Breast Health Perceptions and Screening Behaviors Among Myanmar American Immigrant Women

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OBJECTIVES: To understand and describe attitudes toward general health checkups, breast health knowledge, cultural beliefs, and health-promoting behaviors among Myanmar American immigrant women in the United States.

SAMPLE & SETTING: 267 women participated in the study. 10 women were excluded because of missing data, so the total sample size was 257 participants.

METHODS & VARIABLES: A descriptive, cross-sectional survey design was used to describe and investigate breast health perceptions and behaviors.

RESULTS: Nearly 75% of the study sample reported having negative attitudes toward general health checkups and were found to have less accurate breast health knowledge and more fatalistic views about breast cancer. Only 29% of older women adhered to mammogram recommendations. Younger women reported more barriers to mammograms, and older women reported fewer barriers to mammograms.

IMPLICATIONS FOR NURSING: This study demonstrated the need for additional research focusing on unique perspectives when investigating breast health practices among Myanmar American immigrant women. The findings highlight the essential need to build a strong partnership with stakeholders to combat breast health disparities and address the complex nature of acculturation.

Globally, women face significant breast cancer burden because it is the most common cancer and the second leading cause of death among women worldwide (Ferlay et al., 2024). In 2022, it was the third leading cause of death in the country of Myanmar (also known as Burma) (Ferlay et al., 2024). Breast cancer burden could worsen where minimal healthcare infrastructure and low prioritization of preventive and oncology care are present (World Health Organization, 2022). Although breast cancer incidence rates in Asian populations have been more favorable than in White populations, the sharp increase in incidence rates among Asian populations globally is of concern (Bao et al., 2018; Morey et al., 2019; Sohn et al., 2021). In the United States, the breast cancer incidence rate has been increasing among Asian American women in the past decade compared to the stable incidence rate in the past decade among non-Hispanic White women (Miller et al., 2019). Breast health disparities in the United States have improved in recent years but have not been eliminated (Sohn et al., 2021). High breast cancer burden may be reduced using early detection and awareness strategies. However, Clough et al. (2013) reported that Asian American immigrant women were less likely to receive routine cancer screenings than White immigrant women. Asian American women were less likely to adhere to mammogram recommendations compared to non-Hispanic White women (Paranjpe et al., 2022). In 2018, compared to the baseline national screening rate of 72.8%, the prevalence of up-to-date mammography screening status among Asian American women demonstrated a much lower percentage (55%) than in non-Hispanic Black (66%) or non-Hispanic White (64%) women (American Cancer Society, 2019). A wide range of screening rates were seen among different Asian American subgroups, with the highest rate seen among Japanese

American women (Eden et al., 2023). Much work is needed in Asian American populations to meet the Healthy People 2030 breast cancer screening target goal of 77.1% (U.S. Department of Health and Human Services, 2023).

Asian American populations are among the fastest-growing major ethnic groups in the United States and are projected to surpass 46 million by 2060 (Budiman & Ruiz, 2021). Myanmar American immigrants are the fastest-growing Asian American subgroup, growing tenfold or more from 2000 to 2019 (Budiman & Ruiz, 2021) and bringing their own distinct cultural, sociopolitical, and socioeconomic backgrounds and viewpoints. Myanmar immigrants may not be familiar with preventive care and early cancer screening because these healthcare practices are not readily available in Myanmar, which has a minimal healthcare infrastructure (Han et al., 2018; Latt et al., 2016). In addition, 85% of Myanmar Americans are born internationally, and Myanmar Americans are more likely to have lived in the United States for less than 10 years, have the lowest median household incomes, and have the lowest English proficiency rate compared to other Asian American subgroups, such as Filipino, Japanese, and Indian Americans (Budiman & Ruiz, 2021). These unique social determinants of health profoundly influence their health behaviors in their adopted country.

Literature Review

The method by Cooke et al. (2012) of converting the quantitative PICO (population, intervention, comparison, and outcome) framework to the qualitative SPIDER (sample, phenomenon of interest, design, evaluation, and research type) framework was applied, and a systematic review consisting of articles published from 1996 to 2020 was conducted using the following five databases: PsycINFO®, CINAHL® Plus with Full Text, Cochrane Library, Google Scholar™, and MEDLINE®. The search string used for the database searches was *Myanmar* OR *Burmese* AND *breast cancer screening* OR *breast cancer awareness* OR *breast health* OR *cancer belief** OR *health belief** OR *cultural belief** AND *questionnaire** OR *survey** OR *interview** OR *focus group** OR *case stud** OR *observ** OR *view** OR *experience** OR *opinion** OR *attitude** OR *belie** OR *feel** OR *know** OR *understand** OR *qualitative* OR *mixed method** AND *breast cancer screening beliefs* OR *cancer screening beliefs* OR *breast cancer awareness* AND *Asian Americans*. A PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) Flow Diagram was used to guide the review and screening

process (Moher et al., 2009). A review of the literature yielded 8 qualitative articles and 10 quantitative articles relevant to this study. The critical analysis of these articles involved using the Joanna Briggs Institute Critical Appraisal Checklist for Qualitative Research and the Strengthening the Reporting of Observational Studies in Epidemiology checklist (Lockwood et al., 2015).

