RESEARCH ARTICLE

Mammogram Uptake among Korean American Women in the South: Do Health Beliefs Matter?

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Abstract

   Background: Breast cancer is commonly diagnosed in Korean American women (KAW), and its incidence rates continue to increase. Despite the increasing burden of breast cancer diagnosis, screening rates among KAW remain low. There is a growing body of literature on breast cancer screening behaviors in this population; however, current knowledge regarding cultural influences and KAW's mammogram use is limited, particularly in the southern part of the United States. Using the Health Belief Model, this study examined the association of culturally embedded health beliefs and mammogram use among KAW. **Methods:** Cross-sectional data were obtained from 538 KAW recruited in North Carolina. A hierarchical binary logistic regression was conducted to examine cultural health beliefs associated with mammogram use. **Findings:** Preventive health orientation (OR=1.16, CI=1.02-1.32) and perceived susceptibility (OR=1.32, CI=1.10-1.58) were positively associated with having a mammogram in the past two years, while fear (OR=0.58, CI=0.36-0.94) was negatively related to getting screened in the past two years. **Conclusions:** The current study findings inform future intervention strategies to promote mammogram screening among KAW in sociocultural context.

Keywords: Breast cancer screening- mammography- cultural factors- Health Belief Model- Korean Americans

Introduction

   A study using the SEER Asian Pacific Islander Database (1990-2014) reported that Korean American women (KAW) have one of the highest breast cancer incidence rate increases (2.55% per year) compared to other Asian American women (Tuan et al., 2020). Despite the increasing burden of breast cancer diagnosis, screening rates among KAW remain low. Through use of the 2015-2016 California Health Interview Survey, Lee et al., (2018) found that 79.68% of the entire female population had a mammogram in the past two years, compared to only 68.73% of KAW. Given that regular mammograms help to find cancer at an early stage when treatment is most successful, the low screening rates may delay cancer detection and lead to increased breast cancer mortality rates in this population.

   The literature concerning breast cancer screening identified factors associated with mammography use among KAW. Many studies reported sociodemographic characteristics (e.g., age, education, income) (An et al., 2018; Oh et al., 2017; Lee et al., 2017), acculturation (e.g., length of time living in the US and English proficiency) (Oh et al., 2017), and family cancer history (An et al., 2018; Lee et al., 2019). In addition, accessibility to

health care is reported as a major determinant getting mammography in KAW, including health insurance (Oh et al., 2017; Lee et al., 2021), regular checkup (An et al., 2018; Hong et al., 2018; Lee et al., 2016; Lee et al., 2019), and seeing a consistent provider or trusting one's provider (Hong et al., 2018). For example, Hong et al. (2018) found that having a doctor/place to access, knowing where to get a mammogram completed, and trusting one's provider were associated with greater odds of mammogram use.

   Health beliefs in breast cancer screening have gained attention in its impact on KAW, and the Health Beliefs Model (HBM) is commonly used to examine how health beliefs impact cancer screening behaviors (Eun et al., 2009; Lee et al., 2009; Lee et al., 2015; Lee et al., 2016). The HBM predicts individuals' behaviors in "whether and why people will take action to prevent, detect, or control illness conditions" (Skinner et al., 2015). The model includes key components such as barriers, benefits, motivation, beliefs, behavior, and self-efficacy related to general health and the impact on health behaviors (Champion, 2008). For example, Lee et al., (2016) reported that KAW who had a mammogram had higher perceived self-efficacy and low perceived barriers to breast cancer screening. A recent qualitative study found that the level of perceived susceptibility is associated

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with KAW's attitudes toward breast cancer prevention and that it guides their prevention strategies. A high-risk group of KAW highlighted the importance of regular mammograms and had their first mammogram on average at 37.57 years of age. Comparatively, a low-risk group was more concerned with lifestyle behaviors while paying less attention to regular screenings, and the average age of their first mammogram was 45.33 years old (Lee et al., 2022).

Previous studies emphasized how culturally embedded health beliefs influence cancer screening behaviors, including mammogram use. For instance, Choi et al., (2017) found that embarrassment about breast cancer screening significantly predicted mammogram use. This finding is supported by more recent qualitative research that revealed how KAW might be fearful of the mammogram outcomes and that the procedure may be painful and/or embarrassing (Lee et al., 2021). Also, research on KAW and preventive health orientation indicate that women only see a doctor when feeling sick or having symptoms (Lee, 2015). Prior studies with Korean American immigrants indicated an association between a lack of preventive health orientation and cervical and colorectal cancer screening uptake (Oh et al., 2021; Lee, 2015). However, less is known about the relationship between preventive health orientation and mammogram use among KAW. Current knowledge on cultural impacts and KAW's breast cancer screening behaviors is limited. More efforts are needed because culture plays an important role in a person's beliefs about health and illness and health-seeking behaviors (Shaw et al., 2009).

