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Quality of Life of Breast Cancer Survivors

A Comparative Study of Age Cohorts

KEY WORDS
Older breast cancer survivors
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The aims of this study were to examine the differences between older and younger breast cancer survivors in perceived social support, uncertainty, quality of life (QOL), and selected demographic variables, and to explore the role of these variables in explaining and predicting QOL. A descriptive research design was used. A sample of 163 older and 129 younger breast cancer survivors was recruited from the New York metropolitan area. Participants completed the Social Support Questionnaire, Mishel Uncertainty in Illness Scale Community Form, and the Quality of Life Index-Cancer Version III. Significant differences between younger and older cohorts were found in total social support, spouse and nurse social support subscales, and socioeconomic and psychological/spiritual QOL subscales. Uncertainty, additional illnesses, social support, older age, surgical treatment, and mastectomy were significant predictors of QOL. Understanding differences in perceived social support, uncertainty, and QOL of breast cancer survivors within a context of psychosocial stage and place in life may likely facilitate healthcare to better enhance QOL outcomes. Awareness of factors predictive of QOL will help breast cancer survivors in maintaining an acceptable QOL.

At certain points along the lifespan of women, various role demands that are associated with their psychosocial stage and place in life emerge. In younger women, role demands mainly include expression of sexuality, marital/partner relationship, child bearing, care of young children, and career development.[1–3] In older women, role demands largely entail transitioning to retirement, maintaining independence, adjusting to declining physical function and development of chronic illnesses, dealing with the loss of a spouse/partner through death, having constrained financial resources, and becoming in-home caregivers of young grandchildren, ailing spouses/partners, or elderly parents.[3–4]

Breast cancer necessitates that women adjust to the intrusion of a life-threatening disease into their lives, as well as manage the after-effects of treatment therapies, regardless of age, ethnicity, or stage of life. The illness demands of breast cancer, with accompanying threats to life and functional status, become imposed upon the multiple role demands of their particular psychosocial life stage. This situation clearly affects the quality of life (QOL) of both younger and older women

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in diverse ways that often continue for years beyond the completion of treatment.[5]

Uncertainty is a key occurrence of breast cancer[6] and is predictive of poorer QOL in both younger and older survivors.[7,8] The unpredictable nature of the disease and the threats of disease recurrence, suffering, and death enhance the potential for uncertainty to emerge and persist in breast cancer survivors.[6,9] In addition, breast cancer creates an amplified need for social support.[10] However, for many breast cancer survivors, social support may be unavailable, inaccessible, or perceived as ineffective.[3–5]

Although there exists a wealth of literature that describes uncertainty, social support, and QOL of breast cancer survivors, few comparative studies of younger and older cohorts that specifically investigate their age-related differences with respect to these variables have been conducted. Because younger and older breast cancer survivors have QOL issues unique to their psychosocial stage and place in life, assumptions about the associations of these variables cannot be extrapolated from one age cohort to another. It is essential to achieve a clear understanding of the age-related differences in perceived social support, uncertainty, and QOL, as well as the role of these variables in explaining and predicting QOL. Such evidence will be important in planning and tailoring care that will significantly enhance QOL outcomes for specific age cohorts of breast cancer survivors.

Thus, the purpose of this study was to examine the differences between older and younger breast cancer survivors in perceived support, uncertainty, and QOL. Furthermore, this study also examined differences between younger and older breast cancer survivors in selected demographic variables and explored the role of these variables in explaining and predicting QOL.

■ Literature Review

Psychosocial Stage and Place in Life

Across the lifespan of women, certain major life events such as graduation, first job, marriage, first child, empty nest, retirement, widowhood, and death occur at predictable times in their lives.[11] Consequently, chronological age was considered a criterion for normalizing the roles and responsibilities assumed by women throughout their lives.[11] The age of 21 years benchmarked the beginning of adulthood just as age 65 years signaled retirement and old age. However, since the post–World War II "Baby Boom" generation came of age, the standard ages that once marked a woman's advancement from adolescence to young adulthood, middle adulthood, and senescence have changed and can no longer be thought of as normative or predictable.[11] Adolescence has lengthened into the mid to late twenties, which has delayed the arrival of true adulthood until the third and fourth decades. Middle adulthood has moved forward far into the fifties, and the stages of life beyond the fifties have altered fundamentally from that which was lived through by the women of pre–War and World War II generations.[11] Accordingly, various social roles and life tasks formerly associated with a certain age or stage of life are postponed into another, ignored altogether, or pile up in the same life stage, creating vast role demands.[11]

Breast cancer develops across a wide spectrum of ages and psychosocial life stages. This wide age variation defines a population of women with altered expectations in roles, responsibilities, and life cycle concerns who are challenged with the demands of an unpredictable disease. Because psychosocial stage and place in life greatly influence QOL,[12] the influence of breast cancer on QOL can be far-reaching.

