



# Cancer Screening Promotion among Filipino Americans: A Systematic Review to Inform Clinical Practice and Research

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## Abstract

**Background:** Low cancer screening rates among Asian Americans may contribute to cancer as the leading cause of death in these minority populations. Filipino participants of a patient-centered outcomes research project in California, Hawaii, Texas, New Jersey, and New York reported that cancer is a priority healthcare issue. Early cancer detection through screening significantly influences the timing of cancer diagnosis and prognosis.

**Objective:** This systematic review synthesizes research evidence from interventional studies to promote cancer screening among Filipino Americans.

**Methods:** Five databases (Scopus, CINAHL, Ovid, PsycInfo, and PubMed) were searched on July 2020, with a time exclusion of ten years, using the terms: Filipino Americans, cancer screening, and promotion for relevant research articles. Twelve articles met the criteria and were included.

**Results:** The studies described colorectal cancer (CRC) and breast cancer screening promotion initiatives among Filipino Americans and Asian Americans (including Filipinos). CRC screening promotion studies included the Filipino Health Study in California, CRC2 Study, Lay health educator (LHE) approach, CRC Education Program/Healthy Asian Americans Project, and market-oriented and community-based participatory research approach. Two studies described breast cancer screening promotion among Asian Americans, i.e., the Michigan breast cancer screening study and the Asian grocery store-based breast cancer education program. Cancer screening promotion studies utilized community engagement strategies such as Filipino coordinators, lay health educators, partnerships with community-based organizations, and Asian grocery stores.

**Conclusions:** There are limited intervention studies that promote CRC and breast cancer screening among Filipino Americans, highlighting the need for more research. Community engagement effectively promoted recruitment and participation and could be a potential strategy for sustained cancer screening promotion programs. Future initiatives should consider more research funding and sustainability of programs.

**Keywords:** *Filipino Americans, cancer screening promotion, colorectal cancer, breast cancer, systematic review*

## Background

Filipinos make up a significant immigrant group in the United States (US), reported being the fourth-largest immigrant group with almost two million born outside of the country (US Census Bureau, 2018). Despite the size and growth of the Filipino population, there is limited information regarding their health status. Asian Americans remain underrepresented in most population-based epidemiological studies, either being excluded due to small sample sizes or included only in aggregate as Asian American Pacific Islander (AAPI) or as “others” (Choi et al., 2013; Vargas et al., 2020).

In 2019, the Patient-Centered Outcomes Research Institute (PCORI) funded a project, “Mag-PCOR Muna Tayo,” to build capacity and engage Filipino Americans (FAs) in patient-centered outcomes research (PCOR) and comparative effectiveness research (CER) (Lapiz-Bluhm, 2020; Vargas et al., 2020). The PCORI project aims to create a community-based nationwide Filipino American PCOR (FA-PCOR) network through the creation of FA-PCOR “nayon” (village) in five US states with a large population of Filipino Americans: California (CA), Hawaii (HI), Texas (TX), New York (NY), and New Jersey (NJ). The local nayon engages Filipinos and community stakeholders to address the specific needs of Filipino Americans to make informed healthcare decisions (Lapiz-Bluhm, 2020).

Reports from each nayon indicate that cancer is a healthcare issue of priority in all FA-PCOR states, sometimes ranking as high after diabetes, hypertension, and obesity. Early cancer detection through screening influences the timing of cancer diagnosis and prognosis. According to the American Cancer Society (2016), cancer is the leading cause of death within the Asian American and Pacific Islander (AAPI) community, which is associated with low screening rates (Cuaresma et al., 2018; Lee et al., 2011; Maxwell et al., 2016; Sy et al., 2018). These data prompted this systematic review to synthesize research evidence from interventional studies to promote cancer screening among Filipino Americans. While some intervention studies for cancer were included in the systematic review by Lapiz-Bluhm and Nguyen (2020), this systematic review covers more databases, with a more extended inclusion date of 10 years. Also, it outlines more details of the intervention strategies. Knowledge of effective methods can inform future studies to implement an evidence-based intervention that improves cancer screening among Filipino Americans.

## Methods

The clinical research question of the study is, “What intervention studies have been conducted to promote cancer screening among Filipino Americans?” A database search was done in five databases (i.e., Scopus, CINAHL, Ovid, PsycInfo, and PubMed) using the search terms,

Filipino Americans, cancer screening, and promotion, on July 16, 2020. The literature search was limited to a ten-year period (July 2010 to July 2020). In the literature, the term Filipino American refers to individuals who self-identify as Filipino American. They may belong to one of the following categories: Filipino who migrated to the US, a US-born Filipino (one or both parents are Filipinos), or an individual with a Filipino lineage who self-identifies as Filipino American.

