

# ASSOCIATIONS OF RACE AND OTHER SOCIOECONOMIC FACTORS WITH POST-HOSPITALIZATION HOSPICE CARE SETTINGS

**Objective:** To examine patient characteristics post hospitalization between hospice home care and hospice care delivered in a medical facility.

**Design, Setting, and Participants:** A total of 3,613 hospital discharges to either hospice delivered at home or in a medical facility. Data was from the 2010 Nevada Hospital Inpatient Data.

**Main Outcome Measures:** Our dependent variable was home-based hospice care and medical facility-based hospice care. Our independent variables included race which was categorized as White, African American, Hispanic/Latino, Asian/Pacific Islander, and other race/ethnicity. Socioeconomic factors were marital status and health insurance.

**Results:** Hispanic patients were more likely to be discharged to home rather than a facility-based hospice (OR 1.39). Single patients and divorced patients were less likely to be discharged to a home-based hospice setting (OR .79, .67). Older patients were more likely to be discharged to a facility-based hospice (OR .91). The presence of anemia, paralysis, neurological disorders and weight loss were negatively associated with home discharge (OR 1.51). Patients with higher charges were less likely to be discharged to home (OR .96).

**Conclusions:** Race, age, diagnosis and marital status influenced whether patients were discharged to home-based hospice or hospice delivered in a medical facility. These findings will assist hospice in anticipating which setting would be most appropriate for patients. Further research to determine whether patient preferences or characteristics determine hospice setting will be beneficial. (*Ethn Dis*. 2014;24[2]:236–242)

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**Key Words:** Hospice Care, Racial Disparity, Socioeconomic Factors, Home Care, Medical Facility

## INTRODUCTION

Hospice care as defined by the National Hospice and Palliative Care Organization (NHPCO) offers a comprehensive approach to care for individuals with a diagnosis of a terminal illness that includes coordination of care, symptom management, and support for emotional and spiritual needs. Hospice patients have a diagnosis of  $\leq 6$  months to live and are no longer seeking life-prolonging treatment (eg, chemotherapy and radiation). In the past, cancer patients were most closely associated with hospice care, however, individuals with a diagnosis of a neurological illness, congestive heart failure, and renal failure are increasingly receiving hospice care.<sup>1,2</sup> Hospice care consists of a multidisciplinary team, made up of a physician, nurse, social worker, and chaplain. The unit of care encompasses the patient, family, and friends. Hospice services are paid for by a patient's private health insurance, Medicare, or Medicaid.<sup>3</sup>

In 2011 44.6% of all deaths in the United States were under the care of hospice.<sup>1</sup> In this same year hospice services were provided to Caucasians (82.9%), African Americans (8.5%), Asian or Pacific Islander (2.4%), American Indian or Alaskan native (.2%) and other race (6.1%)<sup>1</sup>. Despite efforts to be more inclusive of ethnic minorities the percentage of patients utilizing hospice continues to be mostly Caucasians.<sup>2</sup>

Hospice services are often provided either at an individual's home or in a facility-based setting, such as nursing home, assisted living facility, a hospital, and an inpatient hospice unit.<sup>5</sup> A

hospice inpatient facility is either a free-standing hospice or hospice services provided in a hospital. In 2011, 1.65 million individuals received hospice care of which 66.4% died in their residence. Despite this sizable percentage of home deaths, deaths in a facility continue to increase. For example, hospice patients who died in a hospice inpatient facility increased from 21.9% in 2010 to 26.1% in 2011.<sup>3</sup>

Quality of care as perceived by the patient can be influenced by whether it was received at home or in a medical facility.<sup>6–9</sup> At home, care may be primarily provided by a friend or family member while in a medical facility people with no prior relationship with the patient provide care. Being cared for in familiar surroundings with items that hold meaning is a much different experience than the sterility of a medical institution.<sup>10</sup>

Patients receiving care at home are more likely to report successful symptom management than those in a medical facility.<sup>5</sup> In addition hospice home care patients experience less depression and anxiety which has been related to being in familiar surroundings with family and friends in close proximity.<sup>11</sup> Patients describe that a sense of control is more likely to be felt at home vs in a medical facility.<sup>12</sup> Patients at home are more likely to report a sense of dignity than those in a medical facility.<sup>9,13</sup>

