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Breast cancer experience and survivorship among Asian Americans: A systematic review

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Abstract

Introduction—Breast cancer is the most common cancer in Asian American women, and the number of Asian American breast cancer survivors is rapidly increasing. Although Asian Americans are one of the fastest growing and most heterogeneous ethnic groups in the United States, limited data exist in regard to their breast cancer experience and survivorship.

Methods—A systematic review of the breast cancer experience literature was conducted and included studies of Asian Americans or their subgroups as a major category of study participants. Of the 125 studies reviewed, 10 qualitative studies, 10 quantitative studies, 5 studies that used a mixed-method approach, and 1 intervention study met the criteria for inclusion.

Results—Qualitatively, Asian Americans reported unmet physical and emotional needs and challenges during survivorship. Quantitative studies consistently found that socioeconomic status, cultural health beliefs, immigration stress, acculturation level, English proficiency, social support, and spirituality influence Asian American breast cancer patients' health behaviors and health-related quality of life (HRQOL). Studies also revealed significant variation in breast cancer reaction and HRQOL within Asian American subgroups.

Conclusions—Although research on Asian American breast cancer experience and survivorship is sparse, we concluded that Asian Americans experience disrupted HRQOL following breast cancer diagnosis and treatment, interwoven with their cultural and socio-ecological system, and that programs focused on improving cancer survivorship outcomes among this ethnic minority group are limited. Most studies have concentrated on the West coast population, and there is significant underrepresentation of longitudinal and intervention studies. Implications for study design, measurement, and future research areas are also included.

Implications for Cancer Survivors—The results highlight a need to understand ethnic differences and to take into account social, cultural, and linguistic factors in breast cancer survivorship experiences among Asian American subgroups as a means to develop culturally relevant and linguistically appropriate interventions designed to improve HRQOL.

Keywords

survivorship; breast cancer; Asian Americans; literature review

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INTRODUCTION

Breast cancer is the most common form of cancer among women of all racial and ethnic groups and the second leading cause of cancer death in the United States [1]. Although the incidence rate of breast cancer has been declining among other U.S. populations, the incidence rates are increasing dramatically for specific Asian American subgroups [2, 3]. Despite advances in the early diagnosis and treatment of breast cancer and increasing numbers of Asian American breast cancer survivors [4], fewer studies have focused on the breast cancer experience of Asian American as compared to Caucasian and African American women [5, 6]. This gap in knowledge is attributed to challenges in overcoming language barriers, differences in socio-cultural backgrounds, a lack of available resources, and stereotypes about positive health profiles in the Asian American community, all of which contribute to cancer health disparities in the Asian American population [7–9]. Breast cancer demands significant physical and mental adjustment and disrupts patients' quality of life [10]. The diagnosis and management of breast cancer might be especially challenging for Asian Americans in light of their culturally specific beliefs about cancer, limited access to linguistically appropriate medical services, a low level of acculturation, and economic difficulties [11, 12]. Because Asian Americans are one of the fastest growing and most heterogeneous ethnic groups in the U.S., and because Asian Americans have a large presence among first-generation immigrants and underserved groups with low literacy and limited medical care access, it is important to understand the breast cancer experiences and outcomes of breast cancer survivors among this group.

Health-related quality of life (HRQOL) is a commonly used framework to evaluate the impact of cancer and its treatment on cancer survivorship. Ashing-Giwa's Contextual Model of HRQOL provides a structure that expands the traditional HRQOL framework by including cultural and socio-ecological dimensions [13]. Guided by the Contextual Model of HRQOL, we aimed primarily to review the research conducted to date and to identify knowledge gaps in the current Asian American breast cancer survivorship literature. The Contextual Model has eight dimensions: four individual-level dimensions and four system-level dimensions. The individual-level contextual dimensions consist of individual-level factors and perceptions in regard to the experience of cancer survivorship, including physical, emotional, and medical-related factors, as well as health practice and medical adherence. The system-level dimensions include selected contextual factors external to the individual that are demonstrated to impact on the survivorship experience, including demographic and socio-ecological variables (i.e., socio-economic status and social support), cultural variables (i.e., language, acculturation, health belief, and spirituality), and health care system variables (i.e., health care access and communication and satisfaction with provider). The Contextual Model of HRQOL was used as a framework for summarizing the findings of this review. Attention was focused on Asian American ethnic subgroups that may account for differences in their responses to breast cancer. Given the paucity of research on this population, we searched for intervention studies in addition to qualitative and quantitative studies. Future research areas and direction are discussed in the context of the review findings.

METHODS

Data Sources and Search

We conducted a systematic review of the English language literature to locate studies that described the breast cancer patient's experiences, reported HRQOL outcomes, or evaluated the interventions in terms of their potential to improve the survivorship experience for Asian American women in the United States. According to the U.S. Census, the term "Asian" refers to people having origins in any of the countries from the Far East, Southeast Asia, or the Indian subcontinent. In addition to nationalities, Asian groups also include ethnic terms. In identifying studies of Asian Americans with breast cancer for this review, we included both immigrants from Asian countries to the U.S. and Americans of Asian descent. Four search engines, PubMed, Google Scholar, PsychoInfo, and Web of Science, were searched to identify literature published between January 1995 and February 2013. We used a search strategy that combined the terms of each of the three concepts relevant to our research objective: Concept One: breast cancer experience, breast cancer management, or breast cancer survivorship; Concept Two: Asian, Chinese, Korean, Japanese, Vietnamese, Filipino, Cambodian, Malaysian, Pakistan, Thailand, Indian; and Concept Three: qualitative interview, quantitative survey, or intervention. Reference sections of relevant review articles and included studies also were scanned to identify additional eligible studies. Dissertations, book chapters, and conference abstracts were excluded.

Study Selection and Data Extraction

Title and abstracts were reviewed by the first author to determine eligibility for inclusion in this review. Inclusion criteria for articles were: (1) qualitative or quantitative research study that examined the needs, experience, or HRQOL-related factors or research on an intervention to improve patient outcomes; (2) provided data on Asian Americans or Asian American subgroup breast cancer survivors, from newly-diagnosed up to unlimited years post-diagnosis; (3) research conducted in the United States.

Of the 125 studies that were identified and reviewed, 26 studies met our criteria. Studies were coded by the first author on 13 predefined categories previously employed in a review study on HRQOL in Hispanic breast cancer survivors [14]. The second author reviewed all 26 studies and corresponding coding. Disagreements were resolved by consensus or reference to the third author.