The present study examines culturally embedded health beliefs as predictors of mammogram use among KAW using the HBM. Specifically, we examined health orientation, modesty, and fear that may be relevant to their mammogram experiences in addition to the HBM subscales (perceived susceptibility, perceived benefits, perceived barriers, and self-efficacy). Given that KAW are predominately first-generation and are influenced by traditional values (Seo et al., 2020), cultural influences along with health beliefs should be considered. The findings of this study will provide a more holistic understanding and measurement of health beliefs in this population, which can inform future interventions for mammogram screening.

Materials and Methods

Study Design and Data Collection

This study implemented a cross-sectional design. In 2019, 538 KAW were recruited using convenience and snowball sampling methods. Eligibility criteria included: being a female born in Korea who immigrated to the US, between 40-79 years old, resided in NC, and did not have a history of breast cancer. The women were recruited voluntarily at various community sites (e.g., churches, grocery stores, hair salons) and community events (e.g., annual Korean Festival, free health clinic events). Initially, church leaders in the Korean American community were contacted to facilitate invitations to their churches and events to connect with potential study participants. Women who completed the questionnaire were asked to refer any

interested individuals to this study.

Data was collected using a structured questionnaire, developed in English, and then translated into Korean using a back-translation method (Bracken and Barona, 1991). Study participants chose their preferred language (English or Korean) and self-administered the questionnaire or completed it via a face-to-face interview. Each participant received a $20 gift card after completing the survey. A total of 467 surveys were analyzed, as 13 were excluded due to substantial incompletion of items, and 58 were excluded because the participant's recent mammogram year was not provided (dependent variable). The East Carolina University Institutional Review Board approved this study.

Measures

Dependent variable. The dependent variable was measured by survey participants' self-reported mammogram use. The participants were asked if they ever had a mammogram in their life (yes or no) and if "yes," they were asked when they had their last mammogram. A mammogram within the past two years was used as the dependent variable.

Independent Variables. The independent variables were selected based on a review of the literature (i.e., preventive health orientation, modesty, and fear) and health belief model (i.e., perceived susceptibility, perceived benefits, perceived barriers, and self-efficacy).

Preventive health orientation was measured using four items (e.g., I see a doctor or have my health check-up only when I have a health problem) (Kwok et al., 2016). All items were on a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree), with a higher score indicating greater levels of preventive health orientation. The four items were reverse coded, and the total score was computed by summing all of the individual item scores. The internal consistency of this scale in this study was $\alpha = 0.76$.

Modesty was measured using five items (e.g., I would feel embarrassed with a doctor examining my breasts as part of a medical exam) (Tang et al., 2000). All items were on a 4-point scale ranging from strongly disagree to strongly agree, with a higher score indicating a higher modesty level. The internal consistency of this scale in this study was $\alpha = $ was 0.79.

Fear was measured using a single item that stated, "I do not receive cancer screening because of the fear of detecting for cancer." A 4-point scale ranging from 1(strongly disagree) to 4 (strongly agree) was used, with higher scores indicating a greater level of fear.

The HBM subscales included perceived susceptibility (3 items), perceived benefits (5 items), perceived barriers (14 items), and self-efficacy (10 items). Each item has four response choices ranging from strongly disagree (1 point) to strongly agree (4 points). The total score for each construct was summed, with higher scores representing stronger beliefs in the given construct. Both perceived susceptibility and perceived benefits were measured using Champion's (1999) HBM scales, and the internal consistency for susceptibility and benefits was 0.85 and 0.67, respectively. Perceived barriers measured using a combination of 11 items of Champion's (1999) HBM scales

and 3 items from previous studies reflecting breast cancer screening barriers among immigrant women (i.e., "I am afraid that I may not communicate well with a physician in English", "I have not been able to get a mammogram because of my financial situation or my insurance status", "It has been difficult to get mammograms because I do not have reliable transportation to a clinic" (Lee et al., 2016; Lee et al., 2009). The internal consistency of this scale in this study was α = was 0.86. Self-efficacy was measured using Champion et al.'s (2005) items. The word "You" in the original instruments was changed to "I" in this study. In the current study, the internal consistency of this scale was α = was 0.89.

