

# Health Literacy and Access to Care in Cancer Screening Among Korean Americans

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## ABSTRACT

**Background:** Health literacy and access to care are critical facilitators for preventive health behaviors. After the passage of the Affordable Care Act in March 2010, little has been studied about how improved health insurance coverage has impacted the use of preventive health services among Korean Americans. **Objective:** The study assessed the impact of access to care, use of services, and health literacy on cancer screening among Korean Americans. **Methods:** A descriptive cross-sectional study of 377 Korean Americans age 18 years and older was conducted with a survey and convenient sampling in Texas. **Key Results:** Although 79% of the sample had health insurance, 32% had never visited a health care provider, and 14% were delayed in care in the past 12 months. Only 11.6% were confident to complete medical forms, and 69.5% had limited levels of confidence. Cancer screening compliance rates were: mammography (50.4% at age 40-54 years; 46.6% at age 55 years and older), a Pap smear (29.4% at age 21-29 years; 78.4% at age 30-65 years; 72.2% at age 66 years and older), and colorectal cancer screening at age 45 years and older (stool tests 15.1%; sigmoidoscopy 27%; colonoscopy 51.3%). Multiple logistic regression analyses revealed that household income, gender, health insurance, and health literacy were significantly associated with self-reported cancer screening. **Conclusions:** Korean Americans who participated in this study are characterized by marginalized health literacy, underused health care services, and significantly lower cancer screening compliance than the goals of Healthy People 2020. The following interventions are suggested to improve health literacy and health insurance literacy on cancer screening: culturally sensitive and linguistically appropriate education for the guidelines concordant with cancer screening, effective communication skills with health care providers, support for navigating the health care system, and development of internet- or social media-based health education programs to meet the preferred communication methods of this population. [*HLRP: Health Literacy Research and Practice. 2021;5(4):e310-e318.*]

**Plain Language Summary:** Despite having improved health insurance coverage, Korean Americans of this study have marginalized health literacy, limited health insurance literacy, low cancer screening compliance, and underused health care services. The results of this study suggest several strategies to improve health literacy and health insurance literacy for Korean Americans, which may also apply to other groups with similar barriers.

Cancer is the second most common cause of death in the United States (U.S.) (American Cancer Society [ACS], 2020) and the leading cause of death for Korean Americans (ACS, 2016; Prevent Cancer Foundation [PCF], 2017). Colorectal cancer is the most commonly diagnosed cancer among Korean American men and the second most common cancer among Korean American women. Breast cancer is the most common cancer and uterine cervix cancer is the sixth most common cancer for Korean American women (ACS, 2016).

Cancer screening can detect cancer at earlier, more treatable stages and reduce mortality (ACS, 2020).

Despite reports that screening rates have increased overall for the U.S. general population, screening disparities remain among racial and ethnic minorities, and people who are uninsured and who were not born in the U.S. are still disadvantaged in cancer screening (ACS, 2020; Reyes & Miranda, 2015). Studies indicate that cancer screening compliance among Korean Americans is significantly lower than other

ethnic groups (ACS, 2016; Han et al., 2019; Jin et al., 2019; Lee & Lee, 2018; PCF, 2017; Tran et al., 2018).

Access to health care and health literacy are critical facilitators for preventive behaviors (Kino & Kawachi, 2020; Wu & Raghunathan, 2019). The Affordable Care Act (ACA) significantly improved access, affordability, and quality of care in the U.S. health care system (Obama, 2016; Office of the Legislative Counsel, 2010; Wu & Raghunathan, 2019). More than 20 million Americans obtained health insurance coverage from 2010 to 2015 (Avery et al., 2016; Smith et al., 2018). However, many people remain uninsured, especially among those with limited health insurance literacy who fear high medical and deductible costs (Collins et al., 2014; Ghaddar et al., 2018; Smith et al., 2018).

Access to care and a usual source of care is correlated with up-to-date cancer screening (ACS, 2020; Lee & Lee, 2018; Tran et al., 2018). Korean Americans have lower rates of health insurance coverage and having a usual source of care compared to the US general population (Lee et al., 2009; Maxwell et al., 2010). Although rates of health insurance coverage increased in Korean Americans after the passage of the ACA (Jin et al., 2019; Jung et al., 2018; Lee & Lee, 2018; Park et al., 2019), little has been studied about how improved insurance coverage has impacted use of preventive services and health status among Korean Americans.

