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Development of Intervention Materials for Individuals With Limited English Proficiency:

Lessons Learned From “Colorectal Cancer Screening in Chinese Americans”

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Abstract

Background—According to recent US census data, 52 million people reported speaking a language other than English at home, and almost 45% of this population reported limited English proficiency (LEP). Colorectal cancer (CRC) ranks among the top 3 most common cancers for several Asian ethnic groups, yet screening remains underutilized by Asian Americans.

Objectives—This article describes the development of culturally and linguistically appropriate intervention materials for individuals with LEP. We discuss lessons learned from this research and implications for the translation of research into practice.

Methods—The Health Behavior Framework served as the conceptual model for this study, and qualitative findings guided the development of our intervention materials (a video and pamphlet). To recommend Western preventive behaviors, the research team bridged the gap between Western and Chinese values and beliefs by devoting particular attention to: (1) the target population's sociocultural values and health beliefs; and (2) unique linguistic features of the Chinese language.

Results—Key lessons learned from this study include the importance of: (1) a conceptual framework to guide intervention development; (2) incorporating sociocultural values and health beliefs into the intervention; (3) addressing and capitalizing on complex linguistics issues; (4) using qualitative methodology in cross-cultural research; and (5) contributions from a multicultural and multilingual research team. Other lessons relate to the translation of research findings into practice. We surmise that lessons learned from this study may be pertinent to the promotion of CRC screening among other patient groups with LEP and applicable to additional cancer screening tests.

Keywords

limited English proficiency; colorectal cancer screening; culturally and linguistically appropriate materials

According to recent US census data, among 268 million people aged 5 years and older, 52 million (19.4%) reported speaking a language other than English at home.¹ Remarkably, from 1990 to 2005, the number of non-English speakers increased by 63%, and almost 45% of this population reported having limited English proficiency (LEP; ie, speaking English less than “very well”).¹

Studies have found that a major barrier to the delivery of preventive services is lack of time during medical visits.^{2–4} Yarnall et al³ determined that a primary care physician needs an average of 7.4 hours per working day to fully satisfy US Preventive Services Task Force recommendations for an average panel of 2500 patients. Linguistic issues can exacerbate this barrier. In a national survey, internists reported devoting substantially more time to patients with LEP. Of those who saw LEP patients, 51% spent an additional 5–15 minutes during visits, while another 26% reported an additional 16–30 min-utes.² Similarly, a study found that Russian- and Spanish-speaking patients not only required additional physician time but were also less likely than their English-proficient counterparts to follow through with physician-requested laboratory testing, imaging studies, and consultations.⁵

Research has shown that effective patient-provider communication is directly linked to improved adherence and medical outcomes.⁶ For LEP patients, visits that included language-concordant bilingual physicians or professional interpreters resulted in optimal communication and improved medical outcomes, including cancer screening.^{7,8}

In contrast, a study showed that ad hoc interpreters (all family members) misinterpreted or omitted 23–52% of questions asked by doctors.⁹ Another study revealed that medical encounters resulted in more interpretation errors with potential clinical consequences when using untrained interpreters (22%) compared with trained interpreters (12%).¹⁰ The Office of Minority Health (US Department of Health Human Services) reported in National Standards for Culturally and Linguistically Appropriate Services (CLAS) in Health Care that health care organizations must assure the competence of language assistance provided to LEP patients/consumers by interpreters and bilingual staff, and specifies that family and friends should not be used to provide interpretation services (except on request by the patient/consumer).¹¹ Yet more than two-thirds of pediatricians surveyed by the American Academy of Pediatrics reported using family members instead of professional interpreters to translate during medical encounters with LEP patients and families.¹²

Results from the American College of Physician survey showed that nearly two-thirds of US internists provide care for LEP patients, and 70% of these physicians believed that, in general, LEP patients had more difficulty in understanding basic health information than did English-proficient patients.² Based on these findings, the American College of Physicians recently issued a position paper that included recommendations for: (1) the availability of language services to improve the provision of health care services to LEP patients; and (2) the establishment of a national clearinghouse to provide translated documents and patient education materials.²

The non-English language most frequently spoken in US homes was Spanish, followed by Chinese.¹³ From 1990 to 2000 the number of individuals who spoke Chinese, Tagalog (the predominant language spoken by Filipinos), Vietnamese, and Korean increased dramatically by 62%, 45%, 99%, and 43% respectively. A significant proportion of Chinese-(58%), Vietnamese- (66%), and Korean-speaking (60%) individuals had LEP.¹³