RESULTS

See Table 1 for socio-demographic and cancer-related descriptive data on each study's sample and Table 2 for information on research design and a summary of findings. The 26 identified studies included: 10 qualitative studies, 10 quantitative cross-sectional studies, 5 mixed-methods studies that used both qualitative and quantitative approaches, and 1 intervention pilot study. Of all the studies, 16 reported their findings from 5 identical or overlapping samples. A total of 14 studies included multi-ethnic samples as a means to explore differences among Asian American and Asian American subgroup, Caucasian, African, and Hispanic survivors. However, we discuss only Asian American-specific results in this review, including 12 studies focused exclusively on Asian Americans or Asian American subgroups. The majority of the studies (n=22) were exclusively conducted with or included participants from California. The sample sizes of Asian American participants in the 10 qualitative studies ranged from 9 to 70 women with two studies focused exclusively on the Chinese population. Among the 10 quantitative studies, the sample size of the Asian American population ranged from 47 to 206, with one study focused exclusively on the Korean population. The sample size for Asian Americans among the 5 mixed-method studies ranged from 22 to 206 (n=206 was only for the quantitative part of the Lim et al.'s study [15]), with one study focused exclusively on the Chinese population. The only intervention study identified in this review was a pilot study of an expressive writing intervention among Chinese American breast cancer survivors (n=19) [16]. Among the 26 studies, most women had early-stage breast cancer, and their diagnosis duration varied, with some newly diagnosed samples (< 1 year) and some longer-term survivors (> 4 years). A total of 18 studies allowed participants to complete the study in their native languages. Six studies assessed and reported acculturation levels among participants.

Results are organized by the Contextual Model of HRQOL's individual-level and system-level dimensions. We reviewed qualitative and quantitative findings within each dimension. Any comparisons between Asian Americans and other ethnic groups were documented within each dimension. To take into account the diversity and heterogeneity among Asian American subgroups, an additional section, differences among Asian American subgroups, was included. Intervention and longitudinal studies were summarized in an individual section as well.

Individual-level Dimensions

Physical Health—Fatigue, irritability, memory loss, decreased energy level, recurring pain, and decreased QOL were reported as side effects of breast cancer treatment by Asian American women [17]. Wang et al. reported that Chinese American women, including both immigrants and U.S.-born Chinese, experienced pain and side effects from radiation, surgery, and hormonal therapy [18]. In particular, Chinese immigrant women were less likely to have their physical issues resolved, as compared to Caucasians and U.S.-born Chinese, due to their cultural norms [18]. Among a Chinese and Vietnamese sample, 94% reported experiencing symptoms with high prevalence of severe intensity [19]. In terms of physical QOL, one study conducted in Hawaii reported that Filipino women have worse outcomes in terms of nausea/vomiting and symptom count than do Japanese, Hawaiian, and Caucasian women [20]. However, compared with Hispanics in another study, Asian American women expressed fewer physical difficulties caused by breast cancer treatments [21].

Emotional Health—The findings related to emotional health included anxiety, distress, fear of recurrence, and mental/emotional health QOL. Asian American women reported their sadness and a reluctance to recall their breast cancer experience, their anxiety during exams, and their fear of cancer recurrence and death [17]. Another qualitative study that examined HRQOL after treatment among Chinese and Caucasian Americans found that women's emotional concerns about recurrence or metastasis were caused by physical distress [18]. Through an interview approach, Lee et al. found that Chinese and Korean American women reported that negative emotions are barriers that impede good HRQOL [22]. Emotional well-being was found to be directly associated with physical QOL in a cross-sectional quantitative study that included Asian American women [23]. In addition, Asian American women reported similar levels of depressive symptoms and had the same levels of rehabilitation problems following treatment as did the Caucasian women [24].

Ashing-Giwa and Lim reported that worry about the conditions getting worse or cancer recurrence as well as unhappiness or a lack of peacefulness were reported as the most bothersome concerns across all ethnic breast cancer survivors in their study, including Asian Americans [25]. Among a multi-ethnic sample, Filipino women had significantly lower emotional functioning than did Caucasian, Japanese, or Hawaiian women [20]. However, compared with Hispanics, Asian American women expressed less emotional distress [21]. Similarly, another quantitative study reported that, compared to Caucasians and African Americans, Asian Americans showed the second-lowest level of emotional well-being, while Hispanic women exhibited the lowest level [26]. Although there were documented deficiencies in their emotional outcomes, Asian American breast cancer survivors sought psychosocial services at a significantly lower rate than did Caucasians [27, 28] and exhibited greater difficulty in seeking emotional help from family, friends, and health professionals [23].

Cancer-specific Medical Factors—No study was identified that examined the effect of medical factors such as disease characteristics and treatment types on Asian American breast cancer survivor's experiences or HRQOL. It was found, however, that Asian American women chose lumpectomy and adjuvant therapy at a significantly lower rate than did Caucasian women [27, 29].

Health Efficacy—

Health efficacy is the ability to engage in behaviors to promote good health, prevent disease, and negotiate optional treatments and preferences with providers. In qualitative studies, Asian Americans reported a lack of knowledge about breast cancer and its treatment and a lack of resources in regard to managing survivorship [29]. In regard to treatment decision-making communication, Asian American women also were less likely to be assertive and were mostly reliant on physicians to make breast cancer treatment decisions [30]. Limited English proficiency was also reported as a major barrier to understanding breast cancer information and treatment-decision making [30].

In terms of health promotion behaviors during survivorship, Lim et al. found that both Asian and Hispanic American women reported changes in their diet patterns; further, Asian Americans were more likely to increase their physical activity levels and enhance their stress management skills [21]. Similarly, Paxton et al. reported that more Asian American breast cancer survivors met the guidelines for physical activity than did Hispanic or African American survivors [31]. Further, health beliefs, doctor-patient relationship, and shared decision making were influential factors in regard to adopting healthy lifestyle practices during survivorship among Asian American breast cancer survivors [15]. Information on alternative therapies and relaxation skills also was reported as needed by Chinese and Korean American women during breast cancer survivorship [22].

System-level Dimensions

Demographic and Socio-ecological Factors—

Consistent with the existing literature on the breast cancer experience, younger women had higher distress levels among Asian American breast cancer survivors [24]. As for socioeconomic (SES) status, studies documented that Asian American immigrants or those with lower acculturation reported a lower level of education and income than did U.S.-born Asians with breast cancer [18, 32, 33, 34]. Further, SES indicators (income and education) were found to influence life burden and physical QOL among a multi-ethnic sample, including Asian American breast cancer survivors [23]. Similarly, survivors with lower income level, lower education level, or who were unemployed were likely to have less-favorable emotional well-being [25].

Within the framework of the Contextual Model, social support is proposed to mitigate the negative impact of cancer on HRQOL. Social support is recognized as central for recovery, coping, and good QOL by Asian American breast cancer survivors [17, 29, 35], but they reported a lack of social support [22], had greater difficulty requesting help from others, and sought psychosocial services at a significantly lower rate than did Caucasians [27, 28]. Support group services were reported as desired [36] and utilized [29, 39]; but compared with Caucasian women, Asian American women have smaller social network size and composition from limited sources of support [27, 28].

