instruments and intervention programs to increase cancer screening for diverse target populations and ethnic groups, including Asian Americans.[11,20–23]

Six members of the research team reviewed transcripts and assigned content codes to thematically group similar interview text; two members reconciled the coding choices of the larger team.[24] Disagreements about appropriate code choices were discussed until consensus was achieved or until a new code was developed. Although the Health Behavior Framework provided the initial set of content codes, we found that these codes required further expansion to encompass new emerging topics and concepts. The research team met regularly during interview analysis to discuss and agree upon emerging themes, new information, and relationships among concepts; content codes were used to thematically group together similar interview text and to aid development of conceptual models.[24]

To test the cultural relevance of our analysis, we presented our findings to members of a local Chinese-American community coalition. We also presented our conceptual models after initial analysis was completed to interested interviewees (11 of 30 participants).

Feedback elicited from these presentations allowed us to further refine our analyses and causal diagrams, as well as to help shape our planned clinical intervention to improve FOBT rates among Chinese-American patients.

RESULTS

Study Group Characteristics

Most study participants (63%) described their English-language ability as "poor" or "none," and nearly all (87%) received one or more forms of public health insurance. Although the median level of education was relatively high (10 years), this varied greatly from person to person. Of the 30 interviewees, 18 (60%) reported experience with any past FOBT. Contact and recruitment were unsuccessful for 35 other patients, who were more likely to speak Cantonese (27 of 35), be female (19 of 35), and be older (median age 71) than interview participants. Fifteen of these declined participation, while the other 20 were unreachable or unavailable for the study.

Colorectal Cancer Causes

When asked about the causes of colorectal cancer, interview participants gave a wide range of responses, including hereditary susceptibility, tobacco smoking, and mental health and emotional well being. However, interviewees most often discussed foods as causes of CRC. Excess meats and fried, burned, and fatty foods were frequently mentioned. Other ingested items mentioned by respondents included alcohol and preserved foods with chemical additives.

Interview participants related certain foods to high CRC risk because of their intrinsic "heat" or toxins. According to some traditional Chinese beliefs, foods, medications, and illnesses can be categorized by their perceived effect upon the body as "hot" (*huo qi*) or "cold" (*liang*)[25]; disease states occur because of imbalances between these hot and cold elements, which do not necessarily correlate with physical temperature (for example, Table 1, Ia, Ib).

Interview participants discussed constipation as an intermediate step to the development of CRC. Foods such as red meats were explicitly linked to CRC not only because of their heat but also because they were thought to cause constipation. Conversely, those foods that promoted regular bowel habits such as fruits were believed to be helpful in preventing CRC (Table 1, Ic). Interviewees described how they believed that the retention of stool when constipated results in the rise of toxins or heat within the body, which in turn leads to CRC (Table 1, Id).

Based upon these and similar interviews, one possible diagram of the CRC causal pathway described by intervie-

Table 1. Representative Interview Quotations

I. Colorectal Cancer Causes

a [Colorectal cancer] has something to do with what you eat, what you drink. Like those... fried foods that cause *huo qi* (heat) in our body.

b I think that the body has to be in harmonious proportion... Eat that much cool things and have to eat that much with heat... When eating things with heat, the intestine would be stimulated.

c People not eating vegetables, eating too much meat, get colorectal cancer because they often have constipation... So the stomach and the intestine protests, then the cancer grows.

d Yes, it is toxic... Because the feces is in your body and it is easily changed to produce toxin. That's why the people with constipation problems can get colorectal cancer easily.

II. Colorectal Cancer Prevention

a If you have good diet and good environment then you can restrain cancer... If you have a healthy *jing shen* (spirit) and are broad-minded, maybe all your life you'll never get cancer.

b And I do fasting every year too... to let it clean up... the dirty stuff in the intestine... Every year you give your intestine a rest for a period of time and also a main clean up—I feel that is pretty good for colorectal cancer.

c The best way [to prevent colorectal cancer] is to take *huai hua* if one has a problem in intestine or stomach... *Huai hua* could soften hard stool... This medicine can take care of heat inside the intestine and stomach.

