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Predictors of Quality of Life in Cancer Survivors: White and Asian American Women

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Abstract

The purpose of this study is to compare the pathways through which multiple contextual factors influence the quality of life in Asian American and White women living with cancer. This is a secondary analysis of the data from 95 Asian American women and 113 White women. The data were analyzed using hierarchical multiple regression analyses and structural equation modeling. Multiple factors explained higher percent of total variances of the quality of life scores in Whites compared with that in Asian Americans.

Keywords

Asian American; cancer; quality of life; feminist; predictors

The National Cancer Institute estimated that over 11.7 million Americans with a history of cancer are currently alive (American Cancer Society, 2012; Gustafson et al., 2001). In 2011, about 1,596,670 new cancer cases were expected to be diagnosed and about 571,950 Americans are expected to die of cancer; this makes cancer the second most common cause of death in the U.S., exceeded only by heart disease (American Cancer Society, 2012). Although recent statistics show that cancer morbidity and mortality rates of Whites have decreased, those of ethnic minorities have increased or stayed the same (American Cancer Society, 2012). Asian Americans and Pacific Islanders have lower 5-year survival rates than Whites (American Cancer Society, 2012). Whites are reported to be more likely to receive aggressive treatment for cancer (Kagawa-Singer, Welisch, & Durvasula, 1997).

Asian cancer survivors are more likely to report a lower quality of life compared to Whites (Lim & Yi, 2009; Yi, Swartz, & Reyes-Gibby, 2011). The association of poor quality of life with fewer sources of support was also higher for ethnic minorities, including Asian Americans, than for Whites (Chlebowski et al., 2005; Lim & Yi, 2009; Yi et al., 2011). In

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Tu et al.'s study (Tu et al., 2005), Chinese American cancer patients reported a lack of support despite perceived high family support. Ashing-Giwa et al. (2004) reported that family support was often perceived to promote coping and well-being, but might also foster delay in care seeking and self-deprecation in Asian Americans. Wellisch et al. (1999) asserted that Asians were taught to be self-sufficient and sought help only from within the family if they could not cope with the situation on their own and that seeking help outside of the family was weak and perceived as shameful and disgraceful to the family. These statistics and findings demonstrate a definite need for support in Asian American women cancer survivors. However, outside of these findings on the association of low social support to low quality of life of Asian American women cancer survivors, very little is known about what are the predictors of the quality of life in Asian American women cancer survivors and how the predictors are different from those in White women cancer survivors.

From a feminist perspective, it is imperative to determine how multiple contextual factors interact and influence the quality of life in different ethnic groups of women cancer survivors in order to understand the intersectionality and multiplicity of the women's experience and provide adequate and appropriate care for them. Likewise, to fully understand the quality of life of Asian American women cancer survivors, it is important to consider multiple contextual factors that may different influence these women's quality of life as compared with other ethnic groups of women cancer survivors. For example, it is well known that Asians rarely complain about symptoms or pain, and delay seeking help until symptoms become severe (Ashing, Padilla, Tejero, & Kagawa-Singer, 2003; Chang & Zhang, 2003; Chen, 2005; Kagawa-Singer, Wellisch, & Durvasula, 1997; Matsuno et al., 2011). These cultural attitudes come from Asian cultural gender norms embedded in these women's daily life (e.g., women as wise mothers and good wives, women as caregivers, family as the highest priority of the women's life). These cultural norms and subsequent cultural ignorance and stoicism embedded in Asian American women's distress reporting may influence or be influenced by multiple contextual factors that affect Asian American women's quality of life. Furthermore, since Asian Americans include more than 71 sub-groups within them, it is difficult to generalize all Asian cultures into one. In addition, there are other predictors such as socioeconomic class, sexuality, geographical areas, and sociopolitical contexts that place additional dimensions to the women's quality of life differently from other ethnic groups.