A summary of the findings from the literature review underscores the diverse profiles and perspectives of Asian women related to breast health knowledge, cultural beliefs, and demographic backgrounds. Immigration and acculturation were two critical factors in breast cancer disparities and breast health practices among Asian immigrant women (Kwok et al., 2020; Morey et al., 2019; Stan et al., 2022). Factors like not knowing anyone with breast cancer, lower education level, prior negative cancer-related experiences of relatives and friends, communication and access, perceived risks of cancer, and cultural beliefs were found to negatively affect the health practices of women with Chinese heritage (Bao et al., 2018; Han et al., 2018; Lee-Lin et al., 2012). Barriers to mammograms were a sense of vulnerability, prioritizing family needs over personal needs, fatalistic views associated with cancer, language barriers, healthcare costs, transportation, lack of communication with healthcare providers, lack of knowledge, cultural practices, not wanting to burden family members, and misperceptions about Western medicine (Miller et al., 2019; Nguyen-Truong et al., 2018; Simon et al., 2017).

Most Myanmar refugees who participated in a study by Raines Milenkov et al. (2020) had never received mammography screening or were not up to date on screening before entering a community health worker model–based prevention program. Although difficulty navigating the U.S. healthcare system, differences in cultural norms, fear, modesty, religiosity, and lack of knowledge created challenges, support from preexisting immigrant communities in the United States, familiarity with Western medicine, resilience to cultural shock, availability of interpreters, social desirability, and trust in biomedicine facilitated Myanmar immigrants' acculturation processes and health-promoting behaviors (Gondek et al., 2015; White, 2012). However, Myanmar American immigrant women's breast health profiles were part of aggregated Southeast Asian subgroups in the studies in the literature review, potentially underestimating their breast healthcare needs (Raines Milenkov et al., 2020; Sohn et al., 2021). This underrepresentation may have limited the availability of comprehensive

data, failing to account for disparities and inequities in Myanmar American women's breast health. This review also highlighted a need to discover more about Myanmar American immigrant women's attitudes toward general health checkups, breast health knowledge, cultural beliefs, and health-promoting behaviors to appropriately and adequately promote and advocate for their health.

Theoretical Framework

This study's theoretical framework was based on a cultural perspective centered on the following core concepts adopted from Pender's (2011) Health Promotion Model (Murdaugh et al., 2018): (a) personal factors, (b) prior behaviors, (c) perceived benefits, (d) perceived barriers, (e) health-promoting behaviors, (f) breast health awareness, and (g) breast cancer screening beliefs (see Supplemental Figure 1 online). The theoretical underpinnings central to the Health Promotion Model are the expectancy–value theory by Fishbein and Ajzen and Bandura's social cognitive theory, which highlight that people are more likely to work toward goals that are of value to them (Murdaugh et al., 2018).

In addition, the study used the National Comprehensive Cancer Network (NCCN, 2021) Breast Cancer Screening and Diagnosis Guidelines, version 1.2021, and the holistic and reciprocal interaction nursing worldview (Fawcett, 1993). In the reciprocal interaction worldview of nursing, people are considered through a holistic lens and are capable of reciprocal interactions with their environment. By applying this nursing worldview, a Myanmar American immigrant woman is believed to have the ability to embrace health-promoting behaviors to achieve positive dynamic states of well-being.

The NCCN (2021, 2023) recommends that asymptomatic women aged 25–40 years who are at average risk for breast cancer should see healthcare providers every one to three years and engage in breast health awareness practices. In their updated guidelines, the NCCN (2023) also recommends that healthcare providers teach about breast health awareness and counsel women regarding the potential benefits, risks, and limitations of breast screening in line with their values and preferences when making health-related decisions. Women's values and preferences are heavily influenced by many factors, which, in turn, affect health-promoting behaviors.

Although the author acknowledges that there is no unanimity in breast cancer screening guidelines across different leading organizations, the current study focused on breast health, cancer awareness, and the importance of clinical encounters (i.e., general health checkups during which breast health awareness conversations could happen) with otherwise healthy women at average risk for breast cancer. A focus on breast health attitudes and knowledge is particularly important for younger women who immigrated from low-income countries with poor healthcare infrastructure because they may not be accustomed to engaging in preventive healthcare practices.

Purpose

The purposes of this study were to (a) describe Myanmar American immigrant women's attitude toward general health checkups, breast health knowledge, and health-promoting behaviors related to breast health and mammography screening; (b) investigate acculturation and socioeconomic factors that affect Myanmar American immigrant women's breast health beliefs and screening practices; and (c) compare these outcomes among the following two distinct age groups: women aged younger than 40 years and women aged 40 years or older.

Methods

Sample and Setting

Inclusion criteria for participation in this study were (a) being Myanmar American; (b) being a female adult aged 25 years or older; (c) being an immigrant (i.e., born outside the United States); (d) having no personal history of breast cancer; and (e) being able to write, read, and understand English. The study used convenience and snowball sampling methods.

The study was approved by the Azusa Pacific University Institutional Review Board (ID No. 21-373) on March 8, 2022. Electronic informed consent forms were obtained at the beginning of the survey. A small honorarium ($10 Amazon gift card) was given to those who completed the survey as compensation for their time and effort.