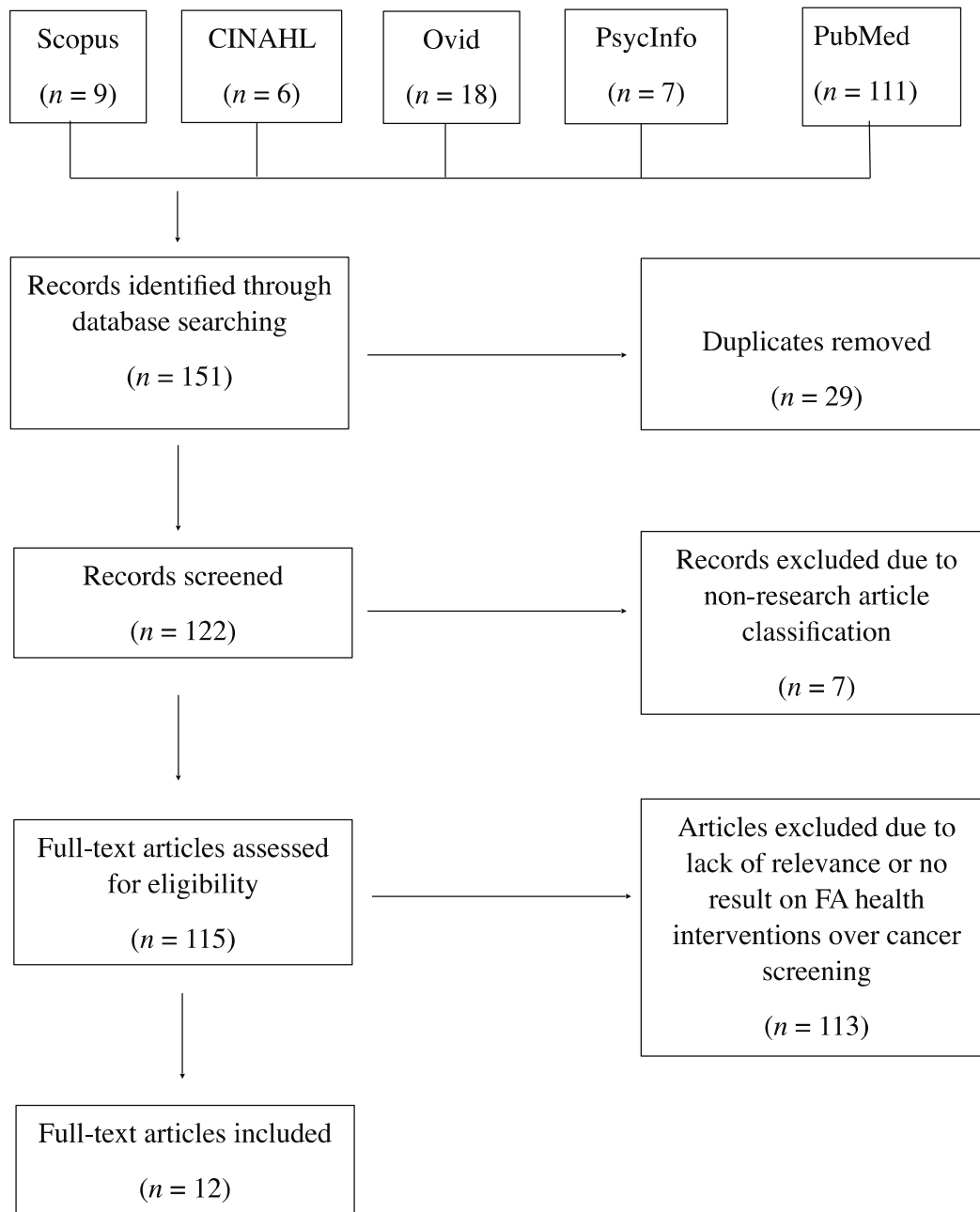
Using the PRISMA search strategy (Figure 1), titles and abstracts of studies were retrieved and screened to identify articles that address promotion strategies related to cancer screening among Filipino Americans. A review team member retrieved the full text of these potentially eligible studies. Articles were further assessed for eligibility and were finalized by the other team member.

The initial search with the time exclusion of ten years yielded 151 articles from all databases. The duplicates of 29 articles were removed using RefWorks. The remaining 122 articles were screened. Seven papers were initially excluded from the screening because they were non-research articles. From the remaining 115 full-text articles assessed, only 12 articles reported cancer screening promotion among Filipinos in the US, which were subsequently included in the systematic review (Figure 1).

A standardized form, previously piloted in another systematic review (Monney & Lapiz-Bluhm, 2018), was used to extract data from the included studies to assess study quality and evidence synthesis. Extracted information included the following: authors, study methodology, study setting, and population, participant demographics and baseline characteristics, details of the intervention and control conditions (if applicable), recruitment and study completion rates, outcomes and types of measurements, major findings, and implications, and limitations (risk of bias). Included were all relevant studies irrespective of the study design (i.e., quantitative, qualitative, or mixed methods). The primary author completed the risk of bias. Due to the lack of similar randomized controlled trials, a meta-analysis could not be performed. A narrative synthesis of the literature is reported herein.

