Nursing Research • September/October 2007 • Vol 56, No 5, 296–306

Gender and Ethnic Differences in Cancer Pain Experience

A Multiethnic Survey in the United States

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- **Background:** Inconsistent findings on ethnic differences in cancer pain experience suggest the need for further studies on this topic for adequate cancer pain management.
- **Objectives:** To determine ethnic differences in cancer pain experience of four ethnic groups in the United States.
- **Methods:** A feminist perspective was used as the theoretical basis. This was a survey of a multiethnic sample of 480 cancer patients asking questions on sociodemographic characteristics and health or illness status, 3 unidimensional cancer pain scales, 2 multidimensional cancer pain scales, the Memorial Symptom Assessment Scale, and the Functional Assessment of Cancer Therapy Scale. The data were analyzed using descriptive and inferential statistics including ANOVA and hierarchical multiple regression analyses.
- **Results:** The results indicated certain ethnic differences in types of pain and symptoms that patients experienced. Also, the results demonstrated significant ethnic differences in cancer pain and functional status.
- **Discussion:** The findings suggest further in-depth qualitative exploration on cultural values and beliefs related to cancer pain in each ethnic group and national studies with a larger number of ethnic minorities on this topic.

- **Key Words:** cancer · ethnicity · gender · pain

Ethnicity is a sociocultural contextual factor influencing persons' pain expression and experience, and a few researchers have begun to report ethnic variations in cancer pain experience (Laliberte, 2003; Miaskowski, 2004). In a national study, Cleeland et al. (1994) reported that, in settings with predominantly ethnic minority patients including Hispanics and African Americans, 62% of those patients were undertreated according to the World Health Organization standards, and they were three times more likely to be undermedicated than patients seen in nonminority settings with predominantly White cancer patients. In another study (Cleeland, Gonin, Baez, Loehrer, & Pandya, 1997), researchers reported that 74% of Hispanics and 59% of African American patients with pain did not receive the World-Health-Organization-recommended analgesics for their pain. In a subsequent study, Anderson et al. (2000) reported that 28% of Hispanic and 31% of African American patients received analgesics that were insufficient to manage their pain.

Despite these findings, some recent studies indicated no such variation in pain experience by ethnicity: There are no ethnic differences in cancer pain experience, measures of pain sensation, pain ratings of ethnically diverse groups of persons with myocardial infarction, pain ratings during childbirth, and behavior responses and pain ratings of children with cancer (Edrington et al., 2004; Rabow & Dibble, 2005; Rustøen, Fosså, Skarstein, & Moum, 2003). As these inconsistent findings indicate, it would be hasty to conclude that there are or are no ethnic differences in cancer pain experience, so further studies are needed to develop reliable knowledge that can be used to manage more adequately the pain of cancer patients. Furthermore, existing studies have tended to include only a limited number of ethnic minorities, and very few national studies having an adequate number of ethnic minorities for valid comparisons have been conducted.

The purpose of this study was to determine ethnic differences in reported cancer pain experiences among four of the most common ethnic groups in the United States (Hispanic, non-Hispanic [N-H] White, N-H African American, and N-H Asian). Cancer patients have been

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reported to experience pain with diverse symptoms, impairments in physical and psychological functioning, and other difficulties that can undermine their quality of life across all states and times (Dodd et al., 2001). Significant positive relationships between cancer pain intensity and psychological and physical symptoms have been reported (Poulos, Gertz, Pankratz, & Post-White, 2001). Thus, in this study, cancer pain was defined as a multidimensional subjective experience that accompanies symptoms and changes in functional status. It was hypothesized that there are significant differences in self-reported cancer pain, symptoms accompanying pain, and functional status according to self-reported ethnic identity (Hypothesis 1). Then, to determine the effects of ethnicity on cancer pain, symptoms, and functional status while considering the effects of other demographic and health and illness factors, it was hypothesized that ethnicity adds significantly to the prediction of the cancer pain, symptoms, and functional status scores after controlling for selected demographic and health and illness factors (Hypothesis 2).

The study was based on a theoretical grounding in feminist perspectives. It was assumed that the inadequate assessment of cancer pain reported by patients does not only come from pure biology, but from their continuous interactions with their environment (Hall & Stevens, 1991). For example, an ethnic minority cancer patient who may have particular difficulty feeling in control in a setting dominated by well-educated professionals may fail to clearly express her needs and fail to demand that her need for pain control be met (Ramer et al., 1999). In this case, inadequate management of cancer pain could be claimed to result from the cancer patient's interactions with her environment. In this study, using a feminist perspective, patients' own views and experiences were respected, and ethnicity was viewed as a significant characteristic that influences cancer patients' interactions with their environments and structures the cancer pain assessment and management processes.

