Impact of Immigrant Status on Aggressive Medical Care Counter to Patients' Values Near Death among Advanced Cancer Patients

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Abstract

Background: Little is known about disparities in end-of-life (EoL) care between U.S. immigrants and non-immigrants.

Objective: To determine immigrant/nonimmigrant advanced cancer patient differences in receipt of values-inconsistent aggressive medical care near the EoL.

Design: Analysis of data from Coping with Cancer, a federally funded, prospective, multi-institutional cohort study of advanced cancer patients with limited life expectancies recruited from 2002 to 2008.

Setting/Subjects: U.S. academic medical center and community-based clinics. Self-reported immigrant ($n=41$) and nonimmigrant ($n=261$) advanced cancer patients with poor prognoses who died within the study observation period.

Measurements: The primary independent/predictor variable was patient immigrant status. Primary outcome variables: (1) aggressive medical care near death, operationalized as the use of mechanical ventilation, resuscitation, feeding tube, and/or antibiotics in the last week of life and (2) receipt of values inconsistent aggressive care, operationalized as receiving aggressive care inconsistent with stated preferences for comfort-focused EoL care.

Results: In a propensity-weighted sample ($N=302$), in which immigrant and nonimmigrant groups were weighted to be demographically similar, immigrants were significantly more likely than nonimmigrants to receive aggressive medical care [OR 1.9; 95% CI (1.0–3.6); $p=0.042$] and values-inconsistent aggressive medical care [OR 2.1; 95% CI (1.1–4.2); $p=0.032$] near death.

Conclusions: Immigrant, as compared with nonimmigrant, advanced cancer patients are not only more likely to receive aggressive EoL care, but also more likely to receive care counter to their wishes. These findings indicate potential disparities in, rather than differences in preference for, aggressive care and a need for further investigation into potential causes of these disparities.

Keywords: end-of-life care; immigrant; values-inconsistent end-of-life care

Introduction

IMMIGRANTS REPRESENT one of the fastest growing and most vulnerable segments of the U.S. population.¹⁻⁴ In 2014, a total of 42.4 million immigrants, which represents

13.3% of the U.S. population, resided in the U.S. This represents the highest number of immigrants in American history.² Due in large part to the high levels of poverty and lack of health insurance among this population (21.4% vs. 8.8% of natives),² health disparities between immigrant, including

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Accepted August 15, 2018.

those who are legal⁵ and undocumented,⁶ and native populations are striking.^{3,4} Discrimination,⁷ immigration policies, language barriers, and system navigation challenges⁸ compound these healthcare inequalities, making immigrants one of the most vulnerable health populations in the U.S.

End-of-life (EoL) care requires complex coordination of care, understanding of options, and communication regarding preferred care. Given these realities and demands, immigrants may be more vulnerable to suffering from poor EoL care, which is often defined as EoL care contrary to patients' wishes and beliefs. Because aggressive care at the EoL is often contrary to patients' preferences and values^{9–14} and associated with poorer quality of life,^{9,15–17} planning for and receiving EoL care consistent with one's values and wishes is now a national priority.¹⁸ Patient-preferred EoL care is considered essential to quality cancer care for patients with advanced cancer.¹⁹

Despite the rapidly growing number of immigrants in the U.S. annually, most of whom are racial and ethnic minorities,²⁰ it is unknown if U.S. immigrant status independent of race/ethnicity contributes to the care that patients receive near the end of life. Among Canadian patients, immigrants relative to nonimmigrants have been shown to be more likely to die in the intensive care unit (ICU) and have higher rates of aggressive EoL care (mechanical ventilation, feeding tubes, and tracheostomy) in the last 6 months of life.²¹ Similar EoL care disparities may exist for U.S. immigrants. Although less research has been conducted among immigrant populations in the U.S., prior research indicates that racial and ethnic minorities, including African Americans and Latinos, are significantly more likely to receive aggressive EoL care (e.g., CPR, ICU stays) than their Caucasian and non-Latino counterparts.^{22–26}

To establish that disparities between U.S. immigrants and nonimmigrants in receipt of aggressive EoL care exist, it is important to determine if immigrant/nonimmigrant differences in EoL care are attributable to differences in preferences for EoL care or represent actual health disparities, a limitation of prior research.²⁷ An essential first step in evaluating equity in EoL care for U.S. immigrants is to determine if there are disparities attributable to immigrant status in patients' receipt of values-inconsistent aggressive medical care near death.