Perceived Social Support

Perceived social support is an individual's discernment that leads them to believe that they are cared for and loved, esteemed, and valued and that they belong to a network of communication and mutual obligation.[13] Studies have consistently underscored the value of social support in the psychosocial adjustment and enhancement of the QOL of breast cancer survivors, regardless of age.[7,8,14–17] Sources of support for women with breast cancer are spouses/partners, family, friends, and healthcare providers; but lack of perceived social support can occur for a variety of reasons. Older breast cancer survivors may, over time, experience shrinking networks of support with the occurrence of divorce, widowhood, and death of loved ones, friends, and pets.[3,18] This attrition reduces the amount of social support available and received.[18] Friends may distance themselves from the breast cancer survivor because of fear or awkwardness about the diagnosis,[5,19] and caregivers may have negative perceptions of breast cancer that strain their relationships with patients.[20] Breast cancer survivors, especially older aged, often experience difficulty with communicating their needs to family and healthcare providers because they perceive a lack of social support and may be insecure with their own abilities to communicate effectively.[4]

Uncertainty

Uncertainty is the inability of a person to determine the meaning of illness-related events such as their disease process, treatment, or hospitalization.[21] Uncertainty develops when a person is unable to make sense of illness events because the events are unpredictable, ambiguous, highly complex, or lacking information.[21] Both younger and older breast cancer survivors likely experience uncertainty well after conclusion of treatment because of reduced contact with healthcare providers, development of physical symptoms, concerns of disease recurrence, and long-term treatment adverse effects.[6,9,22] Uncertainty is a pervasive and stressful part of the life of breast cancer survivors and strongly influences their adaptive behavior.[9] Research findings have described a relationship between social support and uncertainty in which the function of social support changes over time and influences various aspects of uncertainty throughout the cancer experience.[23,24] In younger breast cancer survivors, uncertainty was noted to decline in the presence of increased perceived social support, but the same was not found to occur in their older counterparts.[7,8]

Quality of Life

Quality of life is a person's sense of well-being that stems from satisfaction or dissatisfaction with aspects of life that are important to him/her. Quality of life encompasses the interaction of 4 domains: health and functioning, socioeconomic, psychological/spiritual, and family.[25] The QOL concerns of breast cancer survivors often disperse across the multiple domains of life[19] and are widely divergent with respect to age and place in life.[26] Research has described the QOL issues of younger breast cancer survivors as encompassing premature menopause and sexual dysfunction, disturbance of partner/marital relationship, impact on child-rearing and family, emotional disruption and body image disturbance, career and work disruption, and uncertainty of disease relapse.[1,27–29] Furthermore, research has also described the QOL issues of older breast cancer survivors as consisting of the impact of cancer on other chronic conditions, increased functional disabilities, diminished social support, social isolation, depression, and disruption of independence.[3,4,30,31] Although the QOL issues of younger and older cohorts often overlap, the adaptation and options of each cohort are strongly influenced by personal history, psychosocial life stage, and life cycle concerns.[3,32]

After diagnosis and treatment, many breast cancer survivors move forward with their lives and even thrive, yet some survivors continue to struggle with breast cancer and therapy-related problems for years after treatment.[5] Ferrell and colleagues[26] also reported that breast cancer survivors have a significant need for psychological and spiritual support in meeting QOL needs. Younger breast cancer survivors were noted to have greater QOL disruption than their older counterparts do, and social support was found to be an instrumental factor in improving QOL overall.[26] Hoskins and colleagues[33] concluded that marital relationship had a positive influence on psychosocial adjustment and QOL. Research findings suggest that uncertainty and psychosocial distress in women with gynecological cancer were reduced in the presence of social support.[24] Furthermore, evidence suggests that social support and uncertainty are significant predictors of QOL in both younger and older breast cancer survivors.[7,8]

The conceptual framework of this study was derived from the Mishel uncertainty in illness theory[21,34] and the Ferrans conceptual model of QOL.[25] The Mishel uncertainty in illness theory contends that uncertainty emerges when an individual cannot attribute specific values to objects or events and/or is unable to predict outcomes because of lack of sufficient cues.[34] The Ferrans conceptual model of QOL asserts that QOL is a multidimensional construct composed of 4 major underlying domains: health and functioning, socioeconomic, psychological/spiritual, and family. Social support functions to decrease uncertainty in illness[34] and is a key factor in preserving the QOL of breast cancer survivors.[7,8,33,35]

■ Research Questions

This research study endeavored to answer the following research questions:

1. What is the difference between older and younger breast cancer survivors in perceived social support, uncertainty, and QOL?
2. What is the difference between older and younger breast cancer survivors in selected demographic variables?
3. What is the role of these variables in explaining and predicting QOL of breast cancer survivors?