Methods

This was a cross-sectional comparative survey design of a multiethnic sample of 480 cancer patients in the United States, which was a part of a larger study (Im et al., 2006) aimed at development of a decision support system for cancer pain management.

Sample and Settings

Four hundred eighty cancer patients (105 Hispanics, 148 N-H Whites, 109 N-H African Americans, and 118 Asians) were recruited through both Internet (n = 204) and community (n = 276) settings. To test the differences in cancer pain, symptoms accompanying pain, and functional status according to the four ethnic groups (Hypothesis 1), a conventional effect size of .20 (Cohen, 1988) was assumed. With alpha = .05, 68 participants per ethnic group would be needed to detect a statistically significant difference with power greater than .80 (Cohen, 1988). The Internet settings for recruitment were Internet cancer support groups identified through Google, MSN, and Yahoo searches. The community settings were cancer clinics and cancer support groups across the United States that were identified also by Internet searches. Ten community consultants who were formal or informal leaders of the community clinics and support groups identified through the Internet searches and who had direct contacts with ethnic minority cancer patients in the community settings (2 Hispanic, 4 Asian, and 4 African American community consultants) helped the recruitment process. During the recruitment process, if the community consultants requested hard copies of the questionnaires (pen-and-pencil questionnaires), hard copies were provided to potential participants through the community consultants. Participants recruited through the community consultants included both those who filled out the questionnaires through the Internet (30 cancer patients) and those who filled out hard copies (246 cancer patients).

Inclusion criteria for research participants were cancer patients aged at least 18 years who could read and write English and whose self-reported ethnic identity was Hispanic, N-H White, N-H African American, or N-H Asian. Because the use of multiple languages was impossible due to the inherent diversity and complexities within ethnic groups, only those who could read and write English were recruited.

Sociodemographic characteristics of the participants are summarized in Table 1. About 79% of the participants were women. Although a gender-balanced sample was the aim, using multiple recruitment strategies including direct and indirect contacts through both Internet and community settings, women were inadvertently oversampled. One possible reason is that women outnumber men in the cancer population (American Cancer Society, 2006) and in the Internet population (Fallows, 2005).

Instruments

Sociodemographic Characteristics Eight questions on age, gender, education, religion, marital status, work, family income, and access to healthcare were used to measure and describe sociodemographic characteristics of the participants. Self-reported ethnic identity (ethnic group membership) was measured using the ethnic identity question required in the National Institute of Health's reporting guidelines, and there was another question about country of birth.

Self-Reported Health/Illness Status Self-reported health and illness status was measured using one item rating general health, three items about cancer (primary cancer site, stage of cancer, and previous medical treatments), and one item on usage of pain medication.

Self-Reported Cancer Pain Experiences In this study, unidimensional (the Verbal Descriptor Scale [VDS], the Visual Analog Scale [VAS], and the Wong-Baker Faces Pain Scale [FS]) and multidimensional (the McGill Pain Questionnaire-Short Form [MPQ-SF] and the Brief Pain Inventory-Short Form [BPI-SF]) cancer pain assessment tools were used to measure self-reported cancer pain experience. The reason for using both types of instruments was to increase the validity and reliability of cancer pain measurement through multiple measurements (for confirmation and completeness of data) because very little is known about self-reported cancer pain across ethnic groups.

TABLE 1. Sociodemographic Characteristics of the Participants (*N* = 480)

Characteristics	*n* (%)
Age (in years)	
Mean (*SD*)	51.92 (12.27)
Ethnicity	
Hispanic	105 (21.9)
N-H White	148 (30.8)
N-H African American	109 (22.7)
N-H Asian	118 (24.6)
Education	
No school	4 (0.8)
Elementary	23 (4.8)
Middle school	29 (6.0)
High school	127 (26.5)
Partial college	110 (22.9)
College graduates	120 (25.0)
Graduate degree	67 (14.0)
Income satisfaction	
Totally insufficient	136 (28.3)
Somewhat insufficient	115 (24.0)
Sufficient for essentials	169 (35.2)
More than sufficient	43 (9.0)
Self-reported health status	
Very unhealthy	51 (10.6)
Unhealthy	109 (22.7)
Do not know	66 (13.8)
Healthy	211 (44.0)
Very healthy	41 (8.5)
Cancer site	
Breast	217 (45.2)
Head and neck	32 (6.7)
Lymph nodes	11 (2.3)
Hematologic	14 (2.9)
Gastrointestinal	46 (9.6)
Lung	30 (6.3)
Female reproductive organs	39 (8.1)
Prostate	10 (2.1)
Combined	42 (8.8)
Others	35 (7.2)
Usage of pain medication	
Yes	179 (37.3)
No	298 (62.1)
Place to seek for medical help	
Clinic or health center	292 (60.8)
Hospital outpatient department	29 (5.8)
Hospital emergency room	28 (5.8)
Others	89 (18.5)
Gender	
Women	381 (79.4)
Men	97 (20.2)
Employment	
Employed	190 (39.6)
Unemployed	290 (60.4)
Religion	
Muslim	1 (0.2)
Buddhist	35 (7.3)
Catholic	120 (25.0)
Protestant	114 (23.8)
No religion	69 (14.4)
Others	139 (29.0)
US-born	
Yes	318 (66.3)
No	162 (33.8)
Cancer treatment	
Radiation only	16 (3.3)
Chemotherapy only	77 (16.0)
Surgery only	45 (9.4)
Hormone therapy only	2 (0.4)
Combined	325 (67.7)
Others	15 (3.1)
Cancer stage	
0	23 (4.8)
I	79 (16.5)
II	122 (25.4)
III	72 (15.0)
IV	61 (12.7)
Recurrent	24 (5.0)
Not staged	5 (1.0)
Unknown	24 (5.0)
Regular access to health care	
Yes	450 (93.8)
No	29 (6.0)