Cultural Factors—

Our review found a consistent relationship between the health of Asian American breast cancer survivors and their acculturation level, which is determined by place of birth, length of residency, or English proficiency. For example, the Filipino women in the Gotay et al. study were less likely to have been born in the U.S. and had lower emotional and physical outcomes than did the other groups [20]. Kim et al. also found lower HRQOL among less-acculturated women in a mixed-Asian group [34]. Other studies found that highly acculturated Asian American breast cancer survivors received greater social support [33, 37], which is recognized as central to good HRQOL by Asian American women [32].

Further, foreign-born Chinese women are more likely to define QOL in terms of financial security as compared to U.S.-born Chinese women, who frame QOL in terms of interpersonal relationships [35]. English proficiency was reported as a significant factor in symptom distress and HRQOL among a Chinese and Vietnamese American group [19].

Culture also influences how Asian Americans react to breast cancer and perceive their health. Asian American women reported feelings of self-consciousness and inadequacy, and perceived cancer as a stigma, not openly discussable with their families [17, 35]. Further, Asian cultural and gender socialization dictates that Asian American women be self-sacrificing and nurturing of their husband and family, serving as caregivers with obligations, not as dependents [29, 38]. Compared with Latinas, Asian American women were more likely to believe that their family and cultural background plays a role in their health [21]. Tsai et al. reported that traditional cultural beliefs persistently influence how Chinese Americans interpret and cope with breast cancer in their given sociocultural environment, as in their study, acculturation was found to be related to health beliefs, social support, and life stress [33].

Spirituality also was an important influence among Asian Americans. Family closeness, traditional Chinese values, religion, and Chinese support groups were recognized as spiritual resources among Chinese immigrant women with breast cancer [39]. In multi-ethnic samples, Levine et al. found that more Asian American women reported that they were spiritual [40], were more likely to pray, felt closer to God, and felt more compassion and forgiveness than did Caucasian women [41]. Further, women who prayed were able to find more positive contributions from their cancer experience than those who did not pray [41]. Consistent with the findings of Ashing-Giwa and her colleagues, Asian American women who participated in focus groups believed in the positive effects of prayer and used prayer to cope with their breast cancer [17, 29].

Healthcare System Factors—A consistent finding among qualitative studies is that Asian Americans generally reported limited English proficiency as a barrier to accessing health information and quality of health care as well as to doctor-patient communication and medical decision making [17, 29, 30, 42]. Identified healthcare system issues included insurance and medical costs, limited time with providers, and lack of medical translation services [17, 29, 30, 42]. In particular, Quach et al. reported that Asian American immigrants with breast cancer perceived discrimination by health care providers as a result of these immigrants' having low English proficiency, limited education, as an immigrant (outsider), and lower economic status [42]. In contrast, in Ashing-Giwa et al.'s focus group study, most of the women did not feel that they were discriminated against or treated differently when accessing care but did feel that their health insurance, financial situation, and knowledge of their illness affected the quality of care received [29]. In quantitative research, the doctor-patient relationship was found to be significantly associated with social support [23] and with adopting healthy lifestyle practices [15].

Differences among Asian American Subgroups

In regard to comparisons between Chinese and other Asian American subgroups, two studies reported the differences in the type of preferred feedback and in social network utilization between Chinese and Japanese breast cancer patients [24, 28]. Chinese women tend to need less advice and generally receive social support from family. Japanese women need less positive feedback, have smaller social network size, and are more likely to obtain social support from co-workers and friends, less so from family. Yi et al. also documented that Chinese women reported lower symptom distress and higher HRQOL as compared with Vietnamese women [19].

Chinese and Korean women exhibited different reactions to breast cancer, according to Ashing-Giwa et al. [29]. In terms of the relationship between communication and HRQOL, self-efficacy in doctor-patient communication was associated with HRQOL for Chinese women, while family communication was related to HRQOL for Korean women [43].

Further, in a quantitative study of a mixed group of Asian American breast cancer survivors, lower HRQOL was observed among Korean women [34].Using a mixed-methods approach, Lim et al. found that the cultural health beliefs of Korean women has a different association with the doctor-patient relationship than it does among other Asian American subgroups [15].

Intervention and Longitudinal Studies

In the only intervention study that we identified in the literature, Lu et al. evaluated the potential benefits of an expressive writing intervention among Chinese-speaking breast cancer survivors [16]. Despite the small sample size (n=19), the findings indicated that participants reported high compliance and satisfaction, and the intervention was associated with improved HRQOL outcomes. No longitudinal studies that assessed survivorship-related outcomes among Asian American breast cancer survivors were found in our search.

DISCUSSION

Summary of Findings

The present review is the first to summarize the survivorship literature among Asian American breast cancer survivors using a Contextual Model of HRQOL. A total of 26 studies were included, of which 16 used five identical or overlapping samples [15, 17, 21–23, 25–30, 33, 34, 38, 40, 41]. Synthesizing the findings is challenging due to the variability among the study approaches and sample sizes as well as the cultural diversity of the Asian American subgroups.

Asian American women with breast cancer have significant physical needs, and they are less likely to have them resolved, as compared to Caucasians and U.S.-born Asian Americans [17, 18]. Commonly reported breast cancer treatment side effects, including fatigue and pain, were experienced by Asian American women and required attention from health care providers [17–20]. However, because healthcare services are obtained through a combination of government and private insurers, Asian Americans, especially those who recently immigrated and who have limited English proficiency and are not familiar with U.S. healthcare policies, may have difficulty navigating the medical system and interacting with providers. As highlighted in the Institute of Medicine report [44], cancer patient follow-up care is usually fragmented and without a strategy to assist patients in navigating survivorship. For Asian Americans with limited English proficiency and limited insurance coverage, effective survivorship communication with oncologists and primary care physicians is extremely challenging. Thus, the significant expansion of the Asian American breast cancer survivor population in the coming years will require better-coordinated and patient-centered follow-up care. Future research is needed to examine the cultural relevance of survivorship care plans developed for Asian American populations.

The studies in our review indicate that Asian American breast cancer survivors reported levels of emotional distress and fear of recurrence comparable to those of Caucasian women [17, 24]. Further, although cultural practices, such as spirituality and family closeness, may have benefits for breast cancer survivorship, they also can have a negative impact on how Asian Americans react to breast cancer and seek help. Asian Americans with breast cancer reported sources of distress that included feeling ashamed and stigmatized as well as a need to engage in self-sacrificing behavior to avoid disrupting harmony [35, 38]. Some Asian American women reported a lower rate of seeking professional services for psychosocial problems than did Caucasian woman [24], while other studies reported that Asian American women did utilize support group services [29, 39] when available and expressed their desire for such resources when asked [36]. These findings challenge the stereotype of limited acceptability of support groups among Asian Americans. It may be that the disparity is caused by the unavailability of mental health care services that are culturally competent for these Asian Americans in need. Further, culturally-relevant and faith-based cancer support groups have been adopted in addressing the needs of breast cancer survivors from other ethnic/racial minority groups, including African and Hispanic Americans [45, 46]. In Australia, Kwok et al. recently reported that a culturally sensitive and linguistically appropriate support group was well received by Chinese Australian breast cancer patients [47]. They concluded that one of the most crucial elements that improved the support group attendance rate and engagement was the provision of culturally sensitive information corresponding to women’s beliefs and norms. Therefore, given that coping strategies vary among cultural groups, providing culturally- and linguistically-appropriate support groups that are accessible and congruent with the values and beliefs of Asian American subgroups is critical.