People with limited health literacy may not understand prevention or recognize the signs and symptoms of a disease, which in turn delays seeking care. This behavior is as-

sociated with lower use of preventive services such as cancer screening, as well as greater use of emergency departments or urgent care (Paasche-Orlow & Wolf, 2007). Limited health literacy is more likely to be associated with people who have a lower level of education, people who were not born in the U.S., and non-native speakers of English (Berger et al., 2017; Kino & Kawachi, 2020). Low health literacy combined with limited English proficiency can affect interactions between patients and health care providers (HCPs), contribute to miscommunication, and result in lower-quality health care (ACS, 2020).

Limited health literacy is a significant barrier to cancer screening for Korean Americans who have limited English proficiency (Han et al., 2019; Jung et al., 2018; PCF, 2017). About 68% of Korean Americans do not speak English at home, and 38% speak English less than “very well” (ACS, 2016). Low health literacy and limited English proficiency make it difficult for Korean Americans to understand educational materials containing medical terminology and to find the resources to undergo screenings (Han et al., 2019; Jung et al., 2018).

This study aimed to assess the impact of access to health care, health care services use, and health literacy on cancer screening among Korean Americans. This study also explored the associations between demographic factors, health insurance, health literacy, and cancer screening compliance. The identification of these factors would help to understand how they influence cancer screening and to develop

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a culturally appropriate intervention to increase cancer screening among Korean Americans.

## METHOD

### Data Collection

A descriptive research design with a cross-sectional survey was conducted with convenient sampling. Survey data were collected from 377 Korean Americans living in Texas from September 2018 to December 2018. Korean Americans were defined as people of Korean descent or Korean immigrants living in the US. To be included, a participant had to be at least age 18 years and be able to read and understand the study materials in English or Korean. Paper-based surveys were completed in person by participants who voluntarily came to the survey booth at Health Fairs and other community events.

The survey questionnaire was initially developed in English and translated into Korean using Google Translate. These translated items were then reviewed and agreed upon by bilingual Korean American researchers. The face validity and the appropriateness of the readability of each item were assessed with five Korean Americans of different age groups. A few words in questions were modified to improve understanding. The Institutional Review Boards of Texas Woman's University, the University of Texas Health at San Antonio, and the University of Texas Health Science Center at Houston approved the revised survey. The paper-based survey questionnaire was provided either in Korean or English per each participant's preference. Each survey took about 30 to 40 minutes to complete. Survey participants who won in the random prize drawings were paid \$5 to \$100.

### Questionnaire

The questionnaire consisted of sociodemographics (5 items), acculturation (6 items), health care access and service use (11 items), cancer screening compliance (5 items), general health literacy (5 items), and health information-seeking behaviors (1 item). The 4 of 5 items regarding general health literacy were adopted from the brief health literacy screening tool developed by Haun et al. (2012). The general health literacy of this study's response options offers a 5-point Likert-type scale for each item (1 = *always* to 5 = *never*). The score is based on the sum of the items and can range from 5 to 25, and Cronbach's alpha was 0.85.

Cancer screening compliance was asked about: "When was the last time you had the following cancer screening: breast cancer screening (mammography), cervical cancer screening (Pap smear), colorectal cancer screening (stool test, colonoscopy, or sigmoidoscopy)?" The response options

for each screening were (1) this year or last year, (2) in the last 2 to 4 years, (3) in the last 5 years, (4) in the last 10 years, and never. The response options were dichotomized into 0 = non-compliant and 1 = compliant according to the definition of compliance with the ACS (2020).

### Data Analysis

Data analyses were conducted using the Statistical Package for the SPSS version 26. Descriptive statistics were calculated for demographic characteristics, health care access and services use, health literacy, cancer screening compliance, and health information-seeking behaviors. Cancer screening compliance was analyzed based on the most up-to-date ACS cancer screening guidelines in multiple logistic regression models.

## RESULTS

The demographic characteristics are described in **Table 1**. The mean age of participants was 47 years, and 85% had at least a college education. About 36% had a household income less than \$50,500. About 97% were not born in the U.S., and the average length of U.S. residency was 18.9 years. About 76% were comfortable speaking only in Korean, and 31% responded their English-speaking proficiency was poor or very poor.

