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Trends in Location of Death for Individuals with Pancreatic Cancer in the United States

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Introduction: Pancreatic cancer is the third-leading cause of cancer-related death in the United States with a 5-year survival rate of 10%.[1] Given the poor prognosis, supportive end-of-life care and maximizing quality of life are of critical concern for patients and their families.

Death in a preferred place can be a central care consideration, especially since a majority of advanced cancer patients prefer to die in a familiar environment, such as their homes.[2,3] Death in institutionalized settings are linked with inadequate respect, emotional support, and symptom management relative to death at home with hospice care.[4]

Here, we analyzed trends and disparities in location of death for individuals with pancreatic cancer.

Methods: Using the publicly available Centers for Disease Control and Prevention Wide-Ranging Online Data for Epidemiologic Research database from 2003-2019, we used multivariable logistic regression to evaluate associates between decedent characteristics and location of death for patients with malignant neoplasm of pancreas (International Statistical Classification of Diseases and Related Health Problems, Tenth Revision codes C25.0-C25.9), reporting adjusted odds ratios with 95% confidence intervals. Decedent characteristics included age, sex, race, ethnicity, marital status, and education. Location of death categories included hospital, home, nursing facility, hospice facility, and outpatient medical facility/emergency department (ED).

Results: Between 2003 and 2019, 628,288 patients had pancreatic cancer as the underlying cause of death. Over time, deaths in hospitals, nursing homes, and outpatient medical facilities/ED decreased while deaths at home and in hospice facilities increased; notably, increases in deaths in hospice facilities for White and Black Americans occurred at a faster rate than for Native and Asian Americans (Figure). Decedents identifying with racial minority groups had decreased odds of home (Black vs. White 0.72 [0.71-0.73]), nursing facility (Black vs. White 0.79 [0.77-0.81]), and hospice facility (Black vs. White 0.97 [0.95-0.99]) deaths and greater odds of hospital (Black vs. White 1.69 [1.66-1.72]) and outpatient medical facility/ED (Black vs. White 1.12 [1.09-1.15]) deaths relative to White decedents (Table). Married decedents had increased odds of death at home (1.67 [1.65-1.68) and decreased odds of death in nursing facilities (0.44 [0.43-0.45]), hospice facilities (0.85 [0.84-0.87]), and outpatient medical facilities/ED (0.61 [0.60-0.63]) compared to unmarried decedents. Finally, decedents with college exposure had reduced odds of death in hospitals (0.97 [0.96-0.98]) and nursing facilities (0.83 [0.81-0.84]), and increased odds of death at home (1.03 [1.02-1.04]) and in hospice facilities (1.21 [1.19-1.23]) relative to decedents with a high school education or less.

Discussion: Our analysis provides novel insight into the location of death for patients with pancreatic cancer. A little under half of patients die at home, and increases in death at home and in hospice facilities over time have corresponded to decreases in death in institutionalized settings. These trends are encouraging given patient preference for home and hospice care.[2,3]

Conversely, our finding that Black, Native American, Asian American, and Hispanic patients were more likely to die in hospitals and less likely to die in hospice facilities, as well as our finding that death in hospice facilities have increased at a slower rate for Asian and Native Americans, raise cause for concern. Our findings validate previous studies documenting lower hospice and palliative care utilization among racial and ethnic minorities, including Asian Americans, and contribute to the literature surrounding such disparities among Native Americans.[5,6] While cultural preferences may partially explain these differences, increased community outreach, inclusion of racially/ethnically-concordant healthcare personnel, and culturally competent end-of-life communication may be necessary strategies to address these disparities.

Limitations include reliance on death certificates and lack of granular data for hospice location. Further research is needed to determine the fundamental causes of location of death disparities for patients with pancreatic cancer.

Figure. (A) Trends in Location of Deaths for Individuals with Pancreatic Cancer between 2013-2019. (B) Proportion of Individuals with Pancreatic Cancer with Hospice Facility as Place of Death by Race between 2013-2019. ED, Emergency Department.

Table. Association Between Location of Death by Pancreatic Cancer and Decedent Characteristics between 2003-2019. Data are shown as adjusted odds ratio with 95% confidence intervals. ED, Emergency Department.

Characteristic	Hospital vs All Other Locations of Death	Home vs All Other Locations of Death	Nursing Facility vs All Other Locations of Death	Hospice Facility vs All Other Locations of Death	Outpatient Medical Facility/ED vs All Other Locations of Death
No.	628,288	628,288	628,288	628,288	628,288
Age, y					
≤64	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
65-74	0.84 (0.83-0.86)	1.05 (1.04-1.07)	1.45 (1.41-1.49)	1.05 (1.03-1.07)	0.88 (0.85-0.90)
75-84	0.67 (0.66-0.68)	1.08 (1.06-1.09)	2.29 (2.24-2.35)	0.92 (0.90-0.94)	0.93 (0.90-0.95)
≥85	0.45 (0.44-0.46)	1.01 (1.00-1.03)	3.71 (3.62-3.80)	0.81 (0.79-0.84)	0.93 (0.90-0.96)
Sex					
Female	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Male	1.18 (1.17-1.20)	0.90 (0.89-0.91)	1.02 (1.01-1.04)	1.00 (0.98-1.02)	0.96 (0.94-0.98)
Race					
White	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Black	1.69 (1.66-1.72)	0.72 (0.71-0.73)	0.79 (0.77-0.81)	0.97 (0.95-0.99)	1.12 (1.09-1.15)
American Indian	1.43 (1.32-1.55)	0.97 (0.90-1.05)	0.83 (0.73-0.94)	0.57 (0.49-0.67)	1.05 (0.92-1.21)
Asian	1.55 (1.50-1.60)	0.85 (0.83-0.88)	0.83 (0.79-0.87)	0.67 (0.64-0.71)	1.14 (1.08-1.20)
Ethnicity					
Non-Hispanic	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Hispanic	1.25 (1.22-1.29)	1.12 (1.10-1.14)	0.52 (0.49-0.54)	0.88 (0.85-0.91)	0.93 (0.89-0.97)
Marital Status					
Not married	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Married	1.00 (0.99-1.01)	1.67 (1.65-1.68)	0.44 (0.43-0.45)	0.85 (0.84-0.87)	0.61 (0.60-0.63)
Education					
High school or less	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Some college or more	0.97 (0.96-0.98)	1.03 (1.02-1.04)	0.83 (0.81-0.84)	1.21 (1.19-1.23)	0.99 (0.97-1.10)

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