III. Stool FOBT Testing

a I have no choice but to listen to [my doctor]... He requested me to do the exam. I have to follow, you know. I have to cooperate with him.

b [Providers from another clinic] just told us to take [the FOBT instructions] back and read it ourselves... You know Chinese—we don't understand English that much. So I just threw it aside and followed my own way... I did not do it because I don't quite understand.

c And first, the boss may not allow you to go if the [Chinese] restaurant is busy. They don't have that much manpower. Secondly, you go for a few hours, at least three hours or so easily, you would have financial loss, right?

d The doctor said I could not eat... even a bite of red meat. But I work in a Chinese restaurant and eat in there. Sometimes it was difficult to have special food in a restaurant.

e I don't want to [have FOBT] because my bowel movement is normal and if it's normal I won't get this disease. But if you are abnormal and you have a constipation problem, then you need to do the test.

f I had bowel movements, the stool was tiny. It was not as large as usual... [I was] always thinking I have no health problem, nothing wrong with me. Just had some skinny stool, it was not a problem, not a big problem.

g *Interviewer: Did they say anything, why the doctor ordered FOBT?*
Checking if there was blood in my stool... because my sugar blood was high.
Interviewer: What did doctor say after the check?
The initial check showed that there were liver parasites.

IV. Colorectal Cancer Outcomes

a If the cancer was found at the first stage, of course, the cancer will be cured more easily than the cancer found at the third or fourth stage... So when the doctor asked me to have a [FOBT], I did it right away.

b Western medical doctors tell us that cancer and AIDS both are incurable diseases. For older people, this saying is a blow to the *jing shen* (spirit). If the spirit gets a blow, then he will be mentally collapsed. Then the sickness will get more severe.

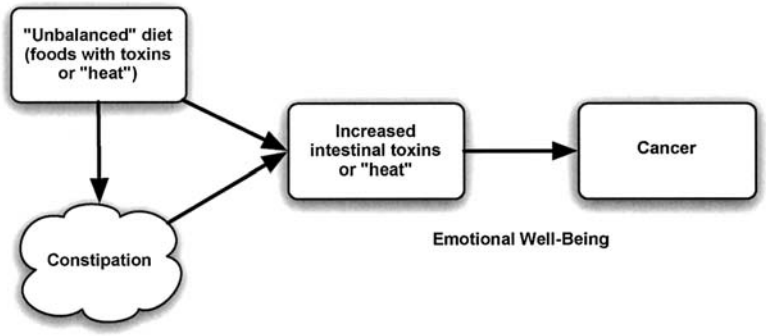

Fig 1. Colorectal cancer causal pathway based upon Chinese-American participant interview and focus group content.

wees in our study is displayed in Figure 1. In this model, constipation is an important central step in the formation or retention of ''toxins'' or ''heat'' within the body, which results in colorectal tumors. Foods cause CRC either directly because of their ''toxins'' or ''heat,'' or indirectly because of their propensity to cause constipation. This diagram in Figure 1 was chosen as the most accurate representation of the perceived causal pathway during our postanalysis presentations to participants and community coalition members. This model is in contrast to a biomedical model of CRC, in which dietary and other environmental exposures influence the development of precursor lesions (polyps) and their malignant transformation, and in which constipation and changes in stool caliber or bowel habits represent late manifestations of disease.[26]

Colorectal Cancer Prevention

Study interviewees did not discuss FOBT or colonoscopy unless prompted; none mentioned barium enema or flexible sigmoidoscopy. Instead, they discussed prevention from a broader perspective; general healthy practices were equated with cancer prevention. Participants in our study spoke about healthy behaviors as those designed to maintain positive energy (*qi*) and balanced spirit (*jing shen*). Moderation in exercise and hygiene and cleanliness were among the specific recommended practices to avoid CRC. Interview participants also stressed the importance of optimism in health and the prevention of CRC. Excessive work and stress, and even discussion about cancer itself were thought to influence and increase cancer risk (Table 1, IIa).

Dietary moderation was described as crucial to the prevention of CRC. Participants suggested not eating too many foods that are high in heat or toxins and foods that cause constipation. In addition to emphasizing diets with many cool foods (eg, fish, fruits) that respondents also thought important to maintaining regular bowel habits, interview participants also described practices specifically aimed at purging these intestinal toxins or heat. These practices included fasting, ''cleansing the colon,'' and sweating (Table 1, IIb).

