Hospice Use by Hispanic and Non-Hispanic White Cancer Decedents

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Objective. To investigate rates of hospice use between Hispanic and non-Hispanic white Medicare beneficiaries diagnosed with cancer using data from a large, population-based study.

Data Sources. Secondary data from the linked SEER-Medicare database including the SEER areas of Los Angeles, San Francisco, and San Jose–Monterey, California, and the state of New Mexico. All subjects were Hispanic or non-Hispanic whites, aged 67 and older, had a cancer diagnosis of breast, colorectal, lung, or prostate cancer from 1991–1996, and died of cancer from 1991–1998.

Study Design. This study employed a retrospective cohort design to compare rates of hospice use between Hispanics and non-Hispanic whites across patient characteristics and over time.

Principal Findings. Rates of hospice use were similar for Hispanics (39.2 percent) and non-Hispanic whites (41.5 percent). In a bivariate logistic regression model, Hispanics were significantly less likely to use hospice than non-Hispanic whites (OR 0.91; 95 percent CI 0.85–0.97). However, after adjusting for age, marital status, sex, educational attainment, income, urban versus rural residence, and type of insurance using multivariate logistic regression analysis, the estimated odds for being a hospice user among Hispanics is similar to the odds of being a hospice user among non-Hispanic whites (OR 1.05; 95 percent CI 0.98–1.13). Stratified analyses revealed significant differences between ethnic groups in the use of hospice by type of insurance and SEER area, indicating interactions between ethnicity and these variables.

Conclusions. Our findings indicate similar rates of hospice use for Hispanics and non-Hispanic whites diagnosed with one of the four leading cancers. Additional studies from other national registries may be necessary to confirm these findings.

Key Words. Hospice, end-of-life care, cancer, Hispanics, minority health

Hospice services are typically used when aggressive therapy is no longer being sought and death is expected to occur within six months. The number of patients opting for this type of care is increasing. In the last decade, for example, the use of hospice services more than doubled among Medicare beneficiaries (General Accounting Office 2000; Lackan, Freeman, and Goodwin 2003; National Hospice and Palliative Care Organization 2002; Cassel and Field 1997).

A number of studies have examined differences in hospice use by patient ethnicity (McCarthy et al. 2003; Virnig et al. 1999a, 1999b, 2000, 2002; Lackan, Freeman, and Goodwin 2003; Christakis 1998; National Hospice and Palliative Care Organization 2002; Crawley et al. 2000; Neubauer and Hamilton 1990; Talamantes, Lawler, and Espino 1995; Haber 1999; Gelfand et al. 2001; Gordon 1995). Using 1990 Medicare claims data, Christakis and Escarce (1996) found nonwhites were significantly less likely to use hospice than whites. In a series of studies using 1992 (Virnig et al. 1999a, 1999b) and 1996 (Virnig et al. 2000) Medicare claims data, Virnig et al. found African Americans were significantly less likely to use hospice than non-African Americans. Similarly, using linked SEER-Medicare data, Asians and Pacific Islanders were found to be significantly less likely to use hospice care than non-Hispanic whites (Ngo-Metzger et al. 2003).

Several studies also suggest that Hispanics use hospice at significantly lower rates than non-Hispanic whites (McCuistion 1994; Pawling-Kaplan and O'Connor 1989; National Hospice and Palliative Care Organization 2002). However, these studies are few in number and are limited by small sample size or lack of denominator data.

In a previous study (Lackan, Freeman, and Goodwin 2003), we reported no differences in hospice use among four ethnic groups (non-Hispanic whites, African Americans, Hispanics, and Asian/Pacific Islanders). That study, however, was limited to older women with a diagnosis of breast cancer. Our current study will expand this research by examining hospice use in a sample including both men and women dying of breast, colorectal, lung, or prostate cancer in one of four SEER areas (Los Angeles, San Francisco, and San Jose–Monterey, California and the state of New Mexico) in which sample sizes in both ethnic groups are large enough to perform detailed statistical analyses.

The purpose of this study is to compare hospice use for Hispanics and non-Hispanic whites dying of cancer. We examine hospice use over time and identify correlates of hospice use.