To answer this question, the present study compared the rates of receipt of aggressive EoL care (defined as receiving mechanical ventilation, resuscitation, feeding tube, and/or antibiotics in the final week of life) as well as the receipt of aggressive EoL care inconsistent with a preference for comfort-focused EoL care between U.S. immigrant and nonimmigrant advanced cancer patients. This study accounts for immigrant/nonimmigrant differences in race, ethnicity, and other relevant sociodemographic characteristics to isolate the effects of immigrant status across multiple immigrant groups. Based on prior research on immigrant disparities in EoL care, it was hypothesized that immigrant patients compared with nonimmigrant patients would be significantly more likely to: (1) receive aggressive EoL care, and (2) receive values-inconsistent aggressive EoL care.

Methods

Sample

Patients in the current study ($N = 302$, unweighted sample) represent a subset of participants in Coping with Cancer

(CwC), a federally funded, prospective, multi-institutional cohort study of advanced cancer patients and their caregivers. CwC participants were recruited between September 2002 and February 2008 from Yale Cancer Center (New Haven, CT), Veterans Affairs (VA), Connecticut Healthcare System Comprehensive Cancer Clinics (West Haven, CT), Parkland Hospital (Dallas, TX), Simmons Comprehensive Cancer Center (Dallas, TX), Dana-Farber Cancer Institute (Boston, MA), and New Hampshire Oncology–Hematology (Hookset, NH). Eligibility criteria required patients to have a diagnosis of advanced cancer (distant metastases; disease refractory to one or more lines of cytotoxic chemotherapy), a physician-formulated life expectancy of 6 months or less, adequate stamina to complete a baseline interview, and English or Spanish proficiency. All interviews were conducted in the patients' preferred language by staff fluent in English and/or Spanish. Patients who met criteria for serious cognitive impairment²⁸ were excluded. Participants received \$25 per interview for study participation. Review boards of all participating institutions approved study procedures; all participants provided written informed consent.

Of the 939 eligible patients, 661 (70.4%) participated. Reasons for nonparticipation included: “not interested” ($n = 106$), “caregiver refuses” ($n = 32$), and “too upset” ($n = 21$). Participants were more likely than nonparticipants to be Hispanic (78/661, 11.8% versus 17/252, 6.7%; $p = 0.025$), but otherwise did not differ in sociodemographic characteristics. Most patient participants (384/661, 58.1%) died during the study observation period. Patients who died were more likely to be younger, non-white, unmarried, uninsured, and less educated at study entry (all $p < 0.05$) than patients who survived the study observation period (277/661, 41.9%).

The cohort for the present analysis consisted of 302 (unweighted sample) terminally ill cancer patients who died within the study observation period. Among the 384 patients who died, 38 (9.9%) were excluded due to missing sociodemographic or post-mortem outcomes data, 39 (10.2%) were excluded because they expressed no clear preference for goals of EoL care used to define values-inconsistent aggressive EoL care, and 5 (1.3%) were excluded because there were too few in the examined group to draw reliable conclusions about differences (i.e., three Asians, two Native Americans) by race. Patients excluded from the study sample due to missing data did not differ from those not excluded due to missing data with respect to immigrant status, age, sex, race/ethnicity (within the White, Black, and Latino categories), years of education, and marital status. Those who were excluded from the study due to missing data were less likely to be insured than those who were not excluded (49.3% vs. 62.6%, $p < 0.05$).