■ Methods

This study used a descriptive research design. Permission to conduct the study was sought and obtained from the institutional review boards of the College of Staten Island-City University of New York and the participating agencies. The sample consisted of 163 breast cancer survivors 50 years older and 129 breast cancer survivors younger than 50 years at the time of the study. The age of 50 years was selected to coincide with the Surveillance, Epidemiology, and End Results (SEER) designation of older and younger cohorts of breast cancer survivors[36] and the approximate median age of menopause[37] as a basis to define the younger and older cohorts of this study. Study participants were at least 1 year post–initial diagnosis and treatment and were able to read and respond in English. A total of 1,023 breast cancer survivors who met the sample delimitations were identified through their records by the tumor registry of participating hospitals in the New York/New Jersey metropolitan area and through the patient records of participating American Cancer Society (ACS) units in the New York metropolitan area. The investigator supplied preassembled study packets to the tumor registrars and the ACS units. The study packets contained an explanatory cover letter, the study questionnaires, a demographic assessment form, and a stamped return envelope. The tumor registrars and staff members of ACS units addressed and mailed the study packets to potential participants. The identities of the potential participants were unknown to the investigator to protect their privacy. Recipients of the study packets were informed in the accompanying explanatory letter that they were anonymous to the investigator and that return of the completed questionnaires constituted implied consent.

With power set at 0.80, medium effect size (0.5), and significance criterion at .05, the minimum sample size sought for this study was 64 participants for each age cohort.[38]

From the 1,023 study packets mailed to potential participants, 319 were returned, specifically, 180 from participants older than 50 years and 139 from participants younger than 50 years, which resulted in an overall response rate of 31%. There were 17 older respondents and 10 younger respondents eliminated from the sample because they did not meet study inclusion criteria. The data from the remaining

163 older participants and 129 younger participants were included in the data analysis.

Instruments

SOCIAL SUPPORT QUESTIONNAIRE

The Social Support Questionnaire (SSQ)[39] is a self-administered measure of social support perceived by the study participant as stemming from 5 sources: spouse, family member, friend, nurse, and physician. A 5-point Likert-type scale ranging from "strongly disagree" (1) to "strongly agree" (5) is used to rate 8 items for each of the 5 sources of support, thus yielding a total of 40 items. A total score is calculated by adding the amount of support perceived from all 5 sources on each of the 8 items. Scores may range from 40 to 200. Higher scores designate more social support perceived. Concurrent validity of the SSQ has been established, and internal consistency reliability has been reported as .90 with a sample of 50 women with breast cancer.[39] Internal consistency reliability score obtained in this study for the total SSQ is .93, and subscale scores are spouse, .97; family, .89; friend, .92; nurse, .96; and physician, .90.

THE MISHEL UNCERTAINTY IN ILLNESS SCALE-COMMUNITY FORM

The Mishel Uncertainty in Illness Scale-Community Form[40] is a self-administered measure of the uncertainty perceived in illness and uses a 5-point Likert-type scale ranging from "strongly disagree" (1) to "strongly agree" (5). This 23-item, 1-factor version of the Mishel Uncertainty in Illness Scale is suitable for nonhospitalized adults. The total score is determined by adding up the point value of all selected items. Scores may range from 23 to 115. Higher scores indicate increased levels of uncertainty. Construct validity was established, and internal consistency reliability of the Mishel Uncertainty in Illness Scale-Community Form was noted to range from .74 to .92.[40] In the present study, an internal consistency reliability of .91 was obtained.

THE FERRANS AND POWERS QOL INDEX-CANCER VERSION III

The Ferrans and Powers QOL Index-Cancer Version III (QLI-CV)[41] is a self-administered measure of QOL that is made up of two 35-item sections: The first section is satisfaction with various life domains, and the second section is perceived importance of those domains, for a total of 70 items. The QLI-CV uses a 6-point Likert-type scale that ranges from "very dissatisfied" (1) to "very satisfied" (6) for section 1 items and from "very unimportant" (1) to "very important" (6) for section 2 items. The QLI-CV includes 4 subscales: health and functioning, socioeconomic, psychological/spiritual, and family. Scores can range from 0 to 30 for total scores and each subscale score. Higher scores indicate better perceived QOL. Concurrent validity of the QLI-CV was established, and internal consistency reliability of the QLI-CV was .95 for the entire instrument.[41] Reliability for the subscales was .90 for health/functioning, .84 for socioeconomic, .93 for psychological/spiritual, and .66 for family.[41] In the present study, an internal consistency reliability of .94 was obtained for the entire instrument, and for the subscales, the following values were obtained: .87 for health/functioning, .71 for socioeconomic, .89 for psychological/spiritual, and .75 for family.