### Health Care Access and Services Use

Health insurance coverage and services use are described in **Table 2**. About 79% of the participants had health insurance. About 37% of the participants had employment-based insurance, followed by 27% having private insurance or insurance through the ACA-subsidized public marketplace. In the past 12 months, 32% had not visited HCPs, 12% visited urgent care, and 6% visited an emergency department. About 14% responded that they need to visit HCPs but are unable to visit for some reason. The main reasons for the difficulties in using health care services in the U.S. were the high cost of medical expenses (74%), followed by language and communication barriers (32%). Fifty-two percent communicated with HCPs only in English, and 17% have used interpreters while visiting HCPs.

### Health Literacy

The result of health literacy is described in **Table 3**. The mean of health literacy was 17.87 (range: 5-25, *SD* = 4.21), categorized as a marginal level of health literacy. Only 11.6% of participants reported confidence enough to complete medical forms by themselves, and 69.5% had limited confidence. About 40% had difficulty understanding their medical conditions as explained by HCPs, and 33% experienced difficulty understanding informa-

tion for their medical conditions. About 37% needed someone to read health information provided by HCPs. However, only 11.6% asked HCPs to explain misunderstood information.

### Cancer Screening Compliance

Cancer screening compliances are described in **Table 4**. About 50% of Korean American women between ages 40 to 54 years had a mammography within 1 year; 9.7% had never had one in their lifetime. About 46.6% of Korean American women age 55 years and older had a mammography within 2 years; 3.4% had never had one in their lifetime. About 29% of Korean American women between ages 21 to 29 years had a Pap smear test within 3 years; 52.9% had never had one in their lifetime. About 78% of Korean American women between ages 30 to 65 years had a Pap smear test within 5 years; 14.7% had never had one in their lifetime. About 72% of Korean American women age 66 years and older had a Pap smear test within 5 years; 16.7% had never had one in their lifetime. About 15.1% of Korean American men and women age 45 years and older had stool tests within 1 year, 27% had sigmoidoscopy within 5 years, and 51.3% had a colonoscopy within 10 years. Forty-seven percent of Korean American men and women age 45 years and older reported no prior experience with any form of colorectal cancer screening in their lifetime.

### Factors Associated with Cancer Screening Compliance

**Table 5** shows the result of a multiple logistic regression analysis of factors associated with Korean Americans having had cancer screenings. Regarding mammography, health insurance was significantly associated with higher rates of screening (odds ratio [OR] 2.94; 95% CI [1.08, 8.02];  $p < .05$ ). Korean American women with higher household income (OR 4.18; 95% CI [1.65, 10.61];  $p < .05$ ) and a greater level of health literacy had significantly higher Pap smear test rates (OR 1.11; 95% CI [1.02, 1.22];  $p < .05$ ). The odds of being screened for colorectal cancer were 2.67 times higher for Korean American women over 45 years of age than Korean American men (OR 2.67; 95% CI [1.15, 6.18];  $p < .05$ ).

### DISCUSSION

According to the objectives of Healthy People 2020, the target rate for mammography is 81.1%, a Pap smear is 93%, and colorectal cancer screenings is 70.5% by 2020 (Office of Disease Prevention and Health Promotion, 2020). Despite the high educational attainment and insurance coverage rates, participants of this study had marginal health literacy, poor understanding of health insurance and insurance coverage, underuse of health care services, and significantly lower cancer screening compliance compared to the goals of Healthy People 2020. Access to care, health literacy, house-

**TABLE 1**  
**Characteristic Demographics (N = 377)**

Category	n (%)
Gender	
Male	138 (36.7)
Female	238 (63.3)
Age, years	<i>M</i> = 47.02 ( <i>SD</i> = 13.36, range: 18-92)
18-39	102 (27)
40-49	124 (32.9)
50-59	86 (22.8)
>60	65 (17.3)
Education	
<High school	11 (2.9)
High school	43 (11.5)
College	229 (61.2)
Graduate school	91 (24.1)
Household size	
1-2	116 (32.6)
3-4	186 (52.3)
>5	50 (14.1)
Household annual income	
<\$31,000	83 (23.3)
\$31,001-\$50,500	45 (12.7)
\$50,501-\$70,000	68 (19.1)
>\$70,001	160 (44.9)
Born in the U.S.	
No	363 (97.1)
Length of stay in the U.S.	<i>M</i> = 18.9 years ( <i>SD</i> = 10.42, range: 1-50)
<10 years	67 (17.8)
10-20 years	173 (46.4)
>21 years	133 (35.7)
Comfortable language in use	
English	24 (6.4)
Korean	284 (75.7)
Both	67 (17.9)
English speaking ability	
Very good	48 (12.7)
Good	78 (20.7)
Fair	135 (35.8)
Poor	92 (24.4)
Very poor	24 (6.4)

Note. Discrepancies in totals are from the response rate. They are not systematic errors, and they did not affect the statistical significance.