As one of the fastest-growing ethnic groups in the United States, Asian Americans numbered 14.4 million in 2005 and are projected to reach 38 million by 2050.^{13,14} Washington State has the third-largest population of Asian and Pacific Islanders (APIs) in the Western United States.¹⁵ More than 90% of APIs in Washington reside in major urban

centers, clustering for the most part in the Seattle/King County region. As the area's largest racial/ethnic minority group, Asian Americans represent 14.4% of the total population in metropolitan Seattle.¹⁶

Based on experience providing primary care to LEP patients, our research team sought to promote cancer screening within the Asian American population through culturally and linguistically appropriate methods that complement the medical services typically provided in busy primary care settings. Studies have shown that health education interventions for LEP individuals are effective in the community setting. Lay health workers significantly increased cervical cancer screening among LEP Vietnamese and Chinese women.^{17–19} Similarly, lay community workers increased mammography screening among LEP Latina women.²⁰ Results from *Mujeres Felices por ser Saludables* also demonstrated the effectiveness of a classroom health education intervention for young, low-ac-cultured Latinas.²¹

The primary objective of our National Cancer Institute funded grant, “Colorectal Cancer Screening in Chinese Americans,” was to design and evaluate a clinic-based, culturally and linguistically appropriate colorectal cancer (CRC) screening intervention for individuals of Chinese descent. This article describes the development of intervention materials for these LEP individuals and the key lessons learned from the study. To provide context, we first present background information on CRC in Asian Americans.

Colorectal Cancer in Asian Americans

Epidemiologic studies of migrants from low-risk to high-risk areas in the 1970s and 1980s documented a rapid increase in CRC incidence within the first generation.²² However, over the past few decades CRC incidence in Asian countries, particularly those more developed and Westernized, has changed significantly.²³ In fact, data from the International Agency for Research on Cancer from 1993 to 1997 showed that age-standardized CRC incidence is greater in Singapore and several areas of Japan than in the United States.²⁴ Based on data from 2002, Japanese individuals born in the United States now have higher CRC rates than those of US whites, with the rates of Japanese residing in Hawaii and Los Angeles among the highest in the world.^{25,26}

It is estimated that at least 50% of CRC deaths can be prevented by routinely screening all men and women aged 50 or older.²⁷ As with other screening modalities, lack of adherence to CRC screening is associated with racial/ethnic minority status, lower income, lower educational level, and lack of health insurance.^{28,29}

Studies have shown that levels of cancer screening are consistently lower among Asian Americans than among any other racial/ethnic group.^{28,30–34} CRC screening in particular remains low among Asian Americans, with variation in screening rates among specific Asian ethnic groups. As summarized in Table 1, surveys of Filipino and Korean Americans show lower screening rates than in Chinese, Japanese, and Vietnamese Americans. Deterrents to CRC screening include low levels of knowledge about CRC; lack of familiarity with screening guidelines and tests; lack of perceived susceptibility to disease; perceptions that CRC screening is unnecessary in the absence of symptoms; lack of availability and access to screening tests; lack of recommendation by a doctor; inconvenience; beliefs that the test is embarrassing and unpleasant; fear of abnormal results and surgery; and concern about financial costs.^{35–44} In addition to these barriers reported for the general population, foreign birth, low acculturation (ie, fewer years of residence in the United States and LEP), and residing in households with 3 or more individuals were also negatively associated with CRC screening by Asians.^{26,30,31,33,34,45–53}

Promotion of Culturally and Linguistically Appropriate Cancer Screening

Culturally and linguistically appropriate interventions are an important option to overcome barriers in the delivery of preventive care to LEP individuals. Designing research to evaluate such interventions with an achievable scope of work, reasonable costs, and appropriate use of resources presented our first challenge. To develop an intervention as feasible as possible to implement in a real world setting, we initiated discussions with International Community Health Services (ICHS), a federally qualified community health center that provides culturally appropriate medical care to local API communities. The overwhelming majority of ICHS patients are low income and have limited or no English skills. Among ICHS patients, 85% either have no health insurance or have Medicaid or state subsidized low-income health insurance.

