The Oncologist, 2025, **30**, oyaf065
https://doi.org/10.1093/oncolo/oyaf065
Advance access publication 11 May 2025
Original Article

Palliative and end-of-life care in Asian and White patients with metastatic lung cancer

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Abstract

Background: Data on palliative and end-of-life care for Asian patients with metastatic lung cancer in the United States are limited, though this is the leading cause of cancer death in this group. Early palliative care improved quality of life and survival in patients with metastatic lung cancer treated with chemotherapy. We examined palliative and end-of-life care patterns in Asian and White patients with metastatic lung cancer in the era of novel therapy.

Methods: Patients newly diagnosed with metastatic lung cancer from 2014 to 2019 were identified at our institution. Patient and disease characteristics and treatment information were compared between Asian and White patients by Mann-Whitney *U* test and Chi-square tests. Time-to-palliative care involvement was compared via log-rank test.

Results: Both Asian ($N = 89$) and White ($N = 197$) patients had low rates of palliative care involvement (38.2% vs 37.6%), with median time from diagnosis to first encounter exceeding a year. The most given frontline systemic therapy was targeted therapy and chemotherapy in Asian and White patients, respectively. Of 22 Asian (24.7%) and 74 White (37.6%) patients who died, Asian patients more often died in-hospital (68.2% vs 32.4%, $P = .004$), and did not have documented code status discussions with their outpatient oncologists (0% vs 24.3%, $P = .010$) within 6 months preceding death.

Conclusion: Early palliative care appears challenging to implement for Asian and White patients newly diagnosed with metastatic lung cancer in a real-world setting. A more patient-centered approach to integrating palliative and end-of-life care communications and interventions alongside precision oncology warrants further study.

Key words: Palliative care; end-of-life care; hospice; advance care discussion; Asian; lung cancer.

Implications for practice

Palliative and end-of-life care of Asian patients with metastatic lung cancer in the United States are not well studied. Compared to White patients, Asian patients were more likely to die in the hospital including in the intensive care unit and did not have documented communication with their primary oncologists about code status before death. Palliative care was involved in only approximately a third of both racial groups, was more likely to be introduced inpatient, over a year out from diagnosis. Further work toward accessible, timely, effective, equitable, culturally sensitive, and more patient-centered palliative and end-of-life care is needed in oncologic practice.

Introduction

Lung cancer is the leading cause of cancer morbidity and mortality and ranks second for incidence worldwide.[1] Palliative care is an integral component of comprehensive oncologic care.[2] Early integration of palliative care with standard oncologic care in metastatic lung cancer has been shown to improve patients' health-related quality of life (HRQoL) and mood and prolong survival by 2.7 months compared to patients receiving standard care alone.[3] These studies were largely done when cytotoxic chemotherapy was standard oncologic management, prior to the advent of targeted therapy and immunotherapy.[4] Palliative care consultation early in the lung cancer course, delivered concurrently with disease-directed, life-prolonging therapies, has since been recommended by multiple clinical practice guidelines.[5-7]

Over the last decade, the therapeutic landscape of lung cancer has transformed with the introduction of novel targeted therapy and immunotherapy, contributing to significant decline in lung cancer mortality.[8] Since the initial FDA approval of erlotinib for treatment of *EGFR*-mutated non-small cell lung cancer (NSCLC) in 2013, *EGFR* tyrosine

Received: 19 June 2024; Accepted: 24 February 2025.

kinase inhibitors (TKIs) have more than doubled progression-free survival (PFS) in comparison with chemotherapy, with osimertinib demonstrating longer OS in the first-line treatment of *EGFR*-mutated advanced NSCLC, versus comparator TKIs.[9,10] Additionally, since 2015 when single-agent immune checkpoint inhibitors (ICIs) improved overall survival compared with docetaxel chemotherapy in second-line treatment of metastatic NSCLC, various ICIs and combinations have been approved in frontline treatment settings with continued survival improvements in metastatic disease.[8,11,12]

