How Do Nurse Case Managers Care for Older Women With Breast Cancer?

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Purpose/Objectives: To describe how nurse case managers care for older women with breast cancer.

Design: A randomized, prospective trial.

Setting: Thirteen community hospitals and two public hospitals in southeastern Texas.

Sample: 335 older women aged 60–89 years newly diagnosed with breast cancer and being cared for by 60 surgeons. Most participants were Caucasian. A total of 166 women were in the control group, and 159 were in the intervention nurse case management group.

Methods: The nurses implemented multiple nursing interventions in each nursing process phase over a period of 12 months.

Main Research Variables: Independent variables were participants' demographic characteristics, depressive symptomatology, and cognitive impairment. Nurse case management contact was a dependent variable.

Findings: In each nursing phase, a greater number of nurse case management contacts were made in the first quarter. Bivariate analysis illustrated statistical differences among race, income, education, and living alone with respect to the mean amount of nurse case management. Multivariate analysis revealed that age, income, living alone, and stage of cancer predicted more nurse case management contact.

Conclusions: Nurse case managers may play a role in helping older women with breast cancer achieve positive health outcomes.

Implications for Nursing: Based on the findings of this study, nurses can develop specific nursing interventions to meet the needs of older women with breast cancer. Nurses can use the Model of Nurse Case Management to plan and manage care for older women with breast cancer.

Key Points . . .

- Older women with breast cancer are an understudied group in the literature, which limits the generalization of most findings in this subject area because the results are based on samples of younger women with breast cancer.
- Researchers must establish an acceptable range of nurse case management contact and which types of nursing interventions are most effective for this population in terms of achieving positive health outcomes.
- This study was not based on which types of interventions were needed by older women with breast cancer, but on which interventions they received from nurse case managers.

Breast cancer is the most common type of cancer and is the second-leading cause of death from cancer among women (National Cancer Institute, 2005). Breast cancer becomes more prevalent with age; in fact, approximately 50% of breast cancer cases are diagnosed in women 65 years of age and older (Yancik et al., 2001). Older women's illness experiences with breast cancer may differ substantially from younger women's regarding reactions to and needs resulting from the diagnosis. For example, with increasing age, the risk of comorbid conditions increases (Satariano & Ragland, 1994).

Older women with breast cancer are faced with the physical and psychosocial difficulties associated with the disease. In addition, they may have to cope with obstacles related to transportation, decreased social support, and physical factors that have the potential to aggravate adjustment to diagnosis, treatment of the disease, and recovery. Cameron and Horsburgh (1998) explored issues identified by older women with breast cancer, including hesitation in seeking initial treatment, desire to maintain independence, and the multiple number of health difficulties being experienced. All of these factors put older women with breast cancer at risk for undertreatment and poor health outcomes. Depending on patients' circumstances or the complexity of the plan of care, nurse case managers may be assigned to this population.

Nurse case management is the process of coordinating health care by planning, facilitating, and evaluating interventions across levels of care to achieve measurable outcomes (Zander, 2002). The nurse case manager is a valuable resource who can help to ensure that patients receive health services and benefits to achieve positive health outcomes. Nurse case managers can efficiently manage an episode of

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illness through assessment, planning, implementation, and evaluation over a period of time. The ultimate goal of the nurse case manager is to improve the quality of care for high-risk populations and contain healthcare costs. The first step in improving the quality of care and positively affecting outcomes for older women with breast cancer is to describe the amount and type of care performed by nurses over a period of time. As this type of information accumulates in the nursing literature, conclusions can be reached about which type of nursing care over which time period can benefit older women with breast cancer. Brooten and Naylor (1995) noted that the development of empirically based clinical practice protocols depends on the ability to describe an episode of nursing care according to intervention type, frequency, and variation over time. For example, the number of telephone calls and home visits and even the type of nurse (i.e., generalist or specialist) needed to achieve certain patient outcomes, including reduced morbidity and higher patient satisfaction, are unknown. Additionally, patient characteristics that may predict a need for special attention from nurse case managers would be important to determine. This knowledge will increase the understanding of how nurses may better serve a population.

The data for this study were obtained from a community-based, prospective trial of nurse case management in older women with breast cancer (Goodwin, Satish, Anderson, Nattinger, & Freeman, 2003). The findings from that study indicated that among women undergoing breast-conserving surgery, greater percentages in the nurse case management group received adjuvant radiation and axillary dissection. In addition, women with indicators of poor social support were more likely to benefit from nurse case management. Using the same data, Jennings-Sanders and Anderson (2003) conducted a qualitative study describing how older patients with breast cancer perceived the effectiveness of community-based nurse case managers. The findings indicated that the nurse case managers made a positive impact on older women with breast cancer by helping to manage comorbid medical conditions; providing emotional support, education, and assistance with activities of daily living (ADL); and helping to navigate the healthcare system.