Recruitment and Data Collection

Individuals identifying as Myanmar or Burmese American living in the United States were recruited virtually, on-site at community social events, and in person through personal networking. The data collection process began with recruitment from March to July 2022. Recruitment flyers with QR codes and SurveyMonkey web links were posted in local Myanmar temples, churches, medical clinics, social events, and social media groups to enable electronic access to the survey. To ensure that only eligible

TABLE 1. Sample Characteristics (N = 257)

Characteristic	X̄	SD
Age (years)	31	6.3
Length of stay in the United States (years)	10.6	5.49

Characteristic	n	%
Age (years)		
25–39	240	93
40 or older	17	7
Country of birth		
Myanmar/Burma	255	99
Other (outside of United States)	1	< 1
Did not answer	1	< 1
Education level		
No education	1	< 1
Primary	40	16
Secondary	99	39
College	107	42
University or above	10	4
Employment status		
Full-time	161	63
Unemployed and not looking	45	18
Part-time	30	12
Unemployed and looking	18	7
Retired	2	1
Did not answer	1	< 1
English proficiency		
Not at all	–	–
Little	22	9
Average	55	21
Good	135	53
Very good	45	18
Healthcare access		
Yes	225	88
No	32	12
Language used at home		
Myanmar and English	164	64
Myanmar only	73	28
English only	20	8
Length of stay in the United States (years)		
Less than 5	35	14
6–10	116	45
11–15	58	23
16–20	20	8
Longer than 20	15	6
Did not answer	13	5

Continued in the next column

TABLE 1. Sample Characteristics (N = 257) *(Continued)*

Characteristic	n	%
Marital status		
Married	169	66
Living together	57	22
Single	16	6
Divorced	14	5
Widowed	1	< 1
Did not answer	–	–

Note. Because of rounding, percentages may not total 100.

participants could proceed with the survey, individuals were first required to complete the eligibility questions and attestation.

Sample Size

The target sample size was calculated based on data from the American Cancer Society (2019), which demonstrated that the prevalence of up-to-date mammography screening in Asian Americans was 55% in 2018, and Cochran's (1963) formula was applied. The calculation yielded a target sample size of 204 to achieve precision within 7% with a two-tailed 95% confidence interval (CI) at a 5% significance level (p = 0.05). A total of 267 individuals responded to the survey, and 10 were excluded because of missing pertinent data, yielding a total sample size of 257.

Variables

This quantitative study used a descriptive, cross-sectional survey design and was part of a mixed-methods study. The dependent variables were breast health–promoting behaviors, which were (a) awareness of one's own breast health, (b) adherence to mammography screening guidelines, and (c) attitude toward general health checkups (defined as going to the doctor for a checkup when one does not have a specific health problem) (Kwok et al., 2012a). The independent variable was the score on the Breast Cancer Screening Beliefs Questionnaire (BCSBQ).

Demographic characteristics, acculturation, and socioeconomic status (SES) were also collected in the survey and used as independent variables. Proxy variables for acculturation were length of stay in the United States, level of English proficiency, and language spoken at home. Education level, employment status, and healthcare access were used as proxy variables to measure SES (Kwok et al., 2020). Participants were categorized into age groups (aged younger than

40 years versus 40 years or older) for specific age-related variable comparisons, particularly to analyze mammogram frequency for those aged 40 years or older, aligning with NCCN (2021, 2023) guidelines recommending annual mammograms after age 40 years.

Instrument

Cannas Kwok, PhD, at Western Sydney University in New South Wales, Australia, approved the use of the BCSBQ (English version). Kwok et al. (2012a) developed and validated this culturally sensitive survey instrument. The BCSBQ consists of a 13-item questionnaire with three subscales. The attitude toward general health checkups and breast health knowledge and fatalistic views toward breast cancer subscales have four items each, and the perceived barriers to mammograms subscale has five items. Each item is scored based on a five-point Likert-type scale, with responses ranging from 1 (strongly agree) to 5 (strongly disagree). The option "do not know" (scored 3) is included for each item. Mean scores for each subscale are calculated and converted to a range of 0–100. For example, if a participant scored 5 on all items within a subscale, the final score for that subscale would be 100. If a participant scored 1

on all items within a subscale, the final score would be 0. Scores of 65 or higher were determined to be indicative of "more positive attitude [toward] [general] health checkups, more accurate [breast health] knowledge and less fatalistic perceptions [toward] breast cancer and therefore of fewer perceived barriers to mammograms than among those women with scores of less than 65" (Kwok et al., 2015, p. 702). Participants were asked about their attitude toward general health checkups on the BCSBQ because clinical breast examinations by healthcare providers often occur during general health checkups. Cronbach's alpha for the BCSBQ was reported at 0.76 for the total scale and 0.7–0.79 for the three subscales. The BCSBQ was tested for content, face, convergent, and construct validities and reported adequate validity (Kwok et al., 2010, 2012a). There is no available tool on this topic that is in the Myanmar language. However, there are more than 100 languages used in the country of Myanmar. Many ethnic Myanmar immigrants do not speak Myanmar as their primary language and are more likely to understand English.

In addition to the BCSBQ, demographic data like age, ethnicity, length of stay in the United States, English language proficiency, language used at home,

TABLE 2. Breast Cancer Screening Beliefs Questionnaire Subscale Scores by Age Group (N = 257)

Subscale	Total Sample (N = 257)		Younger Than 40 Years (N = 240)		40 Years or Older (N = 17)	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Attitude toward general health checkups	51.26	20.41	51.87	19.72	42.65	27.71
Breast health knowledge and fatalistic views about breast cancer	51.43	19.18	51.38	18.63	52.21	26.42
Perceived barriers to mammograms	53.58	18.39	52.75	17.45	62.29	26.66
Subscale	**n**	**%**	**n**	**%**	**n**	**%**
Attitude toward general health checkups						
Positive (score of 65 or higher)	68	26	65	27	3	18
Negative (score of lower than 65)	189	74	175	73	14	82
Breast health knowledge and fatalistic views about breast cancer						
More knowledge, less fatalistic views (score of 65 or higher)	55	21	49	20	6	35
Less knowledge, more fatalistic views (score of lower than 65)	202	79	191	80	11	65
Perceived barriers to mammograms						
Fewer barriers (score of 65 or higher)	84	33	73	30	11	65
More barriers (score of lower than 65)	173	67	167	70	6	35

Note. The Breast Cancer Screening Beliefs Questionnaire consists of a 13-item questionnaire with 3 subscales. The attitude toward general health checkups and breast health knowledge and fatalistic views about breast cancer subscales have 4 items each, and the perceived barriers to mammograms subscale has 5 items. Each item is scored based on a 5-point Likert-type scale with responses ranging from 1 (strongly agree) to 5 (strongly disagree). The option "do not know" (scored 3) is included for each item. Mean scores for each subscale are calculated and converted to a range of 0–100, with higher scores indicating more positive attitudes, more knowledge, less fatalistic views, and fewer perceived barriers to mammograms.