With such advances in cancer-directed treatments and associated improved survival outcomes, the impact of universal early palliative care initiated at diagnosis of metastatic lung cancer is less clear. Compared to those treated with cytotoxic chemotherapy, patients treated with novel therapy face different treatment-related adverse effects, care experiences and challenges associated with prognostic uncertainty. In a retrospective cohort study of 197,331 patients with stage IV NSCLC from a U.S. national clinical database, the percentage of patients who started immunotherapy within one month of death increased from 0.9% to 3.2% from 2016 to 2019,[13] suggesting difficulty with predicting treatment efficacy and prognostication. Palliative care continues to be beneficial in supporting patients and caregivers to live with ongoing illness, cope with uncertainty for the future, and promote communication about advance care planning and goals of care for shared decision-making toward goal-concordant care.[14-18] However, the optimal timing and mechanism for delivery of patient-centered palliative care, given finite palliative care resources, remains to be determined.

The Asian population is the fastest-growing racial group in the United States, projected to exceed 46.2 million by 2060.[19] In contrast to other groups, it is the only racial group for which cancer, specifically lung cancer, rather than cardiovascular disease, is the leading cause of mortality.[20,21] Despite this, little is known about lung cancer care in this racial group. We recently reported that Asian patients presenting with later-stage lung cancer had longer median duration of symptoms prior to diagnosis, delays in treatment initiation and more often did not receive cancer-directed treatment, compared to White patients.[22-24] Although some vulnerable patient populations have been affected by racial disparities in access to palliative and end-of-life care, palliative and end-of-life care have not been well studied in Asian patients with metastatic lung cancer in the U.S.[25-27] Work in this area is needed, as health care systems must meet the needs of the rapidly growing Asian population in the U.S. and its associated lung cancer burden.

This study was conducted at Tufts Medical Center (TMC), a tertiary care hospital that provides cancer care to a large proportion of Asian patients in the greater Boston area. We aimed to elucidate the patterns of palliative and end-of-life care in Asian and White patients with metastatic lung cancer in this real-world setting.

Materials and methods

Study design and patients

This study was approved by the Institutional Review Board at TMC. Patients with a new diagnosis of stage IV lung cancer between 01/01/2014 and 12/31/2019 were identified from the cancer registry. We chose this research period based on a convenience sample prior to the beginning of the COVID-19 global pandemic. This time period was most appropriate, as the American Society of Clinical Oncology (ASCO) had issued a provisional clinical opinion in 2012 that patients with metastatic NSCLC should be offered concurrent palliative care and standard oncologic care at initial diagnosis.[7] These years also spanned when immunotherapy was incorporated into standard oncologic care for metastatic lung cancer and multiple new TKIs were approved for targeted therapy of oncogene-driven metastatic NSCLC.

From an institutional perspective, TMC established the patient navigation program for oncology patients receiving active cancer-directed therapy in 2013; under this program, Chinese language-speaking oncology patients from lower socioeconomic backgrounds could have a bilingual patient navigator fluent in both English and the patients' native language follow their oncologic management longitudinally to assist with care coordination needs. The division of palliative care at TMC was formally established in 2017, initially consisting of one full-time physician, a social worker and a former oncology nurse, and provided inpatient-only consultation on weekdays. From 2014 to 2017 TMC had at least one physician trained in palliative care who provided as needed inpatient consultation primarily and would occasionally see outpatient oncology patients. In 2018-2019, the palliative care division grew to include three physician specialists, allowing for more consistent coverage for outpatient referrals from oncology clinics in addition to inpatient consultations during weekdays. In 2019, the outpatient palliative care physicians began to work alongside the thoracic oncologist in clinic 1-2 times each week to see patients with lung cancer identified by their oncologist as most needing palliative care. A referral to palliative care was initiated when an order was entered into the electronic medical record (EMR) by either an inpatient or outpatient oncology team.

Patients who self-designated as Asian or Non-Hispanic White (referred to as "White" in this text) were included; all other races/ethnicities were excluded. Those presenting with recurrent, progressive, or refractory disease were also excluded. Patients' baseline demographics, including self-designated race/ethnicity, clinical characteristics, palliative and end-of-life care data were extracted from the EMR. Data were collected by manual chart review, and the cutoff date of data collection was 05/31/2022, around when TMC transitioned to a new EMR system.