Limitations in the Existing Literatures and Future Directions

We noted significant gaps in the existing literature: First, only a small number of studies included adequate samples of Asian American subgroups despite the fact that differences in breast cancer survivorship responses and outcomes are present among subgroups of Asian American women [15, 19, 20, 27–29, 34, 38, 43]. This could be due, in part, to the challenges of recruiting immigrant women -- particularly if immigration status serves as a barrier to women’s willingness to participate in research --although this issue was not raised in any of the studies reviewed. In addition, few studies have specifically examined the survivorship experiences of American born Asian populations. More research is needed to explore potential intragroup differences within the larger Asian American breast cancer population, especially in light of the projections that Asian Americans will become one of the fastest growing and most heterogeneous ethnic groups in the United States [48]. Second, 16 studies reported on identical or overlapping samples (five datasets), which may have inflated the study findings in the literature. Third, the majority of the studies were conducted in California, which limits the generalizability of the findings to non-California populations. Research on breast cancer survivorship for populations in regions of the U.S. beyond California, including other Asian-concentrated states such as New York and New Jersey is warranted. Fourth, most of the studies used translated measures/questions, however, as individuals from different Asian American subgroups may interpret questions differently or have different response patterns that might impact on the measure’s cross-cultural utility [49, 50], we need to assess if the available instruments are culturally appropriate and are valid measures in the Asian American breast cancer population.

There was no published study utilizing a longitudinal design identified by this review; thus, longitudinal studies are critically needed to assess change in Asian American breast cancer survivor’s experiences and HRQOL over time. This will provide valuable information on how and when to best meet their needs throughout the cancer trajectory. In addition, research is needed to assess long-term survivorship outcomes among Asians (5 or more years since the diagnosis of cancer [51]), as almost all studies in this review included women within 5 years of diagnosis. Research on the changes in needs and in HRQOL following cancer diagnosis, during treatment, at treatment completion, and during short-term and long-term survivorship among Asian American subgroups is warranted, particularly to understand when Asians are at risk for poorer HRQOL and how interventions might be beneficial. For example, insurance, language, and barrier-to-care issues might be especially prevalent during early diagnosis. Fear of recurrence is likely to be more pertinent later in cancer survivorship.

Further, there is a growing body of work on nutrition and exercise for Caucasian breast cancer populations. Future studies are needed to investigate how positive dietary change or increased level of physical activity affects survivorship among Asian American women with breast cancer. In addition to research on individual-level interventions that take into account the demographics usually associated with the availability of community and institutional resources, we also need research that focuses on system-level influences to reduce disparities and improve HRQOL among Asian American survivors. For example, more cancer screening and surveillance services need to be accessible to Asian Americans in their community and more Asian language interpreters need to be available in the health care system. Further, to increase participant engagement in research, researchers need to employ culturally relevant approaches (community-based participatory research) and novel technologies (mobile health programs), particularly in intervention studies. In particular, data show that Asian Americans have a higher rate of Smartphone adoption than all other ethnicities [52]. Use of mobile technologies to facilitate breast cancer management among Asian American women has great potential to reduce the disease burden and health disparities.

Our findings should be interpreted in the context of the limitations of this review. First, although we searched four major bibliographic databases, we may have overlooked some studies that were published in smaller journals that were not indexed in traditional sources. Second, given that the Asian American sample size in multiethnic studies was relatively small, finding results specific to Asian or Asian American subgroups was challenging.

CONCLUSIONS

To the best of our knowledge, the present review is among the first to synthesize the literature on Asian American breast cancer survivors' experience and outcomes, based on the Contextual Model of HRQOL. Although Asian American breast cancer survivorship research is emerging, the lack of longitudinal and intervention research as well as research on Asian subgroups within a heterogeneous population strongly suggests future research efforts are needed in these areas. Based on the existing literature, we concluded that Asian Americans experience disrupted HRQOL following breast cancer diagnosis and treatment, interwoven with their cultural and socio-ecological system, and that intervention studies focused on improving cancer survivorship outcomes among this ethnic minority group are limited. Some studies in this review reported that Asian Americans would like to attend breast cancer support groups and receive survivorship-related information about stress management and relaxation if such resources were accessible to them [22, 39]. Although we have a growing body of literature on the efficacy of psychosocial stress management interventions among samples primarily of Caucasian women [53, 54], research is critically needed to determine whether these interventions can be culturally adopted for Asian Americans or Asian subgroups. We reported findings focused on specific domains of the Contextual Model of HRQOL and suggest potential targets amenable to intervention development and testing. Evidence suggests that Asian Americans are at higher risk for poor HRQOL following a breast cancer diagnosis, compared to non-Hispanic and Caucasian women, and that they have limited resources. We recognize that there is a critical need to build on the existing research as a means to develop culturally tailored and linguistically appropriate interventions to improve HRQOL and to reduce health disparities among this rapidly growing ethnic minority population.