**TABLE 2**

**Health Care Access and Service Use  
(N = 372)**

Characteristics	n (%)
Health insurance	
Yes	294 (79.2)
No	77 (20.8)
Source of health care coverage	
Private insurance (employer or union)	139 (37.4)
Private insurance (including ACA)	100 (26.9)
Medicare	28 (7.5)
Medicaid or other state program	14 (3.8)
Tricare (VA or military)	14 (3.8)
Other	14 (3.8)
No. of HCP visits in the past 12 months	
None	118 (31.6)
1-2	132 (35.3)
3-4	57 (15.2)
>5	36 (9.7)
Not sure/don't know	30 (8.0)
No. of urgent care visits in the past 12 months	
None	321 (85.1)
>1	45 (11.9)
No. of ED visits in the past 12 months	
None	351 (93.1)
>1	22 (5.8)

hold income, and gender were significantly associated with self-reported cancer screening.

The results of low cancer screening compliance in this study are consistent with other Korean American studies (Chawla et al., 2015; Han et al., 2019; Jin et al., 2019; Lee & Lee, 2018; Tran et al., 2018). This situation could potentially be improved by raising awareness on the importance of periodical cancer screenings as well as evidence-based health education on cancer screening guidelines per age group. In addition, our results indicate that the promotion of health insurance literacy may be warranted to help improve cancer screening among Korean Americans.

Although the insurance coverage rate of Korean Americans in this study was 79%, it did not have a significant effect on cancer screening or health care service use in this study. This finding is consistent with the literature (Ghaddar et al., 2018;

**TABLE 2 (CONTINUED)**

**Health Care Access and Service Use  
(N = 372)**

Characteristics	n (%)
Reasons for the difficulties in using health care services (multiple selections)	
High cost	277 (73.5)
Language/communication barrier	119 (31.6)
Insufficient health insurance coverage	117 (31)
Wait too long to get appointments with HCP/specialist	112 (29.7)
Difficult to understand insurance processing process	100 (26.5)
No health insurance	83 (22)
Difficult to understand the medical terminology/instruction	70 (18.6)
Do not know how to find the HCP to accept my insurance plan	60 (15.9)
Difficult to navigate the health care services (specialists, laboratory, pharmacy, radiology)	52 (13.8)
HCP are not culturally competent	28 (7.4)
Low quality of health care	25 (6.6)
Cannot trust the HCP	22 (5.8)
Health care clinics are far from my home	22 (5.8)
Limited transportation	11 (2.9)
Primary HCP	
Korean	75 (19.9)
Does not identify as Korean	196 (52)
Does not have HCP	104 (27.6)
Language to communicate with HCP	
Korean	75 (19.9)
English	196 (52)
Both	104 (27.6)
Have ever used interpreters while visiting health care services, n (%)	
Yes	62 (16.5)
No	303 (80.6)

Note. Discrepancies in totals are from the response rate. They are not systematic errors, and they did not affect the statistical significance. ACA = Affordable Care Act; ED = emergency department; HCP = health care provider; VA = Veteran Affairs.

Sommers et al., 2017; Park et al., 2019). From an analysis of the 2016 Behavioral Risk Factor Surveillance System, Kino and Kawachi (2020) reported that improving access to health care increased the chance of having a primary care provider, but there was no significant effect on the use of preventive

**TABLE 3**  
**Health Literacy (N = 377)**

Characteristics	Always (%)	Often (%)	Sometimes (%)	Rarely (%)	Never (%)
Confident to complete the medical forms by myself	43 (11.6)	100 (27)	111 (29.9)	63 (17)	54 (14.6)
Difficult to understand what is told to you about the medical condition	13 (3.5)	27 (7.3)	109 (29.5)	134 (36.3)	86 (23.3)
Need someone to read health information/materials given by HCP	25 (6.8)	24 (6.5)	88 (23.8)	140 (37.8)	93 (25.1)
Difficult to learn about the medical condition because of difficulty understanding information	8 (2.2)	21 (5.7)	94 (25.4)	148 (40)	99 (26.8)
Ask HCP to explain information that I don't understand	9 (2.4)	34 (9.2)	121 (32.6)	141 (38)	66 (17.8)

Note. Discrepancies in totals are from the response rate. They are not systematic errors, and they did not affect the statistical significance. HCP = health care provider.