To confirm our feminist assertion that multiple contextual factors differently influence the quality of life in different ethnic groups of women cancer survivors, our purpose for this study was to compare the pathways through which multiple contextual factors influenced the quality of life in Asian American and White women cancer survivors. This was a secondary analysis of the data from a larger study that determined ethnic differences in cancer pain experience among four major ethnic groups of cancer patients in the U.S. (Hispanics, Non-Hispanic [N-H] Whites, N-H African Americans, and N-H Asian Americans). The specific aims and hypotheses that we addressed through this study are:

1. Explore differences in the quality of life between Non-Hispanic (N-H) White and N-H Asian women cancer survivors (Aim #1).

N-H Asian women cancer survivors report lower quality of life scores than N-H White women cancer survivors do (Hypothesis 1).

2. Explore the associations of selected factors to the quality of life in each ethnic group (Aim #2).

The associations of selected factors with the quality of life scores are significantly stronger in N-H White women cancer survivors than in N-H Asian women cancer survivors (Hypothesis 2).

3. Examine the pathways through which multiple predictors influence the quality of life in each ethnic group (Aim #3).

The pathways through which multiple predictors influence the quality of life scores in N-H Asian women cancer survivors are different from those in N-H White women cancer survivors (Hypothesis 3).

Theoretical Basis

In this study, we used a feminist perspective to theoretically guide the analysis. Here, gender and ethnicity were considered significant social constructions rather than biological phenomena that influenced and/or were influenced by women cancer survivors' interactions with their environments, subsequently influencing their quality of life. Indeed, in feminist thought, gender and ethnicity are considered important characteristics that circumscribe women's experience (Nedelsky, 1991). In other words, the study's focus on ethnic differences in the quality of life is from this feminist perspective that emphasizes the influences of gender and ethnicity on their quality of life.

Since Spelman's "inessential women," multiplicity of women's experience due to multiple contextual factors has been emphasized in feminist thought (Nedelsky, 1991). As mentioned above, from a feminist perspective, especially from intersectionality theory, it is imperative to understand the complex interrelationships among multiple contextual factors that influence the quality of life in different ethnic groups of women cancer survivors because this understanding will provide directions for future therapeutics for ethnic minority women cancer survivors. According to intersectionality theory, women's experience could be better understood when we consider how various multiple biological, social and cultural factors including gender, race, class, ability, sexual orientation, and other axes of identity interact and influence the women's experience at multiple levels (Knudsen, 2006). Intersectionality theory also emphasizes that these multiple contextual factors influence women's oppressed experience interrelatedly—not independently—while generating a dynamic system of combined multiple forms of discrimination (Knudsen, 2006). Kaschak (2011) also claimed in her mattering map theory that a number of things simultaneously impact human mind to understand all and the understanding requires revisiting and multiplicity of perspectives. Thus, we assumed intersectionality and multidimensionality of the women's quality of life in their daily lives, and this secondary analysis was based on a feminist assumption that ethnic differences in the quality of life result from the women's constant and dynamic interactions with their complex environment (Knudsen, 2006; Kaschak, 2011). For example, Asian American women cancer survivors in a clinical setting may feel difficulty in

expressing their symptoms to White health care providers and fail to get adequate symptom management (Ramer et al., 1999). In this case, the women's low quality of life due to inadequate management of symptoms could come from their interactions with their environment rather than from their biological differences in cancer experience. Furthermore, there could be multiplicity of the women's experience even within Whites or Asian Americans because of the influences of other contextual factors such as sub-ethnicity, geographical regions, and socioeconomic class.

Finally, the women's self-reports on their quality of life were used as the sole source of the data in the original study. As feminists trust people's own descriptions of their experience (Hall & Stevens, 1991), we depended on the patients' self-report data on their quality of life as accurate and reliable source. In addition, in the original study, we used multiple measurement scales to disclose women's own experience because little is known about gender and ethnic differences in cancer pain experience and because the reliability and validity of existing measurement scales among multi-ethnic groups of cancer patients are not well-known. However, there has been concern over how the instruments developed mainly among White cancer survivors could adequately measure the quality of life of ethnic minority cancer survivors including Asian American women cancer survivors (Aaronson et al., 1993; Guillemin, Bombardier, & Beaton, 1993). Thus, we needed to consider possible cultural inappropriateness and inadequacy of existing instruments measuring the quality of life.