Because the API population is very heterogeneous (the Asian American component alone represents more than 20 ethnicities), our first step required aligning our research with the organization's mission to provide comprehensive medical care to underserved APIs. In partnership with the ICHS medical director, we agreed on 3 key issues. First, our research proposal would focus on the clinic's largest patient population, the Chinese. Should the proposed intervention prove effective, our ultimate goal was to make the intervention available to the organization's diverse patient population. Second, the proposed CRC screening intervention would follow the ICHS standard of practice, primarily Fecal Occult Blood Testing (FOBT). Third, the intervention would consist of culturally appropriate health education provided through a health educator using intervention materials.⁵⁴ Upon funding of the proposal, our intervention study was conducted at ICHS.

Development of CRC Screening Intervention Materials for Chinese Americans

Chinese Americans

Updated census data show that 3.3 million ethnic Chinese live in the United States, the single largest Asian subgroup.¹⁴ Most Chinese Americans are first-generation immigrants, and nearly one-third of Chinese households are linguistically isolated, defined by the Census Bureau as households where no person 14 years of age or older speaks English “very well.”¹⁵

Conceptual Framework

Our intervention materials consisted of a Chinese-language video and a bilingual pamphlet (Chinese and English). The intervention was based on the Health Behavior Framework,^{55–57} which represents a synthesis of constructs from several major health behavior theories and has been used in diverse cancer control studies (Fig. 1).^{51,54,58–67} This framework postulates that individual and health care system factors, and environmental and personal barriers, jointly affect health behavior. Our intervention was designed to affect mutable individual patient-level factors (eg, knowledge, perceptions of disease susceptibility, cultural beliefs, etc.), within the broader influences of health system factors that often act as barriers to cancer screening. Through a thorough understanding of the immutable factors that form the context for individual behavior, we framed intervention messages designed to reduce health system barriers; increase knowledge; positively influence beliefs; provide social support; and reduce barriers to screening.

Incorporation of Cultural Values and Health Beliefs

Health beliefs are an accumulation of traditional ideas, knowledge, and past and present experiences. Although a certain level of conformity and harmony exists between the

dominant and minority cultures, it is inevitable that some cultural and health concepts differ across cultures. For example, fundamental values like filial piety, collectivism, and moderation are retained and practiced by Asian immigrants.⁶⁸

Central to the development of culturally appropriate educational materials, we believe, is the ability to appreciate differences, highlight commonalities, and refrain from imposing judgments. Our primary goal was to bridge the gap between Western and Chinese sociocultural values and health beliefs by strategically acknowledging Chinese cultural values and traditional health beliefs while recommending Western preventive behaviors through appropriate Chinese cultural contexts.

To achieve this end, we conducted 30 qualitative interviews in Cantonese and Mandarin to guide the development of our intervention video and pamphlet. Details of this qualitative study are published elsewhere.⁶⁹ Pertinent to our intervention development, when asked about CRC 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 or colonoscopy. Several interviewees believed that CRC was caused by diets high in foods with “heat” (*huo qi*) or by intestinal “toxins” from frequent constipation. Such beliefs may have led some to presume that FOBT is unnecessary in the absence of symptoms. Participants also may have believed other non-FOBT stool tests (eg, stool cultures) to be forms of cancer screening. Alternative causal pathways for CRC emerged from these interviews and are depicted in Figure 2. Additional themes are presented in Table 2 as related to the Health Behavior Framework and our intervention materials.

Linguistic Issues Pertaining to Spoken Chinese

Developing the intervention video required thoughtful consideration of issues pertinent to vernacular Chinese. Linguists broadly divide variations of the spoken Chinese language into 7 dialects: Cantonese, Mandarin, Wu, Min, Hakka, Xiang, and Gan.⁷⁰ Because of immigration patterns, Cantonese and Mandarin are the predominant dialects among Chinese Americans. Our video was therefore developed in Cantonese and then dubbed into Mandarin.

We used 3 strategies to successfully convey health messages to individuals who speak different dialects but belong to the same culture. First, we developed the video script in Chinese to capitalize on aspects of the language in ways that would have been impossible if we developed the script in English and then translated it into Chinese. Second, to ensure widespread appeal, reflect common cultural values, and bridge regional and dialectic differences, we incorporated common Chinese phrases understandable to individuals who speak different dialects. For example, we used the common Chinese expression *fang xia xin tou da shi* (translated into English as “a load off my mind”) in both the Cantonese and Mandarin videos. Third, we carefully selected vocabulary for each version, because dubbing the Cantonese dialogue into Mandarin required equivalence in both content and timing. For example, “boss” was expressed as *lou sai* in Cantonese and *lao ban* in Mandarin.