The objectives of this article are to describe the amount of care provided throughout each nursing phase (i.e., assessment, planning, implementation, and evaluation) by nurse case managers to older women with breast cancer for a period of one year, predict which selected patient characteristics (i.e., age, education, income, race, living alone, ADL assistance, stage of cancer, attending a support group, depression, cognitive status) necessitate nurse case manager contact in each nursing phase, and discuss any differences among selected patient characteristics with respect to the mean amount of nurse case management contacts for nursing activities in the nursing phases.

Literature Review

The studies in the nursing case management literature do not exclusively examine older women with breast cancer. Most of the studies include women with breast cancer aged 25–85 years. The findings from studies describing the ways in which nurses care for women with breast cancer have been mixed. Some of the nursing interventions have had a positive effect on patient outcomes, whereas others have had no effect at all. Palsson and Norberg (1995) conducted semistructured interviews six months after primary treatment to explore the experiences of nursing care with a focus on emotional support among patients with breast cancer. The women, who were aged 35–69 years, were offered the opportunity to discuss illness-related concerns. A nurse was present to provide emotional support by listening, consoling, and answering questions for the patients. Results from this qualitative study indicated that emotional support from nurses led to feelings of safety and security and may have improved the women's sense of control.

Rustoen and Begnum (2000) evaluated the effect of a nursing intervention on hope and quality of life in patients aged 26–78 years with breast cancer. The experimental group received an intervention designed to increase hope by addressing patients' worries and concerns about their illness. Nurses focused on educating the patients in cognitive awareness and coping skills. To measure hope, researchers asked patients to complete the the Nowotny Hope Scale four times—twice before and two weeks and six months after the intervention. For the members of the experimental group, the level of hope significantly increased just after the intervention but not after six months. No effect on quality of life was found in either the control or experimental group.

Ritz et al. (2000) investigated quality of life and cost outcomes of advanced practice nurses' (APNs') interventions with women aged 30–85 years with breast cancer. APN interventions based on Brooten's Cost Quality Model and the Oncology Nursing Society's Standards of Advanced Practice were administered to the intervention group over a two-year period and included a comprehensive health assessment, support in seeking appropriate treatment, and continuous evaluation of care outcomes. The results indicated that APN interventions improved some quality-of-life indicators but did not raise or lower costs.

Results of the following studies did not support a positive effect of nursing interventions on patient outcomes. Thijs-Boer, de Kruif, and van de Wiel (1999) assessed nurses' involvement in the supportive care of patients recently diagnosed with breast cancer during admission and in the outpatient departments before and after surgery. The nurses implemented interventions such as providing emotional support, education, and physical care. However, patients expressed dissatisfaction with their care and health outcomes in the outpatient setting. Nurses in this study had varying views about their responsibility in educating patients about the course of treatment for breast cancer. Craddock, Adams, Usui, and Mitchell (1999) found that a nursing intervention did not positively affect women aged 25 and older with breast cancer who were receiving chemotherapy treatments. The researchers conducted a quasi-experimental study to determine whether women who received an intervention from nurses would use more self-care techniques after treatment. The intervention consisted of phone calls and oral and written measures about specific side effects of chemotherapy. Results indicated that a telephone call and written self-care measures after the second, third, and fourth chemotherapy treatments did not increase the use of effective self-care techniques.

Hughes et al. (2002) described an episode of home nursing care for older postsurgical patients aged 60–90 years with cancer. Patients received three home visits and five telephone contacts from the nurses. Standard care plans were used to guide nursing care; therefore, specific interventions were

not prescribed in the study protocol. The authors analyzed interventions documented in narrative form by nurses during the four weeks of home care. A description of the intervention type, frequency, range, and variation over time and dose intensity was derived. Results indicated that teaching, psychological support, and determination of patient needs accounted for the higher percentages of interventions documented. Intervention emphasis and dose intensity varied over time. This finding was an indication that nurses altered their care in response to the changing needs of their patients.

Model of Nurse Case Management

The Model of Nurse Case Management (Anderson, Raines, & Goodwin, 1994) served as the conceptual model for this study (see Figure 1). This model incorporates both the structure of nurse case management (i.e., the specific nursing activities and services that comprise nurse case management) and the processes by which this structure addresses the entire care continuum of individual patient needs. The process of the nurse case management intervention consists of four stages of nursing activities: assessment, planning, implementation, and evaluation. In the assessment phase, comprehensive assessments are performed by the nurse case manager to determine the patient's personal characteristics, diagnosis and stage of disease, and overall physical, functional, cognitive, and emotional health status. Available resources, educational needs, personal preferences, and decision-making skills of patients also are assessed by the nurse case manager at this stage.