Data Analysis

Data were analyzed using SPSS for Windows 11.0 statistical software. Specific statistical techniques used to describe findings and answer research questions included descriptive statistics, t test, χ^2, and hierarchical multiple regression.

Description of the Study Sample

The sample consisted of a total of 292 women with an average age of 56.84 years (SD, 13.87 years). Age ranged from 30 to 92 years, with 129 (44.2%) women younger than 50 years and 163 (55.8%) women older than 50 years. On average, the women had completed treatment 4.56 years ago (SD, 3.89 years), with a range of 1 to 35 years. Approximately one-third (33.7%) was Hispanic and two-thirds were white (62.5%), with a small representation of African American, Asian, and other ethnicities (3.7%). Most of the women were employed and married and had either high school or college education. For treatment, most of the sample had undergone a combination of surgery and adjuvant treatments. Fifteen (5.2%) women reported also having been treated for a psychiatric illness. Specific demographic characteristics of the sample designated by age cohort are listed in Table 1.

■ Results

Differences Between Age Cohorts on Demographic Variables

Chi-square analyses were performed to check for significant associations between categorical demographic variables and age group. There was a significant association between age group and marital status ($\chi_5^2 = 27.13$, $P < .001$), with significantly more older women being widowed (21.5% of older women vs 2.3% of younger women) and significantly more younger women being single with partner (7.0% of younger women vs 1.8% of older women).

There was a significant association between ethnicity and age group ($\chi_4^2 = 13.15$, n = 291, $P = .01$). White and African American women were more represented in the younger group (49.5% and 85.7%, respectively, were in the young group), whereas Hispanic women were more represented in the older group (67.3% were in the older group).

There was also a significant association between education and age group ($\chi_3^2 = 18.92$, n = 291, $P < .001$). Women with only a grade school education were more likely to be in the older group (11.7% of older women) than the younger group (1.6% of younger women). In addition, younger women were

Table 1 • Demographic Data (n = 292)

Variable	Younger (n = 129), No. (%)	Older (n = 163), No. (%)	Total (n = 292), No. (%)
Marital status			
Single	14 (10.9)	15 (9.2)	29 (9.9)
Single with partner	9 (7.0)	3 (1.8)	12 (4.1)
Married	86 (66.7)	92 (56.4)	178 (61.0)
Divorced	14 (10.9)	13 (8.0)	27 (9.2)
Separated	3 (2.3)	5 (3.1)	8 (2.7)
Widowed	3 (2.3)	35 (21.5)	38 (13.0)
Ethnicity			
White	90 (69.8)	92 (56.8)	182 (62.5)
Hispanic	32 (24.8)	66 (40.7)	98 (33.7)
African American	6 (4.7)	1 (0.6)	7 (2.4)
Asian	0 (0.0)	1 (0.6)	1 (0.3)
Other	1 (0.8)	2 (1.2)	3 (1.0)
Occupation			
Homemaker	15 (12.2)	43 (27.0)	58 (20.6)
Retired	0 (0.0)	58 (36.5)	58 (20.6)
Healthcare	23 (18.7)	13 (8.2)	36 (12.8)
Educator	24 (19.5)	12 (7.5)	36 (12.8)
Secretary	11 (8.9)	8 (5.0)	19 (6.7)
Supervisor	5 (4.1)	1 (0.6)	6 (2.1)
Sales/business	26 (21.1)	15 (9.4)	41 (14.5)
Other	19 (15.4)	9 (5.7)	28 (9.9)
Level of education			
Grade school	2 (1.6)	19 (11.7)	21 (7.2)
High school	44 (34.4)	74 (45.4)	118 (40.5)
College	48 (37.5)	45 (27.6)	93 (32.0)
Graduate school	34 (26.6)	25 (15.3)	59 (20.3)
Treatment			
Surgery only	15 (11.6)	39 (24.2)	54 (18.6)
Adjuvant only	2 (1.6)	15 (9.3)	17 (5.9)
Both	112 (86.8)	107 (66.5)	219 (75.5)
Psychiatric illness			
Yes	5 (3.9)	10 (6.2)	15 (5.2)
Age, mean (SD), y	44.33 (4.48)	66.74 (10.33)	56.84 (13.87)

more likely to have a graduate-level education (26.6%) than were older women (15.3%). There were trends toward more of the younger cohort having completed college (37.5% vs 27.6%) and toward more of the older cohort having only a high school education (45.4% vs 34.4% younger).