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Table 1

Demographic Data for studies included in the review

Authors	Study Sample	Age	Cancer Stage	Time Since Diagnosis or Surgery	Education	Income	Sample location	Acculturation level/language preference/place of birth	Asian ethnic subgroup difference/focus
Kagawa-Singer et al (1997)	n = 11 Chinese American, n = 11 Japanese American, n = 12 Anglo American	Chinese: M = 47 years (34–74), Japanese: M = 59.6 years (44–75), Anglo: M = 46.7 years (36–68), Japanese group was significantly older.	6 stage I, 22 stage II, 5 stage III, 2 stage IV	6 months to 3 years post-treatment	5 high school, 30 some college	Not reported	Los Angeles	Interviews were conducted in native languages but instruments were used in English. 10 (90%) Chinese were low acculturated while only 1 (9%) Japanese was low-acculturated. The Japanese were significantly more acculturated than the Chinese.	Difference between the responses of the Chinese and Japanese American were also found.
Wellisch (1999)	n = 18 Chinese-American, n = 15 Japanese-American, n = 13 Anglo-American	Chinese M = 50.4 (12.1), Japanese M = 59.9 (12.5), Anglo M = 47.1 (8.7). Japanese women were significantly older than the other groups.	35 stage I & II, 11 stage III & IV. The Chinese group and the Japanese group varied significantly by stage of disease.	M = 2.7 years since diagnosis for all groups	No significant ethnicity differences and closely parallel to the U.S. Census records on Asian American women's educational levels.	Not reported	Los Angeles	Interviews were conducted in participants' native languages. Chinese group had lower acculturation level than the Japanese group.	The difference between Chinese-Americans and Japanese-Americans in terms of social network sizes and type of support feedback needed was observed.
Chiu (2001)	n = 15 Chinese immigrants	M=47 years, range=33–67	3 stage I, 7 stage II, 2 stage III, 3 stage IV	M = 4 years (1–13.5) since diagnosis	4 less than college, 8 college graduate, 3 post-college degrees	Not reported	New York, San Francisco	All immigrants interviewed in Chinese.	Chinese focus
Gotay (2002)	n = 59 Japanese origin, n = 11 Filipino origin, n = 19 Hawaiian, n=35 Caucasian	Japanese origin M = 61 years, Filipino origin M = 46.8 years, Hawaiian M = 57.4 years, Caucasian M = 59.7 years. Filipino breast cancer patients were significantly younger than Caucasian and Japanese patients.	Not reported, various across all stages	Diagnosed between 4 and 6 months.	No significant ethnic differences	Not reported	Hawaii	Need to understand English for participation. Filipino breast cancer patients were less likely than other groups to have been born in the U.S.	Filipino had lower outcomes than other Asian subgroups in this study.
Ashing-Giwa et al., (2003)	*n*=10 Korean monolingual, n=11 Chinese (Cantonese) monolingual, n=13 Mixed Asian bilingual	Korean monolingual M = 56 (31– 78), Chinese (Cantonese) monolingual M = 56 (42– 81), Mixed Asian bilingual M = 53 (40–65)	1 stage 0, 12 stage I, 11 stage II, 2 stage III, 1 stage IV, 7 unknown. Half of the Chinese women did not know the stage of their cancer.	Korean monolingual M = 1 year (0–3), Chinese (Cantonese) monolingual M = 5 years (1–17), Mixed Asian bilingual M = 4 (0–21)	Not reported	Not reported	California	The Korean and Chinese groups were less acculturated and interviewed in their native languages.	Different emerging themes were discussed between Chinese and Korean groups.
Kagawa-Singer and Wellisch (2003)	*n*=18 Chinese, n=15 Japanese, n=13 Anglo	Chinese M = 50.4 (12.1), Japanese M = 59.9 (12.5), Anglo M = 47.1 (8.7). Japanese women	35 stage I & II, 11 stage III & IV. The Chinese group and the Japanese group	M = 2.7 years since diagnosis for all groups	No significant ethnic differences and closely parallel to	Not reported	Los Angeles	Interviews were conducted in participants' native languages. Chinese	Some differences of emerging themes between Japanese

Authors	Study Sample	Age	Cancer Stage	Time Since Diagnosis or Surgery	Education	Income	Sample location	Acculturation level/language preference/place of birth	Asian ethnic subgroup difference/focus
		were significantly older than the other groups.	varied significantly by stage of disease.		the U.S. Census records on Asian American women's educational levels.			group had lower acculturation level than the Japanese group.	and Chinese groups were presented.
Ashing-Giwa et al., (2004)	*n*=34 Asians (Korean monolingual n=11, Chinese monolingual n=10, and Asian bilingual n=13) *n*=24 African American *n*=13 Caucasian *n*=26 Latina	Asian M = 55 years, range=31–81	1 Asian stage 0, 12 Asian stage I, 11 Asian stage II, 2 Asian stage III, 1 Asian stage IV, 7 Asian stage unknown. Half of the Chinese women did not know their cancer stage.	Asian M = 5 years	Not reported.	Estimated as lower-middle to lower income.	Los Angeles	The Korean, Chinese and Latina groups were less acculturated and interviewed in their native languages.	N/A
Wong-Kim et al., (2005)	n = 30 Chinese women (15 foreign-born and 15 U.S.-born)	M = 54 years	Included all stages.	Diagnosed within 24 months.	The foreign-born women reported a lower level of education than the U.S.-born sample.	The foreign-born women reported a lower level of income than the U.S.-born sample.	San Francisco Bay Area	Foreign-born participants resided in the U.S. for less than 15 years.	Chinese focus.
Kim et al., (2006)	n=85 Chinese, n = 39 Filipino, n = 29 Korean, n=26 Japanese, and n=27 other Asians	M = 54 years	37 stage 0, 80 stage I, 70 stage II, 17 stage III	M = 2.9 years since diagnosis. Japanese Americans had significantly longer numbers of years (M=3.8) than Chinese (M=2.7) and Korean Americans (M=2.6).	37 high school or less, 52 as much as an associate degree, 117 college or more. Korean American women had lower education level compared with other groups.	49 <=25,000, 37 25,000-45,000, 49 45,000-75,000, 61 > 75,000. Chinese Americans who reported survey in Mandarin and Korean Americans had lower income levels compared with other groups.	Southern California	Some participants chose their native languages (Mandarin or Korean) as the preferred survey language. Acculturation levels were significantly lower for Korean Americans, followed by Chinese Americans compared with other groups.	Asian subgroup differences exist.
Levine et al., (2007)	*n*=52 Asian/Pacific Islander, n=36 African American, n=52 Caucasian, n=21 Latina	M = 57 years for all women	For all women: 10 stage 0/DCIS, 77 stage I, 75 stage II	Asian M = 2.2 years since diagnosis, significantly longer than the Caucasian group (M = 1.7 years).	For all women: 3 less than 12 years, 10 high school graduate, 41 some college, 49 college graduate, 47 post graduate	Not reported	San Francisco Bay Area	Some interviews were conducted in Chinese. 36 participants were born in Asian/Pacific Islands.	N/A
Lim et al., (2009)	n = 206 Asian, n=183 Latina	Asian M = 54 years	Asian: 37 stage 0, 80 stage I, 70 stage II, 17 stage III	Asian: M = 2.9 years since diagnosis	Asian: 9 < high school, 28 = high school, 169 > high school. Asian Americans reported higher educational levels compared to Latinas.	Asian: 51 < 25,000, 41 25,000-45,000, 41 45,000-75,000, 63 > 75,000. Asian Americans reported higher income levels compared to Latinas.	Southern California	No significant difference in the acculturation level between Latinas (M=2.65) and Asian Americans (M=2.58). Some participants answered survey in their native languages (Spanish, Korean, and Chinese).	N/A