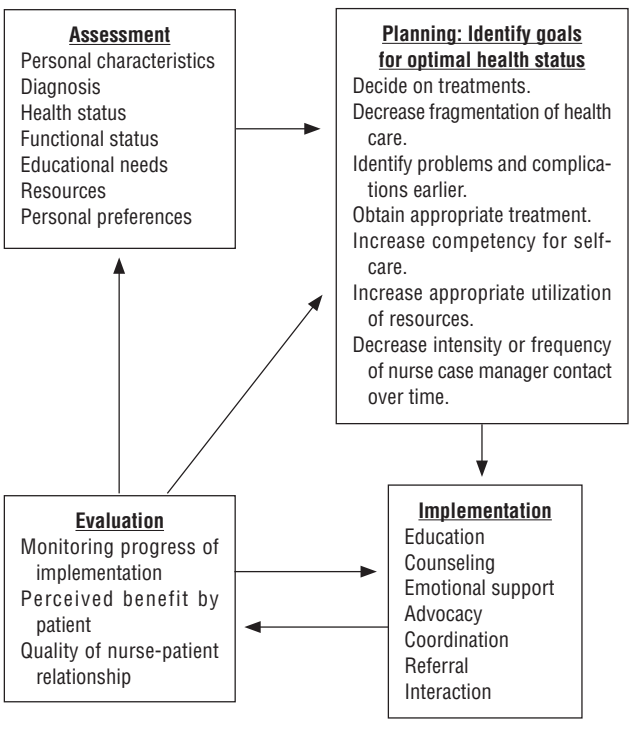

Figure 1. Model of Nurse Case Management for Older Patients With Breast Cancer

Note. Based on information from Anderson et al., 1994.

In the planning phase of the model, the nurse works with the patient to identify goals of optimal health status and then develops a plan by which these goals can be met. The goals vary according to individual patient needs but can be grouped into the following categories: deciding on treatments, decreasing the fragmentation of health care, identifying complications early, obtaining appropriate treatment, increasing competency for self-care, increasing appropriate utilization of resources, and decreasing intensity of nurse case management over time.

The implementation phase consists of implementing the plan designed to achieve the goals identified in the second stage. In this phase, the nurse provides education, counseling, emotional support, advocacy, coordination of services, and referrals. The nurse case manager also establishes and maintains positive interactions with the patient, family, physicians, and other service providers.

The last phase of the model focuses on the evaluation of the extent to which the nurse case management plan is being implemented and whether the identified patient goals are being met. The benefits perceived by the patient and the quality of the nurse-patient relationship are evaluated in this phase. As indicated in Figure 1, the nurse case manager is required to intervene again at the appropriate stage in the activity cycle (i.e., assessment, planning, or implementation) after a failure of implementation or another obstacle has been identified.

Methods

All women aged 60 or older who were newly diagnosed with breast cancer and being cared for by 1 of 60 surgeons practicing at 13 community and 2 public hospitals in southeastern Texas were invited to participate in the study. Randomization occurred before the participants saw a surgeon to avoid patients comparing care and possibly influencing each other. A total of 335 women (166 in the control group and 169 in the intervention nurse case management group) were included in the original study, but 10 women declined to participate in the intervention group. Therefore, 159 women participated in the intervention. Data in the original study were collected through in-home interviews conducted by trained interviewers who were blind to whether the women were in the control or intervention group.

Nurse case managers who delivered care to the intervention group were RNs with specialized training in nurse case management. They implemented multiple nursing interventions that were included in each of the phases of the Model of Nurse Case Management (i.e., assessment, planning, implementation, and evaluation) over a period of 12 months. For example, in the assessment phase, the surgical wound, range of motion in the upper extremities, medications prescribed, functional status, emotional status, social support, and cognitive status were assessed. The planning phase included goal setting, decision making, advocacy, and planning with the patient, family, and healthcare professionals. The implementation phase included interventions such as managing symptoms, offering emotional support, teaching, enlisting social support, coordinating care, providing referrals, and accompanying patients to physician visits. In the evaluation phase, the intervention included monitoring progress and documenting follow-up.

For purposes of this study, total contacts over a 12-month period and contacts within each quarter over a 12-month period were examined. The 12-month period was divided into four quarters. Nurse contact with participants was made by phone or in person. The protocol specified a minimum monthly contact. Each contact then was recorded on a checklist used by nurse case managers to monitor the type of contact with participants.

Measures

In addition to sociodemographic characteristics (age, education, income, race, living alone, ADL assistance, stage of cancer, attending a support group), participants were assessed for the presence of depressive symptomatology using the self-reported Centers for Epidemiologic Studies–Depression (CES-D) scale (Radloff, 1977). A score of 16 or greater indicated high levels of depressive symptoms. The Mini-Mental State Examination (MMSE) was used in this study as a cognitive screening measure (Folstein, Folstein, & McHugh, 1975). A score of 23 or greater indicated probable cognitive impairment.