TABLE 3. Breast Health Characteristics by Age Group (N = 257)

Variable	Total Sample (N = 257)		Younger Than 40 Years (N = 240)		40 Years or Older (N = 17)	
	n	%	n	%	n	%
Family history of breast cancer						
No	195	76	182	76	13	76
Yes	7	3	5	2	2	12
Friend with history of breast cancer						
No	200	78	182	76	11	65
Yes	18	8	12	5	6	35
Heard of mammogram						
Yes	246	96	229	95	17	100
No	11	4	11	5	–	–
Friend with experience of mammogram						
Yes	154	60	140	58	14	82
No	101	39	100	42	1	6
Do not know	2	1	–	–	2	12
Mammogram frequency						
Once a year	78	30	–	–	5	29
Once every 2 years	134	52	–	–	8	47
Once every 3 years or more	43	17	–	–	4	24
Never	2	1	–	–	–	–
Reason for mammogram[a]						
Regular checkup	114	44	–	–	11	65
Invitation letter	94	37	–	–	5	29
Doctor's advice	91	35	–	–	8	47
Free	84	33	–	–	4	24
Breast problem	84	33	–	–	3	18
Family arrangement	76	30	–	–	2	12
Early detection saved life	42	16	–	–	2	12
Technician gender preference						
Female	191	74	182	76	9	53
Male	29	11	27	11	2	12
No preference	37	14	31	13	6	35

[a] Participants could choose more than 1 response to this question.
Note. Not all participants answered every question.
Note. Because of rounding, percentages may not total 100.

education level, employment status, healthcare access, and marital status were collected. The participants were asked whether they knew someone with breast cancer and about their breast cancer screening practices, such as whether they had ever heard of mammography screening and, if so, how often they had received a mammogram. These and other questions added a more complete picture to the BCSBQ. For example, the BCSBQ did not include items about preference for a mammography technician's gender, the number of mammograms in the past five years, or reasons for the most recent mammogram. These additional questions had been shown to be useful in previous studies using the same survey with different immigrant populations (Bao et al., 2018; Kwok et al., 2015, 2020). See Supplemental Table 1 online for the complete survey given in this study.

Data Analysis

IBM SPSS Statistics, version 27.0, was used to analyze data. Descriptive statistics were used for sociodemographic variables, examining for normal distribution. Frequencies, percentages, means, and SDs were reported. Subsequently, Fisher's exact test, chi-square tests, and t tests were employed based on variable type. Fisher's exact test was used to evaluate the associations between education and mammogram adherence and employment and mammogram adherence because the assumptions for the chi-square test were not met (expected cell count less than 5). All other categorical variables were analyzed using chi-square tests. Independent sample t tests compared continuous variables, such as length of stay in the United States and BCSBQ scores. Once relationships were established, logistic regression was used to analyze significant variables. Variables found to have associations of $p < 0.05$ in bivariate analysis were entered into regression.

Results

Demographic characteristics are presented in Table 1. The average age of the women was 31 years, and 240 (93%) were aged 25–39 years. Only 17 women were aged 40 years or older. Overall, 255 women were born in Myanmar and represented 99% of the sample. Nearly half of the women (n = 107, 42%) had a college-level education. About half of the women (n = 135, 53%) reported their English proficiency level as good. More than half of the women worked full-time (n = 161, 63%). Most women (n = 225, 88%) reported having healthcare access. Overall, 64% (n = 164) of the women used the Myanmar and English languages at home. More than

half (n = 151, 59%) of the women had been in the United States for less than 10 years. Of the total sample, 66% (n = 169) of the women were married.

BCBSQ Subscales

As shown in Table 2, 189 (74%) participants demonstrated negative attitudes toward general health checkups; 175 (73%) participants aged younger than 40 years had negative attitudes; and 14 of 17 women aged 40 years or older had negative attitudes. Of the full sample, 202 (79%) participants had less breast health knowledge and more fatalistic views toward breast cancer; 191 (80%) of those aged younger than 40 years had less knowledge and more fatalistic views;

and slightly less than two-thirds of those aged 40 years or older (n = 11 of 17) had less knowledge and more fatalistic views. About two-thirds of the full sample (n = 173, 67%) had more perceived barriers to mammograms, and a higher percentage of those aged younger than 40 years (n = 167, 70%) had more perceived barriers. The trend for perceived barriers to mammograms was reversed for women aged 40 years or older; slightly less than two-thirds (n = 11 of 17) perceived fewer barriers to mammograms.