Covariates. The covariates included age, length of time living in the US, marital status, income, education, and health insurance. Age was calculated by subtracting the participant's birth year and month from the survey year and month and was analyzed as a continuous variable. Length of time living in the US was also analyzed as a continuous variable. Marital status was dichotomized as single/divorced/widowed and married or partnered. For income, participants were asked their annual household income. Education was measured by participants' highest level of education (1=elementary school, 2=middle school, 3=high school or equivalent, 4=college or

university, and 5=graduate school). Education was dichotomized as having a bachelor's degree (yes or no) for the analysis. Health insurance was measured using a "yes" or "no" question.

Data Analysis

Univariate analysis was conducted to describe the characteristics of independent variables and breast cancer screening rates within two years. A hierarchical binary logistic regression was conducted to examine the adjusted relationship between mammogram use in the past two years and health belief variables. In the first model, only covariates were entered in the binary logistic regression model, and the second model included both covariates and health belief variables. All analyses were conducted using STATA/SE 15.1.

Results

As shown in Table 1, more than half of the study participants (62.31%) reported having a mammogram within two years. The mean age of the participants was 55.40 years old (SD = 9.21), and on average, participants lived in the US 23.82 years (SD= 12.10). Most participants (63.11%) had an annual household income between

Table 1. Characteristics of the Study Participants (N=467)

		Mean (SD)	N (%)
Mammogram within 2 years	No		176 (37.69)
	Yes		291 (62.31)
Covariates			
Age		55.40 (9.21)	
Length of time living in the US		23.82 (12.10)	
Marital status	Sigle/divorced/widowed		61 (13.06)
	Married or partnered		406 (86.94)
Household income	<=$25,000		67 (14.89)
	$25,000-$49,000		99 (22.00)
	$50,000-$74,999		88 (19.56)
	$75,000-$94,999		48 (10.67)
	$95,000-$104,999		33 (7.33)
	$105,000-$124,999		43 (9.56)
	$125,000 or more		72 (16.00)
Bachelors' degree	No		191 (36.59)
	Yes		331 (63.41)
Health insurance	No		92 (17.52)
	Yes		433 (82.48)
Health Beliefs			
Preventive health orientation		12.61 (2.10)	
Modesty		11.34 (2.76)	
Fear		1.68 (0.62)	
Perceived susceptibility		5.33 (1.49)	
Perceived benefits		14.51 (2.03)	
Perceived barriers		27.03 (6.02)	
Self-efficacy		36.18(5.13)	

Notes: The total sample size of the study may not be the same as the total sample size of the survey due to missing values

Table 2. Health Belief Factors Associated with Mammogram Use within 2 Years

	Model 1	Model 2
Covariates	OR (95%CI)	OR (95%CI)
Age	1.05 (1.02, 1.09)***	1.06 (1.02, 1.09)**
Length of time living in the US	1.01(0.99, 1.03)	1.01 (0.98, 1.04)
Marital status	1.17 (0.61, 2.24)	1.10 (0.54, 2.27)
Household income	1.31(1.16, 1.48)***	1.22 (1.07, 1.40)**
Bachelors' degree	1.27 (0.77, 2.10)	1.18 (0.69, 2.04)
Health insurance	3.64 (2.06, 6.47)***	2.30 (1.23, 4.32)**
Health Beliefs		
Preventive health orientation		1.16 (1.02, 1.32)*
Modesty		0.94 (0.86, 1.04)
Fear		0.58 (0.36, 0.94)*
Perceived susceptibility		1.32 (1.10, 1.58)**
Perceived benefits		0.99 (0.87, 1.12)
Perceived barriers		0.95(0.90, 1.00)
Self-efficacy		1.03 (0.97, 1.08)
Number of observations	446	437
Log likelihood	-259.26	-228.11
LR chi-square	75.28***	123.12***
Pseudo R-square	0.13	0.21

*$p < .005$; **$p < .01$; ***$p < .0001$

$50,000-$94,999. More than half of the participants (63.41%) had a bachelor's degree or higher, and most participants (82.48%) had health insurance.

Factors Associated with Mammogram Use within 2 Years

Table 2 shows factors associated with having a mammogram within two years. In the first model with only covariates, age, income, and health insurance were significantly associated with having a mammogram within two years. Older participants tended to be more likely to have a mammogram within two years (OR=1.05, CI=1.02-1.09). Participants with a higher income level had a higher likelihood of having a mammogram within two years (OR=1.31, CI=1.16-1.48,). Finally, having health insurance was strongly associated with a higher likelihood of having a mammogram within two years (OR=3.64, CI=2.05-6.47).