The Symptoms Management Model by Dodd et al. (2001) also guided this analysis. The model was developed to understand symptoms and guide selection of symptom management strategies within interrelations among personal, environment and health/illness domain. The model consists of three dimensions: (a) symptom experiences such as perception, evaluation, and response, (b) symptom management strategies, and (c) outcomes such as quality of life, costs, and mortality. All three dimensions are interrelated and are influenced by the person domain such as demographic characteristics, the environment domain such as cultural and social variables, and the health/illness domain such as health statuses and risk factors.

In order to explore the influences of multiple contextual factors on quality of life in cancer survivors, variables in the study were adopted from the Symptoms Management Model. Among three dimensions of the Symptoms Management Model, the symptom experience was conceptualized with pain experience and symptom distress. The symptom management strategies and the outcomes of the Symptoms Management Model were conceptualized with the usage of pain medications/cancer treatments and quality of life, respectively. Also, the personal domain of the Symptoms Management Model was linked with demographic characteristics of cancer survivors, and the environment domain of the model was linked with a cultural factor, ethnicity. The health/illness domain was linked with perceived general health statuses and access to health care service.

Methods

This was a secondary analysis of the data from 480 cancer patients in the United States, which was a part of a larger study (Authors, 2007) that determined ethnic differences in

cancer pain experience. The Institutional Review Board of the institution where the researchers were affiliated approved of the study.

Setting and Participants

In the original study, the participants were recruited through Internet cancer support groups, community cancer clinics, and community cancer support groups. In the community settings, ten community consultants who were leaders of the community cancer clinics and cancer support groups helped in recruiting participants and providing hard copies of questionnaires to potential participants as needed. A total of 480 cancer survivors who met the inclusion criteria participated in the original study. The inclusion criteria were as follows: cancer survivors (a) who were aged over 18 years old; (b) who could read and write English; and (c) who reported their ethnic identity as Hispanic, N-H African American, N-H Asian American, and N-H White according to the NIH guideline. For this study, only the data of 208 cancer survivors including 95 Asian American women and 113 White women were retrieved from the original data set because we aimed to compare the quality of life between Asian American and White women cancer survivors. Power analyses were conducted with G*power 3.1 program. The study was sufficiently powered and the sample size was sufficient for the study.

Instruments

Background characteristics—To measure background characteristics, five questions on age, gender, education, employment status, and family income were used. In addition to a question about the participant's country of birth, self-reported ethnicity was identified using the ethnic identity question required by the National Institute of Health's guideline. Self-reported health status was measured by participants' rating of their own general health. To identify the access to health care, we asked one question on where the participants usually went when they were sick or needed advice about their health. Four items about cancer status (primary cancer site, stage of cancer, previous medical treatment, and usage of pain medication) were also used.

Self-reported cancer pain experience—The Brief Pain Inventory-Short Form (BPI-SF), one of the multidimensional cancer pain assessment tools, was used to measure the self-reported cancer pain experience during the past week. The BPI-SF consists of four items related to pain intensity and seven items related to pain interference on function. The BPI-SF pain scores were determined by adding four items on the intensity of pain using a numeric rating scale (0=no pain to 10=pain), with seven items on interference in the participants' life due to pain using another numeric rating scale (0=not interfere to 10=completely interfere). The range of the total scores was 0 to 110, with a higher score indicating more severe pain. Cronbach's alpha of the original version of the BPI ranged from 0.77 to 0.91 (Cleeland & Ryan, 1994). Validity and reliability of the BPI-SF have also been established across different cultures and languages (Dicle, Karayurt, & Dirimese, 2009; Ger, Ho, Sun, Wang, & Cleeland, 1999; Saxena, Mendoza, & Cleeland, 1999). Cronbach's alpha of the BPI-SF in this study was 0.96.