Data Analysis

The demographic characteristics were described with percentages, means, and standard deviations. T tests and analysis of variance (ANOVA) were used to estimate the difference in the number of nurse case management contacts by selected characteristics. Repeated measures ANOVA was conducted to determine the trend in the number of nurse case management contacts over four quarters in each phase. Multiple regression models were developed to assess which characteristics (i.e., age, education, income, race, living alone, ADL assistance, stage of cancer, attending a support group, CES-D and MMSE scores) were associated with the number of nurse case management contacts in each of the nursing phases. Age was dichotomized into two groups to represent older women (i.e., < 75 years) and much older women (i.e., > 75 years). The cutoff of 12 years or more of formal education was used to represent the population with at least a high school education. Also, the median household income was chosen to dichotomize annual household income as less than $15,000 and greater than $15,000. The number of nurse case management contacts for nursing activities in the assessment and implementation phases was stratified by the significant characteristics that were found from multiple regression analyses. In addition, differences among characteristics were examined with t tests.

Using a paired t test with a 0.05 two-sided significance level, this study detected an effect size of at least 0.225 with a power of 80%. The power was calculated using Query Advisor 5.0 software, and all analyses were performed with the SAS® System for Windows, version 8.2 (SAS Institute Inc., Cary, NC).

Findings

Table 1 illustrates the mean number of contacts over 12 months for each type of nursing intervention on the checklist used by nurse case managers. In the assessment phase, assessing the functional status ($\bar{X}$ = 14.73) and the emotional status ($\bar{X}$ = 16.46) of patients required the most nurse case management contacts. In the planning phase, planning care with the patient required the most nurse case management contacts ($\bar{X}$ = 3.63). For the implementation phase, teaching patients ($\bar{X}$ = 10.91) required the most nurse case management contacts. In the evaluation phase, monitoring the progress of patients required the most nurse case management contacts ($\bar{X}$ = 12.20). A total of 3,907 contacts (1,622 actual visits and 2,285 telephone contacts) were recorded for the one-year period.

Table 1. Mean Nurse Case Management Contacts and Interventions Over One Year

Type of Contact or Intervention	$\bar{X}$	SD
Assessment		
• Physical		
– Surgical wound	4.49	5.21
– Range of motion: upper extremities	5.71	6.09
– Medications	7.74	7.69
– Functional status	14.73	15.20
• Psychosocial		
– Emotional status	16.46	16.26
– Social support	7.28	7.16
– Cognitive status	13.89	16.20
Planning		
• Goal setting	2.05	2.55
• Decision making	1.35	2.22
• Advocacy	2.45	4.92
• Plan with patient.	3.63	5.44
• Plan with family.	1.16	3.09
• Plan with healthcare professionals.	1.34	3.07
Implementation		
• Symptom management	1.23	2.18
• Emotional support of family	3.38	5.91
• Teaching or reinforcing	10.91	9.66
• Enlist social support.	0.52	1.62
• Coordination	7.23	9.43
• Referral		
– Home health	0.11	0.53
– Social service	0.03	0.16
– Reach to recovery	0.04	0.22
• Transportation	0.94	–1.62
• Accompany patient to physician.	0.44	1.18
• Other (e.g., prosthesis fitting)	0.06	0.26
Evaluation		
• Monitor progress.	12.20	12.06
• Document follow-up.	4.67	6.53

Note. The $\bar{X}$ number of individual contacts was 24.57 (assessment $\bar{X}$ = 18.46, planning $\bar{X}$ = 7.75, implementation $\bar{X}$ = 17.55, and evaluation $\bar{X}$ = 12.57). For most contacts, the nurse case manager performed more than one intervention.

The characteristics of the sample are illustrated in Table 2. The typical participant was younger than age 75 (68%), was non-Hispanic white (71%), had an income less than $15,000 per year (50%), had 10 or more years of education (78%), was not living alone (64%), was independent in ADL (73%), had local or regional cancer (94%), was not attending a support group (96%), had a CES-D score of less than 16 (84%), and had an MMSE score of greater than 23 (87%).

Table 2 also illustrates the mean number of nurse case manager contacts with older women with breast cancer, by patient characteristics, over a one-year period. T tests and ANOVA were used to determine statistical differences among the selected characteristics. African Americans received significantly

Table 2. Mean Number of Nurse Case Manager Contacts Over One Year by Patient Characteristics