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METHODS

Data Sources

Data are from the linked Surveillance, Epidemiology and End Result (SEER)—Medicare database. The SEER program is a population-based registry for incident cancer cases in the United States maintained by the National Cancer Institute. SEER areas are located throughout the country and are selected on their ability to contribute accurate data to the registry and on their population composition. These areas included the states of Connecticut, Hawaii, Iowa, New Mexico, and Utah and the metropolitan areas of Detroit, San Francisco, Atlanta, Seattle, Los Angeles County, and San Jose–Monterey. The SEER areas cover approximately 14 percent of the United States population (Ries et al. 2000). The registries include data on all incident cancer cases. This information is obtained from hospitals, outpatient clinics, laboratories, private practitioners, nursing homes, hospices, death certificates, and autopsy reports. In addition, demographic information, including age, ethnicity, and sex, and tumor characteristics (such as size and stage) and course of treatment postdiagnosis are collected. Medicare claims for the present study are from the hospice standard analytic file (SAF). These claims were linked to the SEER registry data for cases aged 65 and older as part of a collaborative project between the National Cancer Institute and the Centers for Medicare and Medicaid Services (Warren et al. 2002). The project also created a Patient Entitlement and Diagnosis Summary File (PEDSF), which includes information on patient age, sex, marital status, managed care versus fee-for-service insurance, year of death, and cause of death.

Study Population

The sample included men and women age 67 or older at time of death to ensure that each subject had two full years of Medicare coverage prior to death. Only subjects classified by SEER as Hispanic or non-Hispanic white were included in the study sample. In order to ensure adequate sample sizes in both ethnic groups, only subjects residing in the four SEER areas of Los Angeles, San Francisco, San Jose–Monterey, and New Mexico were included in the sample. Subjects who were diagnosed with cancer before 1991 were excluded because the Los Angeles site was not added to the SEER program until that year. Only subjects who died of cancer were included in the analysis in order to increase the likelihood of hospice eligibility. A determination of death due to cancer was made by including only those decedents with

International Classification of Diseases, 9th Revision codes for malignant neoplasms ranging from 141.0–239.9 (International Classification of Diseases, 9th revision, Clinical Modification) listed on state death certificates as the underlying cause of death.

The sample consisted of 34,336 subjects diagnosed with breast, colorectal, lung, or prostate cancer from 1991 to 1996 at age 67 or older and who died of cancer from 1991 to 1998. We have data on these subjects for all four SEER areas for each year of the study period.

Measures

Subjects were considered to have enrolled in hospice if they had a claim in the hospice standard analytic file.

Ethnicity was either Hispanic or non-Hispanic white. The SEER variable used in this analysis combines race and Hispanic ethnicity information. Algorithms employed by the SEER program identify Hispanic surnames among individuals of “white” race. As a result, 98 percent of individuals with Hispanic surnames are classified as “white Hispanic” (Bach et al. 2002). This variable has been demonstrated to be more accurate in identifying Hispanics than the Medicare variable (Bach et al. 2002). Additionally, the methods employed by the SEER program for identifying Hispanic ethnicity have been shown to reduce underreporting of Hispanics (Stewart et al. 1999).

Age was divided into three categories: 67–74, 75–84, 85 and older. Age remained a continuous variable for multivariate analyses. Marital status at diagnosis was dichotomized into married and unmarried. Census tract data were used for income and education variables. Area median income was dichotomized: $\leq \$30,000$ and $> \$30,000$. Area education level was determined by the percentage of adults over age 25 in the census tract that completed high school. This variable was categorized as ≥ 90 percent completion, 75–89 percent completion, and < 75 percent completion of high school. Urban areas were designated as counties with a population greater than 250,000 in or adjacent to large metropolitan areas. Type of insurance was divided into two categories: continuous enrollment in fee-for-service (FFS) Medicare in the 24 months prior to death and continuous enrollment in Medicare managed care in the 24 months prior to death. Subjects who switched in and out of Medicare managed care during the 24 months prior to death were excluded from the sample. Year of death ranges from 1991 to 1998.

Analysis

Differences in rates of hospice use between Hispanics and non-Hispanic whites were evaluated using chi-square statistics. Multiple logistic regression analysis was used to identify predictors of hospice use.

Rates of hospice use were calculated by restricting the analysis to the subgroup of interest and then computing the percent of deaths in hospice out of all deaths. For example, in Table 1, the percent hospice use for death in hospice for Hispanic married subjects was calculated as follows: the total number of deaths in hospice for subjects who were married and Hispanic divided by the total number of deaths for subjects who were married and Hispanic in the sample times 100 ($[901 / 2077] \times 100 = 43.4$ percent). All analyses were performed using Version 8.2 of the *SAS* system for Windows (SAS Institute Inc., Cary, NC).