Linguistic Issues Pertaining to Written Chinese

In developing the intervention video and pamphlet, we capitalized on the uniqueness of the Chinese written language, a logographic writing system (one using characters) that differs substantially from the phonographic writing systems (alphabets) of most modern languages.⁷⁰ Because the same Chinese character can have different phonetic values, people who speak mutually unintelligible Chinese dialects can understand each other by communicating in written Chinese.⁷⁰

To extend the reach of our video, we included Chinese subtitles in both the Cantonese and the Mandarin versions to make them potentially accessible to Chinese who speak any of the other 5 dialects. Furthermore, although LEP immigrants may be highly literate in their native language, our community coalition members recommended that we develop the education materials at a fourth-grade reading level so that individuals with different literacy levels could benefit from the information. This recommendation was consistent with experts who advocate that low literacy materials be developed at the fifth-grade reading level or lower.^{71–73}

To the research team's knowledge, validated tools to assess the reading level of Chinese-language materials were not available at the development stage of our intervention materials. Instead, we conducted focus groups to pretest drafts of the Chinese-language materials and sought input from members of the community coalition to assess the content, layout, visual images, and readability of the materials.

Intervention Materials

Our video is 15 minutes long, with versions available in Cantonese and Mandarin, both of which include English and written Chinese subtitles. Our bilingual pamphlet is 20 pages long, with photographs of Chinese architecture, art, and people. Because they were selected as a research-tested intervention program, all of our intervention materials can be accessed from Cancer Control PLANET at <http://rtips.cancer.gov/rtips/index.do>.

Although the development of educational materials in a single language differs from survey development in multiple languages, we applied relevant lessons learned from our prior study on cervical cancer screening among Chinese women as well as those reported by Pasick et al.^{74,75} In their cross-cultural study of African American, Chinese, Latina, and Vietnamese women, Pasick et al.⁷⁴ identified substantial challenges to survey translation in terms of content: (1) a lack of directly comparable measures for certain concepts across cultures; (2) variation in conceptual constructs across cultures; (3) cultural inappropriateness of some concepts; (4) a lack of linguistic equivalents for certain terms; and (5) variation in the connotations of specific words across language groups.

Lessons Learned

We completed a randomized controlled trial that demonstrated the effectiveness of our intervention to promote FOBT screening by LEP patients in a primary care setting.⁵⁴ This intervention consisted of culturally and linguistically appropriate health education provided through a trilingual and bicultural health educator, the video, the pamphlet, and an FOBT kit with instructions in Chinese.

Key lessons learned from this study include the importance of: (1) a conceptual framework to guide the intervention development; (2) incorporating sociocultural values and health beliefs into the intervention; (3) addressing and capitalizing on complex linguistics issues; (4) using qualitative methodology in cross-cultural research; and (5) contributions from a multicultural and multilingual research team. Our early partnership with ICHS ensured the success of the study, and our joint efforts continue through a subsequent NCI grant “Cancer Control Dissemination to Asian Americans.” This current grant addresses some of the lessons learned regarding intervention dissemination and sustainability.

Because the aims of “Colorectal Cancer Screening in Chinese Americans” did not include the translation of research findings into practice, several lessons occurred upon the conclusion of the study's evaluation. Dissemination experts have highlighted that the impact of research advances is limited by the failure to transfer new, evidence-based findings into

the widespread delivery of individual and population health care.⁷⁶ Our experience and lessons learned serve as a case study in research targeting LEP individuals.