## Results

Twelve studies described interventions to promote screening for colorectal cancer (CRC) and breast cancer. Colorectal cancer (CRC) is the third leading cause of cancer death among Filipinos (American Cancer Society, 2016). CRC screening rates among Filipinos are low. For example, the 2014 CRC screening rates among Filipinos in Hawaii was 56.5%, the lowest in the state and below the Healthy People 2020 target of 70.5% (see Cuaresma et al., 2018). Similarly, breast cancer screening rates are also low among Asian



**Figure 1**

*Database Search Flow Diagram of the Literature Search*

Americans (Park, 2018). The Cancer Prevention Institute of California reported that breast cancer rates had been fixedly increasing for Asian-American women over the past 15 years, even though breast cancer rates have stabilized in other racial groups (see Park, 2018). Vulnerability to cancer disparities has been linked to social determinants, which include being a new immigrant, limited English proficiency, lack of time for self-care because of multiple low-paying jobs and caregiving, lack of access to transportation and health insurance, and health care costs (Maxwell et al., 2010a; Maxwell et al., 2010b; Cuaresma et al., 2018).

**Intervention Studies for Colorectal Cancer (CRC) Screening Promotion**

Intervention studies that addressed CRC screening among Filipino Americans and Asian Americans (which include Filipinos) are summarized below (see Table 1). These studies include the Filipino Health Study in CA (Maxwell et al., 2010a), which was extended to the CRC2 Study (Maxwell et al., 2016), Lay health educator (LHE) approach (Cuaresma et al., 2018), CRC Education Program/Healthy Asian Americans Project (HAAP) (Wu et al., 2010), and market-oriented and community-based participatory research ap-

**Table 1***Evidence Synthesis Table for Colorectal Cancer (CRC) Intervention Studies among Filipino-Americans (FAs)*

Authors	Aims	Sample/ Setting	Measurement	Findings
A. Filipino Health Study				
Maxwell et al. (2010)	Assess intervention addressed at increasing CRC screening rates among FAs	FAs ( $n = 548$ ) non-compliant with CRC screening guidelines	Self-reported CRC screening rates within a 6-month follow up	The 6-month follow-up revealed that the intervention group participant with or without the FOBT self-reported an increased CRC screening rate at 30% and 25% respectively, while only 9% was observed in the control group.
Maxwell et al. (2011a)	Examine mediators of behavioral change to increase CRC screening in FAs effectively	FAs ( $n = 548$ ) 50 -70 years of age who were non-adherent to CRC screening guidelines in Los Angeles County	CRC knowledge and screening	Intervention that increased knowledge or awareness of CRC screening and provider-communicated CRC screening increased knowledge and awareness of CRC screening wherein the former accounted for 13% intervention effect while the latter accounted for 20%.
Maxwell et al. (2011a)	Examine a previous community-based trial to enhance CRC screening	FAs aged 50 -70 years of age ( $n = 548$ )	CRC screening receipt adjusted for biases of missing data and self-report	After adjusting for biases, the intervention effect was effective among participants whose providers have received a letter about the intervention studies.
Maxwell et al. (2012)	Describe and evaluate the training of FA community health advisors (CHA) for CRC screenings	FA ( $n = 91$ ) pooled from 19 organizations	Surveys on knowledge, total self-efficacy	Knowledge and self-efficacy on CRC screening guidelines compounded 6 hours post-training 63% to 94%; and 8.2 to 8.9 on a 10-point scale both $p < 0.001$ , respectively. High educational attainment, health care background, high organization participation, perceived leader in their community, and high participation in research correlated with the community health advisors' self-efficacy.
Maxwell et al. (2013)	Assess the feasibility of disseminating intervention on colorectal cancer (CRC) screening in FA communities	FA participants ( $n = 132$ ) in Greater Los Angeles from FA organization with at least 50 members age 50 to 70 years old	Questionnaires, process checklist, log of fecal occult blood test (FOBT) distribution, CRC screening	CRC screening programs by Filipino American community-based organization are feasible with proper technical and financial support. Community health advisor led the endeavors in Filipino American community settings
Maxwell et al. (2014)	Outline the recruitment of FA CBOs and the rate of adoption by the organization for CRC screening promotion	44 Filipino American community lead organization with a minimum of 150 Filipino American members aged 50 and over	Assessment of community organization and comparison of the number of participating organizations	CRC screening promotion program was adopted by 22 of the organizations; adoption rate was highest in previous partner organizations (11/14 = 79%), and community partner referred (5/10 = 50%), New organization (6/20 = 30%) had the lowest adoption rate.