Patients who receive hospice care in a medical facility often require a higher level of care only hospitals can provide.<sup>10</sup> As a result, patients may feel less anxiety in a medical facility because of the availability of medical interventions that are not present at home.<sup>14</sup> In a medical facility patients also feel less burden as family and friends are not responsible for providing care.<sup>12,15</sup> In

addition, research has suggested communication in a medical facility can be fragmented because of lack of relationship between the patient, family members and the medical staff. This fragmentation can leave the patient feeling isolated.<sup>16,17</sup> The routine at the hospital with staff changes, and tests being ordered can be perceived by patients and family as fast paced and overwhelming. Lastly, loud noises and a lack of privacy can also be particularly burdensome for the patient and family.<sup>18</sup>

Racial/ethnic disparities exist in hospice care. While receiving hospice care minorities are associated with frequent admissions to the intensive care unit. In this setting ethnic minorities are more likely to not have advanced directives leaving them with less control over medical decisions. As a result the use of life-saving treatments (eg, ventilators, blood transfusions, dialysis, and intravenous use of antibiotics) is higher for minorities than Caucasians.<sup>19</sup> Due to the use of life-saving treatments the medical costs tend to be higher for minorities in a medical facility. Further, higher rates of emergency room visits, hospitalization, and a longer length of stay in the hospital are associated with minorities receiving hospice care.<sup>20-21</sup> Accordingly, minorities, when compared with Whites, may be more likely to receive hospice care in a medical facility vs at home, but research in this regard has been sparse. In addition, a lack of insurance has been shown to decrease the likelihood of utilizing hospice.<sup>21</sup> It is unclear to the extent that marital status may influence whether hospice is received at home or in a medical facility for minorities. Cultural beliefs and availability of support appear to be highly influential in determining where minorities receive hospice.<sup>22-24</sup>

Ethnic differences regarding the location of hospice care persists and consensus on why has yet to be determined. Therefore, the purpose of our study was to examine potential

racial/ethnic disparities in hospice care settings. We hypothesized higher rates of minorities in a medical facility vs home hospice care with underlying factors of lack of support at home, cultural beliefs, and low socioeconomic status. Additional factors such as health insurance and marital status were also examined for a possible influence on the presence of racial differences between hospice settings.

## METHODS

### Data

This was a cross-sectional study. We analyzed data from the 2010 Nevada Hospital Inpatient Data, provided by the Center for Health Information Analysis (CHIA) at University of Nevada, Las Vegas. The unit of analysis was hospital discharge. The Nevada state inpatient database contains all discharges from community hospitals in the state. Discharges to both home-based hospice care and hospice care delivered in a medical facility were identified. A total of 3,613 discharges were abstracted from the 2010 dataset.

### Measures

Our dependent variable, hospice care setting, was measured by a dichotomous variable indicating home-based hospice care or medical facility-based hospice care.

Our primary independent variable was a categorical variable, race/ethnicity, which was categorized as White, African American, Hispanic/Latino, Asian/Pacific Islander, and other race/ethnic, based on patients' self-reported infor-

mation. For the purpose of data analysis, the original race/ethnicity variable was converted to five dummy variables, representing African American, Hispanic/Latino, Asian and Pacific Islander, other race/ethnicity, and unknown race/ethnicity, respectively, while White served as the reference group. Two additional socioeconomic factors, marital and health insurance status, were considered. Marital status was categorized as single, married, divorced, widowed, or unknown; four dummy variables were created to represent single, divorced, widowed, or unknown, respectively, while married served as the reference group. Health insurance status was categorized as Medicare-commercial, Medicare-HMO, Medicaid, commercial insurance, HMO, PPO, uninsured, and other insurance. While Medicare-commercial served as the reference, seven dummy variables were used represent the other seven different health insurance statuses. The unknowns for the two independent variables (eg, race/ethnicity and marital status) were included in the multivariable analysis so as to not reduce the sample size but were not shown in the results section.