Variables

Patient demographics including age at diagnosis, sex, race, preferred language, interpreter use at the first oncologic clinic encounter, and smoking status were collected. Age was treated as a continuous variable. Smoking status was extracted from the first oncologic visit note, and categorized as never, current, or former smokers, as reported in the EMR. Disease characteristics, including date of diagnosis, stage at diagnosis (according to the contemporary American Joint Committee on Cancer staging system), brain metastasis status at diagnosis, and histologic type were collected. The stage was grouped into IVA or IVB based on the extent of metastatic disease. Histologic type was grouped into NSCLC, small cell lung cancer (SCLC), or other. Frontline treatment data was obtained. Ambulatory or inpatient palliative care consultation/referral with documented notes was counted as ever having palliative care involvement, and the date of the first palliative care encounter was recorded. Hospice care enrollment was defined as having documentation of hospice intake in the EMR. All oncology clinic notes were reviewed for documentation of oncologist-led conversations about code status, health care proxy (HCP), and consideration of hospice care; dates of documented conversations were noted. We focused on oncologist-led conversations, given the limited palliative care staffing, and as we wished to study the role of the treating oncologist, who follows the patient longitudinally throughout the cancer trajectory, in facilitating communication and multidisciplinary collaboration to intervene beyond oncological therapies for transition from cancer-directed treatment to comfort-oriented care.[28] End-of-life care variables including the place of death (inpatient vs. non-hospital setting) and intensive care measures used before death such as mechanical ventilation and cardiopulmonary resuscitation (CPR) were collected. For those who died outside of TMC, death place was identified by reviewing any available telephone notes in which the patient's family or other caregivers reported details about the patient's death. The date of the last systemic treatment, date of hospice enrollment, and date of death were additionally collected.

Statistical analysis

Median/range was used for describing continuous variables and frequency/percentage for categorical variables. Patient demographics, disease characteristics, receipt of palliative and end-of-life care were compared between Asian and White patients via Mann–Whitney *U* test and Chi-square/Fisher's exact tests for continuous and categorical variables, respectively. Time-to-palliative-care involvement (TTPC) was defined as the time from the date of diagnosis to the date of the first encounter with palliative care (inpatient or outpatient). TTPC was evaluated with the Kaplan-Meier method and compared using log-rank tests. Statistical significance was met if the 2-sided *P*-value was ≤ 0.05. All statistical analyses were performed with R software (version 4.1.1).

Results

Baseline demographics of the 89 Asian and 197 White patients included in this study are summarized (Table 1). Median age was similar in Asian and White patients (71 years vs. 68 years, $P = .07$). The Asian group included more male patients (71.9% vs. 48.2%, $P < .001$), never smokers (36% vs. 7.1%, $P < .001$), patients who preferred non-English languages (87.6% vs. 1%, $P < .001$), and patients with NSCLC (85.4% vs. 72.6%, $P = 0.024$). Greater interpreter use in the first oncologic encounter was documented for Asian versus White patients (43.8% vs. 0.5%, $P < 0.001$). No significant differences were found in presence of brain metastasis at baseline (34.8% vs. 39.1%, $P = 0.38$) and substages of stage IV disease (stage IVB 48.3% vs. 52.3%, $P = 0.62$) by racial group (Asian vs. White patients). The frontline treatment received is summarized in Supplementary Table S1.