Note. N-H = non-Hispanic.

A VDS consisting of simple terms including *no pain*, *mild pain*, *moderate*, *severe*, *very severe*, and *worst possible pain* was used to measure self-reported cancer pain. For statistical purposes, the terms were assigned a numerical value from 0 (*no pain*) to 5 (*worst possible pain*). In a study among 71 cancer patients aged 18–85 years with and without pain, the correlation coefficients for test–retest reliability of the VDS was 0.94 (Grossman et al., 1992).

The VAS consisting of a 10-cm horizontal line with word anchors at each end (i.e., *no pain* and *worst pain possible*) included in the MPQ-SF was used to measure self-reported cancer pain experience. The main advantage of the VAS is that it is relatively easy to complete and score, and it can be useful in measuring pain intensity in relation to treatments. When the VAS was tested with the FS and the Memorial Pain Assessment Card among multiethnic groups, it was found to be valid and reliable across ethnic groups (Ramer et al., 1999).

The FS consisting of six faces (Wong & Baker, 1989) was used also to measure self-reported cancer pain experience. The first picture is a very happy smiling face, and the last is a sad, tearful face; the pictures between the two faces indicate varying degrees of sadness. Patients were asked to choose which face is most like theirs. For statistical purposes, the faces were assigned a numerical value from 0 (*a very happy face*) to 5 (*a sad, tearful face*). The scale's concurrent validity, construct validity, and test-retest reliability (r = .61–.87) are well-established (Herr, Mobily, Kohout, & Wagenaar, 1998).

The MPQ-SF by Melzack (1987) was used as a multidimensional pain assessment scale; it has 17 items and 3 components: (1) pain rating index (PRI), (2) VAS, and (3) present pain intensity. The PRI consists of 15 descriptors (11 sensory and 4 affective) that are rated on an intensity scale (0 = *none*, 1 = *mild*, 2 = *moderate*, or 3 = *severe*), and the present pain intensity is measured on a 0 to 5 scale of overall pain intensity. The MPQ-SF pain scores were determined by adding the ratings of all 15 items included in PRI (possible range = 0–45). Validity and reliability of the MPQ-SF have been well established among cross-cultural populations (Lazaro, Bosch, Torrubia, & Banos, 1994). Cronbach's alpha of the MPQ-SF in this study was .94.

The BPI-SF (Cleeland, 1985) consists of 15 items that can be categorized into (a) a global *yes*-or-*no* item comparing pain with other minor aches and pains, (b) four items with 0–10 numerical rating scales for sensory component of pain, (c) an item for pain medications or treatments used, (d) a numerical scale rating the effectiveness of pain relief measures, (e) seven items using 0–10 numerical rating scales for a reactive dimension, and (f) a body diagram to indicate the location of pain. In this study, the BPI-SF pain scores were determined by adding the ratings of four items on intensity of pain and seven items on interferences in the patient's life of pain (possible range = 0–110). Validity and reliability of the BPI-SF have been established across cultures and languages (Ger, Ho, Sun, Wang, & Cleeland, 1999). Cronbach's alpha of the BPI-SF in this study was .96.

Symptoms Accompanying Cancer Pain The Memorial Symptom Assessment Scale (MSAS; Portenoy et al., 1994) was used to question patients about their experiences of 32 symptoms commonly associated with cancer in three dimensions: (1) severity, (2) frequency with which it occurs, and (3) distress it produces. Each symptom is scored from 0 (*no symptom*) to 4 (*very much*). Distress is rated on a five-point Likert scale. The MSAS symptom scores were determined by adding the ratings of symptom distress of 32 symptoms (possible range = 0–128). The validity and reliability of the MSAS have been established among ethnically diverse populations (Chang, Hwang, Feuerman, Kasimis, & Thaler, 2000). Cronbach's alpha of the MSAS in the study reported in this article was .93.