Participants from our study also gave examples of specific traditional Chinese medicines that were believed to be helpful in treating or preventing CRC because they were cool or because they could stop constipation (Table 1, IIc). We were unable to discern any clear indication that believing in dietary moderation to prevent CRC was itself a barrier to FOBT screening among study participants. Twelve of the 17 participants who discussed dietary means of preventing CRC also had prior FOBT experience or knowledge; among the remaining five, a lack of recommendation for the test by medical providers was the most frequently reported barrier to FOBT screening.

Stool Testing

Table 2 summarizes several additional identified FOBT facilitators and barriers, and correlates these factors to the Health Behavior Framework.[20,21] Facilitators were primarily identified by participants with prior experience with FOBT, while barriers were identified by both participants with and without prior FOBT experience. Although several participants described negative experiences because of the odor and messiness associated with the stool collection, those who had undergone FOBT described the experience as positive without lingering distress. Family influence, usually from children, and physician recommendation both were important in encouraging patients to undergo FOBT. Participants from our study stated that their physicians' recommendations were sufficient in themselves (Table 1, IIIa).

Interview participants identified numerous potential barriers to FOBT. Lack of education and understanding about FOBT were barriers to the test. Language difficulties and past trouble with interpreter services added additional difficulty and represented an insurmountable barrier for several of the participants. Interviewees also expressed discomfort at ''bothering'' their physician for perceived minor issues and were reluctant to ask questions when explanations were not understood or given (Table 1, IIIb).

Other system barriers to testing were cited, including economic factors such as the perceived cost of testing, inability to take personal time from work, and confusion about insurance copayment requirements. Because of the reduced employment possibilities available to individuals with limited English proficiency, interview participants gave examples of having been unable to take time from work for follow-up tests and

Table 2. FOBT facilitators and barriers

Health Behavior Framework Factors	Facilitators	Barriers
Communication/rapport with provider	Physician recommendation	English reading/speaking difficulty
	Prior education from physician about test instructions	Reluctance/ embarrassment to discuss through interpreter
Social support	Family member recommendation	
Past adherence	Positive past FOBT experience for self or family	Lack of past FOBT experience for self or family
Perceived outcome efficacy	Belief in importance of regular stool examination	
Knowledge	Belief in screening when asymptomatic	Belief in screening only when symptomatic
		Confusion regarding FOBT purpose
Perceived susceptibility	Concurrent gastrointestinal symptoms/signs at time of test	Lack of gastrointestinal problems at time of test
Insurance status	Public health insurance	
Psychological distress/coping style		Fear of discovering a problem from the test
Patient/ health care system		Worry about test cost
		Work environment restrictions conflict with test
		Difficulty with adhering to FOBT dietary restrictions

Major factors identified in interviews that facilitate or hinder fecal occult blood testing. Discussed factors correspond to several items from Bastani's Health Behavior Framework model.[20] Each of these items was identified in transcripts from multiple interviews.

results (Table 1, IIIc). Additionally, the FOBT instructions to limit potential test reagent cross-reactivity with certain foods represented a special burden for respondents who worked in restaurants and in food services (Table 1, IIId).[27]

Although most felt that stool examination was a useful diagnostic tool, other participants expressed the belief that testing for cancer was unnecessary when gastrointestinal symptoms were absent. The gastrointestinal signs and symptoms that elicited concern among participants were diarrhea, constipation, or visible blood in the stool. Other signs such as change in stool caliber (a manifestation of advanced intraluminal tumor)[26] were not associated with CRC (Table 1, IIIe, IIIf).

Interviewees sometimes associated past stool testing experiences with contemporaneous gastrointestinal symptoms. Stool testing was occasionally performed for reasons other than CRC screening (eg, fecal ova and parasite examination); however, the distinction between FOBT and other stool tests was not always clear from interview context. When asked about past FOBT, several participants seemed to confuse this with other stool tests (Table 1, IIIg). Participants from our study who had undergone FOBT were often unaware of the results of this testing but were satisfied that their physicians would tell them if there were any problem. Study interviewees assumed from the absence of mention of the test during follow-up clinic visits that the FOBT results had been favorable.