In the second model, covariates remained statistically significant: age (OR=1.06, CI=1.02-1.09), income (OR=1.22, CI=1.07-1.40) and health insurance (OR=2.30, CI=1.23-4.32). Model 2 further illustrates various health belief variables. Participants with higher levels of preventive health orientation (OR=1.16, CI=1.02-1.32) or higher levels of perceived susceptibility (OR=1.32, CI=1.10-1.58) were more likely to report having a mammogram within two years. Participants who reported higher levels of fear (OR=0.58, CI=0.36-0.94) were less likely to get screened in the past two years.

Discussion

This study examined factors associated with mammography use in KAIW, focusing on culturally embedded health beliefs using HBM. In the present study sample, 62.31% reported getting a mammogram within two years. The screening rate is higher than other KAIW studies but lower than other racial/ethnic groups. For instance, in Hong et al., (2018) and Jin et al., (2019), screening rates in KAIW were 54% and 52.7% in the past two years, respectively. Potential reasons for this difference may be attributed to the average age difference. In the present study, the average age of participants was 55.40 (SD=9.21), whereas, in Hong et al., (2018) and Jin et al. (2019), the average age of participants was 62.7 (SD=6.78) and 59.1 (SD=7.55), respectively. One possible interpretation would be that older women may have a relatively longer time of breast health care than younger women, thereby less likely to use a mammogram. Additional research is warranted to address age as a factor in uptaking a mammogram.

The regression analysis revealed that preventive health orientation, fear of detecting cancer, and perceived susceptibility were associated with completing a mammogram in the past two years. While these factors are consistent with previous cancer screening research (Lee, 2015), they are entered in the present model/analysis together. Previous studies have shown the influence of preventive health orientation on cervical and colorectal screening behaviors (Lee and Lee, 2017; Oh et al., 2021). Our study expands the evidence that preventive health orientation could predict mammogram use in KAW. Similarly, studies indicated fear of cancer diagnosis as one of the barriers to participating in cancer screening (Lee, 2018; Oh et al., 2021). This research adds to the literature how fear of detecting or diagnosing cancer may cause KAW to delay or avoid breast cancer screening. This could be related to prior research indicating that fear is related to skepticism about the preventability of cancer

or seeing cancer as a death sentence (Vrinten et al., 2017). This could also be associated with fear of cultural stigmas, for example, as has been found regarding a diagnosis of cervical cancer and association with a sexually transmitted disease (Shin et al., 2021). As fear is a multifaceted concept, there may be different types of fear that KAW experience that requires different kinds of intervention that should be explored further in research.

Lastly, KAW who considered themselves highly susceptible to breast cancer were more likely to get a mammogram. This implies an awareness of the risk factors of breast cancer (e.g., family history of cancer or symptoms of breast cancer), the consequences of delaying a cancer diagnosis, and how a mammogram can help find breast cancer at an early stage. Other cancer screening studies align with our findings. For example, Oh et al., (2021) reported that Korean Americans with high perceived susceptibility of colorectal cancer (e.g., family history or gastrointestinal disease) seek colorectal cancer screening, while Korean Americans with low susceptibility prefer primary cancer prevention through lifestyle choices (e.g., healthy foods and exercise) rather than seeking screening.

Interestingly, our findings did not indicate a significant relationship between modesty and mammogram use in the past two years despite other research reporting that modest women were less likely to get screened (Lee, 2015). We suspect that this may relate to the present study sample having high preventive health orientation (mean score = 12.61, SD = 12.10) and that 86.94% were married, which may offset any feelings of modesty. This may be supported by the authors' previous research where married women indicated they were less concerned about exposing their breasts for examination as opposed to feeling more modest if they were single women (Lee et al., 2021). One of the traditional Korean cultural perceptions is visiting a women's clinic or seeking gynecological exams are only for married women who are sexually active. Seeking services at women's clinics as single women are considered to be unacceptable acts such as "premarital sexual activity" or "promiscuity" (Lee and Lee, 2017).

The findings of this study should be interpreted with caution due to a few limitations. First, this study employed a cross-sectional design thus, it might be difficult to determine causal relationships among variables. Second, study participants may not represent KAW living in other areas of the U.S. Third, in this study, we used non-probability sampling methods (i.e., convenience and snowball strategies), limiting the generalization of study findings. Lastly, we used a single item to measure fear of detecting cancer. This might not capture the fears provoked by cancer screening, particularly breast cancer.