Functional Status Functional status was measured using the Functional Assessment of Cancer Therapy Scale (FACT-G), which consists of 33 items with five domains assessing physical well-being, social and family well-being, relationship with the physician, emotional well-being, and functional well-being (Cella et al., 1993). The responses to 28 of the items range from 0 (*not at all*) to 4 (*very much*). The five other items, using a linear analogue scale ranging from 0 (*not at all*) to 10 (*very much so*), are used to assess the extent to which each domain affects overall quality of life. In this study, the FACT-G scores were determined by adding the ratings of 33 questions (possible range = 0–132). Validity and reliability of the FACT-G have been well established among cross-cultural populations (Mullin et al., 2000; Yu et al., 2000). Cronbach's alpha of the FACT-G in this study was .70.

Data Collection Procedures

To administer the Internet questionnaire, a Web site conforming to the Health Insurance Portability and Accountability Act standards, the System Administration, Networking, and Security Institute Federal Bureau of Investigation recommendations, and the Institutional Review Board policy of the institution where the researchers were affiliated was developed and published on an independent, dedicated Web site server. When potential participants visited the project Web site, informed consent was obtained by asking them to click a button labeled *I agree to participate*. After this, questions on specific diagnoses, cancer therapies, and medications were asked, and the appropriateness of answers was checked automatically through a server-side program; participants were connected automatically to the Internet survey web page if the answers were appropriate.

Upon request, pen-and-pencil questionnaires were provided by mail to the community consultants, who distributed the questionnaires in person only to those who were identified as cancer patients. These questionnaires accompanied hard copies of the same informed consent form included in the Internet format of the questionnaire, and the pen-and-pencil questionnaire included a sentence "Filling out this questionnaire means that you are aged over 18 years old and giving your consent to participate in this survey." After the self-administered questionnaires were completed, community consultants retrieved all except five (these were mailed directly to the research team by the participants) in person at the community settings and mailed them to the research team. Supplementing pen-and-pencil questionnaires was essential to recruit the target number of ethnic minority cancer patients across the nation who did not have access to the Internet but were interested in participating in the study. Among 276 participants who were recruited through community settings, 246 (49 Hispanics, 6 N-H Whites, 99 N-H African Americans, and 92 N-H Asians) used the pen-and-pencil questionnaires. With an α level of .05, there were no statistically significant differences in psychometric properties between the Internet format and the pen-and-pencil format of the questionnaire. More detailed findings on psychometric properties of the Internet and pen-and-pencil formats of the questionnaire can be found in the larger study (Im et al., 2006). It took an average of 30–40 minutes for the

TABLE 2. A Summary of Self-Reported Cancer Pain, Symptoms, and Functional Status According to Ethnicity

Cancer Pain Experience	Mean (*SD*)		*SS*	*df*	*MS*	*F*	*p*
VDS							
Hispanic	1.79 (1.32)	Between groups	46.24	3	15.41	8.81	<.01
N-H White	1.82 (1.40)	Within groups	830.95	475	1.75		
N-H African American	1.39 (1.38)	Total	877.18	478			
N-H Asian	1.09 (1.16)						
VAS							
Hispanic	4.20 (3.20)	Between groups	31,679.20	3	10,559.73	9.98	<.01
N-H White	4.05 (3.50)	Within groups	443,325.23	419	1,058.06		
N-H African Americans	2.57 (3.31)	Total	475,004.43	422			
N-H Asian	2.29 (2.92)						
FS							
Hispanic	3.36 (1.49)	Between groups	67.74	3	22.58	9.37	<.01
N-H White	3.34 (1.54)	Within groups	1,132.25	270	2.41		
N-H African Americans	2.75 (1.71)	Total	1,199.99	473			
N-H Asian	2.49 (1.46)						
MPQ-SF							
Hispanic	10.86 (1.32)	Between groups	4,148.11	3	1,382.70	14.64	<.01
N-H White	12.06 (10.92)	Within groups	42,892.81	454	94.48		
N-H African Americans	6.13 (7.92)	Total	47,040.92	457			
N-H Asian	5.18 (8.80)						
BPI-SF							
Hispanic	42.94 (28.99)	Between groups	17,734.71	3	5,911.57	7.16	<.01
N-H White	38.85 (28.85)	Within groups	379,626.65	460	825.28		
N-H African Americans	32.74 (30.72)	Total	397,361.36	463			
N-H Asian	26.15 (26.25)						
MSAS							
Hispanic	24.45 (22.94)	Between groups	3,423.54	3	1,141.18	2.82	.04
N-H White	20.63 (15.92)	Within groups	192,756.96	476	404.95		
N-H African Americans	16.55 (19.40)	Total	196,180.50	479			
N-H Asian	21.46 (22.77)						
FACT-G							
Hispanic	94.76 (20.04)	Between groups	4,264.40	3	1,421.47	4.83	<.01
N-H White	89.28 (14.91)	Within groups	73,824.03	251	294.12		
N-H African Americans	88.84 (18.26)	Total	78,088.43	254			
N-H Asian	81.15 (17.60)						