Glasgow et al's RE-AIM framework was developed to evaluate interventions that change health behavior. The acronym stands for Reach, Efficacy/Effectiveness, Adoption, Implementation, and Maintenance. This model is intended to refocus priorities on public health issues and provides balanced emphasis on internal and external validity. On the individual level, Reach refers to the percentage of potential participants who are exposed to an intervention and how representative they are. Efficacy and Effectiveness concern both the positive or intended effects of an intervention and its possible negative or unintended consequences. Adoption refers to the participation rate and to the representativeness both of the setting in which an intervention is conducted and of the agents who deliver the intervention. Implementation refers to the extent to which various components of an intervention are delivered as intended in real-world settings. The final dimension, Maintenance, applies both to individuals and to settings. At the individual level, it refers to the long-term results of an intervention. At the setting level, it refers to the institutionalization of a program.⁷⁷⁻⁷⁹ We used the RE-AIM framework to examine 3 issues pertinent to the transfer of research-tested intervention programs into practice with LEP patients.⁷⁶

Primary Care Practices Serving LEP Patients

Given the growing immigrant population, primary care practices that serve LEP patients must accommodate a diverse clientele. In the 2004 American Academy of Pediatrics survey, pediatricians reported 62 different languages spoken at home among their LEP patients.¹² ICHS, a prototype of culturally competent primary care services for API communities, has a multilingual and multiethnic staff that provides patient care in 15 different languages and dialects.

Based on the significant effect of our intervention (69.5% of intervention patients completed FOBT compared with 27% of control patients), ICHS wanted to adopt the intervention at its 2 clinics. However, several real-world issues had to be addressed to ensure the successful adoption, implementation, and maintenance of our intervention.

Availability of Intervention Programs for Diverse Primary Care Practice Patient Populations

The first issue, acknowledged in our research planning and key to the translation of our intervention into a real-world setting, is the availability of the intervention to other ethnic populations served by a community clinic such as ICHS. Such an organization is much more likely to adopt and implement an intervention program that is accessible to most of its patient population than one that is not.

As our study illustrates, the development and evaluation of an intervention for a specific cultural and linguistic population requires considerable time, expertise, and resources. Simultaneous intervention development and evaluation for multiple cultural and linguistic populations would require even more time, expertise, and resources.⁸⁰ Multiply these factors with additional areas of focus (eg, breast cancer screening, cervical cancer screening, prostate cancer screening), and the scope of work and resources increases exponentially.

Glasgow et al⁷⁶ emphasized that an integral part of successful dissemination is replication, which involves identifying additional populations, settings, and conditions under which an intervention will be effective. In the real-world setting of cancer prevention in primary care practices, effective replication of research-tested intervention programs for one ethnic group to another with overlapping cultural beliefs holds the potential to promote the efficient translation of research into practice. For example, instead of developing new interventions

for each Asian ethnic group, existing interventions shown to be effective for one group could be replicated and applied to a wider segment of the Asian American population at lower cost and in a more timely manner.

Currently, the literature on dissemination to minority populations is limited, and effective methods to disseminate research-tested intervention programs to minority and LEP populations remain poorly understood. Experts have cautioned that evidence-based interventions effective in the majority population have been shown to be less effective or ineffective in ethnic minority populations.^{81,82} Although we did not find any articles that addressed strategies for replicating effective intervention programs from one minority group to another, we conjecture that effective strategies for replicating research-tested interventions from majority to minority groups and from one minority group to another are dependent on many factors [such as the degree of overlap in: (1) cultural beliefs; (2) health beliefs; and (3) health practices], as well as the focus of the intervention(s). Additional studies in this field are urgently needed to complement other efforts to mitigate existing screening disparities among minority populations.

Adaptation of Interventions for Diverse Primary Care Practice Settings

A second issue relates to clinic staffing. We selected a health educator to provide the intervention because the medical director at ICHS had envisioned this approach to address patient needs. Upon the conclusion of the randomized controlled trial, we examined process evaluation data and found that almost 77% of the patients randomized to the intervention arm elected to view the intervention video at home rather than with the health educator. Because the intervention was designed to be flexible enough to accommodate busy real-world primary care practices, this finding supported the appeal of a simpler approach to health education and inspired the research team to reexamine various facets of the intervention.⁵⁴

According to Roger's Diffusion of Innovation model, innovations that are more flexible are adopted more rapidly.⁸³ Our research team reviewed the process data and the health educator's role in our intervention to examine the possibility of adapting her responsibilities to the clinic's medical assistants.

As integral members of the medical team, medical assistants directly interact with patients throughout a medical visit. To optimize operations, the number of medical assistants must correspond to the number of patients seen at a clinic. At ICHS, a clinic that provides primary care in many languages and dialects, medical assistants are matched to patients by culture and language, because matching physicians to patients by ethnicity, language, or gender is not feasible. When a linguistic match is not available, a certified interpreter is brought in to facilitate the cultural and linguistic aspects of the medical encounter.