Authors	Study Sample	Age	Cancer Stage	Time Since Diagnosis or Surgery	Education	Income	Sample location	Acculturation level/language preference/place of birth	Asian ethnic subgroup difference/focus
Lim and Yi (2009)	n = 51 Korean Americans (47 breast cancer and 4 gynecologic), n = 110 Koreans (72 breast cancer and 38 gynecologic)	Korean Americans: 1 30–39 years, 10 40–49 years, 22 50–59 years, 18 60 or older	Korean Americans: 14 stage 0, 15 stage I, 13 stage II, 7 stage III	Korean Americans years since diagnosis: 9 less than 1, 28 2–5, 14 6 or more	Korean Americans: 8 less than high school, 20 high school or some college, 23 college graduate or higher	Korean Americans: 27 less than 25,000, 25 25,000 and more	Korean Americans recruited from Southern California.	Korean Americans: 50 birthplace in Korea and 49 primary language is Korean.	Korean focus.
Levine et al., (2009)	*n*=52 Asian/Pacific Islander, n=41 African American, n=53 Caucasian, n=23 Latina	M = 58 years (range from 31–83) for all women	For all women: 10 stage 0/DCIS, 81 stage I, 78 stage II	M = 2 years since diagnosis for all women. Time since diagnosis for Caucasians was significantly lower than Asian/Pacific Islander women.	For all women: 4 less than 12 years, 11 high school graduate, 44 some college, 52 college graduate, 48 post graduate.	Not reported	San Francisco Bay Area	Some interviews were conducted in Chinese. 36 participants were born in Asian/Pacific Islands.	N/A
Ashing-Giwa and Lim (Psycho-Oncology) (2010)	n =185 Asian, n=154 European, n=121 African, n=166 Latina	M = 52 years (range from 29–69) for all women	85.5% had been diagnosed with breast cancer in stages I or II.	M= 2.9 years since cancer diagnosis for all women	Not reported	Not reported	Southern California	Some participants answered survey in their native languages (Spanish, Korean, and Chinese).	N/A
Ashing-Giwa and Lim (Qua Life Res) (2010)	n =206 Asian, n=179 European, n=135 African, n=183 Latina	M = 55 years (range from 29–91) for all women	11.1% stage 0, 36.7% stage I, 38.5% stage II, 13.7% stage III. Asian Americans were more likely to have been diagnosed at earlier stage.	M= 3 years since cancer diagnosis for all women	14.4% < high school, 10.8% high school, 74.8% > high school for all women	29.5% < 25,000, 21.8% 25,000-45,000, 21.7% > 45,000-75,000, 27% > 75,000 for all women	Southern California	Some participants answered survey in their native languages (Spanish, Korean, and Chinese).	N/A
Yi et al., (2011)	n = 72 Chinese, n = 25 Vietnamese, n=1 half Chinese half Vietnamese	M = 56 years	87% stages I-IIIA	M = 28 months for all women	Chinese Americans (68%) were more likely to complete high school than Vietnamese Americans (28%).	Vietnamese Americans (86%) were more likely to have income less than 50,000 than Chinese Americans (65%).	Houston, Texas	Interviews were conducted either in Cantonese or Mandarin Chinese, Vietnamese or English. 33% of the whole sample reported having the ability to understand English well and among these, 91% were Chinese Americans.	Chinese and Vietnamese focus. Vietnamese reported lower outcomes than Chinese.
Tsai et al., (2011)	n = 107 Chinese immigrant women for the quantitative survey, n = 15 women for in-depth interview	M = 52.6 years for 107 sample	18 stage 0, 41 stage I, 41 stage II, 8 stage III for 107 sample	29.5 months since diagnosis for 107 samples. 4–52 months since diagnosis for 15 sample	18 high school, 23 post high school, 44 college, 22 graduate. Higher level of acculturation was associated with a more favorable education status.	16 < 15,000, 24 15,000-45,000, 14 45,001-75,000, 12 > 75,000. Higher level of acculturation was associated with a more favorable income status.	Southern California	Interviews were conducted in Mandarin, Taiwanese or English.	Chinese
Ashing-Giwa and Lim (Oncology	n =206 Asian, n=179 European, n=135	M = 55 years (range from 29–91) for all women	11% stage 0, 36% stage I, 38% stage II, 13% stage III, 1% not reported	M= 3 years since cancer diagnosis for all women	14% < high school, 11% high school,	28% < 25,000, 21% 25,000-45,000, 21% > 45,000-75,000,	Southern California	Some participants answered survey in their native languages	N/A

Authors	Study Sample	Age	Cancer Stage	Time Since Diagnosis or Surgery	Education	Income	Sample location	Acculturation level/language preference/place of birth	Asian ethnic subgroup difference/focus
Nursing Forum) (2011)	African, n=183 Latina				75% > high school for all women	26% > 75,000 for all women, 4% not reported		(Spanish, Korean, and Chinese).	
Lu et al., (2012)	n = 19 Chinese women	M = 54 years, range from 31 – 83 years	80.9% had stage I or II diagnosis.	80.9% were within 1 to 4 years' post-diagnosis.	95.2% completed high school	47.6% had income level less than 15,000	Southern California	Expressive writing in Mandarin and/or Cantonese. The average number of years in the United States was 19 years (8–35 years).	Chinese
Quach et al., (2012)	n = 17 Chinese (Cantonese and Mandarin speakers), n = 9 Japanese, n = 8 other Asians, n = 9 African Americans, n = 9 non-Hispanic Whites, n = 8 Latinas	Chinese Cantonese speaker: M = 61.3 (36–78), Chinese Mandarin speaker: M = 54.3 (45–71), Japanese: M = 56.1 (36– 84), Other Asians: M = 57.8 (40–74)	34 stage I, 20 stage II, 6 stage III and IV	18=1 year since diagnosis, 42=2–3 years since diagnosis	15 < =12 years, 32 some college, 13 post-college	15 < 30,000, 9 30,000-59,999, 5 60,000-79,999, 18 >= 80,000, 13 Don't know or refused.	San Francisco Bay Area	31 Foreign-born. Chinese and Latina groups were conducted in their native languages.	N/A
Lee at al., (2012)	n = 4 Chinese, n = 5 Korean women, 3 oncologists	M = 54 (44– 46) years	2 stage I, 5 stage II, 1 stage III, 1 stage IV	M = 1.9 year since diagnosis	2 high school or less, 7 college graduate or above	1 < 20,000 2 20,000-49,999, 4 75,000-99,999, 2 > 100,000	Washington DC Metropolitan Area	M = 18.6 years lived in the U.S. 7 responded as speaking English well or fluently.	Chinese and Korean focus
Wang et al., (2012)	n =37 Chinese immigrant, n = 7 U.S.-born Chinese, n = 27 non-Hispanic White	M = 57.7 (38–73) years for all women	59.2% stage 0, 26.8% stage I, 2.8% stage II, 11.3% don't know	Months since primary treatment completion: 28.2% 0–12 months, 40.9% 13–24 months, 15.5% 25–36 months, 15.5% 36–45 months	25.4% Grade 1–12, 7.0% Vocational/ technical school, 18.3% Some college, 31.0% College graduate, 18.3% Master's or higher degree. Chinese immigrants had a higher percentage (51.3%) of education level below college compared to U.S.-born Chinese and non-Hispanic White.	16.9% < 30,000, 14.1% 30,000-49,999, 12.6% 50,000-69,999, 18.4% 70,000-99,999, 23.9% > 100,000, 14.0% don't know. Chinese immigrants had a higher percentage (32.4%) of annual household incomes below $30,000 compared with U.S.-born Chinese and non-Hispanic White.	Northern California	M = 23.1 years in the U.S. for Chinese immigrant group. Some focus groups and interviews were conducted in Chinese.	Chinese
Paxton et al., (2012)	n = 96 Asian American, n = 118 African American, n = 165 Hispanic, n = 2634 White	Asian: Median = 52 years	Asian: 41 Stage I, 54 stage II, 1 stage IIIA	Asian: Median time = 2 years since diagnosis	Asian: 9 high school or less, 16 some college, 71 college graduate or more	Not reported	California, Arizona, Oregon, Texas	Not reported	N/A
Lim et al., (2012)	n = 206 Asian for the survey, n=11 Korean	M =54	Survey: 37 Stage 0, 108 Stage I, 100 stage II, 20 stage III	Survey: M=3 years	Survey: 9 less than high school, 28 high school graduate, 169	Survey: 51 $25,000 or lower, 41 $25,000-$45,000, 51 $45,001-	California		Korean BCS might have a different pattern of