Authors	Aims	Sample/Setting	Measurement	Findings
B. CRC2 Study				
Maxwell et al. (2016)	Assess CRC screening promotion in FA community-based organizations (CBOs)	22 FA CBOs identified to have at least 150 FA members in Los Angeles and Orange County, CA	Number of participants and rate of screening	Similar effectiveness was achieved in both basic and enhanced intervention strategies with CRC screening rates at the 6-month follow-up at 49% and 53%, respectively. It was notable that the enhanced arm was more impactful due to its greater reach of $n = 223$ participants screened compared to $n = 122$ participants revealing an 83% difference.
C. Lay health educator approach				
Cuaresma et al. (2018)	Investigate impact of lay health educators (LHE) on CRC screening rates in FAs.	FA participants ( $n = 304$ ) age 50 to 70 years in Hawaii	Surveys for up-to-date screening, ever screened, and knowledge and awareness of CRC	Increase in participant self-reported CRC screening from 80% to 89% ( $P = 0.0003$ ) post-intervention versus control group at 73% to 74% $P = 0.60$ ) and remained significant after covariate adjustment with significant intervention effects (OR, 1.81 85% confidence interval, 1.0-3.5). However, there was no intervention effect on up-to-date screening.
D. CRC Education Program/Healthy Asian Americans Project (HAAP)				
Wu et al. (2010)	Assess the effectiveness of CRC education	304 Asian American participants 50 years or older in Michigan	CRC knowledge and screening	Educational intervention for the 304 participants significantly increased their knowledge and attitudes about the importance of screening. 78% of those that received educational intervention after the 6-12-month follow-up had been screened versus 37% who have been previously screened prior to the study.
E. Market-oriented and community-based participatory research approach				
Kim et al. (2016)	Characterize a novel study protocol in disseminating CRC screening guidelines for seven Asian subgroups	72 Asian Americans in 8 focus group. 470 participants from 7 AA groups (Filipinos, $n = 67$ ).	Number of participants and test kits distributed and returned, CRC knowledge	93.5% are in agreement about the importance of early detection, 86.9% believed that cancer can affect anyone, 74.1% believed that CRC is preventable and 83.8% are in agreement that CRC screening should be done by everyone. However, 35.8% believed that not knowing about cancer status is good and 45.5% will only get screened if symptoms arise.

proach (Kim et al., 2016). The Filipino Health Study resulted in several publications included in this systematic review as they provided details of the aspects of the study.

### **Filipino Health Study**

Maxwell and colleagues (2010a) conducted the first community-based trials to develop a multicomponent intervention that would increase colorectal cancer screening among Filipino Americans in CA called the Filipino Health Study. The intervention, based on the Health Behavior Framework, targeted knowledge/awareness of CRC screening, communication with the health care provider, health beliefs, social support, and barriers to CRC screening. Briefly, 548 Fili-

pino Americans, 50–70 years of age who were non-adherent to CRC screening guidelines (i.e., no FOBT within the past 12 months, no sigmoidoscopy within the past five years, and no colonoscopy within the past ten years) from 45 Filipino American community-based organizations (CBOs) and churches participated in the study. They were randomized into three groups: 1) an intervention group that received an education session on CRC screening and free fecal occult blood test (FOBT) kits, 2) an intervention group that received an education session but no free FOBT kits, and 3) a control group that received an education session on the health benefits of physical activity. The groups consisted of 6–10 subjects within the same CBO to take advantage of

**Table 2.** Evidence Synthesis Table for Breast Cancer Intervention Studies among Filipino Americans (FAs)

Authors	Aims	Sample/Setting	Measurement	Findings
A. Michigan Breast Cancer Screening Study				
Wu et al., (2014)	Assess outcomes of a breast intervention program on knowledge and intention to get screened in Southeast Asian and South Asian population	Southeast Asian and South Asian women from Michigan with the following ethnic breakdown of India ( $n = 60$ ), Philippines ( $n = 17$ ), and Vietnamese ( $n = 60$ )	Pre- and post-educational session survey	Culturally appropriate intervention effectively modified knowledge, attitudes, behaviors, and perceptions regarding breast cancer and screening among SEA and SA women. Risk perception increased from a baseline of 46% to 73%. Culturally tailored interventions help in promoting early detection and cancer control among this group
B. Asian Grocery Store-Based Education Program				
Sadler et al., (2012)	Assess the effectiveness of a randomized controlled trial of the Asian Grocery Store-based Cancer Education Outreach Program from 2000-2004 in educating Asian Americans about breast cancer	Asian American women ( $N = 1,522$ ) identified as Chinese ( $n = 381$ ), Filipino ( $n = 414$ ), Korean ( $n = 371$ ), and Vietnamese ( $n = 356$ ) of at least 20 years old at an Asian grocery store in Southern California	Pre and post-education survey (Reported mammogram in the past 12 months, adherence to mammogram and annual clinical breast exam)	Breast cancer education intervention encouraged mammogram scheduling in women aged 40 or older who were non-adherent for annual screenings vs women in the control group.

existing bonds between members of the same organization. Interviews (telephone or face-to-face) were conducted at baseline and six months after the session in English or Filipino. The participants received a \$20 incentive for each interview and a chance to win a \$500 prize after completing the follow-up interview. During the 6-month follow-up period, self-reported CRC screening rates were 30% for the intervention with the FOBT kit, 25% for the intervention without the FOBT kit, and 9% for the control group. The intervention with an educational group session in a community setting significantly increased CRC screening among Filipino Americans, even without free FOBT kits. Subsequent analyses further supported the effectiveness of the intervention across the demographic characteristics of the sample (Maxwell et al., 2011).