Colorectal Cancer Outcomes

Participants offered a wide range of opinions regarding colorectal cancer outcomes. Very few interviewees expressed the belief that CRC was always or almost always fatal. Those that expressed this view offered secondhand stories of the adverse experiences of close family or friends with cancer. The remainder, however, expressed the belief that outcomes could be improved if the tumors were detected early. These interviewees generally believed that cancers grow and progress in stages, and they spoke directly to the need for screening while asymptomatic (Table 1, IVa).

Emotional well being was believed to be crucial by interviewees, not only in preventing cancer incidence but also in improving outcomes after diagnosis. Participants believed that optimism and positive mental attitude were necessary to improve chances of surviving colorectal cancer. Conversely, stressful events were thought to adversely affect health outcomes. Interviewees discussed how even the identification and diagnosis of a disease itself can cause emotional stress, which may influence its natural history and progression in a patient (Table 1, IVb).

DISCUSSION

We draw several conclusions and find intervention implications from our study. For some older Chinese Americans, food choices that are balanced between hot and cold and that promote regular bowel movements are important in preventing colorectal cancer. As has been found in prevention studies in other populations,[28,29] screening for disease is believed unnecessary by some of these Chinese Americans in the absence of outwardly obvious symptoms. Our study participants generally believed in a cultural health belief model in which primary disease prevention (eg, consumption of a diet rich in fruits and vegetables) was given greater importance than secondary disease prevention (eg, screening FOBT or colonoscopy). Liang and colleagues found similar prevention beliefs among

Chinese women in Washington, DC, during focus groups to discuss breast cancer prevention; participants emphasized outdoor exercise in fresh air and food choices that balanced hot-cold in the body, rather than secondary cancer prevention (screening tests such as mammography).[30]

Intervention programs to improve CRC mortality in elderly Chinese immigrants should continue to emphasize regular physical activity, eating diets rich in fruits and vegetables, and other primary prevention practices that were strongly advocated by the participants of our qualitative interviews. In developing programs to improve CRC screening rates, we suggest that educational material must recognize and validate some of these practices (eg, balancing hot and cold foods; maintaining regular bowel movements); failure to acknowledge such beliefs and practices may risk distancing the target audience from the intended health promotion message.[16]

Intervention programs should educate about the role of secondary preventive tests that may be performed in the absence of symptoms. Additionally, medical providers should be careful to distinguish for their patients between diagnostic studies performed for one's complaints (eg, stool culture test) from those performed for asymptomatic screening (eg, FOBT).

Significant barriers to regular colorectal cancer screening exist for many older Chinese Americans. Although many are common to other populations,[28,29,31] we found that several barriers were special problems for our target community. Limited English skills and difficulties in understanding FOBT instructions, even when using trained medical interpreters, caused some to have problems in comprehending and adhering to physician recommendations. Limited English capability as a barrier to cancer screening among Chinese and other Asian Americans is a consistent finding reported by other authors (eg, Liang et al).[30] Cultural expectations about the relationship roles of physicians and patients (eg, discomfort about ''bothering'' physicians about ''minor'' issues) may also create a barrier to asking about poorly understood instructions or test results.

Interviews in other languages and cultures carry methodologic difficulties, such as the challenge of assuring that transcripts convey underlying conceptual constructs and are not muddled by poor translation.[18,19,24] We have tried to address these issues by carefully training bicultural interviewers, spot-checking translation accuracy, and sharing these data with community partners and interviewees.

Our study involved interviews with older Cantonese- or Mandarin-speaking Chinese-American patients of a community clinic with long experience with the special needs of Asian immigrant patients. We believe this fact may partly account for the high proportion of participants (18 of 30) with prior FOBT experience. Participant recruitment was purposeful and not meant to be representative of all Chinese Americans. We cannot comment on whether similar issues and beliefs would be raised among less or more acculturated Chinese Americans who were not part of this study; generalization of these findings beyond our target population or into other Asian ethnic groups is outside of the intent of our study and should only be done with caution. Future population-based surveys will help confirm and further clarify our findings. Although we are unaware of published reports of prior application of the Health Behavior Framework to Chinese Americans, the broad constructs represented in this framework have been applied successfully in studies among multiple other ethnic groups in the United States, including Latinos, African Americans, Filipinos, Vietnamese, and Koreans.[11,20–23]