Individual Breast Health Characteristics

As shown in Table 3, most participants (n = 195, 76%) did not have family members with breast cancer, and

TABLE 4. Associations Between Having Mammograms as Recommended and Demographic Characteristics and Bivariate Analyses for Group Aged 40 Years or Older (N = 17)

Variable	Had Mammogram as Recommended (N = 5)		Did Not Have Mammogram as Recommended (N = 12)		Significance			
	$\overline{X}$	SD	$\overline{X}$	SD	t	df	95% CI	p
Attitude toward general health checkups[a]	70	22.71	31.25	21.15	3.374	15	[0.552, 2.996]	0.004*
Breast health knowledge and fatalistic views about breast cancer[a]	53.75	24.04	51.56	28.35	0.151	15	[–0.965, 1.123]	0.882
Perceived barriers to mammograms[a]	77	22.53	60.42	27.58	1.183	15	[–0.447, 1.687]	0.255
Length of stay in the United States (years)[b]	7.6	4.04	10.25	4.54	–1.129	15	[–1.656, 0.473]	0.276
Level of English proficiency[b]	2.4	0.89	4	0.74	–3.838	15	[–3.29, –0.75]	0.002*

Variable	χ²	p
Language used at home[b]	13.43	0.001*[d]
Education level[c]	–[e]	0.002*
Employment status[c]	–[e]	0.191
Healthcare access[c]	2.88	0.009*

* p < 0.05
[a] Mean scores for each BCSBQ subscale are calculated and converted to a range of 0–100, with higher scores indicating more positive attitudes, more knowledge, less fatalistic views, and fewer perceived barriers to mammograms.
[b] Proxy for acculturation; higher level of English proficiency, longer length of stay, and more use of English language at home indicate greater acculturation.
[c] Proxy for socioeconomic status; higher education level, full-time employment, and access to health care indicate higher socioeconomic status.
[d] Cramer's V = 0.68
[e] Fisher's exact test
BCSBQ—Breast Cancer Screening Beliefs Questionnaire; CI—confidence interval; df—degrees of freedom
Note. Level of English proficiency was scored based on a self-reported Likert-type scale with scores ranging from 0 (not at all) to 4 (very good).

TABLE 5. Associations Between BCSBQ Subscale Scores and Demographic Characteristics for Group Aged Younger Than 40 Years (N = 240)

	Positive Scores (65 or Higher)[a]						Negative Scores (Lower Than 65)[a]					
	H (N = 65)		K (N = 49)		B (N = 73)		H (N = 175)		K (N = 191)		B (N = 167)	
Variable	X̄	SD	X̄	SD	X̄	SD	X̄	SD	X̄	SD	X̄	SD
Length of stay in the United States (years)[b]	8.96	3.8	8.91	3.65	10.65	6.34	11.26	5.9	11.1	5.84	10.7	5.24
Level of English proficiency[b]	3.93	0.65	3.98	0.66	3.9	0.73	3.77	0.86	3.76	0.84	3.77	0.84
Language used at home[b]	3.08	1.4	3.33	1.2	2.88	1.38	3.03	1.34	2.97	1.38	3.11	1.33
Education level[c]	3.42	0.43	3.53	0.79	3.51	0.82	3.25	0.78	3.23	0.76	3.2	0.74
Employment status[c]	3.03	0.43	3.04	0.57	2.92	0.66	2.69	0.84	2.72	0.79	2.72	0.8
Healthcare access[c]	0.94	0.24	0.94	0.24	0.95	0.83	0.84	0.36	0.85	0.36	0.83	0.37

[a] Mean scores for each BCSBQ subscale (H, K, and B) are calculated and converted to a range of 0–100, with scores of 65 or higher indicating positive attitude, more knowledge, less fatalistic views, and fewer perceived barriers, and scores of lower than 65 indicating the opposite.
[b] Proxy for acculturation; higher level of English proficiency, longer length of stay, and more use of English language at home indicate greater acculturation.
[c] Proxy for socioeconomic status; higher education level, full-time employment, and access to health care indicate higher socioeconomic status.
B—perceived barriers to mammograms; BCSBQ—Breast Cancer Screening Beliefs Questionnaire; H—attitude toward general health checkups; K—breast health knowledge and fatalistic views toward breast cancer
Note. Level of English proficiency was scored based on a self-reported Likert-type scale with scores ranging from 0 (not at all) to 4 (very good). Language used at home was scored using the following rubric: 1 (Myanmar only), 2 (English only), 3 (other), 4 (Myanmar and English). Education level was scored using the following rubric: 1 (no education), 2 (primary), 3 (secondary), 4 (college), 5 (university or above). Employment status was scored using the following rubric: 1 (unemployed and not looking), 2 (unemployed and looking), 3 (full-time), 4 (part-time), 5 (retired). Healthcare access was scored 0 if the participant did not have access to health care and 1 if the participant did have access.

most did not have friends with breast cancer (n = 200, 78%). All participants aged 40 years or older had heard of mammograms. Among those aged younger than 40 years, 11 women (5%) had not heard of a mammogram before. Overall, 58% (n = 140) of participants aged younger than 40 years and 14 of 17 participants aged older than 40 years reported having friends with mammogram experiences. Only 5 of 17 women aged 40 years or older adhered to mammogram recommendations. In this age group, 11 of 17 women had received mammograms as part of their regular checkups, and 8 reported that their doctors advised them to schedule mammograms. The majority of the full sample (n = 191, 74%), regardless of age, preferred female technicians to perform the mammogram.

Bivariate Analyses of Older Age Group

Bivariate analyses were performed for the group aged 40 years or older (N = 17) to see the differences between women who adhered to mammograms once a year and women who did not adhere to mammograms once a year in relation to (a) attitude toward general health checkups, (b) breast health knowledge and fatalistic views toward breast cancer, (c) perceived barriers to mammograms, (d) acculturation (consisting of length of stay in the United States, level of English proficiency, and language used at home), and (e) SES (consisting of education level, employment status, and healthcare access). The null hypothesis was that there was no difference between the women aged 40 years or older who adhered to mammograms as recommended and those who did not. Table 4 details the bivariate analysis results for this age group.