Symptoms accompanying cancer pain—The Memorial Symptom Assessment Scale-Short Form (MSAS-SF)(Chang, Hwang, Feuerman, Kasimis, & Thaler, 2000) was used to measure the past week's experience of 32 symptoms commonly associated with cancer in two dimensions: (1) severity and (2) distress. The severity of each symptom is scored from 0 to 4 ranging from "no symptoms" to "very much". Distress is rated on a 5-point (0–4) likert scale (not at all=0, a little bit=1, somewhat=2, quite a bit=3, and very much=4.0). The MSAS-SF included the global distress index (GDI) (4 psychological symptoms, and 6 physical symptoms), the physical symptom distress score (PHYS) (12 prevalent physical symptoms), and the psychologic symptom distress score (PSYCH) (6 prevalent psychological symptoms). The number of symptoms is derived from screening for the presence of 32 symptoms. The MSAS-SF score was determined by summing the ratings of the 32 distress symptoms (range 0 to 128). Cronbach's alpha of the MSAS-SF ranged from 0.76 to 0.87 and the validity and reliability of MSAS-SF have been established among ethnically diverse populations (Chang et al., 2000). Cronbach's alpha of the MSAS-SF in this analysis was 0.93.

Quality of life—The Functional Assessment of Cancer Therapy Scale (FACT-G) consists of 33 items with five domains assessing physical well-being (PWB)(7 items), social/family well-being (SFWB)(7 items), relationship with doctor (RWD)(2 items), emotional well-being (EWB)(5 items) and functional well-being (FWB)(7 items)(Cella et al., 1993). The FACT-G score was determined by adding the ratings of 33 items that were used to measure quality of life (possible range=0 to 162). Higher scores mean better quality of life. Cronbach's alpha of the FACT-G was 0.92 (Cella et al., 1993) and the validity and reliability of the FACT-G have been established across diverse ethnic populations (Mullin et al., 2000; Yu et al., 2000). Cronbach's alpha of the FACT-G was .70 in the original study (Authors, 2007) and .70 in this secondary analysis.

Data Collection Procedures

In the original study, the data were collected using an Internet survey and pen-and-pencil questionnaires. When a potential participant visited the project website for the Internet survey, an electronic informed consent and self-administered questionnaires were provided through the Internet. Upon request, pen-and-pencil questionnaires were mailed to the community consultants, who distributed the questionnaires in person only to those who were identified as cancer patients. The questionnaires were provided with hard copies of the same informed consent form on the project website. At the completion, community consultants retrieved all the questionnaires in person, except for five that were mailed directly to the research team by the research participants.

Data Analysis Process

In order to explore differences in the quality of life between Non-Hispanic (N-H) White and N-H Asian women cancer survivors (Aim #1) and explore the associations of selected factors to the quality of life in each ethnic group (Aim #2), hierarchical multiple regression analyses were performed. Prior to conducting hierarchical multiple regression analyses, multicollinearity (high correlations among variables) was checked, but no sign of multicollinearity was found. In the first step of the hierarchical regression analyses,

sociodemographic characteristics including age, religion, family income, education, and employment status were entered into the regression models. Only in the model for total participants (Aim #1), was the ethnicity entered into the first step with other sociodemographic variables. Then, health and illness status measured with both the perceived general health and access to health care were entered into the models in the second step. In the third step, symptom treatments including cancer treatments and usage of pain medications were entered into the regression model. Finally, the symptom experiences including the cancer pain scores measured with the BPI-SF and the symptom distress scores measured with the MSAS-SF were entered into the regression equations. All nominal or categorical variables were converted into dummy variables.

Structural equation modeling analyses, which are useful statistical techniques to test and estimate causal relationships, were performed to examine the pathways through which multiple predictors influenced the quality of life in each ethnic group (Aim #3). Then, the standardized path coefficients (that could identify significant pathways) and the model fit (that could estimate how well an estimated model fits the data) were evaluated.

Results

Background Characteristics

The background characteristics of the participants are summarized in Table 1. The mean age of the participant was 48.3 (SD 12.9) years, and about 40% of the participants answered that their family income was sufficient for essential family needs. Regarding the health and illness status, the mean perceived general health score was 3.2 (SD 1.1) on a five-point Likert scale, and about 64% of the participants did not use pain medications. Also, most of the participants (77.4%) were treated with the combined therapy (e.g., radiation therapy and chemotherapy).