These findings further reinforce the imperative to improve quality of care by providing access to fully bilingual and bicultural staff and interpreters in healthcare settings. Cancer control educational materials not only need to consider the language or dialect but also the cultural beliefs about health and prevention of the target audience. Many of the older Chinese Americans from our study principally engage in primary preventative behaviors (diet, exercise) to reduce their perceived risk for colorectal cancer; future study will evaluate whether our developed intervention materials will successfully encourage older Chinese Americans to also complete FOBT and other secondary colorectal cancer prevention measures.

ACKNOWLEDGMENTS

The authors thank Grace Chin, Doug Bang, Hueifang Chen, Ben Tseng, and Lucia Tseng for their bilingual interviewing work; H. Hoai Do and Nadine Chan for their transcript reading and coding; Clayton Hibbert and Kendra Eberle for their technical assistance; and Donna Keller and Mary Walsh for their coordinating support. They also thank the members of the Seattle Chinese community coalition and the staff of ICHS for their collaborative efforts in this project.

This research was funded through a grant from the National Cancer Institute (R01CA092432). Dr. Choe received support during this analysis from the University of Washington Biobehavioral Cancer Prevention and Control Training Program (R25CA092408). Ms. Lim completed work on this project while at the University of Washington prior to her current position at the Program for Appropriate Technology in Health (PATH).

REFERENCES

1. Jemal A, Tiwari RC, Murray T, et al. Cancer statistics, 2004. *CA Cancer J Clin.* 2004;54(1):8–29.
2. Landis SH, Murray T, Bolden S, Wingo PA. Cancer statistics, 1999. *CA Cancer J Clin.* 1999;49(1):8–31.
3. Vernon SW. Participation in colorectal cancer screening: a review. *J Natl Cancer Inst.* 1997;89(19):1406–1422.
4. Winawer S, Fletcher R, Rex D, et al. Colorectal cancer screening and surveillance: clinical guidelines and rationale-update based