Characteristic	n	%	$\bar{X}$	SD	p
Age (years) (N = 158)					0.143
60–64	29	18	30.28	19.33	
65–69	36	23	24.94	18.97	
70–74	42	27	24.67	22.39	
75–79	32	20	17.03	17.87	
80+	19	12	26.63	22.22	
Race (N = 158)					0.039
Non-Hispanic white	112	71	21.85	18.66	
African American	33	21	31.55	25.05	
Hispanic or other	13	8	25.85	17.87	
Income ($) (N = 137)					0.001
< 15,000	69	50	31.73	22.41	
≥ 15,000	68	50	19.66	17.03	
Education (years) (N = 137)					0.042
≤ 9	31	23	33.39	26.78	
10–12	82	60	24.49	18.32	
≥ 13	24	18	20.13	17.66	
Living alone (N = 143)					0.021
Yes	51	36	31.47	25.55	
No	92	64	22.08	16.47	
Needs assistance with activities of daily living (N = 157)					0.353
Yes	42	27	21.86	19.67	
No	115	73	25.29	20.70	
Stage of cancer (N = 156)					0.698
0	8	5	20.00	15.76	
1	98	63	23.96	19.31	
2	41	26	26.15	22.78	
3	9	6	30.33	25.49	
Attending a support group (N = 133)					0.206
Yes	5	4	36.80	17.14	
No	128	96	24.91	20.59	
CES-D score (N = 133)					0.071
< 16	112	84	24.41	20.76	
≥ 16	21	16	33.43	21.15	
MMSE score (N = 141)					0.401
≤ 23	18	13	29.50	19.49	
> 23	123	87	25.11	20.80	

CES-D—Centers for Epidemiologic Studies–Depression; MMSE—Mini-Mental State Examination

Note. For dichotomous variables, the p values came from t tests; for other categorical variables, the p values came from analysis of variance.

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

more nurse case management compared to non-Hispanic whites and Hispanics. Those with annual household incomes less than $15,000 required more nurse case manager contacts than those with incomes greater than $15,000. Those with less than nine years of education had more nurse case manager contact than those with more than nine years of education. Older women with breast cancer who lived alone required more case manager contact than those who did not.

Table 3 illustrates the mean number of contacts made by nurse case managers in each phase over the entire 12-month period. The mean number of total contacts decreased over each quarter for each of the nursing phases ($p < 0.001$). The total mean contacts were significantly higher ($p < 0.01$) in the assessment and implementation phases compared to the planning and evaluation phases.

Five different multivariate general linear models were used to specify which patient characteristics were associated with nurse case manager contact in the nursing phases (see Table 4). Age (i.e., < 75 years) predicted more nurse case manager contact in the planning phase ($p = 0.042$) and implementation phase ($p = 0.020$). Income (i.e., < $15,000) predicted more nurse case manager contact in the evaluation phase ($p = 0.038$). Living alone predicted more nurse case manager contact in the assessment phase ($p = 0.020$) and implementation phase ($p = 0.006$). Older women with local or regional breast cancer predicted less case manager contact in the planning phase ($p = 0.006$).

Table 5 presents a more detailed analysis of the characteristics living alone and age with each nursing activity in the assessment and implementation phases. These characteristics were selected because they were significant predictors in the multivariate analysis of the assessment or implementation phase. Results illustrated that older women living alone received significantly more contact with nurse case managers regarding psychosocial assessment, teaching, and emotional support. Women younger than age 75 received significantly more nurse case manager contact in terms of symptom management compared to women older than age 75.

Discussion

According to the types of nurse case manager interventions on the checklist, the majority of contacts involved assessing functional and emotional status, planning, teaching, and monitoring the progress of patients. These are all fundamental aspects of providing nursing care. Each phase indicated a greater number of contacts in the first quarter and a decline in subsequent quarters. The nurse case managers initially were spending more time working with the participants in terms of assessing the surgical wound, setting goals, teaching, and monitoring progress. Over subsequent quarters, the participants may have been functioning more independently, thus requiring fewer nurse case management contacts. The greatest number of mean contacts by nurse case managers occurred in the assessment and implementation phases. These findings are expected because, during the assessment phase, the participants are at home after their treatments and may have issues regarding their physical status, psychosocial status, and environmental setting. During this time period, nurses assess patients and help them adapt to their new situation after breast cancer treatment. Palsson and Norberg (1995) suggested that the initial period after breast cancer treatment may lead to cognitive and affective distress for older women with breast cancer. In the implementation phase, teaching is just one of the interventions provided by nurse case managers. During this phase, nurse case managers educate participants about managing their illnesses. This process of teaching is lengthy and may require nurse case managers to have multiple contacts with participants.

Bivariate statistics and multivariate analysis illustrated which characteristics would necessitate nurse case manager contact. Older women living alone had more nurse case management contact than those living with others. Older women who live alone may not have access to the same types of social supports that their counterparts have. Assistance with caregiving, transportation, and general social support may be absent for older women living alone with breast cancer. Pistrang and

Table 3. Mean and Standard Deviation of Contacts Made by Nurse Case Managers in Each Nursing Phase

	Total[a]		First Quarter		Second Quarter		Third Quarter		Fourth Quarter		
Phase	$\bar{X}$	**SD**	$\bar{X}$	**SD**	$\bar{X}$	**SD**	$\bar{X}$	**SD**	$\bar{X}$	**SD**	**p[b]**
Assessment	18.46[c]	16.27	9.28	7.50	4.14	4.37	2.65	3.55	2.39	3.65	< 0.001
Planning	7.75	8.03	3.96	4.66	1.92	2.89	1.13	2.58	0.74	2.06	< 0.001
Implementation	17.55[c]	15.16	9.35	7.59	3.82	4.39	2.33	3.48	2.05	3.10	< 0.001
Evaluation	12.57[d]	11.59	6.62	6.25	2.98	3.70	1.78	2.92	1.19	2.28	< 0.001
Total	**24.57**	**20.38**	**12.76**	**9.79**	**5.36**	**5.45**	**3.52**	**4.57**	**2.92**	**4.33**	**< 0.001**

[a] Based on repeat measurement analysis, the number of contacts is significantly higher in the assessment and implementation phases than in the planning and evaluation phases.