Measures

Sociodemographic characteristics. During a structured baseline interview conducted by trained research staff utilizing a questionnaire, patients' immigrant status, age, sex, race/ethnicity, education, health insurance status, and marital status were reported. Patients' sites of recruitment were coded to indicate geographic region (Northeast vs. Southwest) and academic medical setting (Y/N).

Preference for EoL care. During the baseline interview, patients were asked if they would prefer: (1) a course of

treatment that focused on extending life as much as possible, even if it meant more pain and discomfort, or (2) a plan of care that focused on relieving pain and discomfort as much as possible, even if that meant not living as long. Responses were coded as “life-extending care” or “symptom-directed, comfort care.”

Aggressive medical care near death. Building on prior reports,^{29,30} patient’s receipt of aggressive medical care near death was operationalized as use of mechanical ventilation, cardiopulmonary resuscitation, feeding tubes, or antibiotics in the last week of life (post-baseline interview). Within 3 weeks of the patient’s death, the formal or informal caregiver most involved in the patient’s care during the last week of life provided information regarding the patient’s care near death. Additional information on healthcare received in the last week of life was obtained from the patient’s medical chart. In support of its construct validity, this indicator of aggressive care near death was positively associated with patient death in an intensive care unit ($r=0.38$, $p<0.001$) and negatively associated with home hospice utilization near the end of life ($r=-0.34$, $p<0.001$) in the present sample.

Values-inconsistent aggressive medical care near death. As noted, during their baseline (study entry) interview, patients were asked if they would prefer life-extending or symptom-directed, comfort-focused EoL care. Patients who indicated a preference for relieving pain and discomfort as much as possible but who nevertheless received aggressive medical care (as defined above) in the last week of life were coded as receiving as opposed to not receiving values-inconsistent aggressive medical care near death.

Statistical analyses

Chi-square tests were used to compare demographic characteristics, i.e., patient age category, sex, race/ethnicity, level of education, health insurance status, marital status, and recruitment site geographic region and academic setting between immigrants and nonimmigrants within the study sample. To adjust for demographic differences between the immigrant and nonimmigrant groups, a two-step statistical approach was taken in which propensity score weighting was applied (Step 1) and covariate balance was assessed and imbalance statistically controlled in estimating the final immigrant status effect (Step 2).^{31,32} The balance of measured covariates refers to the similarity of the covariate distributions.³²

In the first step, propensity weights were used to adjust for demographic differences that emerged between the two groups: immigrants and nonimmigrants. Using propensity score weights is a common method of matching samples to facilitate causal inference for between-group effects.³³ Stabilized inverse probability propensity weights³⁴ were constructed in the present sample to match the immigrant and nonimmigrant groups with respect to patient age category, gender, race/ethnicity, education level, health insurance status, marital status, recruitment site geographic region, and academic setting. Use of these weights allowed us to eliminate these factors as potential confounds in the analysis of immigrant/nonimmigrant group differences in preference for

life extending as opposed to symptom-directed, comfort-focused EoL care and in aggressive medical care near death. It should be noted that once the weights were applied, the weighted sample represented $N=308$ patients.

In the second step, any resulting imbalance from the propensity weights in covariates was assessed and statistically controlled by including them as covariates in the final statistical models.³² In accordance with recommended guidelines,³² balance is quantified similarly to Cohen’s d effect size and is referred to as standardized differences.^{32,35,36} Standard recommendations to indicate covariate balance is an effect size less than 0.10–0.25.^{35,36} Covariate imbalance was operationalized in the present study as a standardized difference of greater than 0.15, which is the midway point between these recommended cutoffs. This secondary step helped to ensure that potential confounds were controlled to isolate the effect of immigrant/nonimmigrant status on aggressive EoL care and values-inconsistent EoL care.