Mammogram adherence: In the group aged 40 years or older, attitude toward general health checkups was more positive in the mammogram-adherent group than in the mammogram-nonadherent group (p = 0.004, 95% CI [0.552, 2.996]). Counter to the study's hypothesis, women in the nonadherent group showed higher levels of English proficiency than women in the adherent group (p = 0.002, 95% CI [–3.29, –0.75]). A two-way contingency table analysis evaluating whether there was a statistical relationship between language used at home and mammogram adherence was significant (p = 0.001, Cramer's V = 0.68), with a strong association. Fisher's exact test, evaluating the association between education level

and mammogram adherence, was also significant (p = 0.002). There were no statistical relationships between mammogram adherence and breast health knowledge and fatalistic views toward breast cancer, perceived barriers to mammograms, length of stay in the United States, employment status, or healthcare access among this age group.

Bivariate Analyses of Younger Age Group

Bivariate analyses were conducted to evaluate the associations between various demographic characteristics and BCSBQ subscale scores in the group aged younger than 40 years (N = 240). Women aged younger than 40 years were divided into the following subgroups for each BCSBQ subscale: those who scored higher than 65 (positive) and those who scored lower than 65 (negative) (see Tables 5 and 6).

Attitude toward general health checkups: Length of stay in the United States was negatively associated with attitude toward general health checkups (p < 0.001, 95% CI [−0.722, −0.117]). Employment status was positively associated with attitude toward general

health checkups (p < 0.001, 95% CI [0.162, 0.737]). Healthcare access was also positively associated with attitude toward general health checkups (p = 0.017, 95% CI [0.005, 0.576]). There were no associations between attitude toward general health checkups and (a) level of English proficiency, (b) language used at home, or (c) education level.

Breast health knowledge and fatalistic views toward breast cancer: Length of stay in the United States was negatively associated with knowledge of breast health and fatalistic views toward breast cancer (p = 0.002, 95% CI [−0.733, −0.065]). The analyses for education level (p = 0.016, 95% CI [0.072, 0.704]), employment status (p = 0.002, 95% CI [0.11, 0.743]), and healthcare access (p = 0.039, 95% CI [−0.048, 0.581]) in relation to knowledge and fatalistic views also found significant associations. There were no significant relationships between breast health knowledge and fatalistic views toward breast cancer and (a) level of English proficiency or (b) language used at home.

Perceived barriers to mammograms: The association between education level and perceived barriers

TABLE 6. Bivariate Analyses for Group Aged Younger Than 40 Years (N = 240)

Variable	Attitude Toward General Health Checkups				Breast Health Knowledge and Fatalistic Views Toward Breast Cancer				Perceived Barriers to Mammograms			
	t	df	95% CI	p	t	df	95% CI	p	t	df	95% CI	p
LOS in the United States (years)[a]	−3.387	150	[−0.722, −0.117]	0.001*	−3.117	98	[−0.733, −0.065]	0.002*	−0.56	96	–	0.955
Level of English proficiency[a]	1.338	152	–	0.129	1.915	92	–	0.59	1.211	238	–	0.114
Language used at home[a]	0.246	238	–	0.806	1.788	82	–	0.077	−1.25	238	–	0.212
Education level[b]	1.501	238	–	0.135	2.427	238	[0.072, 0.704]	0.016	2.866	238	[0.124, 0.679]	0.005*
Employment status[b]	4.079	214	[0.162, 0.737]	<0.001*	3.22	100	[0.11, 0.743]	0.002*	1.946	168	–	0.053
Healthcare access[b]	2.406	173	[0.005, 0.576]	0.017*	2.092	108	[−0.048, 0.581]	0.039*	2.858	212	[0.058, 0.611]	0.005*

* p < 0.05
[a] Proxy for acculturation
[b] Proxy for socioeconomic status
CI—confidence interval; df—degrees of freedom; LOS—length of stay

TABLE 7. Predictors of BCSBQ Subscale Scores for Group Aged Younger Than 40 Years (N = 240)

Variable	OR	95% CI	p
Attitude toward general health checkups[a]			
Length of stay shorter than 5 years	7.122	[1.627, 31.175]	0.009*
Length of stay 6–10 years	3.2	[0.903, 11.348]	0.072
Length of stay 11–15 years	8.696	[2.189, 34.681]	0.002*
Length of stay 16–20 years	33.478	[3.147, 356.09]	0.004*
Length of stay longer than 20 years	28.558	[2.736, 298.07]	0.005*
Education level	–	–	1
Healthcare access	0.249	[0.08, 0.774]	0.016
Breast health knowledge and fatalistic views toward breast cancer[b]			
Length of stay shorter than 5 years	4.191	[0.941, 18.659]	0.06
Length of stay 6–10 years	3.078	[0.841, 11.261]	0.089
Length of stay 11–15 years	9.549	[2.146, 42.492]	0.003*
Length of stay 16–20 years	10.423	[1.447, 75.093]	0.02
Length of stay longer than 20 years	–	–	0.998
Education level	–	–	1
Healthcare access	0.305	[0.085, 1.092]	0.068
Perceived barriers to mammograms[c]			
Healthcare access	0.288	[0.097, 0.853]	0.025*

* p < 0.05
[a] Nagelkerke R^2 = 0.183
[b] Nagelkerke R^2 = 0.187
[c] Nagelkerke R^2 = 0.037
BCSBQ—Breast Cancer Screening Beliefs Questionnaire; CI—confidence interval; OR—odds ratio
Note. Length of stay refers to time in the United States and is a proxy for acculturation.

was significant (p = 0.005, 95% CI [0.124, 0.679]). Healthcare access was also significantly associated with perceived barriers (p = 0.005, 95% CI [0.058, 0.611]). There was no association between perceived barriers to mammograms and (a) length of stay in the United States, (b) level of English proficiency, (c) language used at home, or (d) employment status.