Authors	Study Sample	Age	Cancer Stage	Time Since Diagnosis or Surgery	Education	Income	Sample location	Acculturation level/language preference/place of birth	Asian ethnic subgroup difference/focus
	American for the focus groups				more than high school	$75,000, 63 $75,000 or higher			association in the doctor-patient relationship compared with the cultural health beliefs of other AA BCS.
Lim and Paek (2012)	n=86 Chinese American, n=71 Korean American	M=55.3	Chinese: 10 Stage 0, 22 Stage I, 45 stage II, 9 stage III; Korean: 1 Stage 0, 34 Stage I, 23 stage II, 12 stage III	Chinese: M=3.2 years; Korean: M=3.9 years	43 high school or less, 114 higher than high school	57<$25,000, 25 $25,000-$45,000, 26 $45,000-$75,000, 37 < $75,000	Los Angeles, California	Length of stay in the U.S.: M=23.9 years, survey was in native language.	Structural paths varied between Chinese American and Korean American BCS.
Lee et al., (2013)	n= 4 Chinese American, n=5 Korean American	M =53.7 years	8 Stage I-III	All but one were within 5 years since diagnosis	7 college graduate and above	6 above $75,000	Maryland	All immigrants	Chinese and Korean focus

Table 2

Methodological data for studies included in the review

Authors	Analyses of Data/Study type	Measures or Interview Topics	Results Summary
Kagawa-Singer et al., (1997)	Qualitative (structured interview) and Quantitative (cross-sectional)	CARES, ASSIS - Arizona Social Support Interview Schedule, Suinn-Lew Self-identity Acculturation scale, Weiner-Adler health symptoms, CES-D, Asian American Breast Cancer Study Questionnaire, and Qualitative Questionnaire of Breast Cancer Experience.	Asian American women chose breast conserving therapy and adjuvant therapy at a significantly lower rate than the Anglo American women. Asian American women reported using different modes of help-seeking behavior but sought professional assistance for psychosocial problems at a significantly lower rate than Anglo women.
Wellisch (1999)	Qualitative (structured interview) and Quantitative (cross-sectional)	ASSIS - Arizona Social Support Interview Schedule, ISSB-Inventory of Social Supportive Behaviors, Qualitative Questionnaire of Breast Cancer Experience.	Asian Americans have greater difficulty requesting or accepting help from others than Anglo-American women post breast cancer.
Chiu (2001)	Qualitative (in-depth interview)	Cultural-spiritual resources	Chinese immigrant women experience their spiritual resources through family closeness, traditional Chinese values, religion, alternative therapy, art, prose and literature and Chinese support groups.
Gotay (2002)	Quantitative (cross-sectional)	QLQ-C30 (quality of life measure)	Filipino women reported significantly worse outcomes on emotional functioning, nausea/ vomiting, and symptom count compared with other ethnic groups.
Ashing-Giwa et al., (2003)	Qualitative (Focus group)	Attitudes, beliefs, knowledge about breast cancer, health care issues, quality of the patient-doctor relationship, and cultural and socio-ecological issues	Issues regarding lack of knowledge about breast cancer, medical cost, time with doctor, cultural beliefs about illness, gender role and family obligations, and language barriers.
Kagawa-Singer and Wellisch (2003)	Quantitative (cross-sectional) and Qualitative (semi-structured interview)	Qualitative breast cancer experience questionnaire, CARES, Suinn-Lew acculturation scale, Revised Explanatory Model interview guide	Compared with Euro-American women, Asian American women were expected to be self-sacrificing and nurturing of husband and family, and had a goal of harmony over intimacy.
Ashing-Giwa et al., (2004)	Qualitative (focus group)	Attitudes, beliefs, knowledge about breast cancer, health care issues, quality of the patient-doctor relationship, and cultural and socio-ecological issues	Asian Americans discussed how their feelings about their body affected their QOL. Asians discussed feeling self-conscious, inadequate, self-confidence lost, and cancer as a stigma. Asians reported decrements in QOL and emphasized attitude affects recovery. Language barriers and needing more time with doctors were also reported.
Wong-Kim et al., (2005)	Qualitative (semi-structured interview)	Cancer beliefs, the meaning of a breast cancer diagnosis, treatment effects, faith and spirituality, fate and fatalism, the effect of cancer on patient's family role, cultural perceptions of QOL	Women reported breast cancer as a stigma and interpersonal support as central to a good QOL. Foreign-born Chinese women referenced wealth more frequently while U.S.-born Chinese women indicated friendship when describing QOL.
Kim et al., (2006)	Quantitative (cross-sectional)	FACT-B and Breast Cancer Subscale (HRQOL), short acculturation scale,	The study observed lower HRQOL among less acculturated Asian American breast cancer survivors