[b] The p value is from repeat measurement analysis to test the linear trend on the number of contacts over four quarters.

[c] The number of contacts was significantly higher in the assessment and implementation phases than in the planning and evaluation phases. A statistically significant difference existed in the number of contacts.

[d] The number of contacts in the evaluation phase was significantly higher than the number of contacts in the planning phase.

Barker (1995) reported the positive effect that social support has on older women with breast cancer. Research findings indicated that an older woman's partner significantly helps in the adaptation to a diagnosis and treatment of breast cancer.

African Americans had more nurse case management contacts than non-Hispanic whites and Hispanics. This finding may indicate that older African American women need additional assistance managing their disease because of barriers such as socioeconomic status and ability to navigate through the healthcare system. Studies have reported that African American women diagnosed with breast cancer have lower socioeconomic status, more barriers to health care, higher diagnostic and treatment delays, and a higher prevalence of comorbid conditions leading to poor health outcomes (Heimann et al., 1997; Perkins, Cooksley, & Cox, 1996).

Women who were aged 75 and younger had more nurse case manager contacts than those aged 75 or older. This finding may indicate that younger women had more difficulty in coping with their illness, thus needing more support from nurse case managers. Compas et al. (1999) found that younger women exhibited greater affective distress and a tendency to engage in less adaptive ways of coping.

Older women with breast cancer with an annual household income of less than $15,000 had more nurse case management contacts compared to those with incomes greater than $15,000. This indicates that older women with lower incomes

Table 4. Patient Characteristics Predicting Nurse Case Management Contact in Each Nursing Phase

	Assessment			Planning			Implementation			Evaluation			Total		
Characteristic	β	**SE**	**p**	β	**SE**	**p**	β	**SE**	**p**	β	**SE**	**p**	β	**SE**	**p**
Age (years)															
> 75	0.64	0.35	0.070	0.49	0.24	0.042	–0.75	0.32	0.020	0.42	0.30	0.158	0.70	0.36	0.053
Race															
Non-Hispanic white	–0.53	0.38	0.169	–0.42	0.26	0.104	0.31	0.34	0.370	–0.59	0.32	0.073	–0.42	0.39	0.291
Income ($)															
< 15,000	0.48	0.39	0.219	0.43	0.26	0.099	0.62	0.35	0.074	0.68	0.33	0.038	0.68	0.40	0.090
Education (years)															
< 12	0.14	0.37	0.704	0.19	0.25	0.442	0.10	0.33	0.749	0.09	0.31	0.764	0.13	0.38	0.734
Living alone															
Yes	0.84	0.36	0.020	0.34	0.24	0.165	0.90	0.32	0.006	0.19	0.30	0.533	0.96	0.37	0.010
Needs assistance with activities of daily living															
Yes	–0.02	0.45	0.972	–0.17	0.30	0.566	0.05	0.40	0.893	0.01	0.38	0.989	0.18	0.46	0.688
Stage of cancer															
Local or regional	–0.75	0.67	0.262	–1.27	0.45	0.006	–0.81	0.60	0.176	–0.39	0.56	0.490	–0.82	0.69	0.233
Attending a support group															
Yes	0.92	0.89	0.302	0.54	0.60	0.372	0.75	0.80	0.349	0.43	0.75	0.567	0.72	0.92	0.432
CES-D score															
≥ 16	0.82	0.46	0.074	–0.14	0.31	0.654	0.76	0.41	0.064	0.30	0.39	0.435	0.90	0.47	0.057
MMSE score															
> 23	0.21	0.55	0.707	0.05	0.37	0.899	–0.02	0.49	0.970	–0.11	0.47	0.819	–0.10	0.57	0.858

CES-D—Centers for Epidemiologic Studies–Depression; MMSE—Mini-Mental State Examination; SE—standard error

Table 5. Mean Contacts on Selected Items Made by Nurse Case Managers in the Assessment and Implementation Phases