**TABLE 4**  
**Cancer Screening Behaviors (N = 377)**

Test	Age Group, years	Last Screening, n (%)					
		This Year or Last Year	In the Last 2-4 Years	In the Last 5 Years	In the Last 10 Years	Never	Not Applicable
Mammography	Female 40-54	57 (50.4)	26 (23)	13 (10.6)	4 (3.5)	11 (9.7)	3 (2.7)
	Female 55+	27 (46.6)	15 (25.9)	7 (12.1)	5 (8.6)	2 (3.4)	2 (3.4)
Pap smear	Female 21-29	4 (23.5)	1 (5.9)	0 (0)	0 (0)	9 (52.9)	3 (17.6)
	Female 30-65	79 (41.6)	50 (26.3)	20 (10.5)	7 (3.7)	28 (14.7)	6 (3.2)
	Female 66+	8 (44.4)	2 (11.1)	3 (16.7)	1 (5.6)	3 (16.7)	1 (5.6)
Colonoscopy	Female and male 45+	24 (12.6)	39 (20.4)	23 (12)	12 (6.3)	77 (40.3)	16 (8.4)
Stool test	Female and male 45+	28 (15.1)	29 (15.6)	22 (11.8)	6 (3.2)	84 (45.2)	17 (9.1)
Sigmoidoscopy	Female and male 45+	16 (9.6)	18 (10.8)	11 (6.6)	3 (1.8)	95 (57.2)	23 (13.9)

services. The Park et al. study (2019) examined changes in health care access and use associated with ACA for different Asian American subgroups compared to non-Latino White people in the California Health Interview Survey (CHIS). From pre-ACA to post-ACA periods, Korean Americans had the largest reduction in people who were uninsured, from 36% to 9.6%, among Asian American subgroups. However, the rates of delay in care increased from 14.3% to 15.4% and emergency department visits from 7.8% to 9.8% in the past 12 months. Compared to the results of post-ACA imple-

mentation in the Park et al. study (2019), this study's rate of never having visited HCPs in the past 12 months (32%) is higher than those of Korean Americans (26.1%) as well as Chinese (23.2%), Filipino (17.6%), and non-Latino White people (14.9%) in CHIS. The rates of delay in care in the past 12 months of this study (14.3%) are consistent with 15.4% of the CHIS.

The main reasons for the delay in care in the past 12 months in this study were (1) limited health care access, (2) language and communication barriers, and (3) limited



**TABLE 5**  
**Factors Associated with Cancer Screening Compliance**

Variable	Mammography (n = 169)	Pap Smear (n = 225)	Colorectal Cancer Screening <sup>a</sup> (n = 159)
Education			
<High school	1.00	1.00	1.00
High school	0.50 [0.07, 3.65]	3.60 [0.57, 22.78]	0.72 [0.05, 10.43]
College	0.78 [0.12, 5.01]	2.64 [0.46, 15.23]	0.71 [0.06, 9.25]
Graduate college	0.56 [0.07, 4.69]	3.44 [0.51, 23.28]	1.43 [0.09, 21.81]
Household annual income			
<\$31,000	1.00	1.00	1.00
\$31,001-\$50,500	0.24 [0.06, 0.93]*	1.50 [0.54, 4.15]	0.49 [0.13, 1.83]
\$50,501-\$70,000	0.36 [0.95, 1.33]	1.46 [0.53, 4.05]	0.88 [0.26, 2.92]
>\$70,001	1.20 [0.39, 3.66]	4.18 [1.65, 10.61]*	1.01 [0.32, 3.20]
Health insurance			
Yes	2.94 [1.08, 8.02]*	0.91 [0.39, 2.10]	2.58 [0.99, 6.66]
Health literacy	0.98 [0.89, 1.08]	1.11 [1.02, 1.22]*	0.97 [0.87, 1.07]

Note. Values are presented as adjusted odds ratio (95% confidence interval). The analysis was limited to examinations of self-reporting within recommended years by American Cancer Society guidelines.