Maxwell and colleagues (2011b) assessed the Health Behavior Framework variables at baseline and 6-month follow-up ( $N = 432$ ). Knowledge/awareness of CRC screening and patient-provider communication mediated receipt of screening. An increase in CRC screening awareness accounted for 13% of the total intervention effect size, while

patient-provider communication accounted for 20%. Examining the roles of potential mediators in intervention trials may help identify constructs to target to enhance the effectiveness of interventions to increase CRC screening.

Maxwell and colleagues (2012) described the training program for the Filipino Health Study. Filipino Americans from 19 organizations conduct small-group sessions with members of their organizations to promote CRC screening. Community health advisors (CHAs) completed brief pre- and post-training surveys that included knowledge of colorectal cancer screening guidelines, perceived self-efficacy of performing specific tasks, and satisfaction with the training. The CHAs had high levels of knowledge and self-efficacy at pre-training, which increased significantly immediately after the six-hour training. Self-efficacy was associated with high educational attainment, health care background, high level of participation in the organization, being perceived by others as a leader, and past frequent involvement in research activities.

The initial feasibility of CHAs to work the community

settings for the Filipino Health Study was documented (Maxwell et al., 2013). The CHAs conducted one-on-one or small group education and passed out the free FOBT kits. Twenty CHAs from 4 organizations engaged in recruitment and education activities with 132 participants. CHAs consistently completed screening questionnaires to establish eligibility and kept logs of FOBT distribution. However, they did not always record eligible participants who did not consent to participate. Process checklists that indicated what information was covered in each educational session and post-session follow-up logs were only partially completed. Almost all participants reported receipt of intervention components and receipt of screening at 4-month follow-up and reported high acceptability of the program. Hence, there is a need for training, monitoring recruitment, intervention implementation, and follow-up of CHAs who work with the community.

The participation of 44 community-based organizations (CBOs, having  $\geq 150$  Filipino American members age 50+) was an essential component of the Filipino Health Study (Maxwell et al., 2014). They compared the organizational characteristics of organizations that did and did not adopt the CRC screening promotion program. 22 (50%) of community organizations adopted the CRC screening promotion program. Adoption was highest among organizations that had previously partnered with research teams (11/14 = 79%) and among organizations that were referred by community partners (5/10 = 50%), and lowest among new organizations (6/20 = 30%). This study underscores the importance of community resources, community-academic relationships, and partnership in the dissemination process. However, the moderate rate of adoption among new organizations and the demands of completing documentation and assessments to advance dissemination research raise questions regarding the generalizability of the study findings.

### ***CRC2 Study***

In 2016, Maxwell and colleagues reported on the CRC2 study (2011-2014), which focused on implementing the previously developed Filipino Health Study to increase CRC screening. They evaluated the two strategies to implement an evidence-based intervention to promote CRC screening in Filipino American community organizations. Twenty-two community organizations were randomized to either a basic or enhanced implementation strategy. In both arms, CHAs recruited participants non-adherent to CRC screening guidelines, conducted educational sessions, distributed print materials, and free fecal occult blood test kits, reminded participants to get screened, and mailed letters to participants' providers. In the enhanced arm, leaders of the organizations participated in implementation efforts. While the effect was similar in both arms of the study (screening rate at 6-month follow-up was 53% in the enhanced arm, 49% in the basic arm), 223 participants were screened in the

enhanced arm versus 122 in the basic arm. The enhanced implementation strategy reached 83% more participants and achieved a higher public health impact. The results highlight and support the importance of leveraging CBOs in community health promotion activities.

### ***Lay Health Educator Approach***

Using a clustered randomized controlled trial, Cuaresma et al. (2018) utilized the lay health educator approach to increase CRC screening among 304 Filipino Americans ages 50 to 75 years in Hawaii (HI) in 2012-2015. The lay health educators delivered two education sessions and two telephone follow-up calls on CRC screening plus a CRC brochure versus an attention control. Participants in the intervention group had an increased proportion of ever having received CRC screening (from 80% to 89%) than the control group (from 73% to 74%). However, the intervention did not affect up-to-date screening.