RESULTS

Table 1 compares rates of hospice use for Hispanics and non-Hispanic whites. The rate of hospice use was lower for Hispanics (1,548/3,951) than for non-Hispanic whites (12,613/30,385), 39.2 percent and 41.5 percent, respectively, $p = .005$. The table also presents percent hospice use for Hispanics and non-Hispanic whites by selected patient characteristics. A Bonferonni correction was used to adjust p -values for multiple comparisons across strata of each patient characteristic. The only significant difference between ethnic groups in hospice use was detected among subjects who were unmarried, had fee-for-service insurance, or resided in the SEER area of Los Angeles.

Figure 1 presents rates of hospice use over time for Hispanics and non-Hispanic whites. Hospice use increased over the study period in both groups. The interaction of ethnicity by year of death was not significant ($p = .68$), indicating that hospice use did not vary by ethnicity over time.

Table 2 presents three logistic regression models predicting the odds of hospice use. The first model shows the unadjusted odds of hospice use for Hispanics compared to non-Hispanic whites (OR 0.91, 95 percent C.I. 0.85–0.97). The second model adds sociodemographic variables and type of insurance (OR 1.04, 95 percent C.I. 0.97–1.13). The third model further adds type of cancer, SEER area, year of diagnosis, and year of death as covariates. Similar to model 2, differences between ethnic groups in hospice were not significant (OR 0.98, 95 percent C.I. 0.90–1.06).

Table 1: Percent Hospice Use by Selected Patient Characteristics for Hispanics and Non-Hispanic Whites Subjects Aged 67 and Older Diagnosed with Breast, Colorectal, Lung, or Prostate Cancer from 1991–1996 Who Died of Cancer from 1991–1998 (*N* = 34,336)

	<i>Distribution of Sample Number (%)</i>	<i>Hispanics (N = 3,951)</i>	<i>Non-Hispanic Whites (N = 30,385)</i>	<i>P-value[‡]</i>
Entire sample	34,336 (100)	39.2	41.5	0.005*
Age				
67–74	13,046 (38.0)	40.8	41.1	1.00
75–84	15,330 (44.6)	39.9	43.5	0.15
85+	5,960 (17.4)	33.9	37.1	0.96
Marital status				
Married	17,723 (53.1)	43.4	44.1	1.00
Not married	15,684 (46.9)	34.3	38.4	0.03**
Sex				
Female	15,691 (48.2)	40.4	43.2	0.63
Male	16,845 (51.8)	38.4	40.1	0.98
Area of residence				
Urban	32,343 (94.2)	40.3	42.1	0.74
Rural	1,991 (5.8)	30.5	30.9	1.00
Area Median Income				
≤ \$30,000	5,194 (15.1)	36.1	34.2	0.96
> \$30,000	29,142 (84.9)	40.8	42.6	0.96
Education (% H.S.)				
≥ 90%	8,871 (26.5)	46.9	44.9	1.00
75%–89%	14,838 (44.4)	43.3	42.3	1.00
< 75%	9,726 (29.0)	36.7	36.5	1.00
Insurance				
Managed care	9,501 (27.7)	58.8	57.4	1.00
Fee-for-service	24,835 (72.3)	31.6	35.5	0.003**
SEER area				
Los Angeles	16,679 (48.6)	35.4	39.9	0.003**
San Jose–Monterey	4,444 (12.9)	37.1	41.0	0.99
New Mexico	4,026 (11.7)	42.7	45.0	1.00
San Francisco	9,187 (26.8)	47.7	43.2	0.74
Type of cancer				
Prostate	4,694 (13.7)	40.7	42.5	1.00
Colorectal	7,876 (22.9)	41.2	42.8	1.00
Breast	3,108 (9.1)	36.0	43.7	0.15
Lung	18,658 (54.3)	38.1	40.4	0.87
Year of death				
1991	2,118 (6.2)	15.6	17.4	1.00
1992	3,749 (10.9)	25.0	28.9	0.98
1993	4,910 (14.3)	30.1	35.3	0.49
1994	5,433 (15.8)	38.6	41.2	1.00
1995	5,890 (17.2)	39.5	45.0	0.20

continued

Table 1: *Continued*

	<i>Distribution of Sample Number (%)</i>	<i>Hispanics (N = 3,951)</i>	<i>Non-Hispanic Whites (N = 30,385)</i>	<i>P-value[†]</i>
1996	6,025 (17.5)	47.7	48.5	1.00
1997	3,816 (11.1)	49.5	52.8	1.00
1998	2,395 (7.0)	52.2	53.2	1.00