The mean pain score was 34.0 (SD 27.8) and the mean symptoms distress score was 23.3 (SD 19.6). Additionally, the mean of the quality of life scores of the participants was 105.8 (SD 19.6).

The Factors Influencing the Quality of Life

Table 2 shows the results of the hierarchical regression analyses. The perceived general health score ($\beta = 5.09, p < .01$) and the pain scores ($\beta = -.30, p < .01$) were statistically significant predictors of the quality of life scores in the regression model for Asian American women. These predictors accounted for 29% of the total variance. In the model for White women, “more than sufficient family income for essential family needs” ($\beta = 12.96, p < .05$), the perceived general health score ($\beta = 6.86, p < .01$), the use of pain medication ($\beta = -8.93, p < .05$), and the pain scores ($\beta = -.24, p < .01$) were significant predictors of the quality of life scores. These predictors accounted for 54% of the total variance in the model for White women.

In the regression model for all participants, “sufficient ($\beta = 6.97, p < .05$) and more than sufficient ($\beta = 14.74, p < .01$) family income for essential family needs,” the perceived general health score ($\beta = 6.19, p < .01$), and the pain scores ($\beta = -.19, p < .01$) were significant

predictors of the quality of life scores. Ethnicity was a not significant predictor of the quality of life. These predictors accounted for 33% of total variance in the model.

Structural Equation Modeling on Quality of Life

The structural equation models with standardized path coefficients in each ethnic group are shown in Figure 1. In the structural equation models for both Asian American women and White women, the perceived general health had significant direct positive effect on the quality of life scores, and mediated the relationships between the symptom experience (the pain scores and the symptom distress scores) and the quality of life scores. Socioeconomic status had significant indirect effects on the quality of life through both the symptom experience (the pain scores and the symptom distress scores) and the perceived general health score in the models for both ethnic groups. The symptom experience also had a significant direct negative effect on the quality of life scores in the structural equation model for only White women.

About 18 percent of the quality of life scores in the model for Asian American women were explained by the considered variables while about 38 percent of those for White women were explained by the variables. The overall fit of each model was supported by the statistical standards.

Discussion

This study supported our feminist assertion of intersectionality and multiplicity of women's experience: multiple contextual factors differently influenced the quality of life in different ethnic groups of women cancer survivors. We found that the paths through which the predictors influenced the quality of life were different according to ethnicity. The findings supported that multiple factors including socioeconomic status, perceived health status, pain, and symptoms influenced the quality of life of White and Asian American women living with cancer. Among the multiple factors, the perceived general health had significant direct positive effect on the quality of life scores in both groups, and socioeconomic status had significant indirect effects on the quality of life in both groups. Yet, the multiple factors explained higher percent of total variances in the quality of life among White women compared with Asian American women. Also, the symptom experience had significant direct negative effect on the quality of life scores only in the structural equation model for White women.

The finding that multiple contextual factors influenced the quality of life in women living with cancer has been reported in the current literature (Awadalla et al., 2007; Browall, Ahlberg, Persson, Karlsson, & Danielson, 2008; Hack et al., 2010; Mols, Vingerhoets, Coebergh, & van de Poll-Franse, 2005; Richardson, Wang, Hartzema, & Wagner, 2007). However, the finding that the multiple factors explained higher percent of total variances in the quality of life among White women compared with Asian American women tends to be new. A plausible reason would be: the predictors were selected from an existing symptom management model that has been mainly developed in the populations who rarely included Asian American women except Thai women (Dodd et al., 2001).