### ***CRC Education Program/Healthy Asian Americans Project (HAAP)***

Wu and colleagues (2010) described the expansion of an established health promotion program, the Healthy Asian Americans Project (HAAP), to include community-based CRC education during 2005-2006. Using Asian-language media, HAAP promoted awareness throughout local Asian Indian, Chinese, Filipino, Hmong, Japanese, Korean, and Vietnamese American communities and recruited men and women over 50 years to attend health fairs at local community/cultural centers. The program had a coordinator from within their respective Asian Indian, Chinese (Taiwan and China), Filipino, Hmong, Japanese, Korean, and Vietnamese communities who connects them to churches, temples, and civic organizations. The intervention was an expert-presented educational seminar on evidence-based guidelines for early detection of CRC. The presentation was in Chinese and English; the on-site translation was provided when the audience did not speak either of those languages. Educational brochures about CRC (obtained from the American Cancer Society and other websites) were distributed in relevant Asian languages. The data from 304 participants (ethnic breakdown was not provided) showed significantly increased knowledge and attitudes on the importance of screening. Study follow-up conducted between 6 and 12 months showed that 78% of those who received the educational intervention had been screened in the last 12 months; only 37% had ever been screened with any of the tests prior to the study. The educational intervention improved CRC screening rates and may help lower CRC mortality among underserved Asian Americans.

### ***Market-oriented and Community-based Participatory Research Approach***

Kim et al. (2016) tested an innovative study protocol to disseminate CRC screening guidelines in seven Asian sub-

groups (Cambodian, Chinese, Korean, Laotian, and Vietnamese, Filipinos, and Southern Asians). The study integrated a market-oriented Push-Pull-Infrastructure Model, Diffusion of Innovation Theory, and community-based participatory research approach to create a community-centered dissemination framework. Consumer research, through focus groups ( $N = 72$  participants in 8 focus groups) and community-wide surveys ( $N = 464$ ), was centered on the adopters to ensure a multilevel intervention was well designed and effective. The focus groups were facilitated by bilingual, bicultural research staff members, who participated in a 4-hour training session to enhance their facilitation skills. A focus group guide was developed to ensure consistency across groups. Most participants agreed that early detection of cancer was important (434/464, 93.5%), cancer could happen to anyone (403/464, 86.9%), CRC could be prevented (344/464, 74.1%), and everyone should screen for CRC (389/464, 83.8%). However, 35.8% (166/464) of participants also felt that people were better off not knowing if they had cancer, and 45.5% (211/464) would screen only when they had symptoms. Most participants indicated that they would get screened upon their doctor's recommendation, but half reported that they only saw a doctor when they were sick.

### **Intervention Studies for Breast Cancer Screening Promotion**

Two studies described breast cancer screening promotion among Asian Americans including the Michigan breast cancer screening study (Wu et al., 2014) and Asian grocery store-based breast cancer education program in California (Sadler et al., 2012).

#### ***Michigan Breast Cancer Screening Study***

Wu and colleagues (2014) examined the effects of a culturally appropriate community-based breast intervention program on knowledge about breast cancer and intention for screening among Indian, Filipino and Vietnamese women in MI (Wu et al., 2014). They used the Cultural Exploratory Model (CEM), which underscores the importance of understanding minority women's cultural beliefs, values, and personal life experiences regarding the utilization of breast cancer screening. Four bilingual coordinators from the Philippines, Vietnam, and India facilitated community networking and participant recruitment. Recruitment eligible women to participate in the study used the following strategies: 1. collaboration with the local community, ethnic social groups, professional organizations, and religious associations to distribute information to members; 2. collaboration with ethnic student associations to help recruit their mothers and other relatives into the study; 3. posting flyers at local ethnic grocery stores, restaurants, beauty salons, etc.; 4. making presentations and volunteering in local ethnic celebration events (e.g., the Mid-Autumn Festival, Asian New Year Celebration, etc.); and 5. providing

small monetary incentives. The study intervention was an hour-long interactive education session delivered in a group format and conducted at community centers, churches, and temples where participants gathered. At baseline, participants ( $N = 166$  Asian women; 17 were Filipinos) had limited knowledge of breast cancer screening guidelines and had misconceptions about breast cancer risk factors. After the educational intervention, they reported significantly higher knowledge scores related to breast cancer and screening recommendations and intentions to obtain follow-up CBE and mammograms. This culturally appropriate intervention provides strategies to overcome personal instructional barriers for early detection and cancer control.