[†]A Bonferroni correction was used to account for multiple comparisons. *P*-values shown have been calculated by using the following formula: $1 - (1 - \text{original } p\text{-value})^{33}$. There are a total of 33 comparisons in this table. *P*-values listed as 1.00 on the table have been rounded from < 0.9999 .

*Significant at $\alpha = 0.05$ level.

**Significant at $\alpha = 0.05$ level after Bonferroni correction.

Figure 1: Hospice Use over Time for Hispanic and Non-Hispanic White Subjects Aged 67 and Older Diagnosed with Breast, Colorectal, Lung, or Prostate Cancer from 1991 to 1996 Who Died from Cancer from 1991–1998 ($N = 34,336$)

The analyses performed for Table 2, model 3 were performed separately for each cancer site (data not shown). There was no difference in the odds of Hispanics enrolling in hospice compared to non-Hispanic whites for three of the four cancer sites: colorectal (OR 0.94, 95 percent C.I. 0.82–1.07), lung (OR 0.91, 95 percent C.I. 0.82–1.00), and prostate (OR 0.93, 95 percent C.I. 0.79–1.10). For women with breast cancer, however, Hispanics were significantly

Table 2: Results of Logistic Regression Analysis Predicting Odds of Hospice Use among Subjects Aged 67 and Older Diagnosed with Breast, Colorectal, Lung, or Prostate Cancer from 1991–1996 Who Died of Cancer from 1991 to 1998 (*N* = 34,336)

	<i>Model 1 OR (95% C.I.)</i>	<i>Model 2 OR (95% C.I.)</i>	<i>Model 3 OR (95% C.I.)</i>
Hispanic (vs. NHW)	0.91 (0.85–0.97)	1.04 (0.97–1.13)	0.98 (0.90–1.06)
Age at death		1.00 (0.99–1.00)	1.00 (0.99–1.00)
Male (vs. female)		0.78 (0.74–0.82)	0.75 (0.71–0.80)
Married (vs. unmarried)		1.30 (1.24–1.37)	1.21 (1.14–1.28)
> 90% completed H.S. (vs. < 75%)		1.43 (1.34–1.53)	1.28 (1.18–1.38)
75–89% completed H.S. (vs. < 75%)		1.24 (1.17–1.32)	1.15 (1.07–1.23)
Area Income > \$30,000		1.05 (0.96–1.14)	1.24 (1.12–1.37)
Urban (vs. rural)		1.11 (0.99–1.25)	2.05 (1.75–2.40)
Managed care (vs. FFS)		2.52 (2.40–2.66)	2.45 (2.31–2.60)
Year of death			1.29 (1.26–1.32)
New Mexico (vs. L.A.)			2.63 (2.35–2.94)
San Francisco (vs. L.A.)			1.20 (1.12–1.27)
San Jose (vs. L.A.)			1.22 (1.12–1.32)
Prostate cancer (vs. lung)			0.87 (0.79–0.96)
Breast cancer (vs. lung)			0.74 (0.67–0.82)
Colorectal cancer (vs. lung)			0.96 (0.90–1.03)
Year of diagnosis			0.92 (0.90–0.94)

less likely to enroll in hospice than non-Hispanic whites (OR 0.73, 95 percent C.I. 0.58–0.97).

We further examined whether hospice use varied by ethnicity for each independent variable. There were two significant interactions: ethnicity by type of insurance and ethnicity by SEER site. Table 3 presents the odds of hospice use for Hispanics by type of insurance and SEER site from the final model. In subjects with fee-for-service insurance, rates of hospice use are significantly lower for Hispanics when compared with non-Hispanic whites (OR 0.90, 95 percent C.I. 0.81–0.99). No difference in hospice use was detected between ethnic groups in subjects with managed care insurance (OR 1.13, 95 percent C.I. 0.98–1.30). The table also shows that the Los Angeles SEER area is the only SEER site in our sample in which the rate of hospice use for Hispanics is significantly lower than for non-Hispanic whites. Hispanics residing in Los Angeles were approximately 0.87 (95 percent C.I. 0.78–0.97) times as likely to enroll in hospice as non-Hispanic white subjects residing in Los Angeles.