### Analytical Techniques

Data analyses was not based on the conventional logistic regression for binary variables because individual discharges were not independent. It was based on the generalized linear mixed model (GLIMMIX) including the usual fixed effects for regressors and random effects were applied to examine the relationship between the independent variables and the dependent variables. The random cluster effect was used to take into account the cluster effect of discharges within the hospital due to discharges in each hospital not randomly selected. We included a set of control variables or covariates in the multivariable model. First we controlled for patient age and sex. Age was divided into  $\leq 54$ , 55-64, 65-74,  $\geq 75$  groups to create a meaningful interval in the

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**Table 1. Characteristics of patients by discharge setting (N = 3,613)**

Variable	Home (n=1,450)	Facility (n=2,613)	P
<b>Sociodemographics</b>			
Age, mean (SD), year	73.9 (14.3)	73.7 (13.1)	
Female, %	50.6	49.3	
Race, %			<.01
White	77.0	78.4	
Black	6.8	8.0	
Hispanic	6.1	5.8	
Asian	3.2	4.2	
Other race	2.9	3.1	
Unknown race	4.0	.5	
Marital status, %			<.01
Married	22.0	25.3	
Single	44.8	40.6	
Divorced	7.1	9.8	
Widowed	24.9	23.3	
Unknown	1.2	1.1	
Insurance status, %			<.01
Medicare - commercial	52.1	48.1	
Medicare - HMO	19.2	23.3	
Medicaid	5.5	6.4	
Commercial insurance	2.9	2.9	
PPO	6.5	4.9	
HMO	7.6	8.3	
Uninsured	3.9	4.1	
Other insurance	1.7	2.1	
<b>Hospitalization</b>			
Length of stay, mean (SD), day	7.1 (7.9)	9.3 (15.3)	<.01
Total charge, median, \$	37,823	66,450	
Total charge, mean (SD), \$	63,486 (83,313)	110,142 (135,059)	<.01

generalized linear mixed model. Second, we controlled for patient mix in regard to comorbidities that consisted of a set of 29 co-morbid conditions, developed by Agency for Healthcare Research and Quality (AHRQ), such as congestive heart failure, depression, diabetes, heart attack, hypertension, neurologic disorder (eg, coma, paralysis), pulmonary circulation disorders, renal failure, and weight loss.<sup>25</sup> Finally, length of stay and total charges were also included as covariates as used in other studies.<sup>26-27</sup> Total charges were measured in \$10,000 intervals to have a meaningful interval in the data analysis.

## Results

Unadjusted patients' sociodemographic characteristics by hospice care

locations are displayed in Table 1. Minimal differences in age and sex were noted across the two types of care locations. Patient from all race/ethnic backgrounds except Hispanic patients (6.1% went to home-based hospice and 5.8% went to facility-based hospice) were more likely discharged to facility-based hospice. Also, married and divorced patients were more likely to be discharged to facility-based hospices whereas single and widowed patients tended to be discharged to home-based hospices. With regard to hospitalization, patients who were discharged to a home-based hospice, as compared to facility-based hospice experienced a shorter hospital stay (7.1 vs 9.3 days, respectively,  $P<.01$ ) and lower total charges (\$63,486 and \$110,142, respectively,  $P<.01$ ).

The top six diagnostic categories of patients who were discharged from

hospital to hospice care are shown in Table 2. The top five were the same across the two types of hospice care settings although the ranks differed. In total, the top six categories represented ~78% of the total patient discharges, 73.9% of discharges to home hospice and 81.4% of discharges to facility hospice.

The top 10 specific diagnoses between the two hospice settings are shown in Table 3. The top four diagnoses (ie, hearing loss, organism unspecified pneumonia, unspecified acute renal failure, respiratory failure) were the same for both hospice settings although the ranks varied. Other specified rehabilitation procedure, urinary tract infection, and volume depletion made the top 10 among the patients in the home hospice group but did not make the top 10 in the facility hospice group. On the other hand, cerebral artery occlusion, subendocardial infarction, and unspecified bronchus and lung conditions did not make the top 10 in the home hospice group but made the top 10 in the facility hospice group. Overall, the top 10 diagnoses represented ~32% total patient discharges, 26.6% of discharges to home hospice and 35.1% of discharges to hospice group.