Rates of patient preference for life-extending as opposed to symptom-directed, comfort-focused EoL care, and rates of aggressive medical care, and values-inconsistent aggressive medical care, near death were estimated for the immigrant and nonimmigrant groups using the stabilized inverse probability propensity-weighted sample. Logistic regression models using these weights and adjusting for patient sex and level of education (covariates with standardized differences of greater than 0.15 in the weighted sample) were used to estimate adjusted odds ratios for associations between immigrant status and preference for life-extending EoL care, aggressive medical care near death, and values-inconsistent aggressive medical care near death. Statistical analyses were conducted using SAS statistical software, version 9.4 (Cary, NC). Statistical inferences were based on two-sided tests with $p<0.05$ taken to be statistically significant.

Results

In the unweighted study sample, immigrant advanced cancer patients were more likely to be Hispanic, less educated, uninsured, recruited in the Southwest, and not receiving care in an academic medical center as compared with nonimmigrant patients (Table 1). In the weighted study sample, there were no significant sociodemographic differences between these two groups (Table 1).

In the weighted sample, adjusting for patient sex and level of education, immigrants were significantly more likely than nonimmigrants to receive aggressive medical care [AOR 1.9; 95% CI (1.0–3.6); $p=0.042$], and values-inconsistent aggressive medical care [AOR 2.1; 95% CI (1.1–4.2); $p=0.032$], near death (Table 2). Immigrants as opposed to nonimmigrants were not significantly more likely to prefer life-extending as opposed to symptom-directed comfort-focused EoL care.

Discussion

Results from the present study indicate that immigrants, independent of ethnicity or other sociodemographic factors, are nearly two times more likely to receive aggressive medical care in the final week of life and over two times more likely to receive aggressive medical care that is inconsistent with their preferences for comfort-focused EoL care than

TABLE 1. SOCIODEMOGRAPHIC COMPARISON BETWEEN IMMIGRANTS AND NONIMMIGRANTS IN THE UNWEIGHTED AND WEIGHTED SAMPLES

Characteristic	Unweighted sample (N=302)								Weighted sample (N=308)							
	Immigrant 41		nonimmigrant 261		Comparison			Immigrant 49		Nonimmigrant 259		Comparison				
	n	%	n	%	χ^2	df	P	n	%	N	%	χ^2	df	p		
Age																
Less than 65 years	28	68.3%	178	68.2%	0.00	1	0.992	32	66.6%	172	66.5%	0.00	1	1.000		
65 years or greater	13	31.7%	83	31.8%				16	33.4%	87	33.5%					
Sex																
Male	23	56.1%	140	53.6%	0.09	1	0.769	19	39.9%	140	54.1%	3.32	1	0.068		
Female	18	43.9%	121	46.4%				29	60.1%	119	45.9%					
Race/Ethnicity																
White	6	14.6%	195	74.7%	156.48	2	0.000	35	71.0%	174	67.0%	0.29	2	0.865		
Black	2	4.9%	53	20.3%				8	16.2%	47	18.3%					
Latino	33	80.5%	13	5.0%				6	12.8%	38	14.6%					
Education																
Up to 12 years	30	73.2%	129	49.4%	8.01	1	0.005	31	64.3%	137	52.9%	2.15	1	0.142		
Beyond 12 years	11	26.8%	132	50.6%				17	35.7%	122	47.1%					
Insurance Status																
Insured	9	22.0%	180	69.0%	33.45	1	0.000	34	70.3%	164	63.3%	0.88	1	0.349		
Not Insured	32	78.0%	81	31.0%				14	29.7%	95	36.7%					
Marital Status																
Married	25	61.0%	142	54.4%	0.62	1	0.432	22	46.1%	143	55.1%	1.34	1	0.248		
Not Married	16	39.0%	119	45.6%				26	53.9%	116	44.9%					
Region																
Northeast (CT, NH, MA)	6	14.6%	148	56.7%	25.10	1	0.000	21	43.0%	133	51.5%	1.17	1	0.278		
Southwest (TX)	35	85.4%	113	43.3%				28	57.0%	126	48.5%					
Academic Medical Center																
Yes	5	12.2%	104	39.8%	11.75	1	0.001	21	42.7%	95	36.7%	0.64	1	0.425		
No	36	87.8%	157	60.2%				28	57.3%	164	63.3%					