Table 3: Odds of Hospice Use for Hispanic versus Non-Hispanic White Subjects Aged 67 and Older Diagnosed with Breast, Colorectal, Lung, or Prostate Cancer from 1991 to 1996 and Who Died of Cancer from 1991 to 1998, by Type of Insurance and SEER Area ($N = 34,336$)*

<i>Factors That Had Significant Interactions with Patient Ethnicity</i>	<i>Odds Ratio (95% Confidence Interval)</i>
Type of insurance	
Managed care	1.13 (0.98–1.30)
Fee-for-service	0.90 (0.82–0.99)
SEER area	
Los Angeles	0.87 (0.78–0.97)
San Jose–Monterey	0.87 (0.68–1.11)
New Mexico	0.97 (0.82–1.16)
San Francisco	1.19 (0.99–1.42)

*Controlling for all other variables included in model 3 (from Table 2) and insurance*SEER area* year of death interaction term.

The sample of subjects dying after a cancer diagnosis represents two populations, those dying of cancer, and those dying after a cancer diagnosis but from some other disease. We repeated the analyses using subjects dying from all causes and found similar results. For example, in a logistic regression analysis controlling for the effects of sociodemographic variables, type of insurance, SEER area, and type of cancer, the odds of Hispanics enrolling in hospice compared to non-Hispanic whites was 1.05 (95 percent C.I. 0.98–1.07). Thus, the results of this study are generalizable to the SEER population since the lack of difference remained after examining deaths of all causes.

DISCUSSION

Our study can be summarized as follows. Hispanics and non-Hispanic whites with a diagnosis of cancer were found to use hospice services at similar rates. A significant difference in hospice use between Hispanics and non-Hispanic whites was detected in an unadjusted model, but the difference disappeared in adjusted models controlling for sociodemographic characteristics, type of insurance, type of cancer, and SEER area. Ethnicity, age at death, and having a diagnosis of colorectal cancer were the only variables not associated with hospice use. This finding is noteworthy because of the large sample size. Significant associations can often be detected when samples are overpowered

for statistical analyses. Therefore, associations that are not significant with large samples are particularly striking.

Separate analyses for each cancer site demonstrate that it is only among women with breast cancer that Hispanics are significantly less likely to use hospice services in comparison to non-Hispanic whites. Another noteworthy finding for women dying of breast cancer is that hospice enrollment was equally likely to occur in married and unmarried subjects. Finally, two significant interactions with ethnicity were observed, ethnicity by type of insurance and ethnicity by SEER site. After adjusting for sociodemographic characteristics, type of insurance, type of cancer, and SEER area, Hispanic subjects were less likely to use hospice if enrolled in fee-for-service Medicare. Hispanic subjects were also significantly less likely to use hospice than non-Hispanic whites if residing in Los Angeles.

There are limited studies that have reported on proportions of hospice use among Hispanics (Lackan, Freeman, and Goodwin 2003; Pawling-Kaplan and O'Connor 1989; McCuiston 1994; National Hospice and Palliative Care Organization 2002). Three of these studies reported that Hispanics used hospice services less than non-Hispanic whites. However, they were either limited to single hospice sites or lacked denominator data, thus making comparisons in rates of use across ethnic groups difficult. In a previous study, we found no difference in hospice among non-Hispanic whites, African Americans, Hispanics, and Asian/Pacific Islanders. That study only examined older women diagnosed with breast cancer. The present study is the first to compare rates of hospice use between Hispanics and non-Hispanic whites using a population-based sample of men and women diagnosed with one of the four leading cancers.

While the National Hospice and Palliative Care Organization study did not include denominator data, its findings are still striking. Briefly, the study reported that in 2000, 82 percent of hospice patients were non-Hispanic white and 3.4 percent were Hispanic. According to year 2000 data from the U.S. Census Bureau, non-Hispanic whites comprised 70.6 percent of the population and Hispanics comprised 12 percent in that year (Therrien and Ramirez 2000). The 3.4 percent hospice use among Hispanics reported by the National Hospice and Palliative Care Organization is much lower than what we found and also much lower than the proportion of Hispanics in the nation. It is possible that this study found lower hospice use among Hispanics because it included all hospice patients, not just older adults. On average, Hispanics are younger than non-Hispanic whites (Therrien and Ramirez 2000) and hospice services are primarily used by older adults (Cassel and Field 1997). Another

explanation might be that information on patient ethnicity may be more accurate in the SEER data.