Having the medical assistants rather than a health educator deliver the intervention would better accommodate the cultural and language needs of a linguistically diverse patient population, because a single health educator would still require interpretation services to reach such a heterogeneous clientele. This lesson highlights a need to better understand the effective adaptation and reinvention of interventions to better address cancer screening among LEP patients in primary care practices. We surmise such an adaptation and reinvention will facilitate the adoption, implementation and maintenance of the intervention at ICHS.

Capacity to Disseminate Research-Tested Intervention Programs to Individuals With LEP

The third issue pertains to the fact that mainstream and professional media may not effectively reach minority populations, particularly those that are predominantly LEP. Our

research team used various approaches to disseminate the intervention program and associated research findings. Although presentations at national conferences and publications in health journals proved essential to informing the research community, it is our experience that additional avenues are necessary to reach communities that serve LEP individuals and populations.^{54,69,84} It is our hypothesis that organizations (health, social, or media) serving LEP communities could potentially bridge the gaps in information as well as disseminate research-tested interventions to their clientele. To fully realize the potential of research-tested intervention programs designed for LEP populations, the capacity of these organizations serving LEP communities to effectively disseminate health information and interventions warrant further study.

Summary

We surmise that lessons learned from this study may be pertinent to other patient groups with LEP and applicable to additional screening tests. Our findings supplement the limited literature on health promotion among LEP patients and identify potential research areas to mitigate screening disparities among LEP individuals.

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Figure 1.
The Health Behavior Framework. These are the health behavior framework variables as represented at the time of our study.

Figure 2. Alternative colorectal cancer causal pathways. Diagrams of alternative models of colorectal cancer formation based on (a) Chinese American participant interview and focus group content; and (b) review of biomedical literature. Items in cloud-shaped boxes represent external disease signs or symptoms.⁶⁹

Table 1
CRC Screening Among Asian Americans

	Group	FOBT	Sigmoidoscopy	Endoscopy
1997 BRFSS age >50, California and Hawaii ⁸⁵	APIs	3–24% [*]	24–41% [†]	
2000 National Health Interview Survey age ⁸⁶	Asians	15% [*]		19% [‡]
2001 California Health Interview Survey age 18 or older ³²	Asians	41–54% [§]		41–54% [§]
396 high risk individuals age 40–80, California ⁸⁷	APIs	8%	16%	29%
215 individuals age >40 in California ⁸⁸	Vietnamese	12% [*]		
1991 BRFSS age >50 ⁸⁹	Vietnamese	35–38% [¶]		
235 individuals age 50–79 in San Jose, California 2001–2002 ⁵⁰	Vietnamese	31% [*]	18% [†]	
239 Vietnamese age 50–79 living in San Jose, California ⁵⁰	Vietnamese	31%	18%	22%
2001 California Health Interview Survey ³⁴	Vietnamese	18%		
284 men and women in South Alabama ⁵²	Vietnamese	21% [¶]		
100 elderly women age >60 at 7 Chinese senior centers ⁴⁷	Chinese	11% [*]	30% [†]	
203 elders age >50 at a 3 Chinese senior centers ⁴⁶	Chinese	16% [*]	22% ^{//}	
383 individuals age >50 from a community health clinic ⁸⁴	Chinese	19%	3%	21%
206 individuals age >50 from senior centers or churches ⁹⁰	Chinese	65%	54%	49%
433 Chinese American women age >50 from Metropolitan Washington, DC ⁹¹	Chinese	56.8% ^{**}		
218 women age >50 from church/social service organizations ³⁰	Filipina	12% [*]		15% ^{††}
263 individuals age 40–69 in Chicago, Illinois ⁴⁹	Korean	9–11% [¶]		
229 women age >50 from church/social service organizations ³⁰	Korean	14% [*]		37% ^{††}
205 individuals age 60–89 in Maryland ⁴⁸	Korean	18% [¶]	11% ^{‡‡}	
151 Korean Americans age 40–70 in Los Angeles ⁹²	Korean	17% [§]		
Sample of urban population in 4 states age >30 ²⁶	Japanese	48% ^{§§}		44% ^{††}

* FOBT in the past year.