Estimates in weighted sample are based on the use of stabilized inverse probability propensity weights. Sample size in weighted sample reflects the sum of these weights.

nonimmigrants. Given that the receipt of aggressive care in the present study was significantly more likely to be values-inconsistent for immigrants relative to nonimmigrants, these findings indicate a health disparity in care received at the EoL between immigrants and nonimmigrants rather than a group difference in preference for aggressive EoL care. This finding addresses a limitation of prior research²⁷ by demonstrating

that differences in aggressive EoL care rates among U.S. immigrants and nonimmigrants are likely representative of a health disparity rather than a difference in preference for more aggressive EoL care.

Findings from the present study indicate health disparities in EoL care among U.S. immigrants, highlighting the need for future research to identify potential contributors

TABLE 2. ASSOCIATIONS BETWEEN IMMIGRANT STATUS AND STUDY OUTCOMES OF INTEREST (WEIGHTED SAMPLE; N=308)

	<i>Immigrant 49</i>		<i>Nonimmigrant 259</i>		<i>Immigrant vs. nonimmigrant</i>					
<i>Outcome</i>	n	%	n	%	<i>AOR</i>	<i>(95% CI)</i>	χ^2	<i>df</i>	p	
Preference for EoL Care										
Life-Extending	13	26.6%	79	30.4%	0.9	0.5	1.8	0.07	1	0.785
Symptom-Directed, Palliative	36	73.4%	180	69.6%						
Aggressive EoL Care										
Yes	21	43.8%	76	29.4%	1.9	1.0	3.6	4.13	1	0.042
No	27	56.2%	183	70.6%						
Values-Inconsistent Aggressive EoL Care										
Yes	16	32.5%	46	17.9%	2.1	1.1	4.2	4.62	1	0.032
No	33	67.5%	213	82.1%						

AOR adjusted for patient sex and level of education.

to these disparities as a means to reduce them. Possible contributors to immigrant health disparities could include communication and language barriers, discrimination, acculturation, system level barriers, lack of health literacy or information about harms and benefits of EoL care, or other factors.⁷ Prior research indicates that contributors to racial and ethnic health disparities in the receipt of aggressive EoL care have included whether or not an EoL discussion occurred,³⁷ lack of prognostic awareness and knowledge of hospice care and other alternative treatments,²⁶ religious beliefs and a belief that life-sustaining care would not be offered in situations where someone was likely to die,¹¹ and mistrust of the medical care system.^{11,26} Similarly, a myriad of possible influences may account for the immigrant health disparities seen in the present study and should be explored in future work.

There are several factors unique to immigrants—such as cultural barriers, communication barriers, and knowledge and understanding barriers—that may contribute to these disparities and create more vulnerability for their care at the EoL. These individual level differences may combine with system level barriers within the U.S. medical care system to exacerbate disparities in EoL care. For instance, Nuila (2012) recently highlighted the potential issue of disparities in EoL care among immigrants with terminal illness, specifically those who are undocumented.⁸ Nuila noted that immigrants with terminal illness are repeatedly admitted to hospitals in what has been referred to as a “revolving door” of care in which patients keep being admitted to emergency departments for severe pain and other symptoms, but who are never properly cared for as dying patients.⁸ When asked what type of care they want, these patients often prefer to be discharged and even request to return to their home country to die.⁸ Another set of potential system level barriers are the patient-centered and shared decision-making models prominent within U.S. healthcare systems that often guide EoL care decision making, but that may be in contrast to many immigrants’ familiarity with a clinician-directed or family-based model of decision making.^{21,38,39} This, in turn, could lead to patients being less likely to express their EoL care wishes. Rising tensions regarding immigrant status in the U.S. is also likely to heighten the healthcare burden experienced by this population at the EoL. These potential vulnerabilities of immigrants not communicating and/or receiving preferred EoL care merits the attention of providers to assess patients’ wishes at the EoL more thoroughly.