Authors	Analyses of Data/Study type	Measures or Interview Topics	Results Summary
		Urban life stressor scale, Social support scale.	and among Korean American survivors, which might be due to language capacity and other socio-ecological characteristics.
Levine et al., (2007)	Qualitative (in-depth interview)	Examined the roles of spirituality and spiritual support among diverse women with breast cancer.	Main themes were: 1) God as a comforting presence, 2) Questioning faith 3) Anger at God, 4) Spiritual transformation of self and attitude towards others/ recognition of own mortality, 5) Deepening of faith, 6) Acceptance, 7) Prayer by self. The highest percentage of women who said they were spiritual was Asian/Pacific Islander group.
Lim et al., (2009)	Quantitative (cross-sectional)	FACT-G (HRQOL), Health behaviors instrument, Multidimensional health locus of control (cultural health beliefs, Acculturation scale, Interpersonal aspects of care subscale of the Adherence Determinants Questionnaire (doctor-patient relationship), shared treatment-related decision)	Asian American breast cancer survivors express less emotional distress and less physical difficulties than Latinas. Asian Americans were more likely to believe that their family situation and cultural background plays a role in their health. Both groups reported changes in their diet patterns but Asian Americans were more likely to increase their physical activity levels and stress management skills.
Lim and Yi (2009)	Quantitative (cross-sectional)	SF-36 (QOL), Brief symptom inventory-18 (psychological distress), Quality of Life-Cancer Survivor (QOL-CS)-Spiritual well-being subscale, Medical Outcomes Study (MOS) social support survey, religious involvement questionnaire	The mediating effect of social support between spirituality and QOL for Korean Americans was observed.
Levine et al., (2009)	Quantitative (cross-sectional) and Qualitative (in-depth interview)	FACIT-B (QOL), FACIT-Sp (spirituality), ISEL (social support), SNI (social networks), POMS (mood), Benefit finding scale. Qualitatively examined the roles of spirituality and spiritual support among diverse women with breast cancer.	Quantitative data showed that women who prayed were able to find more positive contributions from their cancer experience than those who did not pray. The interviews showed that African American and Asian/Pacific Islander women were more likely to pray and felt closer to God and felt more compassion and forgiveness than Caucasian women.
Ashing-Giwa and Lim (Psycho-Oncology) (2010)	Quantitative (cross-sectional)	FACT-B emotional well-being sub-domain, Life stress scale, SF-36, family burden items, work burden and capability items	Findings demonstrated that family and work burdens defined the functional strain. Asian Americans showed the second lowest emotional well-being score while Latina Americans exhibited the lowest score.
Ashing-Giwa and Lim (Qua Life Res) (2010)	Quantitative (cross-sectional)	FACT-B (physical well-being), RAND 36 item Health Survey general health perception sub-domain, SF-36 pain sub-domain, FACT-B emotional-well-being subscale, Medical outcomes social support survey, Life stress scale, Interpersonal aspects of care subscale of the Adherence Determinants Questionnaire, Comfort in health care system items, Diagnostic care delay items.	Psychological well-being and life burden were directly associated with PQOL across all ethnic groups. SES indicators significantly influenced life burden and PQOL among ethnically diverse BCS. Asian Americans showed a significant relationship between patient-doctor relationship and perceived social support.
Yi et al., (2011)	Quantitative (cross-sectional)	English proficiency subscale of Southeast Asians acculturation scale,	English proficiency was a significant factor in symptom

Authors	Analyses of Data/Study type	Measures or Interview Topics	Results Summary
		Edmonton Symptom Assessment Scale, Quality of Life instrument-Breast Cancer	distress and QOL. 94% of the study sample experienced symptoms and that many of these were of severe intensity. The study sample also reported lower levels of QOL compared with other studies. Vietnamese American women reported higher symptom distress and lower QOL compared with Chinese Americans.
Tsai et al., (2011)	Quantitative (cross-sectional) and Qualitative (semi-structured interview)	Acculturation scale from Marin et al, Health belief scale from Ashing-Giwa et al., social support measure, Urban life stress scale. Interview topics: experience of adapting to breast cancer, life experience after immigration across the trajectory of breast cancer adjustment, ethnic identity and daily cultural practices.	Acculturation was related to health beliefs, social support, and life stress among Chinese American immigrant women. Life stresses derived from immigration bring additional difficulties for immigrant women living with breast cancer.
Ashing-Giwa and Lim (Oncology Nursing Forum) (2011)	Quantitative (cross-sectional)	FACT-G emotional well-being subscale, SF-36 mental health subscale	Indicators of less favorable emotional outcomes were: 1) Latina American survivors, 2) Lower income earners, 3) Less-educated survivors, 4) Unemployed survivors, 5) Survivors who cannot speak English, 6) younger survivors
Lu et al., (2012)	Pilot study of expressive writing intervention	FACT-B, FACIT-F, Physical symptom checklist, PANAS, Posttraumatic Growth Inventory, PTSD symptom scale, IES-intrusion subscale	Expressive writing is associated with long-term improvement of health outcomes among Chinese American breast cancer survivors and participants perceived the intervention to be appropriate and valuable.
Quach et al., (2012)	Qualitative (23 interviews and 7 focus group)	Diagnosis, treatment, discrimination - medical setting, discrimination-other setting, coping and social support, immigrant stress	Among Asian immigrants, participants reported experiencing institutional and personally mediated overt types of discrimination, including lack of access to quality and readily available translation services. Low English proficiency perceived as a barrier for information seeking and doctor-patient communication.
Lee at al., (2012)	Qualitative (in-depth interview)	Language barrier, cultural differences, decision making	For women with limited English proficiency, language was the greatest barrier to understanding information and making treatment-related decisions. Asian American women are less likely to be assertive and are mostly reliant on physicians to make treatment decisions.
Wang et al., (2012)	Qualitative (semi-structured interview and focus group)	QOL after treatment, follow-up care, social support and self care	Breast cancer survivors experienced pain and side effects from radiation, surgery, and hormonal therapy. Physical distress caused emotional concerns about recurrence or metastasis. Chinese immigrant women were less likely to have their issues resolved compared to non-Hispanic White and U.S.-born Chinese because of cultural norms. Some Chinese immigrants turned to Traditional Chinese Medicine for relief or accepted the idea that physical distress was part of survivorship.

Authors	**Analyses of Data/Study type**	**Measures or Interview Topics**	**Results Summary**
Paxton et al., (2012)	Quantitative (cross-sectional)	SF-36 health survey (HRQOL), Women's health initiative physical activity instrument, Body Mass Index	More Asian American and White survivors met the guidelines for physical activity than African American and Hispanic survivors.
Lim et al., (2012)	Quantitative (cross-sectional) and qualitative (focus group)	Survey measures: Short Acculturation Scale, Multidimensional Health Locus of Control, Adherence Determinants Questionnaire Interpersonal Aspects of Care Subscale, Health Behaviors Scale including diet, exercise and stress management, and Treatment Decision Making Scale. Same topics for focus group	Inter-intrapersonal health beliefs, doctor-patient relationship and shared decision making were positively associated with adopting healthy lifestyle practices.
Lim and Paek (2012)	Quantitative (cross-sectional)	Family Adaptability and Cohesion Evaluation Scales-Family Communication Scale, Decisional Conflicts Scale, Perceived Efficacy in Patient-Physician Interaction Scale, SF-36	Self-efficacy in patient-physician communication was directly associated with HRQOL for Chinese Americans; family communication was related to HRQOL for Korean Americans.
Lee et al .,(2013)	Qualitative (in-depth interview)	Quality of life, cultural factor and coping with negative emotions	Lack of social support, limited resources, negative emotions are barriers for HRQOL. Low emotional help seeking with family, friends and health professionals. Alternative therapies and relaxation skills information is needed.