Multivariate Analysis

Multivariate analysis was conducted using the binary logistic regression test for variables found to be significant in the bivariate analyses, which were length of stay in the United States, healthcare access, education level, language used at home, attitude toward general health checkups, breast health knowledge and fatalistic views toward breast health, and perceived barriers to mammograms for women aged younger than 40 years (see Table 7).

Length of stay in the United States had significant relationships with (a) attitude toward general health checkups and (b) breast health knowledge and fatalistic views toward breast cancer, although CIs were quite wide. For women aged younger than 40 years, a length of stay shorter than five years was significantly associated with attitude toward general health checkups (odds ratio [OR] = 7.122, p = 0.009, 95% CI [1.627, 31.175]). The association between length of stay in the United States being 6–10 years and attitude toward general health checkups had a 95% CI of 0.903 to 11.348, trapping the value of 1. Therefore, it was not a significant indicator, as the possibility of a true OR of 1 could not be ruled out. However, having a length of stay of 11–15 years was significantly associated with breast health knowledge and fatalistic views toward breast cancer (OR = 9.549, p = 0.003, 95% CI [2.146, 42.492]). Healthcare access had significant associations with attitude toward general health checkups (OR = 0.249, p = 0.016, 95% CI [0.08, 0.774]) and perceived barriers to mammograms (OR = 0.288, p = 0.025, 95% CI [0.097, 0.853]). Attitude toward general health checkups, education level, and language used at home were not predictors for having mammograms as recommended in the group of women aged 40 years or older (see Table 8).

Discussion

For women aged 25–39 years, negative attitude toward general health checkups, such as seeking health care only when encountering a health problem, can result in missed opportunities to engage in breast health awareness conversations with a healthcare provider. For those aged 40 years or older, annual routine

mammograms as recommended by the NCCN (2021, 2023) could be missed. However, this study showed that older women who adhered to annual mammogram recommendations showed a more positive attitude toward general health checkups. This finding is consistent with literature on Korean Australian women (Kwok et al., 2020).

In addition, Myanmar American immigrant women may not be aware of the critical value of preventive care and early detection because many come from a home country where preventive care is nearly nonexistent or not promoted (Bao et al., 2018; Myint et al., 2020). These results are worrisome because Asian American women's mammography screening rates are historically lower than those of non-Hispanic White women (American Cancer Society, 2019; Xie et al., 2022).

As illustrated by Pender's (2011) Health Promotion Model, women's breast health knowledge and awareness may catalyze them to engage in health-promoting behaviors, such as getting mammograms or engaging in breast health care, because they perceive that such behavior will benefit their health. Thus, having more accurate breast health knowledge and less fatalistic views toward breast cancer is essential. The results of this study demonstrated that the sample of Myanmar American women aged 25–74 years had inaccurate breast health knowledge and more fatalistic views toward breast cancer. These findings are consistent with literature about other Southeast Asian and South Asian women. For example, Kwok and Sullivan (2006) reported that older Chinese Australian women had fatalistic views about cancer, Lee-Lin et al. (2012) found that Chinese American women viewed breast cancer as a terminal illness, and Bottorff et al. (1998) found that South Asian Canadian immigrant women held fatalistic views associated with cancer. This evidence demonstrates that barriers to having accurate breast health knowledge and adhering to mammography screening recommendations have existed among Asian immigrant women. Common findings related to these barriers include fatalistic views, fear, cultural practices, modesty, transportation, costs, misconceptions, communication barriers, and issues with healthcare providers. Perceived barriers considered in this study included cultural beliefs, such as assumptions, attitudes, or perceptions that are culturally influenced. For example, the survey asked whether women agreed or disagreed with the following statement: "If a woman is fated to get breast cancer, she will get breast cancer; there is nothing she can do to change fate." Additional barriers were measured, such as those indicated by the following statement: "I

KNOWLEDGE TRANSLATION

- These findings underscore the need for disaggregated data to explore the unique perspectives of Myanmar American immigrant women to explain their negative attitude toward general health checkups, less accurate breast health knowledge and more fatalistic views toward breast cancer, and more perceived barriers toward mammography screening.
- Strong partnerships with stakeholders are necessary to combat breast health disparities and address the complex nature of acculturation, which may encompass more than the congruency of immigrants' attitudes, beliefs, and behaviors with those of the dominant society in their adopted country.
- Future studies exploring the perspectives and roles of healthcare providers with Myanmar heritage and interactions between providers and patients are needed to decrease breast health disparities and to better understand and enhance breast health awareness and screening adherence within the Myanmar American community.

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don't want to go for a mammogram because I would need to take off my clothes and expose my breasts." This study's findings showed that older Myanmar American immigrant women had fewer perceived barriers to mammograms, such as less concern about pain, fewer issues with transportation, fewer language barriers, and fewer concerns about modesty. However, the adherence to mammogram recommendations among these participants was low at only 5 of 17. This finding indicates the need to explore and gain a deeper understanding of women's attitudes and perceptions about breast health–promoting behaviors.