One major strength of the present study is its ability to document immigrant/nonimmigrant disparities in actual receipt of aggressive care at the EoL, as well as the ability to determine if this care was consistent or counter to patients’ preferences in a large cohort study of advanced cancer patients. Furthermore, the rigorous propensity score matching analytic approach taken further strengthens the study findings by indicating that these disparities are not due to pre-existing demographic or socioeconomic factors, such as education or insurance status, which are known contributors to health disparities among the immigrant population.² Thus, the present study provides compelling evidence that immigrant/nonimmigrant disparities in EoL care exist and are likely inconsistent with patients’ preferences, a marker of low-quality EoL care.^{18,19}

Limitations

Although the present study contributes a novel and increasingly relevant finding regarding immigrant EoL care disparities, there are limitations to the present study that should be considered in interpreting the findings. First, the present study did not verify self-reported immigrant status, which could potentially lead to a miscalculation of actual proportion of patients in the immigrant group. Second, the present study did not differentiate between documented and undocumented immigrants, who are likely to suffer different health disparities differently or at different rates at the EoL. Third, although the present study presents findings for immigrants versus nonimmigrants and accounts for race and ethnicity through propensity score weighting, the vast majority of immigrants in the present study (84.6%) are Latino/Hispanic. After applying propensity score weights, immigrants represented in the study sample were largely of European descent, which should be noted in interpreting study results. The benefit of this analytic approach is that it allows for a better isolation of the effect of immigrant status, but the sample demographics are then more representative of immigrants of European descent. Future research should attempt to match immigrant and nonimmigrant samples across demographic characteristics to allow for better isolation of immigrant status effects. Fourth, time of diagnosis to time of death was not assessed in the present study. Because vulnerable and underserved populations may suffer from later stage diagnosis, some of the differences in EoL care received may have been due to a shorter period of time engaged in cancer care and treatment regimens. Future research should consider this important potential influence on disparities in EoL care among immigrant and nonimmigrant patients. Finally, the present study recruited from a large number of academic medical centers, may not be representative of the broader immigrant patient population in the U.S. For instance, these centers are more likely to be in urban settings, have higher rates of experimental and other treatment options, etc., which could differentially influence the rate of aggressive EoL care received by patients. Despite these limitations, our findings highlight disparities in EoL care among immigrants relative to nonimmigrants.

Conclusions

Findings from the present study indicate that immigrants are more likely to receive aggressive care inconsistent with their own preferences and values for comfort-focused EoL care. These findings are critically pertinent to the delivery of high-quality cancer care for advanced cancer patients in a healthcare setting that is increasingly utilized by immigrants.^{1,2} Specifically, this study indicates that immigrant advanced cancer patients are not only receiving more futile aggressive care at the EoL, but are also likely receiving the care that is counter to their own preferences for EoL care.⁸ It is critical to further investigate ways to better communicate EoL care options to immigrants and ensure they receive top-quality EoL care consistent with their own values and preferences. With a growing threat to both legal and undocumented immigrants’ healthcare in the U.S.^{5,6} and the multitude of unique factors contributing to health disparities faced by immigrants,⁷ it is critical for healthcare providers to ensure that immigrants receive the highest quality EoL care.

Author Disclosure Statement

No competing financial interests exist.

This research was supported in part by the following grants: MH63892 (HGP) from the National Institute of Mental Health; CA106370 (HGP), CA218313 (HGP), and CA197730 (HGP) and K07CA207580 (MJS) from the National Cancer Institute; and MD007652 (PKM, HGP) from the National Institute on Minority Health and Health Disparities.

Review boards of all participating institutions approved study procedures; all participants provided written informed consent. All participants were treated in accordance with ethical standards as designated by the IRB and APA ethics.

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