Multivariable analysis adjusted results are shown in Table 4. Compared to White patients, patients with all other races/ethnicities, except Hispanic, had comparable odds of being discharged to either hospice setting whereas Hispanic patients were more likely to be discharged to home-based hospices than to facility-based hospices (odds ratio [95% confidence interval], 1.39 [1.00, 1.92]). Further, as compared to married patients, single or divorced patients were less likely to be discharged to a home-based hospice setting (.79 [.64, .97], .67 [.49, .90], respectively) whereas widowed patients had a comparable odds of being discharged to the home-based hospice setting. No differences were detected

**Table 2. Top diagnostic categories by discharge setting (N=2,834)<sup>a</sup>**

Diagnostic Category <sup>b</sup>	Home (n=1,073)		Facility (n=1,761)	
	%	Rank	%	Rank
Neoplasms (140–239)	20.1	1	18.3	1
Diseases of the circulatory system (390–459)	17.8	2	16.3	3
Diseases of the respiratory system (460–519)	16.3	3	18.2	2
Diseases of the digestive system (520–579)	7.0	4	7.4	5
Infectious and parasitic diseases (001–139)	6.9	5	14.6	4
Diseases of the genito-urinary system (580–629)	5.9	6		
Injury and poisoning (800–999)			6.7	6
Total	73.9		81.4	

<sup>a</sup> P<.01 when comparing the results of the two discharge places.

<sup>b</sup> ICD-9-CM, International Classification of Diseases-9th Edition-Clinical Modification.

regarding discharge to hospice and health insurance status.

Several control variables also showed significant differences (Table 4). The age group variable was negatively associated with being discharged to the home-based hospice setting (.91 [.83, .99]). Among the 29 comorbidities included in the analysis, deficiency anemia, paralysis, other neurological disorders, and weight loss showed negative associations with being discharged to the home-based hospice care setting, while pulmonary circulation disorders showed a positive association with being discharged to the home-based hospice care setting (1.51 [1.07, 2.13]). Finally, the higher the total charges a patient incurred, the less likely the patient would be discharged to the home-based hospice setting (.96 [.95, .98]).

## DISCUSSION

Our findings indicate variations between hospice delivered at home and a medical facility. Among the four major ethnic populations, Hispanics were more likely to be discharged to home care. This result may be related to cultural beliefs, language barriers, and the availability of social support.<sup>28,29</sup> In the Hispanic culture, family members are viewed as primary caregivers. Also, extended family members in Hispanic

families have a level of closeness not prevalent in other ethnicities;<sup>31</sup> these factors create the availability of additional support that is needed in caring for a loved one at home.<sup>22</sup> Conversely, language barriers may be more prevalent in a medical facility due to the minimal amount of bilingual staff, which could result in Hispanics less likely to use facility-based hospice.<sup>30</sup>

Home care requires family and/or friends to be involved in providing care and without support the medical facility is the alternate option.<sup>32</sup> Accordingly our results on marital status appear to be consistent to those of previous research in that single and divorced patients were less likely to be discharged to home.<sup>33</sup> This can be attributed to a lack of available caregiver support for those single and divorced.<sup>33–35</sup>

Age appears to be a factor in whether hospice care is received at home or in a medical facility.<sup>36–37</sup> Our results indicate that the older a patient, the less likely they were to receive

hospice at home. This could be for several reasons; an older individual may be further in their disease progression requiring medical care that may only be available in a facility. Second, an older individual may not have a living spouse to provide care at home.<sup>34</sup> Finally, even if a living spouse is available they may have health conditions that limit the amount of caregiving they can provide.<sup>38</sup>

The presence of certain diagnoses among patients discharged to home care or medical facility was another finding.<sup>39–40</sup> For example, cerebral artery occlusion, subendocardial infarction, and unspecified bronchus and lung conditions were in the top ten diagnoses for patients receiving hospice care in a medical facility.<sup>41,42</sup> One reason for this finding could be that symptom distress is higher among these diagnoses and management of symptoms required treatment only available in a hospital setting. For the home hospice group, other specified rehabilitation procedures, urinary tract infections and volume depletion were amongst the top ten diagnoses while this was not the case for medical facilities. Once again the severity of these diagnoses permits treatment that could be administered at home and would likely not require hospitalization.<sup>34</sup> Finally, the results show that those who incurred higher charges were less likely to be discharged to home hospice care.<sup>42</sup> The higher cost is more than likely

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**Table 3. Top 10 diagnoses by discharge setting (N = 1,144)<sup>a</sup>**