† Sigmoidoscopy in the past 5 yr.

‡ Endoscopy includes sigmoidoscopy, colonoscopy and proctoscopy in the past 5 yr.

§ FOBT in the past year or endoscopy (includes sigmoidoscopy, colonoscopy, and proctoscopy) in the past 5 yr.

¶ Ever had FOBT.

// FOBT in the past year with sigmoidoscopy in the past 5 yr.

** FOBT in the past year, sigmoidoscopy in the past 5 yr, or colonoscopy in the past 10 yr.

†† Endoscopy includes sigmoidoscopy and colonoscopy in the past 5 yr among those >50.

‡‡ Ever had sigmoidoscopy.

§§ FOBT in the past 2 yr among those >50.

Table 2
Application of the Health Behavior Framework to Intervention Materials

Variable	Qualitative Findings	Pamphlet	Video (in Addition to Pamphlet)
Patient variables			
Acculturation			<ul style="list-style-type: none"> Mr. Ho is less acculturated but his son took him to get CRC screening
Knowledge	<p>Facilitators</p> <ul style="list-style-type: none"> Belief in screening when asymptomatic <p>Barriers</p> <ul style="list-style-type: none"> Confusion regarding FOBT purpose Belief in screening only when symptomatic 	<ul style="list-style-type: none"> CRC Symptoms/lack of symptoms Early detection Screening modalities Screening guidelines Talk with MD if you have a family history of CRC FOBT instructions Insurance coverage for tests 	<ul style="list-style-type: none"> Same
Communication and rapport with provider	<p>Facilitators</p> <ul style="list-style-type: none"> Physician recommendation Prior education from physician about test instructions <p>Barriers</p> <ul style="list-style-type: none"> Lack of clear instructions English reading/speaking ability Reluctance/embarrassment to discuss through interpreter 	<ul style="list-style-type: none"> Ask MD about screening (testing) Ask MD about result notification Ask MD about healthy diet and practices 	<ul style="list-style-type: none"> Ask MD about screening (testing)
Perceived severity		<ul style="list-style-type: none"> Data on CRC incidence and mortality Late detection of CRC results with death and suffering 	<ul style="list-style-type: none"> Same
Perceived susceptibility	<p>Facilitators</p> <ul style="list-style-type: none"> Concurrent gastrointestinal symptoms/signs at time of test 	<ul style="list-style-type: none"> Chinese people can get CRC Women and men can get CRC 	<ul style="list-style-type: none"> Same Mr. Wang never thought he would get CRC

Variable	Qualitative Findings	Pamphlet	Video (in Addition to Pamphlet)
	Barriers <ul style="list-style-type: none"> Lack of gastrointestinal symptoms/signs at time of test 	<ul style="list-style-type: none"> Despite healthy lifestyle practices you may still get cancer 	<ul style="list-style-type: none"> Lack of bowel symptoms does not mean there is no problem You cannot control your heredity Patient testimonies
Beliefs in: Benefits vs. Costs		<ul style="list-style-type: none"> Screening is a worthwhile investment Early CRC detection avoids more serious problems Early CRC detection can result with cure Normal screening gives peace of mind Prevents unnecessary worry Your health is important to care for your family With longevity you can enjoy the grandchildren Same Need time to get test Potential monetary costs 	<ul style="list-style-type: none"> Same (items 1–6) Good health is important for work/business Patient A testimonial Patient B testimonial
Perceived outcome efficacy	Facilitator <ul style="list-style-type: none"> Belief in importance of regular stool examination 	<ul style="list-style-type: none"> Screening can help MD to find and remove polyps Early CRC detection avoids more serious problems Early CRC detection can result with cure 	<ul style="list-style-type: none"> Same Prevention is better than treatment
Self-efficacy		<ul style="list-style-type: none"> FOBT is easy to complete FOBT is performed at home 	<ul style="list-style-type: none"> Same You can pick up FOBT from the clinic
Perceived control		<ul style="list-style-type: none"> Taking care of health is important (Mrs. Chen) FOBT preparation and directions Ask MD about CRC screening 	<ul style="list-style-type: none"> Same (items 1–3)