#### ***Asian Grocery Store-Based Education Program***

From 2000 to 2004, Sadler and colleagues (2012) conducted a randomized controlled trial that explored the impact of the Asian grocery store-based breast cancer education program on Chinese, Filipino, Korean, and Vietnamese women ( $N = 1,160$ , at least 40 years of age) in CA. The Asian Grocery Store-Based Education Program was a brief, repetitive intervention to heighten breast cancer awareness and knowledge and stimulate participants to follow recommended screening guidelines. After a brief baseline survey (i.e., sociodemographic characteristics and their breast cancer knowledge, attitudes, and screening behaviors), the education program began with a brief face-to-face education session. The study had two arms: breast cancer arm and the control. The breast cancer arm received the flyer describing the state's free breast cancer screening program. They also received information to increase their knowledge about breast cancer, increase their motivation to become screened and decrease barriers such as fear of the screening. The control arm received an equivalent intervention for prostate cancer. A packet of in-depth easy to read educational materials was mailed to the participants two weeks later. At four weeks post-baseline training, phone contact was attempted up to five times to confirm the mailed information had been received and answer any questions since the face-to-face session. At six weeks post-baseline, a second complementary packet of relevant information was mailed to each participant. Mailings and calls were done by the same student community health educator who had initially recruited and educated the participant at the grocery store (baseline). At eight weeks post-baseline, a follow-up telephone survey was conducted by a fellow student community health worker who had no previous contact and was blind to the randomization. The follow-up survey focused on monitoring changes in breast cancer knowledge, attitudes, and screening behaviors since completing the baseline. Women aged 40 and older and non-adherent for annual screening mammograms were more likely to schedule a mammogram after receiving the breast cancer education program. Securing cancer education sites at Asian grocery stores made it easier to reach the diverse community of Asian American women



to disseminate vital cancer control information and recruit them to a breast cancer education study.

### Discussion

This study provides a synthesis of research evidence on the promotion of CRC and breast cancer screening among Filipino Americans and Asian Americans (including Filipinos). CRC screening promotion studies were conducted in CA, HI, and MI; some were more than a decade ago. These studies showed that community engagement is effective in improving knowledge about CRC and promoting CRC screening behaviors. Filipino coordinators, lay health educators, partnerships with community-based organizations, and Asian grocery stores were effective intervention platforms.

Interventions to improve cancer screening must attempt to address the social determinants associated with cancer disparities. These may include but not be limited to being a new immigrant, limited English proficiency, lack of time for self-care because of multiple low-paying jobs and caregiving, lack of access to transportation and health insurance, and health care costs (see Cuaresma et al., 2018). Sy et al. (2018), using the CA Medical Expenditure Panel Survey data for 2009–2014, reported that older age, having health insurance, and a usual care provider predicted CRC screening across all ethnicities. Different demographic, health care access and health attitude predictors within each ethnic group were also related to CRC screening. Understanding these issues among Filipino Americans in their respective states can improve intervention strategies. The CRC screening promotion studies undertaken in CA in the Filipino Health Study increased CRC screening. There was a 5% difference in the increase of CRC screening between groups that received an educational intervention with FOBT kit (30%) and those without FOBT kits (25%), which highlights the importance of the education piece of the intervention. Other CRC screening promotion studies were conducted among Asian Americans, including Filipinos. Data from these studies must be taken with caution, especially those with no subgroup analyses. They may mask subgroup-specific issues that influence the results. Lee et al. (2011) highlight the importance of identifying differences in CRC screening behavior of various Asian American/Pacific Islander (AAPI) subgroups to better aid the development of interventions relevant to the specific Asian group.

Although breast cancer is high among Asian American women, studies that promote breast cancer screening in this population are even more limited. Two studies conducted in MI and CA leveraged community connections to reach the Asian American community. Wu and colleagues (2014) utilized the community coordinator model to reach out to Asian Americans in the community. Sadler et al. (2012) used the Asian grocery store-based model to reach the

community with follow-up provided accordingly. Both were effective in improving screening rates. The use of an Asian grocery was an innovative approach that successfully reached the target population. Studies that target Filipino women are needed to address breast cancer screening issues in this population.

This systematic review is not without any limitations. Like any other review, its quality is dependent on the original research. It is also dependent on the extent of the database search. The literature search was conducted in five databases and limited to the last ten years. This database search is more extensive than reported in Lapid-Bluhm and Nguyen (2020); they searched three databases and included studies conducted in the past five years. Although utmost care was done to capture relevant research studies, there remains a likelihood that the team may have missed other intervention studies that address CRC and breast cancer promotion among Filipino Americans, which are published elsewhere.

### Implications for Clinical Practice

Data from cancer screening promotion studies highlight the lack of awareness or knowledge among Filipinos and other Asian American subgroups about the cancer screening guidelines. Hence, education on cancer screening guidelines during clinical visits is of utmost importance. Clinicians are encouraged to take time to educate, promote and facilitate cancer screening. The clinician's role is critical because research data indicate that Asians are more likely to get screened following their doctor's recommendation (Kim et al., 2016). Where appropriate, the cancer screening can occur during the visit to help mitigate transportation barriers. If the practice cannot provide screening, clinicians should consider having a mechanism where a staff member can schedule the referral appointment with the relevant institutions. This approach can assist barriers related to the navigation of a complex healthcare referral system. Hence, at the end of the visit, the patient would have a confirmed appointment for cancer screening.