	Lives Alone		Does Not Live Alone		Age < 75 Years		Age ≥ 75 Years	
Item	$\bar{X}$	**SD**	$\bar{X}$	**SD**	$\bar{X}$	**SD**	$\bar{X}$	**SD**
Assessment								
Physical	20.26	17.25	15.12	13.05	17.64	14.70	13.20	14.82
Psychosocial	22.14*	18.77	15.48	12.06	18.58	16.03	13.98	16.00
Implementation								
Teaching	14.86*	12.23	9.61	7.46	11.57	9.23	9.31	10.41
Emotional support of family	0.37*	1.40	1.32	2.38	1.14	2.96	0.53	2.34
Enlist social support.	0.76	2.38	0.45	1.01	0.64	1.91	0.27	0.67
Symptom management	1.14	2.02	1.45	2.39	1.51*	2.40	0.67	1.52
Coordination	9.84	12.77	6.13	7.02	7.88	10.56	5.98	6.42
Accompany during visits.	0.53	1.14	0.65	1.33	0.71	1.33	0.35	1.16
Referral	1.90	2.10	1.32	1.68	1.50	1.78	1.24	1.92

* $p < 0.05$

received more nurse case management. In contrast, Bradley, Given, and Roberts (2002) reported that women with low incomes were more likely to receive less than adequate care from healthcare professionals after receiving a cancer diagnosis, even though the women had access to health care. The authors stressed the importance of future studies to determine why less than adequate care is rendered to the poor.

Women with less than a high school education had more nurse case management contacts compared to those with more than a high school education. Women with lower levels of education may have limited knowledge about how to access information to guide them in effectively managing their disease. In addition, having educational information about breast cancer and its treatment has been effective in improving the quality of life in urban women with breast cancer (Spiegel, Bloom, Kraemer, & Gottheil, 1989).

The stage of cancer was a significant variable in the planning phase of the nursing process. Older women with metastatic cancer had more nurse case management contacts compared to women who had local or regional cancer. This finding was expected. Interventions such as goal setting are included in the planning phase, which would mean that the nurse case manager would have to help establish more complex and intense goals based on a late-stage diagnosis. This process would require nurse case managers to spend a greater amount of time with these women.

Living alone and age were significant characteristics in the assessment and implementation phases. Older women with breast cancer who lived alone received more assistance from nurse case managers in the areas of assessment, emotional support of family, accompaniment to physician visits, teaching, coordination, and referrals than women who did not live alone. Women who were younger than age 75 received more assistance from nurse case managers in the areas of assessment, enlisting social support, and symptom management than women who were older than 75 years. This finding is a clear indication that nurse case managers must function effectively in all of these areas. Without appropriate intervention from nurse case managers, individuals may be at risk for nonadherence to their medical regimens.

Study Limitations

The sample consisted mostly of white older women living in southeastern Texas. Future studies should include a representative sample of Hispanic and African American older women as well as women from other regions. This study was not based on the types of interventions older women with breast cancer needed, but on which interventions they received from nurse case managers. Only three nurse case managers were involved in this study.

Nursing Implications

Older women with breast cancer are a truly understudied group in the literature. The few studies that do exist have not exclusively examined women with breast cancer who are older than 65 years. This limits the generalization of most findings because the results obtained from a younger group may not be valid for older women. Future nursing studies must continue to describe the amount and types of care that are being provided by nurse case managers to older women with breast cancer over a period of time. The findings from this study suggest that a linear trend exists in terms of the number of contacts made by nurse case managers with respect to each nursing process phase over a one-year period. However, the researchers could not determine whether this type of trend is the norm or whether nurse case managers should be spending more time in one particular phase or in all phases of the nursing process. Researchers must establish an acceptable range of how much nurse case management contact and which types of nursing interventions are most effective for this population in terms of achieving positive health outcomes.

Findings from this study revealed that some characteristics (e.g., living alone, income, age, stage of cancer) predicted the number of contacts in each nursing process phase. Nurse case managers may need to develop specific nursing interventions to address these differences. For example, if older women with breast cancer are living alone, nurse case managers must integrate informal and formal support systems into the plan of care.

Nurse case managers can serve as patient advocates for older women with breast cancer who have lower incomes by referring them to a variety of resources they can activate in their community. Nurse case managers must remember that older women may have different coping skills than younger women and, thus, have different psychosocial needs. Older women with advanced stages of cancer may require nurses to

activate additional resources such as hospice care or respite care for family members.

The Model of Nurse Case Management is a community-based model that can be used by nurses to plan and manage care for older women with breast cancer. The model sheds light on the basic processes of nurse case management, which is essentially the use of the nursing process along with defining clinical and financial outcomes. In the assessment phase of the Model of Nurse Case Management, nurses are able to determine whether patients have characteristics that place them at risk for not following their healthcare regimens. These characteristics may include having multiple health problems, poor social support networks, and limited resources. Planning appropriate goals, implementing specific interventions, and evaluating progress for these at-risk individuals may lead to favorable patient outcomes. The model encourages nurses to provide holistic, culturally competent care by considering the personal preferences of their patients. Future nursing research must continue to evaluate whether nurse case managers can have a positive effect on the health outcomes of older women with breast cancer and, in turn, affect healthcare costs and quality of life.