Note. VDS = Verbal Descriptor Scale; N-H = non-Hispanic; VAS = Visual Analog Scale; FS = Wong-Baker Faces Pain Scale; MPQ-SF = McGill Pain Questionnaire-Short Form; BPI-SF = Brief Pain Inventory-Short Form; MSAS = Memorial Symptom Assessment Scale; FACT-G = Functional Assessment of Cancer Therapy Scale; *SS* = sum of squares; *df* = degree of freedom; *MS* = mean square.

participants to complete either the Internet format or the pen-and-pencil format of the questionnaire.

Data Analysis Process

The collected data were saved in ASCII format and databases. The data from the Internet survey were saved automatically and directly in the databases as the participants entered the data. The data from the pen-and-pencil survey were entered by one research assistant (RA) into the database, and two additional RAs double-checked the data entry separately. If one of the RAs found an error, the three RAs together resolved the errors. For both Internet and pen-and-pencil questionnaires, when the missing fields were less than 10%, mean substitution was used to determine the value of missing data. Participants for whom 10% or more data were missing were not included in the analyses;

TABLE 3. Top Five Most Frequently Reported Pain Descriptors Included in the MPQ-SF According to Ethnicity

Rank	Hispanics	N-H Whites	N-H African Americans	N-H Asians
1	Aching pain (62%)	Tiring pain (70%)	Aching pain (51%)	Tender pain (35%)
2	Tiring pain (60%)	Aching pain (69%)	Tiring pain (47%)	Aching pain (29%)
3	Sharp pain (52%)	Throbbing pain (34%)	Sharp pain (36%)	Tiring pain (26%)
4	Tender pain (52%)	Sharp pain (36%)	Throbbing pain (34%)	Throbbing pain (25%)
5	Throbbing pain (46%)	Tender pain (33%)	Tender pain (33%)	Cramping and fearful pain (23%)

Note. MPQ-SF = McGill Pain Questionnaire-Short Form; N-H = Non-Hispanic.

previous research showed that there was little, if any, impact on significance tests or confidence intervals (Little & Rubin, 2002). Although this method might increase the likelihood of type I error mildly, excluding participants with small amounts of missing data might actually result in a bias toward more healthy, compliant individuals (McLaughlin & Marascuilo, 1990). Then, before conducting data analyses, descriptive statistics were run to check errors or inconsistency in the data, and the data were cleaned while automatically generating the codebook.

Sociodemographic profiles, health and illness status, self-reported cancer pain, symptoms accompanying pain, and functional status of the participants were described using descriptive statistics including frequency, percentage, mean, standard deviation, and range. To test Hypothesis 1, the data were analyzed using analysis of variance (ANOVA). Tukey's Honestly Significant Differences test was used to assist in interpreting any significant effects from the ANOVA. Before conducting ANOVA, Levene's homogeneity test was conducted to determine the homogeneity of the ethnic groups. For the multiple comparisons, a corrected alpha using Bonferroni method was used. Hierarchical stepwise multiple regressions were conducted to determine the effects of ethnicity on cancer pain, symptoms, and functional status while considering other demographic and health and illness factors (Hypothesis 2). For these analyses, demographic factors including age, income satisfaction, and gender were entered first; health and disease factors including cancer stage, health status, and pain medication were entered second; and ethnicity (four dummy codes: Hispanic or not, N-H White or not, N-H African American or not, and N-H Asian or not) was entered last. The increase in R^2 (ΔR^2) was computed to determine the relative contributions of each set of variables. Standard coefficients (β) were computed to compare the relative importance of each variable in the model. The data were checked for multicollinearity, using tolerance and the variance inflation factor. Any variance inflation factor values greater than 10 and tolerance values smaller than .10 may indicate multicollinearity. There were no signs of multicollinearity in any of the regression models. All analyses were performed with the SPSS program.

Findings

Self-Reported Cancer Pain, Symptoms, and Functional Status

The ethnic-specific means of the cancer pain, symptoms, and functional status scores are summarized in Table 2. The top five most frequently reported pain descriptors (included in the Multicultural Personality Questionnaire [MPQ]) according to ethnicity are summarized in Table 3. *Aching pain* was the most frequently reported pain descriptor among Hispanics and N-H African Americans, and it was the second most frequently reported pain descriptor among N-H Whites and N-H Asians. The most frequently reported pain descriptor among N-H Whites was *tiring pain*, and that among N-H Asians was *tender pain*.