Our finding that Hispanics and non-Hispanic whites use hospice at similar rates is contrary to a widely held belief that ethnic minorities underutilize hospice services (Gordon 1995; Haber 1999; Gelfand et al. 2001; Talamantes, Lawler, and Espino 1995; McCuiston 1994; Pawling-Kaplan and O'Connor 1989; National Hospice and Palliative Care Organization 2002). While it has been confirmed in population-based studies that African Americans use hospice services at lower rates than non-Hispanic whites (Payne, Medina, and Hampton 2003; Virnig 1999a, 1999b, 2000, 2002; Bass and Labus 1985; Gordon 1995; Neubauer and Hamilton 1990), this does not appear to be the case for Hispanics.

Given the eligibility requirements of the Medicare Hospice Benefit and the strong social support networks of Hispanic cultures, our finding that Hispanics and non-Hispanic whites use hospice at similar rates makes sense. The Medicare Hospice Benefit requires that hospice patients have a caregiver available for at least 19 hours per day. This requirement, known as the "caregiver rule," prohibits many older adults from enrolling in hospice care. Older adults who live alone, who do not have close friends or relatives able to commit to providing nearly full-time care, or who may not be able to afford custodial care are ineligible for hospice services under the Medicare Hospice Benefit because of the "caregiver rule" (Gordon 1995).

It is doubtful that the "caregiver rule" is a prohibitive factor in traditional Hispanic communities. Hispanic cultures have strong kinship networks and the strength of these support networks is well-documented (Aranda and Knight 1997; Aranda and Miranda 1997). Hispanic households are often comprised of extended families and multiple generations, thus increasing the potential availability of hospice caregivers.

Another characteristic of Hispanic cultures that facilitates the use of hospice care is the cultural attitude toward caregiving. Cultural norms dictate that family members should be cared for in the home by their loved ones for as long as possible (Angel et al. 1996; Markides et al. 1997). This is evidenced by the lower use of institutional care (e.g., nursing homes) by Hispanics (Dey 1997; Angel and Angel 1997). This preference for caring for family members at home versus institutional settings is consistent with the ideals of hospice care.

Our study is limited in that only subjects who died with breast, colorectal, lung, and prostate cancer were included in the study. While these are the most frequently occurring cancers for adults age 65 and over (Edwards

et al. 2002), the use of hospice among patients with noncancer diagnoses is increasing (National Hospice and Palliative Care Organization 2002). It is important that ethnic differences among patients with noncancer diagnoses are also investigated. In addition, while the SEER-Medicare data are an excellent source to study older patients diagnosed with cancer who subsequently use hospice, they are limited in their generalizability to older adults across the country. The SEER-Medicare population is more racially and ethnically diverse, has a greater percentage of urban residents, is more highly educated, and has a higher income than the older adult population of the United States (Warren et al. 2002; Nattinger et al. 1997). There remains debate surrounding the accuracy of reporting of Hispanic ethnicity in the SEER data. A study by Swallen et al. (1997) examining misclassification of Hispanics in the San Francisco SEER registry identified both overreporting and underreporting of Hispanics. Misclassification of individuals of Hispanic ethnicity differed for males and females and was found to be associated with acculturation and sociodemographic characteristics such as age and education. Since our study demonstrates that hospice use between Hispanics and non-Hispanic whites is similar, it is unlikely that underreporting of Hispanics will bias our results. Swallen and colleagues suggested that in cases of overreporting, Hispanic ethnicity was confused with membership in another nonwhite ethnic group. If this is the case, it is not likely that this type of overreporting would bias our results. Another limitation is the lack of detailed information about populations within the Hispanic ethnic group. The term "Hispanic" is used to describe several groups including Mexican Americans, Cubans, and Puerto Ricans. Further research is necessary to investigate hospice use within these groups since it has been demonstrated that these groups differ with respect to the use of other health services, such as number of physician visits per year (Burnette and Mui 1999; Trevino and Moss 1984).

Our findings suggest that while some minority groups may use hospice services less than non-Hispanic whites, it cannot be assumed that all minority groups do so. Further research is necessary to examine hospice use in other minority groups.

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