There was a significant association between age cohort and the presence of other medical illnesses ($\chi_1^2 = 34.41$, n = 203, $P < .001$). Older women reported more additional illnesses (31.4%) than did younger women (1.0%).

There was no association between age cohort and the presence of psychiatric illness ($\chi_1^2 = 3.95$, n = 290, $P = .27$).

A significant association with age cohort was also found for type of treatment received for breast cancer ($\chi_2^2 = 17.40$, n = 290, $P < .001$). Younger women were less likely to receive only surgery (27.8% vs 72.2% of older women), older women were less likely to receive both surgery and adjuvant treatment (48.9% vs 51.1% of younger women), and older women were more likely to receive adjuvant treatment only (88.2% vs 11.8% of younger women). In addition, younger women were more likely to have had a mastectomy (65.1%) compared with the older women in this sample (47.5%) ($\chi_1^2 = 8.99$, n = 291, $P = .003$).

An independent-sample *t* test found a significant difference between older and younger women in the length of time since treatment ($t = -3.18$, $P = .002$), with more recent treatment (mean [SD], 3.77 [2.65] years) for younger women than for older women (mean [SD], 5.15 [4.52] years).

Differences Between Age Cohorts on Study Variables

Mean scores and ranges achieved by participants on the study instruments are presented in Table 2. Independent-samples *t* tests were performed to determine whether younger and older women differed on measures of QOL, uncertainty, or social support (see Table 3). A significant difference between older and younger women was found in total social support ($t = 3.38$, $P = .001$), with younger women perceiving more social support (mean [SD], 149.48 [22.79]) than older women do (mean [SD], 139.40 [28.20]). In the SSQ subscales, significant differences between older and younger women were found in spouse ($t = 3.22$, $P = .001$) and nurse ($t = 2.43$, $P = .02$) social support, with younger women perceiving more spousal support

Table 2 • Mean Scores and Ranges on Study Instruments Achieved by Women

Scale	No.	Mean (SD)	Range
MUIS-C	292	51.88 (15.11)	23–107
SSQ total	292	143.86 (26.39)	24–200
SSQ spouse	262	25.24 (7.92)	2–40
SSQ family	291	31.58 (6.42)	4–40
SSQ friend	291	31.79 (6.02)	2–40
SSQ nurse	291	27.95 (6.03)	3–40
SSQ physician	292	30.20 (6.14)	10–40
QOL total	290	22.11 (5.01)	8.16–30.00
QOL health	290	21.44 (6.00)	1.00–30.00
QOL socioeconomic	290	22.55 (4.72)	6.63–30.00
QOL psychological	287	21.70 (6.37)	3.43–30.00
QOL family	289	24.04 (5.44)	6.00–30.00

Abbreviations: MUIS-C, Mishel Uncertainty in Illness Scale-Community Form; QOL, quality of life; SSQ, Social Support Questionnaire.

(mean [SD], 27.85 [10.83]) than older women do (mean [SD], 22.93 [13.83]) and younger women perceiving more social support from nurses (mean [SD], 29.33 [7.05]) than older women do (mean [SD], 26.85 [10.35]). No significant differences in levels of uncertainty or total QOL scores were noted. However, the QOL subscales revealed a significant difference between the older and younger cohort in the socioeconomical ($t = -2.93$, $P = .004$) and psychological/spiritual ($t = -2.90$, $P = .004$) subscales, with older women reporting better socioeconomical QOL (mean [SD], 23.27 [6.51]) than younger women did (mean [SD], 21.66 [4.84]) and better psychological/spiritual QOL (mean [SD], 22.67 [6.44]) than their younger counterparts did (mean [SD], 20.50 [6.11]).

Exploration of Variables Predicting QOL

To further explore the role of the study variables on the QOL of breast cancer survivors, a hierarchical multiple regression was performed combining all the variables that showed significant relationships to QOL in univariate analyses. Ethnicity and marital status were transformed into dummy variables and then entered in the first and second steps, respectively. Ethnicity was transformed into 4 dummy variables (Asian, African American, Hispanic, and other), and marital status was transformed into 5 dummy variables (single, single and cohabiting, separated, divorced, and widowed). Cancer treatment received was also transformed into 2 dummy variables (surgery alone and adjuvant therapy alone), and these were entered in the third step. Other demographic and treatment variables (length of time since treatment, whether the participant underwent a mastectomy, whether the participant has additional physical illnesses, and educational level achieved) were entered in the fourth step. Finally, the study variables of uncertainty, age group, and social support were entered using forward stepwise criteria to determine which, if any, were significantly associated with QOL after the demographic and treatment variables were taken into account.