The top five most distressing and bothering symptoms according to ethnicity are summarized in Table 4. The most distressing and bothering symptom among Hispanics and

TABLE 4. Top Five Most Distressing and Bothering Symptoms According to Ethnicity

Rank	Hispanics	N-H Whites	N-H African Americans	N-H Asians
1	Pain (67%)	Pain (70%)	Lack of energy (47%)	Lack of energy (55%)
2	Lack of energy (52%)	Lack of energy (70%)	Pain (44%)	Difficulty sleeping (54%)
3	Difficulty sleeping (51%)	Difficulty sleeping (61%)	Difficulty sleeping (44%)	Worrying (50%)
4	Feeling sad (43%)	Difficulty concentrating (51%)	Numbness/tingling in hands/feet (39%)	Pain (49%)
5	Feeling drowsy (39%)	Worrying (43%)	Worrying (32%)	Difficulty concentrating (48%)

Note. N-H = Non-Hispanic.

TABLE 5. Predictors of Cancer Pain, Symptoms, and Functional Status: Hierarchical Multiple Regression

Predictor Variables	β	p	ΔR^2	F_{ch}	p for F_{ch}
VDS scores					
Step 1			.049	5.979	.001
Age	−.055	.236			
Income satisfaction	−.021	.656			
Gender	−.067	.143			
Step 2			.277	47.533	<.001
Cancer stage	.063	.186			
Health status	−.272	.000			
Pain medication	−.351	.000			
Step 3			.028	4.964	.002
Being Hispanic or not	.002	.962			
Being N-H African American or not	−.072	.139			
Being N-H Asian or not	−.186	.000			
VAS scores					
Step 1			.054	5.770	.001
Age	−.058	.229			
Income satisfaction	−.009	.855			
Gender	−.039	.412			
Step 2			.326	52.331	<.001
Cancer stage	.092	.063			
Health status	−.288	.000			
Pain medication	−.367	.000			
Step 3			.021	3.447	.017
Being Hispanic or not	.025	.661			
Being N-H African American or not	−.075	.144			
Being N-H Asian or not	−.150	.006			
FS scores					
Step 1			.048	5.785	.001
Age	−.007	.868			
Income satisfaction	−.016	.715			
Gender	−.075	.086			
Step 2			.335	62.340	<.001
Cancer stage	.070	.129			
Health status	−.342	.000			
Pain medication	−.354	.000			
Step 3			.033	6.439	<.001
Being Hispanic or not	.039	.397			
Being N-H African American or not	−.076	.104			
Being N-H Asian or not	−.183	.000			
MPQ-SF scores					
Step 1			.062	7.401	<.001
Age	−.073	.111			
Income satisfaction	−.001	.979			
Gender	−.105	.020			
Step 2			.275	46.346	<.001
Cancer stage	.053	.262			
Health status	−.312	.000			
Pain medication	−.302	.000			

TABLE 5. (continued)

Predictor Variables	β	p	ΔR^2	F_{ch}	p for F_{ch}
Step 3			.055	10.063	<.001
Being Hispanic or not	−.010	.829			
Being N-H African American or not	−.156	.001			
Being N-H Asian or not	−.253	.000			
BPI-SF scores			.096	12.290	<.001
Step 1					
Age	−.039	.381			
Income satisfaction	−.103	.021			
Gender	−.077	.074			
Step 2			.299	56.814	<.001
Cancer stage	.003	.954			
Health status	−.346	.000			
Pain medication	−.342	.000			
Step 3			.031	6.095	<.001
Being Hispanic or not	.047	.311			
Being N-H African American or not	−.069	.137			
Being N-H Asian or not	−.170	.001			
MSAS scores					
Step 1			.094	12.108	<.001
Age	−.081	.115			
Income satisfaction	−.156	.003			
Gender	−.066	.194			
Step 2			.113	16.646	<.001
Cancer stage	.064	.224			
Health status	−.257	.000			
Pain medication	−.164	.002			
Step 3			.001	.194	.901
Being Hispanic or not	−.039	.467			
Being N-H African American or not	−.001	.896			
Being N-H Asian or not	−.008	.987			
FACT-G scores					
Step 1			.063	4.524	.004
Age	−.090	.196			
Income satisfaction	−.024	.728			
Gender	−.204	.003			
Step 2			.098	7.725	<.001
Cancer stage	.208	.004			
Health status	−.008	.908			
Pain medication	−.165	.024			
Step 3			.023	1.863	.137
Being Hispanic or not	.090	.214			
Being N-H African American or not	.066	342			
Being N-H Asian or not	−.091	.221			

Note. VDS = Verbal Descriptor Scale; VAS = Visual Analog Scale; FS = Wong-Baker Faces Pain Scale; MPQ-SF = McGill Pain Questionnaire-Short Form; BPI-SF = Brief Pain Inventory-Short Form; MSAS = Memorial Symptom Assessment Scale; FACT-G = Functional Assessment of Cancer Therapy Scale; ΔR^2 = R^2 change; F_{ch} = F change; N-H = Non-Hispanic.