The finding that the perceived general health had significant direct positive effect on the quality of life scores, and mediated the relationships between the symptom experience (the pain scores and the symptom distress scores) and the quality of life agrees with some studies (Awadalla et al., 2007; Fernandes & Kimura, 2010), but disagrees with others (Ashing-Giwa & Lim, 2010; Bull et al., 1999). The finding on the association of perceived general health to quality of life tends to be inconsistent in the literature. Awadalla et al. (2007) reported that “currently feeling sick” was a significant predictor of the quality of life of the patients with breast cancer and gynecologic cancer. Fernandes and Kimura (2010) reported that perceived health status was a main predictor of quality of life among women with cervical cancer. However, Bull et al. (1999) reported that general health perception was not a significant predictor of quality of life among women with recurrent breast cancer. Also, Ashing-Giwa and Lim (2010) reported non-significant association of the perceived health scores measured using the SF-36 to the quality of life scores measured using the FACT-G. A plausible reason for the inconsistent findings would be possible inadequacy and inconsistency of the instruments measuring quality of life that were used in the studies. As mentioned above, the instruments developed only among White cancer survivors would not be adequate to measure the quality of life of ethnic minorities including Asian American woman cancer survivors. Indeed, researchers have pointed out the difficulties in operationalizing the concept of quality of life since the quality of life is an “elusive concept approachable at varying level of generality from the assessment of societal or community wellbeing to the specific evaluation of individuals or groups”(Felce & Perry, 1995, p. 51). Furthermore, considering sub-ethnic diversities among Asian Americans and Whites, there is a certain concern related to cultural appropriateness and adequacy of the existing scales measuring the quality of life.

The finding that the symptom experience had significant direct negative effect on the quality of life scores only in the structural equation model for White women agrees with the literature (Lee et al., 2008). Lee et al. (2008) reported that symptoms due to therapies rather than therapies themselves influenced the quality of life of women treated with radiotherapy for breast cancer. Bull et al. (1999) reported that breast cancer patients with more physical symptoms reported poorer quality of life. Sarna (1993) reported that symptom distress was strongly correlated with quality of life among women with lung cancer.

The finding that the symptom experience did not have significant effect on the quality of life among Asian American women, yet, needs to be carefully interpreted. A plausible reason could be Asian American women’s tendency of not reporting and/or minimizing symptoms and/or pain due to their cultural attitudes and beliefs related to cancer (Ashing et al., 2003; Chang & Zhang, 2003; Chen, 2005; Kagawa-Singer et al., 1997; Matsuno et al., 2011). Indeed, the literature reports that Asian Americans shoulder unnecessary burden of cancer because they rarely complain about symptoms (especially psychological symptoms) or pain, delay seeking help until symptoms become severe, and rarely ask or get necessary support during the disease process due to their cultural values and beliefs (related to cancer, gendered roles, family support and obligations, and women’s health) and language barriers (Ashing et al., 2003; Chang & Zhang, 2003; Im, Lee, & Park, 2002; Kagawa-Singer et al., 1997; Matsuno et al., 2011). It is also well known that Asian patriarchal Confucian culture (where many Asian American women came from) has cultural norms of subordinate

women; the wife is confined to the home and bears all major household responsibilities, and women are raised to be wise mothers and good wives and to sacrifice themselves for their families and nations (St. Hill, Lipson, & Meleis, 2003). This cultural norm might make the women suffer under hidden exploitation and not give their attention to their symptoms and pain by praising the women who sacrifice themselves for their families and nations (St. Hill et al., 2003). Thus, there is a possibility that the symptom measurement among Asian American women might not accurately reflect their actual symptom experience. Furthermore, as mentioned above, there could be more than these factors that influenced the women's quality of life (e.g., sub-ethnic diversities, socio-economic class, geographical areas, and sociopolitical environmental contexts).

The finding that socioeconomic status had significant indirect effects on quality of life through both the symptom experience and perceived general health in both groups agrees with some studies on the quality of life of cancer patients (Awadalla et al., 2007; Mols et al., 2005; Sarna, 1993; Yu et al., 2000), but disagrees with others (Arndt, Stegmaier, Ziegler, & Brenner, 2006; Ashing-Giwa & Lim, 2010). The literature is inconsistent about the association of socioeconomic status with the quality of life. Awadalla et al. (2007) reported patients with higher education and better employment had higher quality of life. Mols et al. (2005) reported that financial difficulties are of particular concern for women with breast cancer and it influenced their quality of life. Yi et al. (2011) reported a negative association between income and symptom distress, but a positive association between income and quality of life among Vietnamese and Chinese American breast cancer survivors. However, Arndt et al. (2006) reported that sociodemographic factors including socioeconomic status had little impact on the quality of life among women with breast cancer 1 year after diagnosis. Asing-Gowa and Lim (2010) reported no significant association between socioeconomic status (standardized income) and quality of life among a multi-ethnic sample of breast cancer survivors.