Kim et al. (2016) reported that while most participants indicated that they get screened upon their doctor's recommendation, half shared that they only saw a doctor when they were sick. This information highlights the need to emphasize routine preventive well visits. Clinical practices should schedule annual visits accordingly and provide follow-up reminder calls to ensure that they make it to the appointment. If possible, the visit should include relevant cancer screening procedures to overcome common screening barriers (i.e., transport, time, and ability to navigate a complex healthcare system). Most health plans cover preventive services such as vaccinations and screening tests at no cost to the patient. This information should be checked and relayed to the patient to address reservations to screening related to healthcare costs.

Clinicians may consider providing their patients the information from the American Cancer Society (2021) website, specifically the American Cancer Society Guidelines for the Early Detection of Cancer. This website provides an outline of recommended screening by age for the different forms of cancer. Alternatively, the National Cancer Institute (NCI, 2019) also offers printed and downloadable online resources for various cancer screenings for the patient population (see <https://www.cancer.gov/publications/patient-education#screening>). These resources are important clinical tools to combat the lack of awareness of the importance of cancer screening and cultural-related issues on cancer, such as lack of treatment follow-up and stigmatization of women with breast cancer (see Park et al., 2018). Asian-American women who do get screened are less likely to get follow-up treatment after abnormal mammogram results than their white counterparts. The stigma surrounding breast cancer in the Asian-American community is still prevalent. Cultural differences, such as superstition, can cause shame about opening up about having breast cancer (see Park, 2018).

### Implications for Research

This systematic review highlighted the limited research on breast cancer screening promotion among Filipino Americans. The two studies included were conducted among Asian Americans, not solely on Filipino Americans. The Michigan Breast Cancer study (Wu et al., 2014) had 17 Filipino participants; 60 were from India and 60 from Vietnam. This disproportionate distribution raises the question of the validity and representativeness of the study for Filipino Americans. While studies among Asian Americans are helpful, interpretations of specific subgroups from these studies must be considered with caution. The aggregate analyses could mask subgroup-specific issues that may be important for further studies and practical applications. More studies to promote breast cancer screening and other types of cancer among Filipinos are needed. Such studies are important because of the Filipinos' cultural tendency not to seek preventive health care. It is known among the Filipino community that most wait until the symptoms are undeniably unbearable before seeking medical treatment. With cancer, early detection through screening tests can potentially reduce the chance of dying from that cancer. Hence, cancer screening is of utmost importance.

The lack of studies of Filipinos in other states is also apparent. The PCORI-funded project, "Mag-PCOR Muna Tayo," reports that Filipinos' health and healthcare issues differ depending on their state of residence (Lapiz-Bluhm, 2020). Such results highlight the need for studies among Filipinos' cancer screening knowledge, attitudes, and behaviors in different states other than CA and MI. These studies can leverage the Filipino-American "nasyon" networks created

by the "Mag-PCOR Muna Tayo" project. Details about the project and the FA-PCOR "nasyon" networks in CA, HI, TX, NJ, and NY are located in the Center for Filipino American Health website: <https://filamhealth.org/>.

Lapiz-Bluhm and Nguyen (2020) and Nguyen et al. (2020) highlight the need for a three-pronged approach to effectively increase research among Filipino Americans to improve health outcomes. The tripartite model includes research funding, researchers, and research participants. More funding for research among Filipino Americans will encourage more researchers to study health and healthcare issues among Filipino Americans. On the other end, community engagement initiatives to build research capacity, such as the FA-PCOR network, can encourage Filipino Americans to participate in research. Among Filipinos, the community networks have a significant influence on their attitudes and behaviors. Faith-based and professional organizations such as the Philippine Nurses Association of America (PNAA) and its local chapters can be leveraged as community engagement platforms. For example, "Mag-PCOR Muna Tayo" formed the FA-PCOR "nasyon" networks through the leadership of PNAA members as academic research collaborators partnered with patient advocate leaders in each state. Filipinos have also identified social media platforms (i.e., Facebook) as potential means to connect with community networks and influence health promotion behaviors. Cancer screening promotion campaigns can use these platforms and other advances in information technology to improve the penetrance among Filipino American communities.

### Conclusions

This systematic review highlights the intervention studies that promote CRC and breast cancer screening among Filipino Americans. It underscores the limited research among this vulnerable population. The studies included were community-based, engaging local lay health workers or coordinators, Asian groceries, and community-based organizations. The involvement of community-based organizations effectively promoted recruitment and could be a potential strategy for sustained cancer screening programs. Future initiatives should consider more funding to encourage researchers to study Filipino health and healthcare priorities along with community engagement efforts to create a cadre of Filipino Americans willing to participate in research. The sustainability of community-based cancer screening programs should also be a priority.

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