Diagnosis <sup>b</sup>	Home (n=387)		Facility (n=757)	
	%	Rank	%	Rank
Hearing loss (389)	3.9	1	9.1	1
Pneumonia, organism unspecified (486)	3.8	2	4.2	3
Acute renal failure, unspecified (584.9)	2.8	3	2.8	4
Respiratory failure (518.81)	2.6	4	6.8	2
Other specified rehabilitation procedure (v57.89)	2.6	5		
Congestive heart failure (428.0)	2.6	6	2.2	6
Chronic asthmatic bronchitis with acute exacerbation (491.21)	2.4	7	1.8	9
Urinary tract infection (599.0)	2.2	8		
Brain and spinal cord (198.3)	1.9	9	1.6	10
Volume depletion (276.51)	1.8	10		
Cerebral artery occlusion (434.91)			2.5	5
Subendocardial infarction (410.71)			2.2	6
Bronchus and lung, unspecified (162.9)			1.9	8
Total	26.6		35.1	

<sup>a</sup> P<.01 when comparing the results of the two discharge places.

<sup>b</sup> ICD-9-CM, International Classification of Diseases-9th Edition-Clinical Modification.

**Table 4. Relationships of race and other factors with discharge settings**

Independent Variable	Odds Ratio	95% CI	P
Race			
White - reference	1.00		
African American	1.09	.81, 1.47	
Hispanic / Latino	1.39	1.00, 1.92	<sup>b</sup>
Asian & Pacific Islander	.88	.59, 1.33	
Other race	1.12	.71, 1.77	
Marital status			
Married - reference	1.00		
Single	.79	.64, .97	<sup>b</sup>
Divorced	.67	.49, .90	<sup>c</sup>
Widowed	.92	.74, 1.15	
Health insurance status			
Medicare commercial - reference	1.00		
Medicare – HMO	1.05	.84, 1.31	
Medicaid	1.16	.79, 1.71	
Commercial insurance	.83	.47, 1.47	
PPO	1.09	.76, 1.57	
HMO	1.23	.90, 1.68	
Uninsured	1.09	.70, 1.70	
Other insurance	.81	.45, 1.47	
Age group <sup>a</sup>	.91	.83, .99	<sup>b</sup>
AHRQ comorbidity measure <sup>a</sup>			
Deficiency anemia	.77	.64, .93	<sup>c</sup>
Other neurological disorders	.66	.53, .82	<sup>c</sup>
Paralysis	.44	.28, .71	<sup>c</sup>
Pulmonary circulation disorders	1.51	1.07, 2.13	<sup>b</sup>
Weight loss	.73	.57, .92	<sup>c</sup>
Hospitalization <sup>a</sup>			
Total charge	.96	.95, .98	<sup>c</sup>

CI, 95% confidence interval; HMO, health maintenance organization; PPO, preferred provider organization.

<sup>a</sup> Not all results of the control variables but only results of significant ones are displayed.

<sup>b</sup> P<.05.

<sup>c</sup> P<.01.

associated with a higher level of care available only in a medical facility.<sup>43</sup>

Our study has a number of limitations. The results are based on the state of Nevada, which may not be generalizable to other locations. This study was cross-sectional not longitudinal which does not allow for the comparison of results over time. Cultural beliefs were not taken into account and may have influenced the preference for receiving care at home or in a facility. Level of pain was also not accounted for and may have had a significant impact on whether a patient was discharged to home or a medical facility.<sup>44</sup>

In conclusion, our findings have implications for the delivery of hospice at home or in a medical facility. Hospice care prides itself on supporting the patient with their wishes in end of life. One of these wishes relates to the patient's preference for place of care. Our findings suggest race/ethnicity, age, and the patient's finances may influence the location of hospice care. Efforts are required to explore patient preference of place of care to determine if their choice is being fulfilled or the before mentioned characteristics are overriding patient preference, which can improve patients' involvement in

the decision-making process of their care and treatment. Determining if a particular diagnosis was associated with a particular race may assist hospice in anticipating whether care at home or in a medical facility would be most appropriate. Future research may also investigate levels of satisfaction among patients between home care hospice and medical facility based hospice to improve patient-centered outcomes for patients who receive hospice care.<sup>45</sup>

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*Design and concept of study:* Kirkendall, Shen, Gan

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*Data analysis and interpretation:* Kirkendall, Shen

*Manuscript draft:* Kirkenhall, Shen, Gan

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