N-H Whites was pain, whereas that among N-H African Americans and Asians was lack of energy. Lack of energy was the second most distressing and bothering symptom among Hispanics and N-H Whites, and pain was the second among N-H African Americans.

Ethnic Differences in Cancer Pain, Symptoms, and Functional Status

There were significant ethnic differences in the VDS score ($F = 8.81$, $p < .01$), the VAS score ($F = 9.98$, $p < .01$), the FS score ($F = 9.37$, $p < .01$), the MPQ score ($F = 14.64$, $p < .01$), the BPI-SF score ($F = 7.16$, $p < .01$), and the FACT-G score ($F = 4.83$, $p < .01$) (Hypothesis 1; Table 2). However, there was no significant ethnic difference in the MSAS scores. The post hoc tests indicated that the VDS, VAS, FS, MPQ, and BPI-SF scores of N-H Asian participants were significantly lower than those of Hispanic and N-H White participants ($p < .01$). The VAS and MPQ scores of N-H African American participants were significantly lower than those of Hispanic and N-H White participants ($p < .01$). The FACT-G scores of N-H Asian participants were significantly lower than Hispanic participants ($p < .01$).

Effects of Ethnicity on Cancer Pain, Symptoms, and Functional Status

Separate hierarchical regression analyses were performed to determine the effects of ethnicity on the main cancer pain, symptom, and functional status scores while controlling for other demographic and health and illness factors (Hypothesis 2; Table 5). The overall model fit was still significant after the ethnicity variables were added to the model. With a couple of exceptions, there was a very large R^2 change when the cancer stage, health status, and pain medication variables were added to the model. The change in R^2 was not as dramatic when the ethnicity variables (Hispanic or not, N-H African American or not, and N-H Asian or not) were present, but there was some indication that the overall model fit was still good ($p < .01$).

All the variables combined accounted for 35% of the variance in the VDS scores ($F = 20.92$, $p < .001$). Health status and pain medication were significant predictors of the VDS scores and accounted for 28% of the variance. Being N-H Asian or not was a significant predictor of the VDS scores and explained about 3% of the variance. Forty percent of the variance in the VAS scores was explained by all the variables considered ($F = 22.00$, $p < .001$). Health status and pain medication were significant predictors of the VAS scores and accounted for 33% of the variance. Forty-two percent of the variance in the FS scores was explained by the predictor variables ($F = 27.00$, $p < .01$). Health status and pain medication were significant predictors of the FS scores and accounted for 34% of the variance. Being N-H Asian or not was a significant predictor of the FS scores and explained about 3% of the variance. All the variables combined accounted for 39% of the variance in the MPQ scores ($F = 23.80$, $p < .01$). Health status and pain medication were significant predictors of the MPQ scores and accounted for 28% of the variance. All the variables combined also accounted for 43% of the variance in the BPI-SF scores ($F = 28.16$, $p < .01$). Health status and pain medication were significant predictors of the BPI-SF scores and accounted for 30% of the variance. Being N-H Asian or not was a significant predictor of the BPI-SF scores and accounted for about 3% of the variance. Twenty-one percent of the variance in the MSAS scores was explained by all the variables considered ($F = 10.117$, $p < .01$). Health status was a significant predictor of the MSAS scores and accounted for 11% of the variance. Finally, 18% of the variance in the FACT-G scores was explained by all the variables considered ($F = 4.910$, $p < .01$). No significant predictor of the FACT-G scores was identified.

Discussion

The findings strongly support ethnic differences in cancer pain experience. The findings indicated that the cancer pain scores from both unidimensional and multidimensional scales were significantly different according to ethnicity, and being N-H Asian or not was a significant predictor of the VDS, FS, and BPI-SF scores. As indicated in previous studies (Wills & Wootton, 1999), N-H Asians were the ethnic group who reported the lowest cancer pain scores in all pain scales. The N-H White group reported the highest VDS and MPQ scores, whereas the Hispanic group reported the highest VAS, FS, and BPI-SF scores. The findings on the high VAS, FS, and BPI-SF scores among Hispanics are consistent with previous findings among Hispanic cancer patients (Eversley et al., 2005): Hispanics had the worst pain among multiethnic groups of cancer patients. Yet the finding that N-H African Americans reported lower cancer pain scores than Whites and Hispanics was somewhat different from previous findings among African American cancer patients (Eversley et al., 2005). A possible reason for these findings is that about 80% of the African American participants of the study reported in this article were recruited through cancer support groups, whereas about 60% of the Hispanic cancer patients were recruited through cancer clinics.