Table 4 presents the results of the regression at each step, including change statistics and statistics for the cumulative model as a whole. In the first step, ethnicity was significantly associated with QOL, explaining 4.8% of the variance (R^2 change = 0.048, F change$_{4,188}$ = 2.37, $P = .05$). Marital

Table 3 • Differences in Uncertainty, Social Support, and QOL Between Younger and Older Women

			Significance Tests		
	Younger Cohort, Mean (SD)	Older Cohort, Mean (SD)	*t*	*df*	*P*
MUIS-C	50.51 (13.89)	52.97 (15.96)	−1.39	290	.17
SSQ total	149.48 (22.79)	139.40 (28.20)	3.38	289.87	.001
SSQ spouse	27.85 (10.83)	22.93 (13.83)	3.22	256.30	.001
SSQ family	31.33 (6.80)	31.79 (6.58)	−0.59	289	.56
SSQ friend	32.34 (5.90)	31.35 (7.02)	1.29	289	.20
SSQ nurse	29.33 (7.05)	26.85 (10.35)	2.43	282.61	.02
SSQ physician	29.93 (6.14)	30.42 (6.57)	−0.65	290	.52
QLI-CV total	21.53 (4.61)	22.56 (5.29)	−1.74	288	.08
QLI-CV health	21.34 (5.04)	21.53 (6.68)	−0.28	286.98	.78
QLI-CV socioeconomic	21.66 (4.84)	23.27 (4.50)	−2.93	288	.004
QLI-CV psychological/spiritual	20.50 (6.11)	22.67 (6.44)	−2.90	285	.004
QLI-CV family	23.49 (5.48)	24.50 (5.39)	−1.57	287	.12

Abbreviations: MUIS-C, Mishel Uncertainty in Illness Scale-Community Form; QLI-CV, QOL Index-Cancer Version III; QOL, quality of life; SSQ, Social Support Questionnaire.

Table 4 • Step-by-Step Results of Hierarchical Multiple Regression Predicting Quality of Life

			Change Statistics				Model Statistics		
Step: Variables Added	R^2	Adj. R^2	R^2 Change	F Change	*df*	*P*	F	*df*	*P*
1. Ethnicity[a]	0.048	0.028	0.048	2.37	4,188	.05	2.37	4,188	.05
2. Marital status[b]	0.074	0.029	0.026	1.03	5,183	.40	1.63	9,183	.11
3. Treatment[c]	0.088	0.032	0.014	1.35	2,181	.26	1.58	11,181	.11
4. Additional background information[d]	0.178	0.108	0.090	4.83	4,177	.001	2.55	15,177	.002
5. Uncertainty	0.368	0.310	0.190	52.92	1,176	<.001	6.40	16,176	<.001
6. Social support	0.398	0.340	0.030	8.87	1,175	.003	6.81	17,175	<.001
7. Age group	0.416	0.355	0.018	5.23	1,174	.02	6.88	18,174	<.001

[a] Predictors (constant): dummy ethnicity variables (Asian, African American, Hispanic, other ethnicity).
[b] Predictors added: dummy marital status variables (widow, single, single cohabiting, divorced, separated).
[c] Predictors added: dummy treatment variables (adjuvant only, surgery only).
[d] Predictors added: time since treatment, education, additional illness, mastectomy.

status did not add significantly to the model in the second step (R^2 change = 0.026, F change$_{5,183}$ = 1.03, P = .40). In the third step, cancer treatment was entered, but this variable also did not add significantly to the model (R^2 change = 0.032, F change$_{2,181}$ = 1.35, P = .26). In the fourth step, additional background information was entered and added significantly to the model (R^2 change = 0.090, F change$_{4,177}$ = 4.83, P = .001). In the fifth step, uncertainty was added to the model, explaining an additional 19% of the variability in QOL (R^2 change = 0.190, F change$_{1,176}$ = 52.92, $P < .001$). In the sixth step, social support was added to the model, explaining an additional 3.0% of the variability (R^2 change = 0.030, F change$_{1,175}$ = 8.87, P = .003). Finally, age group was added to the model in the seventh step, explaining 1.8% of the variability in QOL (R^2 change = 0.030, F change$_{1,175}$ = 5.23, P = .02). The entire model at the final step was highly significant (F = 6.88, $P < .001$), with 41.6% of the variability in QOL explained by all the variables together.