Variable	Qualitative Findings	Pamphlet	Video (in Addition to Pamphlet)
		<ul style="list-style-type: none"> Ask MD about result notification Ask MD about healthy diet and lifestyle Ask clinic about insurance coverage Good health is good fortune 	<ul style="list-style-type: none"> Diet of moderation
Cultural beliefs		<ul style="list-style-type: none"> <i>Bou</i> (traditional Chinese health concept of replenishing the body) 	<ul style="list-style-type: none"> Same (Mrs. Yip cooks <i>bou</i> soup) Health benefits of practicing <i>Tai Chi</i>
Fatalism		<ul style="list-style-type: none"> Early CRC detection can result with cure CRC does not have to be fatal Screening can save you and your family pain and suffering 	<ul style="list-style-type: none"> Same
Subjective norms		<ul style="list-style-type: none"> Why look for problems when asymptomatic Good health is good fortune Health is precious to you and your family Maintaining good health is important 	<ul style="list-style-type: none"> Same Filial piety (Martin Yang Public Service Announcement – he will cook a feast for his mother; take her on a tour of China; get her to do CRC screening)
Social support	Facilitator <ul style="list-style-type: none"> Family recommendation 	<ul style="list-style-type: none"> Friends and family encourage to have test and vice versa 	<ul style="list-style-type: none"> Same Mr. Ho's son took him to see MD Mr. Ho's son interpreted during MD visit
Psychological distress and coping style	Barrier: <ul style="list-style-type: none"> Fear of discovering a problem from the test 	<ul style="list-style-type: none"> Afraid to get screened, don't want to find problems Avoidance—why look for problems when asymptomatic Screening will give you peace of mind 	<ul style="list-style-type: none"> Procrastinate (Mr. Lee's friend's wife)
Readiness to change			
Past adherence	Facilitator	<ul style="list-style-type: none"> Need regular screening 	

Variable	Qualitative Findings	Pamphlet	Video (in Addition to Pamphlet)
	<ul style="list-style-type: none"> Positive past FOBT experience for self or family 		
	Barrier		
	<ul style="list-style-type: none"> Lack of past FOBT experience for self or family 		
MD and health care system barriers			
Result notification		<ul style="list-style-type: none"> Lack of clarity of what to expect 	
Patient barriers	Barrier		
	<ul style="list-style-type: none"> Difficulty with adhering to FOBT dietary restrictions 		
Time	<ul style="list-style-type: none"> Work environment restrictions conflict with test instructions 	<ul style="list-style-type: none"> Difficult to take time off work (Mrs. Chen) 	<ul style="list-style-type: none"> Difficult to take time off work
Childcare			<ul style="list-style-type: none"> Mr. Lee's friend, the wife didn't get screened and died from CRC
Language			<ul style="list-style-type: none"> Mr. Lee's friend did not speak English Mr. Ho relied on his son or an interpreter to communicate with MD
Costs	Worry about test cost and co-payment		<ul style="list-style-type: none"> Mr. Lee's friend wanted to save money, did not get screened
MD and health care system support			
MD		<ul style="list-style-type: none"> Ask MD about screening Mr. Yip (MD insisted he got screened: MD provided information and knowledge; MD did colonoscopy; MD removed polyps) 	<ul style="list-style-type: none"> Same (Mr. Ho)
Nurse			<ul style="list-style-type: none"> Ask the nurse about medications

Variable	Qualitative Findings	Pamphlet	Video (in Addition to Pamphlet)
			and foods to avoid for FOBT
Patient support			
Family and friends		<ul style="list-style-type: none"> Mrs. Hu (friend Mrs. Lee) Mr. Yip (wife Mrs. Yip; brother and his wife) 	<ul style="list-style-type: none"> Mr. Lee and their friends Mr. Ho's son took him for an exam Mrs. Yip and her husband get FOBT
Colleagues			<ul style="list-style-type: none"> Mr. Wang's restaurant colleagues
Medical history		<ul style="list-style-type: none"> Talk with MD if one has family history of CRC 	
Demographic factors		<ul style="list-style-type: none"> Chinese people can get CRC Women and men can get CRC Individuals 50 and older need regular screening 	<ul style="list-style-type: none"> Same
Insurance status	Facilitator	<ul style="list-style-type: none"> Most insurance cover costs of FOBT Ask the clinic for more information 	
	<ul style="list-style-type: none"> Public health insurance 		

CRC indicates colorectal cancer; MD, physician; FOBT, fecal occult blood test.