The inconsistent findings on the predictors of the quality of life may also be due to the lack of comparative studies among different ethnic-groups. In most studies, the participants tended to be limited to Whites or a specific ethnic group, and very few comparative studies on quality of life among multi-ethnic groups of women living with cancer have been conducted (Ashing-Giwa, Tejero, Kim, Padilla, & Hellemann, 2007; Ashing-Giwa & Lim, 2010; Paxton et al., 2012). Furthermore, the few studies indicated certain ethnic differences in the women's quality of life and the predictors of the quality of life (Ashing-Giwa et al., 2007; Paxton et al., 2012). In the study reported in this paper, we also found ethnic differences in the women's quality of life and the predictors of their quality of life. However, these ethnic differences have rarely been considered in the studies on quality of life among women living with cancer. Also, intersectionality and multiplicity of women's experience have rarely been considered in the studies among cancer survivors.

This study had limitations mainly due to the fact that this was a secondary analysis. The sample size was pre-determined, and there was no control in the selection of the multiple factors. Also, as mentioned above, the symptom management model that was used to guide the selection of the predictors might have limitations in its application to Asian American

women. Furthermore, as discussed above, there may be limitations from the use of existing instruments that were developed and tested mainly among White cancer survivors.

Conclusion

This secondary analysis supported our assumption from a feminist perspective: multiple contextual factors differently influenced the quality of life in White and Asian American women and the paths through which the factors influenced the quality of life were different in each ethnic group. Based on the findings, we want to conclude this paper with the following implications. First of all, further studies of the differences in the predictors of the quality of life in different ethnic groups are needed with further cultural studies on possible reasons of the predictors. Second, more in-depth qualitative studies on multiple and complex contextual factors that influence the quality of life in different ethnic groups are needed to comprehensively understand the predictors of the quality of life in each ethnic group. As discussed above, the reason that symptom experience did not have effect on quality of life among Asian American women could be culture-bound, which needs further investigations. Through these studies, health care therapeutics that are based on the comprehensive understanding of the predictors could be developed. Third, to understand women's quality of life during their cancer experience, we need to develop a more comprehensive and culturally relevant model to explain the phenomenon. As discussed above, the predictors that were selected from one of the most frequently used models for symptom management (the symptom management model) could explain the quality of life in White women better than that in Asian American women. As discussed above, that may be due to the fact that the model was developed in the populations that rarely included Asian American women except Thai women. Thus, there is a definite need for development of a model that could explain the quality of life of Asian American women within their unique cultural contexts while considering sub-ethnic diversities among them and other contextual factors such as socioeconomic class, geographical areas, and sociopolitical environmental contexts. Finally, health care providers need to consider in their care for ethnic minority women cancer survivors that multiple and complex contextual factors might be the reasons for the women's low quality of life and need to assess the women's actual needs that are culturally circumscribed in their daily lives. In the assessment process of the women's needs, the different tendencies to report distress (including symptoms and pain) among White women versus Asian American women need to be considered. For example, health care providers need to further assess Asian American women's self-reports of distress (symptoms and pain) by asking more detailed in-depth questions on the quality, quantity, and frequency of their distress while considering these women's possible tendency of minimizing or not-reporting their distress.

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Figure 1. The associations of the predictors to quality of life in each ethnic group

Note. ** $p < .01$, * $p < .05$; The solid lines present significant pathways and the dashed lines presents non-significant pathways; All values are reported as standardized path coefficients.