Table 5 presents the β coefficients and significance statistics for all variables in the model at the final step in the regression. In the final step, not all variables showed significant associations with QOL. Having had surgical treatment only (as opposed to adjuvant treatment alone or surgery and adjuvant treatment combined) was significantly associated with QOL (B = 1.598, t = 2.17, P = .03), with those having surgery only showing higher QOL than do those who had either adjuvant treatment or surgery plus adjuvant treatment. Social support scores (B = 0.037, t = 3.31, P = <.001) and being older than 50 years (ie, in the older group) (B = 1.568, t = 2.29, P = .02) were significantly and positively associated with QOL. Having additional physical illnesses ($B = -3.242$, $t = -3.81$, $P < .001$), having had a mastectomy ($B = -1.335$, $t = -2.08$, P = .04), and higher scores on the uncertainty scale ($B = -0.135$, $t = -6.32$, $P < .001$) were all significantly and negatively associated with QOL. Reviewing the standardized β coefficients reveals that the most influential variable on QOL is uncertainty because it is the largest. The next largest are additional illness, social support, age group, surgery treatment, and mastectomy.

Discussion

The differences noted between the age cohorts on perceived social support, uncertainty, and QOL provide evidence for nurses and other health practitioners who deliver care to breast cancer survivors. Although adequate amounts of social support were perceived by both cohorts of this study, the younger cohort perceived significantly more social support than did the older cohort. Furthermore, the younger cohort was noted to report significantly more spousal support than did the older cohort. This finding was expected because twice as many members of the older cohort were without marital partners through divorce, separation, or widowhood. Overall, these results are consistent with the observation that older breast cancer survivors frequently perceive less social support in their lives. Barriers to social support such as strained relationships, poor communication with potential support providers, and shrinking networks of support have been documented among older breast cancer survivors.[4,8,42] Moreover, the younger cohort reported having perceived significantly more social support from nurses. This coincides with the finding that the younger cohort reported having more recent treatment that spanned a greater number of breast cancer treatment modalities as compared with the older cohort. The more recent and longer interaction with nurses, which would occur when undergoing multiple treatment modalities, may explain the greater amount of social support that the younger cohort perceived from nurses. The perception of less social support from nurses found among the older cohort may coincide with the likelihood of poor communication abilities that older breast cancer survivors may experience with care providers[42] and thus influence their perception of social support. Nurses and other health practitioners need to anticipate the likelihood of reduced perception and access to supportive resources among older breast cancer survivors in planning and delivering supportive interventions to enhance their QOL. Furthermore,

Table 5 • Coefficients and Significance Statistics for the Variables in the Final Step of the Hierarchical Regression Predicting Quality of Life

	Unstandardized Coefficients		Standardized Coefficients		
Variable	*B*	SE	*β*	*t*	*P*
Constant	24.246	3.517		6.89	<.001
Dummy African American	0.832	2.858	.031	0.29	.77
Dummy Hispanic	−3.685	2.606	−.169	−1.41	.16
Dummy Asian	−0.189	4.483	−.003	−0.04	.97
Dummy other ethnicity	−1.590	2.353	−.103	−0.68	.50
Dummy widow	1.346	0.932	.098	1.44	.15
Dummy single cohabiting	−2.543	1.644	−.096	−1.55	.12
Dummy single	−0.191	0.940	−.012	−0.20	.84
Dummy divorced	−0.050	1.266	−.002	−0.04	.97
Dummy separated	1.031	2.026	.032	0.51	.61
Dummy surgery	1.598	0.735	.149	2.17	.03
Dummy adjuvant	0.994	1.153	.056	0.86	.39
Time since treatment	0.077	0.079	.059	0.98	.33
Education	−0.379	0.338	−.070	−1.12	.26
Additional illness	−3.242	0.851	−.259	−3.81	<.001
Mastectomy	−1.335	0.643	−.143	−2.08	.04
Uncertainty	−0.135	0.021	−.404	−6.32	<.001
SSQ total	0.037	0.011	.215	3.31	<.001
Age group	1.568	0.685	.171	2.29	.02

Abbreviation: SSQ, Social Support Questionnaire.

the consequence of social support as influential in the reduction of uncertainty and enhancement of QOL should be acknowledged by nurses and other health practitioners in the care of breast cancer survivors regardless of age and psychosocial lifestage.