<sup>a</sup>Colonoscopy, sigmoidoscopy, or stool test in females and males who are at least age 45 years.

\*p < .05.

health insurance literacy. Health insurance literacy, especially, is a notable barrier for Korean Americans of this study. This finding is consistent with other studies. Low health insurance literacy is associated with greater avoidance of health care services in White people, African Americans, Hispanic people, and Asian Americans (Ghaddar et al., 2018; Miller & Wherry, 2017; Smith et al., 2018; Tipirneni et al., 2018). The results of this study indicated that limited health insurance literacy needs more attention than a lack of health care access. Although Korean Americans of this study had health insurance, they struggled to navigate HCPs and services. They need education on how to use health insurance to get proper health care services.

Although educational attainment, household incomes, and employment rates are relatively high in Asian Americans, they are vulnerable to cancer care (PCF, 2017). Jacobson et al.'s study (2016) reported that even highly educated people without language barriers can misunderstand cancer risks and that this is a greater challenge for those with limited English proficiency. Limited English proficiency is highly relevant to low health literacy (Lee et al., 2018). These findings are consistent with the results of this study. The majority of the participants in this study were not born in the U.S. (97%), and the average length of U.S. residency was 18.9 years. Although they have high educational attainment, most of them

have difficulties speaking English, and only 18% were comfortable in both English and Korean. This result is consistent with the Han et al. study (2019), which shows only 23.4% of the Korean American sample fluent in English regardless of high educational level and 16.5 years of the average length of stay in the U.S. Lee et al. (2018) reported that 97% of the Korean American women in their study had at least some college education, but understanding of human papilloma virus and English proficiency are critical factors that contribute to low health literacy. Studies reported that people with low educational attainment were likely to have low health literacy (Jacobson et al., 2016; Kino & Kawachi, 2020). However, the Korean Americans in this study showed results inconsistent with the literature. Low education tends to lead to low health literacy; however, high educational attainment did not guarantee high health literacy in this study.

Despite having limited health literacy and English proficiency, 81% of this study sample had never used medical interpreters while visiting HCPs, possibly because they are unaware that interpreter services are available during health care visits. Only 11.6% asked HCPs to explain information that they did not understand, perhaps due to the courtesy and hierarchy relationship between provider and patient that is important within their culture. The difference in levels of health literacy in Korean Americans when receiving health care communication and materials in Korean or

English should be investigated. Language barriers can affect patient and provider interaction, contribute to miscommunication, and result in lower-quality health care (ACS, 2020). The result of this study helps HCPs to understand the culture of this population. Furthermore, to receive higher-quality health care, Korean Americans require education of effective communication skills.

Most participants of this study seek health information from the internet (72.5%), followed by HCPs (46.3%), and family/friends (39.9%). These results are consistent with prior data that showed Korean Americans' most preferred source of health information is the internet, followed by HCPs, then ethnic newspapers (PCF, 2017). Through these channels, HCPs, researchers, and community leaders could more effectively deliver health information as well as education to increase health literacy and health insurance literacy.

From the findings of this study, the following interventions are suggested to improve health literacy and health insurance literacy on cancer screening: (1) education for the guidelines concordant cancer screening, (2) culturally sensitive and linguistically appropriate education for effective communication skills with HCPs, (3) support navigating the health care system to increase health insurance literacy, and (4) internet- or social media-based health education programs to meet the preferred communication method of this population.

## STUDY LIMITATIONS

Our study has limitations to be noted. First, this study has a cross-sectional research design. Causal interpretation cannot be made through cross-sectional research. Second, this study used a self-administered survey. Although confidentiality was promised before participation and privacy was maintained while completing questionnaires, social desirability bias or recall bias for the time of cancer screenings may be concerns. Third, this study used a convenient sampling for data collection. The small sample size for some age categories may not have allowed identifying important differences. Due to these limitations, our results may not be generalizable to other Korean American communities in the U.S.

## REFERENCES

American Cancer Society. (2016). *California cancer facts and figures 2016. Special section: Cancer in Asian Americans, Native Hawaiians, and Pacific Islanders*. <https://www.cancer.org/research/cancer-facts-statistics/all-cancer-facts-figures/cancer-facts-figures-2016.html>

American Cancer Society. (2020). *California cancer facts and figures 2020*. <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2020/cancer-facts-and-figures-2020.pdf>

Avery, K., Finegold, K., & Whitman, A. (2016). *Affordable Care Act has led to historic, widespread increase in health insurance coverage*. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, 2016.