Palliative care was involved in the management of 38.2% of Asian and 37.6% of White patients (Table 2). Only 27 Asian (30.3%) and 63 White patients (32.0%) had palliative care evaluation within 12 months of cancer diagnosis. Approximately 70% or more of patients in each group had the first palliative care consultation in the inpatient setting. Only 20.6% of Asian and 21.6% of White patients had two or more palliative care encounters in any setting, inpatient or outpatient. Asian patients had a longer TTPC than White patients, though this difference was not statistically significant (median TTPC: 15.7 vs. 12.5 months, $P = 0.12$) (Figure 1). Similar rates of hospice enrollment were observed for Asian and White patients (29.2% vs. 32.0%). Of the 26 Asian and 63 White patients who received hospice care, a similar majority of both groups (61.5% vs. 65.1%) had had prior palliative care involvement. The hospice enrollment rates were the same in Asian and White patients who did not have palliative care involvement (11.2% vs. 11.2%). (Supplementary Table S2). The patterns of palliative care involvement and hospice enrollment by year are summarized (Supplementary Table S3, Supplementary Table S4, Supplementary Table S5).

Twenty-two (24.7%) Asian and 74 (37.6%) White patients died during this study's time frame. Of these decedents, none of the Asian patients had documented outpatient code status discussions with their primary oncologists within 6 months before death, compared to White patients (0% vs. 24.3%, $P = .01$). Additionally, a lower percentage of Asian patients had documented discussions about HCP designation (18.2% vs. 32%) and consideration for hospice care (18.2% vs. 28.4%) within 6 months before death, though neither of these differences was statistically significant (Table 3). A higher percentage of Asian than White patients died in the inpatient setting (68.2% vs. 32.4%). Death in the intensive care unit (ICU) was more common for Asian than White patients (40.9% vs. 24.3%, $P = .004$). A higher percentage of White patients died in locations outside the hospital, such as at home or hospice facilities (56.8% vs. 22.7%, $Pp = .004$). Asian and White patients had similar rates of mechanical ventilation use (18.2% vs. 16.2%) and CPR (0% vs. 1.4%) before death (Table 4). Thirteen (14.6%) Asian and 21 (10.7%) White patients had transitioned to comfort measures only before death. Among patients with available data, time from hospice enrollment to death ($N = 32$, median: 16.5 vs. 12.5 days) and time from last systemic treatment to death ($N = 55$, median: 39 vs. 55.5 days) were not significantly different between Asian and White patients.

Discussion

This study showed that palliative care involvement in both Asian and White patients with metastatic lung cancer was suboptimal, according to current consensus guidelines recommending for early palliative care at diagnosis of metastatic lung cancer. While enrollment in hospice care was similar in both groups, significantly more Asian patients died in-hospital than in non-hospital settings. Asian patients also lacked documented communication with their primary oncologists about code status before death.

Early outpatient palliative care referrals have been associated with improved quality of end-of-life care and healthcare utilization with fewer emergency room visits, hospital and ICU admissions, and hospital deaths, compared to the experience of those first referred to palliative care as inpatients, later in their disease course.[29] In our study, rates of palliative care involvement were low (<40%) in both Asian and White patients with newly diagnosed metastatic lung cancer, and most initial encounters with palliative care occurred inpatient, with very few of these patients having a follow-up encounter. Furthermore, the median time from lung cancer diagnosis to first documented palliative care encounter was beyond a year in both Asian and White patients, which is significantly longer than in the landmark clinical trial by Temel et al, in which patients with metastatic lung cancer

Table 1. Baseline demographics and clinical characteristics.

Characteristic	Asian (*N* = 89)	White (*N* = 197)	*P*-value
Age (years)			.07
Median [IQR]	71.0 [63.0, 78.0]	68.0 [61.0, 76.0]	
Gender			<.001
Female	25 (28.1%)	102 (51.8%)	
Male	64 (71.9%)	95 (48.2%)	
Language spoken			<.001
Non-English languages	78 (87.6%)	2 (1%)	
Cantonese	55 (61.8%)	0 (0%)	
Mandarin	14 (15.7%)	0 (0%)	
Taishanese	5 (5.6%)	0 (0%)	
Vietnamese	2 (2.2%)	0 (0%)	
Burmese	1 (1.1%)	0 (0%)	
Japanese	1 (1.1%)	0 (0%)	
Other	0 (0%)	2 (1%)	
English	11 (12.4%)	195 (99.0%)	
Interpreter Use			<.001
No	50 (56.2%)	196 (99.5%)	
Yes	39 (43.8%)	1 (0.5%)	
Smoking status			<.001
Current	18 (20.2%)	74 (37.6%)	
Former	39 (43.8%)	107 (54.3%)	
Never	32 (36.0%)	14 (7.1%)	
NA	0 (0%)	2 (1.0%)	
Histology type			.024
NSCLC	76 (85.4%)	143 (72.6%)	
SCLC	7 (7.9%)	41 (20.8%)	
Other	6 (6.7%)	13 (6.6%)	
CNS metastasis at diagnosis			.38
No	55 (61.8%)	104 (52.8%)	
Yes	31 (34.8%)	77 (39.1%)	
NA	3 (3.4%)	16 (8.1%)	
Stage IV subgroups			.62
Stage IVA	46(51.7%)	94 (47.7%)	
Stage IVB	43 (48.3%)	103 (52.3%)	