Despite the limitations, the present study findings suggest several implications for promoting KAW breast cancer screening in sociocultural contexts. When developing a health educational program, tailored messages should be provided based on the individual's level of preventive health orientation and breast cancer susceptibility. First, having Korean American cancer patient stories at various stages of breast cancer (e.g., how they found cancer, treatment procedures) might be useful

to remind women of the benefits of early detection of breast cancer, particularly for those who avoid screening due to lack of preventive health orientation or fear of cancer diagnosis. Also, messages representing family members or peers promoting screening may be beneficial. Some KAW get a mammogram because they do not want to put any financial burden/caregiving burdens on their family members if they find cancer at an advanced stage (Lee et al., 2022). Second, women with low perceived susceptibility to breast cancer might have inaccurate information about breast cancer risk factors and breast self-exam (Lee et al., 2022), leading them to feel safe and delay mammogram uptake. For instance, although accepted in Korea as a screening method, guidelines regarding breast self-exam (BSE) changed in the U.S. since the early 2000s, with BSE being considered an acceptable part of detection among women at average risk (Smith et al., 2003; ACS, 2019). Lastly, an educational program may need to be combined with strategies to increase access to health care (e.g., free, or low-cost screening services), especially for those who have limited or lack health insurance, as among the present study covariates health insurance was associated with having a mammogram in the past two years.

In conclusion, The present research adds to the literature concerning factors that inhibit or support mammogram screening among KAW based on the HBM. Nuanced data, particularly related to the HBM and other key factors such as fear, can inform the development of interventions to influence KAW who are wary of completing mammograms. This also provides information on how to continue to support those completing mammograms and perhaps integrate them into interventions to increase uptake among KAW who do not get mammograms.

Author Contribution Statement

Conceptualization, MHL, AS, YL, HYL; funding acquisition, MHL; data collection, MHL; data analysis: YL; original draft writing, MHL, AS, YL; review and editing: MHL, AS, YL, HYL. All authors have read and agreed to the published version of the manuscript.

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Ethics Approval
The East Carolina University Institutional Review

Board approved this study, UMCIRB, (Approval number (UMCIRB 18-001409). All participants provided informed consent prior to participating in the study.

Availability of data

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available

Declaration of Conflicting Interest

The authors declare no potential conflicts of interest concerning this article's research, authorship, and/or publication.

Conflicting Interest

The authors have no conflicts of interest to declare.

References

American Cancer Society (2019). Breast cancer early detection and diagnosis. Retrieved from, https://www.cancer.org/content/dam/CRC/PDF/Public/8579.00.pdf.

An S, Choi YJ, Lee HY, Yoon YJ, Platt M (2018). Predictors of breast cancer screening among Korean American women: Is Having an Annual Checkup Critical?. *Asian Pac J Cancer Prev*, **19**, 1281-6.

Bracken BA, Barona A (1991). State of the art procedures for translating, validating and using psychoeducational tests in cross-cultural assessment. *School Psychol Int*, **12**, 119-32

Champion V, Skinner CS, Menon U (2005). Development of a self-efficacy scale for mammography. *Res Nurs Health*, **28**, 329-36.

Champion VL, Sprinston J (1999). Mammography adherence and beliefs in a sample of low-income African American Women. *Int J Behav Med*, **6**, 228-40.

Champion VL, Skinner CS (2008). Ch 3. The Health Belief Model. In K. Glanz, B.K.

Rimer, & K. Viswanath (Eds.), Health Behavior and Health Education: Theory, Research, and Practice (4th ed., pp. 45-65). Jossey-Bass.

Choi GY, Koh E, Choi S, Cho JY (2017). Understanding breast cancer screening behaviors of Korean American women in sociocultural contexts. *Soc Work Health Care*, **56**, 45-63.

Eun Y, Lee EE, Kim MJ, Fogg L (2009). Breast cancer screening beliefs among older Korean American women. *J Gerontol Nurs*, **35**, 40-50.

Hong HC, Ferrans CE, Park C, et al (2018). Effects of perceived discrimination and trust on breast cancer screening among Korean American women. *Womens Health Issues*, **28**, 188-96.

Jin SW, Lee HY, Lee J (2019). Analyzing factors of breast cancer screening adherence among Korean American women using Andersen's behavioral model of healthcare services utilization. *Ethn Dis*, **29**, 427.