An interesting finding is that there were no ethnic differences in symptoms accompanying cancer pain and that ethnicity was not a significant predictor of the symptom scores. When considering that Asians reported the lowest cancer pain scores, their symptom scores should be expected to be lower than those of other ethnic groups. However, the findings indicate that there were no significant differences in the MSAS between Asians and other ethnic groups. One possible reason may be that Asians are more hesitant to report pain than they are to report physical symptoms. In the literature (Lipson & Dibble, 2005), it has been reported that Asians are hesitant to report psychological symptoms, such as depression, which can be stigmatized in Asian cultures; instead, they report physical symptoms, even when their symptoms are psychological in nature. It is possible that Asians do not report pain because it is a signifier of a more serious condition, like cancer, and because pain can be viewed negatively by others (Chung, Wong, & Yang, 2000).

Although very little is known about ethnic differences in the functional status of cancer patients, the finding that Hispanics reported the highest functional status score somewhat agrees with previous findings on family support among Hispanic cancer patients. Functional status has been reported to be influenced by living arrangements and social support (Wan et al., 1999). Compared with other ethnic groups, Hispanic cancer patients tend to be in a better situation in this regard: They were more likely to seek support from family members, friends, and health professionals; to identify a family member as the final treatment decision maker; and to have strong family support during the diagnosis and treatment process (Maly, Umezawa, Ratliff, & Leake, 2006). Indeed, familism among Hispanics—strong identity and attachment to the nuclear and extended families as well as loyalty and reciprocity in helping other family members (Maly et al.)—has been reported frequently in the literature. Although Asians and African Americans have similar cultural values, their behaviors seeking help for their cancer would be different because of the stigmatized nature of cancer (American Cancer Society, 2002; Chung et al., 2000). Subsequently, from this point of view, the findings on the highest functional status scores among Hispanic cancer patients could be understood. However, the finding needs to be interpreted carefully because the hierarchical multiple regression analyses indicated that being Hispanic or not was not a significant predictor of the FACT-G scores despite the finding of significant ethnic differences in the FACT-G scores.

The findings of this study that differed from those of previous studies raised a question about the appropriateness and adequacy of the cancer pain scales, the symptom scale, and the functional status scale for a specific ethnic group of cancer patients. In this study, Hispanics reported the highest cancer pain scores in the VAS, FS, and BPI-SF, whereas Whites reported the highest scores in the VDS and the MPQ-SF. The finding that a specific ethnic group reported the highest scores in one cancer pain scale but not in another suggests that some scales worked better than other scales in a specific ethnic group. Indeed, recently, some studies have reported this kind of dilemma. For example, in previous studies (Closs & Briggs, 2002), it was argued that the MPQ that was developed in Canada may not measure cancer pain adequately even in other English-speaking countries. The variation across the scales is interesting given that each scale has high reliability across ethnic groups.

The study had several methodological limitations, one of which is that the participants might not represent ethnic minority cancer patients adequately in the United States, although a large number of ethnic minority cancer patients were recruited. As described above, participants were recruited through both Internet and community settings to gather equivalent numbers of cancer patients from each of the four ethnic groups. Also, although multiple recruitment strategies were designed to gather a gender-balanced sample, more women participated than men. A third limitation is that there was no control over a child or a family member's involvement in data collection through the Internet (e.g., a child filling out the survey for the participant) because researchers could not be physically present to witness the activity. However, in the case of the pen-and-pencil questionnaires, all the participants except five who returned the questionnaires directly to the research team filled out the questionnaires at community settings while participating in the usual activities (e.g., cancer support groups or treatment modalities), and they returned the questionnaires to the community consultants in person before they left.

Conclusion and Implications

The findings indicated certain ethnic differences in types of pain and symptoms that cancer patients experienced. Also reported were significant ethnic differences in cancer pain and functional status and indicated that being N-H Asian or not was a significant predictor of several cancer pain scores. The following are suggested for future research: First, when a specific ethnic group reports the highest cancer pain score in one scale but not another, a question is raised about the appropriateness and adequacy of the scales themselves. Thus, the appropriateness and adequacy of the cancer pain, symptom, and functional status scales need to be examined further in each of the ethnic groups of cancer patients. Second, the findings suggest that cultural values and beliefs unique to each ethnic group might have influenced their cancer pain experience. Thus, more in-depth qualitative explorations on cultural values and beliefs related to cancer itself and the cancer pain assessment and management process are needed for better cancer pain management. Finally, generalizing study findings needs to be undertaken carefully, given that participants were recruited with a convenience sampling method. National studies on ethnic differences in cancer pain experience with a larger number of ethnic minorities using a systematic recruitment strategy would provide a more comprehensive and generalizable picture of ethnic variations in cancer pain experience. ▼

Accepted for publication May 11, 2007.

The study was funded by the NIH/NINR/NCI (1 R01 NR007900-01A1).

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