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References

Anderson, E.T., Raines, A.P., & Goodwin, J.S. (1994). *Nurse case management: A community-based model for older breast cancer patients.* Paper presented at the Gerontological Society of America Meetings, Atlanta, GA.

Bradley, C.J., Given, C.W., & Roberts, C. (2002). Race, socioeconomic status, and breast cancer treatment and survival. *Journal of the National Cancer Institute, 94,* 490–496.

Brooten, D., & Naylor, M.D. (1995). Nurses' effect on changing patient outcomes. *Image: The Journal of Nursing Scholarship, 27,* 95–99.

Cameron, S., & Horsburgh, M.E. (1998). Comparing issues faced by younger and older women with breast cancer. *Canadian Oncology Nursing Journal, 8*(1), 40–44.

Compas, B.E., Stoll, M.F., Thomsen, A.H., Oppedisano, G., Epping-Jordan, J.E., & Krag, D.N. (1999). Adjustment to breast cancer: Age-related differences in coping and emotional distress. *Breast Cancer Research and Treatment, 54,* 195–203.

Craddock, R.B., Adams, P.F., Usui, W.M., & Mitchell, L. (1999). An intervention to increase use and effectiveness of self-care measures for breast cancer chemotherapy patients. *Cancer Nursing, 22,* 312–319.

Folstein, M.F., Folstein, S.E., & McHugh, P.R. (1975). "Mini-Mental State." A practical method for grading the cognitive state of patient for the clinician. *Journal of Psychiatric Research, 12,* 189–198.

Goodwin, J.S., Satish, S., Anderson, E.T., Nattinger, A.B., & Freeman, J.L. (2003). Effect of nurse case management on the treatment of older women with breast cancer. *Journal of the American Geriatric Society, 51,* 1252–1259.

Heimann, R., Ferguson, D., Powers, C., Suri, D., Werchselbaum, R.R., & Hellman, S. (1997). Race and clinical outcome in breast cancer in a series with long-term follow-up evaluation. *Journal of Clinical Oncology, 15,* 2329–2337.

Hughes, L.C., Robinson, L.A., Cooley, M.E., Nuamah, I., Grobe, S.J., & McCorkle, R. (2002). Describing an episode of home nursing care for elderly postsurgical cancer patients. *Nursing Research, 51,* 110–118.

Jennings-Sanders, A., & Anderson, E.T. (2003). Older women with breast cancer: Perceptions of the effectiveness of nurse case managers. *Nursing Outlook, 51,* 108–114.

National Cancer Institute. (2005). Cancer facts and figures. Retrieved March 25, 2005, from http://cis.nci.nih.gov/fact/5_6.htm

Palsson, M.B., & Norberg, A. (1995). Breast cancer patients' experiences of nursing care with the focus on emotional support: The implementation of a nursing intervention. *Journal of Advanced Nursing, 21,* 277–285.

Perkins, P., Cooksley, C.D., & Cox, J.D. (1996). Breast cancer: Is ethnicity an independent prognostic factor for survival? *Cancer, 78,* 1241–1247.

Pistrang, N., & Barker, C. (1995). The partner relationship in psychological response to breast cancer. *Social Science and Medicine, 40,* 789–797.

Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1,* 385–401.

Ritz, L.J., Nissen, M.J., Swenson, K.K., Farrell, J.B., Sperduto, P.W., Sladek, M.L., et al. (2000). Effects of advanced nursing care on quality of life and cost outcomes of women diagnosed with breast cancer. *Oncology Nursing Forum, 27,* 923–932.

Rustoen, T., & Begnum, S. (2000). Quality of life in women with breast cancer: A review of the literature and implications for nursing practice. *Cancer Nursing, 23,* 416–421.

Satariano, W.A., & Ragland, D.R. (1994). The effect of comorbidity on 3-year survival of women with primary breast cancer. *Annals of Internal Medicine, 120,* 104–110.

Spiegel, D., Bloom, J.R., Kraemer, H.C., & Gottheil, E. (1989). Effect of psychosocial treatment on survival of patients with metastatic breast cancer. *Lancet, 2,* 888–891.

Thijs-Boer, F.M., de Kruif, A.T., & van de Wiel, H.B. (1999). Supportive nursing care around breast cancer surgery: An evaluation of the 1997 status in the Netherlands. *Cancer Nursing, 22,* 172–175.

Yancik, R., Wesley, M.N., Ries, L.A., Havlik, R.J., Edwards, B.K., & Yates, J.W. (2001). Effect of age and comorbidity in postmenopausal breast cancer patients aged 55 years and older. *JAMA, 285,* 885–892.

Zander, K. (2002). Nursing case management in the 21st century: Intervening where margin meets mission. *Nursing Administration Quarterly, 26*(5), 58–67.