on new evidence. *Gastroenterology*. 2003; 124(2):544–560.
5. Hardcastle JD, Chamberlain JO, Robinson MH, et al. Randomized controlled trial of fecal-occult-blood screening for colorectal cancer. *Lancet*. 1996;348(9040):1472–1477.
6. Byers T, Levin B, Rothenberger D, Dodd GD, Smith RA. American Cancer Society guidelines for screening and surveillance for early detection of colorectal polyps and cancer: update 1997. American Cancer Society Detection and Treatment Advisory Group on Colorectal Cancer. *CA Cancer J Clin*. 1997; 47(3):154–160.
7. Screening for colorectal cancer: recommendation and rationale. *Ann Intern Med*. 2002; 137(2):129–131.
8. Shapiro JA, Seeff LC, Nadel MR. Colorectal cancer-screening tests and associated health behaviors. *Am J Prev Med*. 2001;21(2): 132–137.
9. Kim K, Yu ES, Chen EH, Kim J, Brintnall RA. Colorectal cancer screening: knowledge and practices among Korean Americans. *Cancer Prac*. 1998;6:167–175.
10. Juon HS, Han W, Shin H, Kim KB, Kim MT. Predictors of older Korean Americans' participation in colorectal cancer screening. *J Cancer Educ*. 2003;18:37–42.
11. Maxwell AE, Bastani R, Warda US. Demographic predictors of cancer screening among Filipino and Korean immigrants in the United States. *Am J Prev Med*. 2000;18: 62–68.
12. Tang TS, Solomon LJ, McCracken LM. Barriers to fecal occult blood testing and sigmoidoscopy among older Chinese-American women. *Cancer Pract*. 2001;9(6): 277–282.
13. Sun WY, Basch CE, Wolf RL, Li XJ. Factors associated with colorectal cancer screening among Chinese Americans. *Prev Med*. 2004;39:323–329.
14. Gittelsohn J, Pelto PJ, Bentley ME, Nag M, Oommon N. Qualitative methodological approaches for investigating women's health in India. In: Gittelsohn J, Bentley ME, Pelto PJ, eds. *Listening to Women Talk About Their Health—Issues and Evidence from India*. New Delhi: Har-Anand Publications; 1994.
15. de Vries H, Weijts W, Dijkstra M, Kok G. The utilization of qualitative and quantitative data for health education program planning, implementation, and evaluation: a spiral approach. *Health Educ Q*. 1992;19:101–115.
16. Burke NJ, Jackson JC, Thai HC, et al. 'Honoring tradition, accepting new ways': development of a hepatitis B control intervention for Vietnamese immigrants. *Ethn Health*. 2004;9:153–169.
17. *International Community Health Services: Annual Report*. Seattle, Wash: ICHS; 2001.
18. Bernard H. Unstructured and semistructured interviewing. In: Bernard H, ed. *Research Methods in Anthropology*. 2nd ed. Walnut Creek, Calif: AltaMira Press; 1995;208–236.
19. Morse J, Field P. Principles of data collection. In: Morse J, Field P, eds. *Qualitative Research Methods for Health Professionals*. 2nd ed. Thousand Oaks, Calif: SAGE Publications; 1995;89–124.
20. Bastani R, Maxwell A, Bradford C, Prabhu-Das, Yan K. Tailored risk notification for women with a family history of breast cancer. *Prev Med*. 2000;29:355–364.
21. Gritz ER, Bastani R. Cancer prevention—behavior changes: the short and long of it. *Prev Med*. 1993;22:676–688.
22. DiMatteo R, Hays R, Gritz E, et al. Patient adherence to cancer control regimens: scale development and initial validation. *Psychol Assess*. 1993;5:102–112.
23. Taylor VM, Yasui Y, Burke NJ, et al. Pap testing adherence among Vietnamese-American women. *Cancer Epidemiol Biomarkers Prev*. 2004;13:613–619.
24. Morse J, Field P. Principles of data analysis. In: Morse J, Field P, eds. *Qualitative Research Methods for Health Professionals*. 2nd ed. Thousand Oaks, Calif: SAGE Publications; 1995;125–149.
25. Lee E. Chinese-American families. In: Lee E, ed. *Working with Asian Americans: A Guide for Clinicians*. New York, NY: The Guilford Press; 1 1997;61–63.
26. Mayer RJ. Gastrointestinal tract cancer. In: Braunwald E, Fauci A, Kasper D, Hauser S, Longo D, Jameson J, eds. *Harrison's Principles of Internal Medicine*. 15th ed. New York, NY: McGraw-Hill Professional; 2001;578–588.
27. Hemoccult II serial test for routine screening for fecal occult blood [patient instruction package insert]. Fullerton, Calif: Beckman Coulter, Inc; 2001.
28. Holmes-Rovner M, Williams GA, Hoppough S, Quillan L, Butler R, Given CW. Colorectal cancer screening barriers in persons with low income. *Cancer Pract*. 2002;10(5):240–247.
29. Austin LT, Ahmad F, McNally MJ, Stewart DE. Breast and cervical cancer screening in Hispanic women: a literature review using the health belief model. *Womens Health Issues*. 2002;12(3):122–128.
30. Liang W, Yuan E, Mandelblatt JS, Pasick RJ. How do older Chinese women view health and cancer screening? Results from focus groups and implications for interventions. *Ethn Health*. 2004;9(3):283–304.
31. Bolen JC, Rhodes L, Powell-Griner EE, Bland SD, Holtzman D. State-specific prevalence of selected health behaviors, by race and ethnicity—Behavioral Risk Factor Surveillance System, 1997. *MMWR CDC Surveill Summ*. 2000;49(2):1–60.

AUTHOR CONTRIBUTIONS

Design and concept of study: Tu, Acorda, Taylor
Acquisition of data: Lim, Acorda
Data analysis and interpretation: Choe, Tu, Lim, Burke
Manuscript draft: Choe, Tu, Burke, Acorda, Taylor
Statistical expertise: Choe
Acquisition of funding: Tu, Taylor
Administrative, technical, or material assistance: Choe, Lim, Acorda
Supervision: Tu, Burke, Taylor