Table 1

Background characteristics of the participants (N=208)

Characteristics	Asian American (n=95)	White (n=113)	Total (n=208)
	n (%) or Mean $\pm$ SD		
Age (years)	52.8 $\pm$ 8.9	44.5 $\pm$ 14.5	48.3 $\pm$ 12.9
Education			
< College	31 (32.6)	18 (15.9)	49 (23.6)
College	40 (42.1)	76 (67.3)	116 (55.8)
> College	24 (25.3)	19 (16.8)	43 (20.7)
Religion			
Buddhist	25 (26.3)	3 (2.7)	28 (13.4)
Catholic	3 (3.2)	30 (26.5)	33 (15.9)
Protestant	18 (18.9)	35 (31.0)	53 (25.5)
No religion	22 (23.2)	15 (13.3)	37 (17.8)
Others ^a	27 (28.4)	30 (26.5)	57 (27.4)
Employment			
Yes	31 (32.6)	54 (47.8)	85 (40.9)
No	64 (67.4)	59 (52.2)	123 (59.1)
Family income ^b			
Totally insufficient	20 (17.7)	23 (24.2)	43 (20.7)
Somewhat insufficient	33 (29.2)	31 (32.6)	64 (30.8)
Sufficient	45 (38.8)	37 (39.0)	82 (39.4)
More than sufficient	15 (13.3)	4 (4.2)	19 (9.1)
Access to health care			
Yes	86 (90.5)	108 (95.6)	194 (93.3)
No	9 (9.5)	5 (4.4)	14 (6.7)
Pain medications			
Yes	20 (21.1)	54 (47.8)	74 (35.6)
No	75 (78.9)	59 (52.2)	134 (64.4)
Cancer treatments			
Radiation therapy only	1 (1.1)	1 (0.9)	2 (1.0)
Chemotherapy only	9 (9.5)	14 (12.4)	23 (11.0)
Surgery only	8 (8.4)	13 (11.5)	21 (10.1)
Hormone therapy only	0 (0.0)	1 (0.9)	1 (0.5)
Combined	77 (81.0)	84 (74.3)	161 (77.4)
Perceived general health (1–5)	3.1 $\pm$ 1.1	3.3 $\pm$ 1.1	3.2 $\pm$ 1.1
Pain scores (0–110)	26.2 $\pm$ 26.0	40.5 $\pm$ 27.6	34.0 $\pm$ 27.8
Symptom severity scores (0–128)	24.7 $\pm$ 22.9	22.1 $\pm$ 16.2	23.3 $\pm$ 19.6
Quality of life scores (0–162)	104.8 $\pm$ 18.5	106.6 $\pm$ 20.5	105.8 $\pm$ 19.6

Note.

^a Others = Muslim, Jewish, etc.;

^b Family income indicate the level of sufficient for essential family needs.;

^c Others = radiation therapy, hormone therapy, etc.

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Table 2

Predictors of the quality of life in each ethnic group

	Asian American					White					Total				
	β	R ²	R ²	F _{ch}	β	R ²	R ²	F _{ch}	β	R ²	R ²	F _{ch}	β	R ²	F _{ch}
Step 1		.11	.11	.97		.27	.27	3.79**		.16	.16	3.14**			
Totally insufficient income (referent)	1				1				1						
Somewhat insufficient income	1.52				-9.40				-3.33						
Sufficient income	8.40				2.71				6.97*						
More than sufficient income	10.01				12.96*				14.74**						
Step 2		.22	.11	5.49**		.41	.14	11.40**		.27	.11	14.05**			
Perceived general health	5.09**				6.86**				6.19**						
Step 3		.23	.01	.26		.46	.05	1.75		.29	.02	1.06			
No pain medications (referent)	1				1				1						
Pain medications use	1.67				-8.93*				-4.84						
Step 4		.29	.06	3.01*		.54	.08	8.97**		.33	.04	5.50**			
Pain scores	-.30*				-.24**				-.19**						
Symptom severity scores	-.09				-.18				-.01						

Note.

** p<.01,

* p<.05; R², change in R²; F_{ch}, changes in F value (p-value for F_{ch}); Only significant variables are presented in the table.