Acculturation has been shown to have negative influences over time on immigrants' health status beginning from the time of their arrival in the United States (Clough et al., 2013) and to have subsequent effects on breast cancer survival disparities among Asian Americans (Gomez et al., 2010; Le et al., 2019). However, this study showed inconsistent results regarding the associations between acculturation status and attitude toward general health checkups, breast health knowledge, and perceived barriers to mammograms in both age groups. For example, women who were presumed to be more acculturated because of higher levels of English proficiency, longer lengths of stay in the United States, and use of English at home were shown to be nonadherent to mammogram recommendations or general health checkups. Similarly, Stan et al. (2022) demonstrated that SES and acculturation did not influence Asian

TABLE 8. Predictors of Having Mammograms as Recommended for Group Aged 40 Years or Older (N = 17)

Variable	OR	95% CI	p
Attitude toward health checkups	1.793	–	1
Education level	1	–	1
Language used at home	–	–	1

CI—confidence interval; OR—odds ratio
Note. Nagelkerke R^2 = 0.925

American women's adherence to mammography screening recommendations, further highlighting the complex nature of acculturation among Asian American populations.

Acculturation may encompass more than the congruency of an immigrant's attitudes, beliefs, and behaviors with those of the dominant society in their adopted country, and the concept may need to be further examined with a broader lens in future studies (Kwok et al., 2012b; Spector, 1991). For instance, immigrants may retain certain attitudes, beliefs, and behaviors regardless of their length of stay in the United States. In addition, their dominant society may not change despite being in their adopted country; thus, their health practices may not change. The Asian American identity encompasses people with diverse languages, cultures, birth countries or regions, and socioeconomic or sociopolitical backgrounds. To better understand how immigrants' backgrounds intersect with breast health practices and beliefs, targeted approaches are required to look at disaggregated population data (Eden et al., 2023).

Regarding SES and women's breast health attitudes, this study found that breast health knowledge and fatalistic views toward breast cancer, perceived barriers to mammograms, employment status, and healthcare access were associated with the younger group's attitude toward general health checkups. In addition to employment status and healthcare access, higher education levels were also associated with higher levels of breast health knowledge in the younger group. Education level and healthcare access were associated with perceived barriers to mammograms among the younger group. However, the landmark series addressed the breast cancer burden among Asian American populations and further emphasized the unique literature findings that higher SES, higher education level, and greater healthcare

access may not be the main factors affecting women's mammogram adherence (Eden et al., 2023).

Limitations

The study's generalizability is limited because of its convenience and snowballing sampling methods and because most participants were aged younger than 40 years. It may not represent Myanmar American immigrant women residing in geographically isolated areas. This study also did not collect participants' geographic regions with their demographic characteristics. Because of their unique social determinants of health, it is possible that the survey did not reach those with limited access to the internet or computers, with limited technological knowledge, or with limited English language proficiency. Some scoring rubrics for acculturation and SES metrics were not in a continuous line from high to low, but rather used only to convey those data for coding purposes. For example, the highest value for employment did not correspond to full-time employment, and it is unclear whether Myanmar and English spoken in the home would correspond to a higher level of acculturation than English only. Although SES and acculturation are complex and not fully understood in the literature, this may have confounded correlation analyses for these variables. In addition, this study used a self-report survey, which may lead to over- or under-reporting and recall bias. Finally, this study was conducted when many people faced pandemic-related challenges, which may have negatively affected participants' healthcare perceptions and practices.

Implications for Nursing

Based on a similar study with Chinese American populations, it was anticipated that some quantitative findings would be related to the participants' length of stay in the United States (Lee-Lin et al., 2012). Factors like (a) length of stay in the United States, (b) levels of acculturation, (c) participants' prior beliefs and practices before immigration, (d) situations surrounding the reasons for immigration, and (e) availability of social support systems on arrival to the United States will need to be examined in future studies with larger samples and a broader scope of acculturation. In addition, the impact of cultural, religious, and language barriers can intersect with breast health perspectives and equity among Myanmar American immigrant women, so these variables need additional exploration.

The study findings underscored the need for further research with disaggregated Asian American

populations, such as Myanmar American immigrant women, to address healthcare disparities and inequities. This study was a part of a mixed-methods study; this approach allowed the researcher to gain deeper insights to make sense of the quantitative data. There is a significant need to conceptualize future research to understand the multidimensional immigrant experience and the interconnection between their past experiences and diverse sociocultural and sociopolitical backgrounds.

Survey tools in the languages of the targeted populations are needed to reach a broader range of participants. Trust in their own communities is deeply rooted in Myanmar American immigrant women; thus, community health workers may be able to bridge the gaps between researchers and these underrepresented Asian American subgroups in the future. Finally, the perspectives and roles of healthcare providers, particularly those of Myanmar heritage, should be explored to help decrease breast health disparities and improve Myanmar American immigrant women's breast health–promoting behaviors. Future studies to gain insight into the perspectives and roles of healthcare providers with Myanmar heritage and the communication and interaction between healthcare providers and women among this population are needed to decrease breast health disparities, improve understanding, and enhance breast health awareness and mammography screening adherence within the Myanmar American community.

Conclusion

Knowledge gained from this study has set the stage for understanding Myanmar American immigrant women's experience in terms of their breast health knowledge and cancer screening beliefs from a culturally congruent perspective. This descriptive study, which was the first of its kind with Myanmar American immigrant women, not only fills a knowledge gap but also provides a basis for future studies of breast health behaviors and outcomes among this population. These findings underscore the critical need for disaggregated data exploring the unique perspectives of Myanmar American immigrant women, which can further explain their negative attitude toward general health checkups, less accurate breast knowledge, more fatalistic views toward breast cancer, and more perceived barriers to mammograms. To discover solutions to the problem of significantly lower breast cancer early detection rates among Asian American women, additional research focusing on Asian American subgroups and their unique characteristics and backgrounds is critical.

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