<https://aspe.hhs.gov/system/files/pdf/207946/ACAHistoricIncreaseCoverage.pdf>

- Berger, S., Huang, C.-C., & Rubin, C. L. (2017). The role of community education in increasing knowledge of breast health and cancer: Findings from the Asian breast cancer project in Boston, Massachusetts. *Journal of Cancer Education, 32*(1), 16–23. <https://doi.org/10.1007/s13187-015-0911-3>
- Chawla, N., Breen, N., Liu, B., Lee, R., & Kagawa-Singer, M. (2015). Asian American women in California: A pooled analysis of predictors for breast and cervical cancer screening. *American Journal of Public Health, 105*(2), e98–e109. <https://doi.org/10.2105/AJPH.2014.302250>
- Collins, S. R., Rasmussen, P. W., Doty, M. M., & Beutel, S. (2014). *Too high a price: Out-of-pocket health care costs in the United States: Findings from the Commonwealth Fund Health Care Affordability Tracking Survey, September-October 2014*. <https://www.commonwealthfund.org/publications/issue-briefs/2014/nov/too-high-price-out-pocket-health-care-costs-united-states>
- Ghaddar, S., Byun, J., & Krishnaswami, J. (2018). Health insurance literacy and awareness of the Affordable Care Act in a vulnerable Hispanic population. *Patient Education and Counseling, 101*(12), 2233–2240. <https://doi.org/10.1016/j.pec.2018.08.033>
- Han, H. R., Kim, K., Cudjoe, J., & Kim, M. T. (2019). Familiarity, navigation, and comprehension: Key dimensions of health literacy in Pap test use among Korean American women. *Journal of Health Communication, 24*(6), 585–591. <https://doi.org/10.1080/10810730.2019.1607955>
- Haun, J., Luther, S., Dodd, V., & Donaldson, P. (2012). Measurement variation across health literacy assessments: Implications for assessment selection in research and practice. *Journal of Health Communication, 17*(Suppl. 3), 141–159. <https://doi.org/10.1080/10810730.2012.712615>
- Jacobson, H. E., Hund, L., & Soto Mas, F. (2016). Predictors of English Health Literacy among U.S. Hispanic Immigrants: The importance of language, bilingualism and sociolinguistic environment. *Literacy & Numeracy Studies: An International Journal in the Education and Training of Adults, 24*(1), 43–64. <https://doi.org/10.5130/lns.v24i1.4900>
- Jin, S. W., Lee, H. Y., & Lee, J. (2019). Analyzing factors of breast cancer screening adherence among Korean American women using Anderson's Behavioral Model of healthcare services utilization. *Ethnicity & Disease, 29*(Suppl. 2), 427–434. <https://doi.org/10.18865/ed.29.S2.427>
- Jung, M. Y., Holt, C. L., Ng, D., Sim, H. J., Lu, X., Le, D., Juon, H. S., Li, J., & Lee, S. (2018). The Chinese and Korean American immigrant experience: A mixed-methods examination of facilitators and barriers of colorectal cancer screening. *Ethnicity & Health, 23*(8), 847–866. <https://doi.org/10.1080/13557858.2017.1296559>
- Kino, S., & Kawachi, I. (2020). Can health literacy boost health services utilization in the context of expanded access to health insurance? *Health Education & Behavior, 47*(1), 134–142. <https://doi.org/10.1177/1090198119875998>
- Lee, H., Kim, J., & Han, H. R. (2009). Do cultural factors predict mammography behaviour among Korean immigrants in the USA? *Journal of Advanced Nursing, 65*(12), 2574–2584. <https://doi.org/10.1111/j.1365-2648.2009.05155.x>
- Lee, H. Y., Choi, Y. J., Yoon, Y. J., & Oh, J. (2018). HPV literacy: The role of English proficiency in Korean American immigrant women. *Clinical Journal of Oncology Nursing, 22*(3), E64–E70. <https://doi.org/10.1188/18.CJON.E64-E70>
- Lee, S. Y., & Lee, E. E. (2018). Access to health care, beliefs, and behaviors about colorectal cancer screening among Korean Americans. *Asian Pacific Journal of Cancer Prevention, 19*(7), 2021–2027. <https://doi.org/10.1188/18.CJON.E64-E70>