Kwok C, Pillay R, Lee CF (2016). Psychometric properties of the Breast Cancer Screening Beliefs Questionnaire among women of Indian ethnicity living in Australia. *Cancer Nurs*, **39**, 24-31.

Lee EE, Nandy K, Szalacha L, et al (2016). Korean American women and mammogram uptake. *J Immigr Minor Health*, **18**, 179–86.

Lee H, Kim J, Han HR (2009). Do cultural factors predict mammography behaviour among Korean immigrants in the USA?. *J Adv Nurs*, **65**, 2574-84.

Lee HY, Stange MJ, Ahluwalia JS (2015). Breast cancer screening behaviors among Korean American immigrant women: findings from the health belief model. *J Transcult Nurs*, **26**, 450-7.

Lee HY, Lee MH (2017). Barriers to cervical cancer screening and prevention in young Korean immigrant women: implications for intervention development. *J Transcult Nurs*, **28**, 353-62.

Lee HY, Lee MH, Yoo JJ, Lee DK (2017). Breast cancer screening disparity among Korean American Immigrant Women in Midwest. *Asian Pac J Cancer Prev*, **18**, 2663-7.

Lee MH, Merighi JR, Lee HY (2019). Factors associated with mammogram use in Korean American immigrant women. *Am J Health Behav*, **43**, 1075-85.

Lee MH, Schwartz AJ (2021). Barriers to breast cancer screening and coping strategies in Korean American women. *J Transcult Nurs*, **32**, 6-13.

Lee MH, Far D, Lee S (2022). Korean American immigrant women's attitudes towards breast cancer prevention: A qualitative study. J Transcult Nurs, Published Online First, doi: 10.1177/10436596221078044.

Lee SY (2015). Cultural factors associated with breast and cervical cancer screening in Korean American women in the US: an integrative literature review. *Asian Nurs Res*, **9**, 81-90.

Lee SY (2018). Koreans' awareness and preventive behaviors regarding colorectal cancer screening. *Asian Pac J Cancer Prev*, **19**, 2657-64.

Lee SY, Lee E, Natipagon-Shah B, Toyama J (2018). Factors associated with breast cancer screening among Korean American women in California: Results from the California Health Interview Survey 2015–2016. *Asian Pac J Cancer Prev*, **19**, 3271.

Oh KM, Park B, Jacobsen KH (2021). A qualitative analysis of barriers to colorectal Cancer screening among Korean Americans. *J Cancer Educ*, **36**, 261-70.

Oh KM, Taylor KL, Jacobsen KH (2017). Breast cancer screening among Korean Americans: a systematic review. *J Community Health*, **42**, 324-32.

Seo YJ, Cheah CS, Cho HS (2020). The gender ideology of 'Wise Mother and Good Wife' and Korean immigrant women's adjustment in the United States. *Nurs Inq*, **27**, e12357.

Shaw SJ, Huebner C, Armin J, Orzech K, Vivian J (2009). The role of culture in health literacy and chronic disease screening and management. *J Immigr Minor Health*, **11**, 460-7.

Shin HY, Song SY, Jun JK, Kim KY, Kang P (2021). Barriers and strategies for cervical cancer screening: What do female university students know and want?. *PLoS One*, **16**, e0257529.

Skinner CS, Tiro J, Champion VL (2015). Chapter 5: The Health Belief Model. In Health Behavior: Theory, Research, and Practice, edited by Karen Glanz, et al., John Wiley & Sons, Incorporated, pp 75-94.

Smith RA, Sawyer KA, Sawyer KA, et al (2003). American Cancer Society guidelines for breast cancer screening: Update 2003 American Cancer Society guidelines for breast cancer screening: Update Authors. *CA Cancer J Clin*, **53**, 141–69.

Tang TS, Solomon LJ, McCracken LM (2000). Cultural barriers to mammography, clinical breast exam, and breast self-exam among Chinese-American women 60 and older. *Prev Med*, **31**, 575-83.

Tuan AW, Davis Lynn BC, Chernyavskiy P, et al (2020). Breast cancer incidence trends by estrogen receptor status among Asian American Ethnic Groups, 1990–2014. *JNCI Cancer Spectr*, **4**, 1-8.

Vrinten C, McGregor LM, Heinrich M, et al (2017). What

do people fear about cancer? A systematic review and meta-synthesis of cancer fears in the general population. *Psychooncology*, **26**, 1070-9.