The cohorts showed no significant difference in levels of uncertainty, and this finding is consistent with the assertion that age was not associated with uncertainty.[23] Both younger and older cohorts reported moderate levels of uncertainty, which suggests the presence of an ongoing threat to QOL, regardless of psychosocial stage and place in life. Uncertainty has been reported to persist long after diagnosis and treatment, and it was frequently triggered by various factors such as physical symptoms, fear of recurrence, environmental events, and controversy of breast cancer broadcast in the media.[6] When planning and delivering care, nurses and other health practitioners need to be aware of the likely presence of uncertainty in younger and older breast cancer survivors and of events that may trigger its rise. Interventions aimed at reducing uncertainty in both cohorts would likely have a positive influence on their QOL.[7,8]

The younger and older cohorts in this study showed no significant difference in total QOL, and both cohorts reported overall acceptable QOL. The older cohort had significantly better QOL in the socioeconomic domain than the younger cohort did. A possible explanation could be that the older cohort of this study may have had less financial concerns than their younger counterparts did, which is consistent with the literature.[43] Breast cancer has been found to influence younger women in areas of educational plans, career, family plans, and ability to provide care for children and others.[44] It is possible that the younger cohort of this study may have been facing such life stage–related issues, which could have adversely influenced their socioeconomic QOL. Socioeconomic issues such as unemployment, lost wages, loss of health insurance, and skyrocketing healthcare costs are often areas of great concern, great importance, and least satisfaction for breast cancer survivors[5,45] regardless of age. Health practitioners need to be especially cognizant of how socioeconomic issues may adversely affect the QOL of younger and older breast cancer survivors alike, especially in these challenging economic times.

The older cohort of this study reported a significantly better QOL in the psychological/spiritual domain than the younger cohort did, even though the younger cohort perceived significantly more social support than the older cohort did. These results are consistent with conclusions in the literature that older women with breast cancer experience less distress, less life disruption, and better psychosocial adjustment and well-being than their younger counterparts do.[26,32,46,47] Older women tend to be more emotionally resilient from prior life stage experiences and are likely better able to manage the psychosocial demands of breast cancer.[29] The possible influence of emotional resilience, prior life experience, and better emotional adjustment might also explain why the older cohort fared better in the psychological/spiritual domain of QOL when the older cohort in this study perceived adequate yet significantly less social support than the younger cohort did. Younger women often perceive breast cancer to be a greater threat to their lives in the future than do older women and are likely more vulnerable to the disruptive effect of psychosocial distress on QOL.[46] Nurses and other health practitioners should be cognizant of the vulnerability of younger breast cancer survivors in the psychological/spiritual domain of QOL. Moreover, health practitioners should thoroughly assess younger and older breast cancer survivors alike for threats to the integrity of their psychological/spiritual QOL.

The results of the hierarchical regression identified factors in addition to perceived social support and uncertainty that explain a substantial amount of the variance of QOL in breast cancer survivors. Previous research has indicated that perceived social support and uncertainty are significant predictors of QOL of breast cancer survivors.[7,8,47] The findings of this study suggest that in addition to perceived social support, older age and treatment that consists of surgery only may likely predict a better QOL in breast cancer survivors. This may be explained by the beneficial influence of social support on QOL, the better management of QOL that older women likely have, and the absence of adverse physical effects that often accompany adjuvant treatment such as chemotherapy. Uncertainty and having had a mastectomy may likely predict a poorer QOL. This may be explained by the negative influence that uncertainty has on QOL and the threats to physical and psychosocial integrity that a mastectomy may pose.[48] Furthermore, the findings of this study revealed that uncertainty continued to be present in both cohorts and was likely the most influential factor on their QOL, followed by having additional illnesses, perceived social support, older age, having surgery only, and having had a mastectomy. Nurses and other health practitioners need to be cognizant of the presence of these factors in their patients and the significant influence that these factors have on the QOL of breast cancer survivors.

■ Limitations

The results of this study should be interpreted cautiously. A convenience sample was used, and results should not be generalized beyond the sample of this study. The ethnic makeup of the sample might be reflective of the local population from which this sample was drawn but does not represent the ethnic makeup of the general population of breast cancer survivors.

■ Implications for Practice and Research

The age-related differences between younger and older cohorts of breast cancer survivors have important implications for practice and research. Acknowledgement of age-related differences that may influence the QOL of breast cancer survivors can assist health practitioners to develop interventions that will likely enhance QOL outcomes for their patients. Interventions aimed at expanding the perception of social support in older breast cancer survivors and enhancing emotional resilience and socioeconomic resources in younger breast cancer survivors can assist them in effectively managing their illness demands and QOL. Awareness of factors that are predictive of better or poorer QOL will help nurses and other health practitioners to acknowledge the resources and vulnerabilities of breast cancer survivors and assist them in maintaining an acceptable QOL.

Further research is needed to determine additional age-related variables that may influence support, uncertainty, and QOL of breast cancer survivors. The exploration of cultural factors that may influence QOL in younger and older breast cancer survivors is also needed and can potentially add to the cultural competence of health practitioners in caring for multiethnic populations of breast cancer survivors. Additional research is recommended to identify specific interventions that may best enhance QOL outcomes in younger and older breast cancer survivors and further substantiate best practice in care delivery.

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