org/10.22034/APJCP.2018.19.7.2021

- Maxwell, A. E., Crespi, C. M., Antonio, C. M., & Lu, P. (2010). Explaining disparities in colorectal cancer screening among five Asian ethnic groups: A population-based study in California. *BMC Cancer*, 10, Article 214. <https://doi.org/10.1186/1471-2407-10-214>
- Miller, S., & Wherry, L. R. (2017). Health and access to care during the first 2 years of the ACA Medicaid Expansions. *The New England Journal of Medicine*, 376, 947–956. <https://doi.org/10.1056/NEJMs1612890>
- Obama, B. (2016). United States health care reform: Progress to date and next steps. *Journal of the American Medical Association*, 316(5), 525–532. <https://doi.org/10.1001/jama.2016.9797>
- Office of Disease Prevention and Health Promotion. (2020). *Healthy People 2020*. <https://www.healthypeople.gov/2020/topics-objectives/topic/cancer/objectives>
- Office of the Legislative Council. (2010). *Compilation of patient protection and Affordable Care Act*. <https://www.hhs.gov/sites/default/files/ppacacon.pdf>
- Paasche-Orlow, M. K., & Wolf, M. S. (2007). The causal pathways linking health literacy to health outcomes. *American Journal of Health Behavior*, 31(Suppl. 1), S19–S26. <https://doi.org/10.5993/AJHB.31.s1.4>
- Park, S., Stimpson, J. P., Pintor, J. K., Roby, D. H., McKenna, R. M., Chen, J., & Ortega, A. N. (2019). The effects of the Affordable Care Act on health care access and utilization among Asian American subgroups. *Medical Care*, 57(11), 861–868. <https://doi.org/10.1097/MLR.0000000000001202>
- Prevent Cancer Foundation. (2017). *80% by 2018. Recommended messages to reach Asian Americans. Asian Americans and Colorectal Cancer Companion Guide*. [http://nccrt.org/wp-content/uploads/CRC-Communications-Asian-American-Companion-Guide-Final\\_B.pdf](http://nccrt.org/wp-content/uploads/CRC-Communications-Asian-American-Companion-Guide-Final_B.pdf)
- Reyes, A. M., & Miranda, P. Y. (2015). Trends in cancer screening by citizenship and health insurance, 2000–2010. *Journal of Immigrant and Minority Health*, 17, 644–651. <https://doi.org/10.1007/s10903-014-0091-y>
- Smith, K. T., Monti, D., Mir, N., Peters, E., Tipirneni, R., & Politi, M. C. (2018). Access is necessary but not significant: Factors influencing delay and avoidance of health care services. *MDM Policy & Practice*, 3(1). <https://doi.org/10.1177/2381468318760298>
- Sommers, B. D., Gawande, A. A., & Baicker, K. (2017). Health insurance coverage and health: What the recent evidence tells. *The New England Journal of Medicine*, 377, 586–593. <https://doi.org/10.1056/NEJMs1706645>
- Tipirneni, R., Politi, M. C., Kullgren, J. T., Kieffer, E. C., Goold, S. D., & Scherer, A. M. (2018). Association between health insurance literacy and avoidance of health care services owing to cost. *JAMA Network Open*, 1(7), e184796. <https://doi.org/10.1001/jamanetworkopen.2018.4796>
- Tran, M. T., Jeong, M. B., Nguyen, V. V., Sharp, M. T., Yu, E. P., Yu, F., Tong, E. K., Kagawa-Singer, M., Cuaresma, C. F., Sy, A. U., Tsoh, J. Y., Gildengorin, G. L., Stewart, S. L., & Nguyen, T. T. (2018). Colorectal cancer beliefs, knowledge, and screening among Filipino, Hmong, and Korean Americans. *Cancer*, 124(Suppl. 7), 1552–1559. <https://doi.org/10.1002/cncr.31216>
- Wu, T. & Raghunathan, V. (2019). The patient protection and Affordable Care Act and utilization of preventive health care services among Asian Americans in Michigan during pre- and post-Affordable Care Act implementation. *Journal of Community Health*, 44, 712–720. <https://doi.org/10.1007/s10900-019-00628-7>