Abbreviations: IQR, interquartile range; NA, not available; NSCLC, non-small cell lung cancer; SCLC, small cell lung cancer; CNS, central nervous system.

Table 2. Palliative care and hospice care involvement in Asian and White patients.

Variable	Asian (*N* = 89)	White (*N* = 197)	*P*-value
Palliative care involvement (N, %)	34 (38.2%)	74 (37.6%)	1.00
Palliative care involvement setting (N, %)			.37
Inpatient	27 (79.4%)	51 (68.9%)	
Outpatient	7 (20.6%)	23 (31.1%)	
Palliative care follow-up after the first consultation (N, %)	7 (20.6%)	16 (21.6%)	1.00
Hospice enrollment (N, %)	26 (29.2%)	63 (32.0%)	.72

diagnosed from 2006 to 2009 were randomized to early palliative care within 8 weeks of diagnosis.[3]

Our findings could be explained by institution-specific factors and wider real-world practice patterns reflecting how outpatient palliative care is provided to oncology patients at large. Hui et al. surveyed U.S. cancer centers regarding their palliative care infrastructure in 2009 and again in 2018, and found that while NCI-designated cancer centers

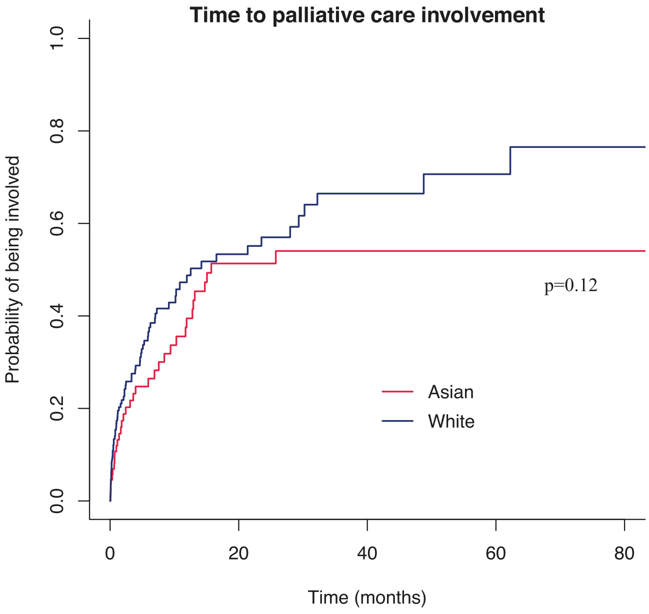

Figure 1. Time-to-palliative-care involvement (TTPC) in Asian and White patients with newly diagnosed metastatic lung cancer. Median TTPC in Asian (*N* = 34/89) vs. White (*N* = 74/195) patients: 15.7 months vs. 12.5 months, *P* = .12.

saw a significant increase in outpatient palliative care clinics between 2009 and 2018 (59% vs. 95%) with no significant changes in inpatient palliative care consultation teams (92% vs. 90%), there was no significant increase in outpatient palliative care clinics (22% vs. 40%; *P* = 0.07) or in inpatient palliative care consultation teams (56% vs. 68%; *P* = 0.27) at non-NCI-designated cancer centers.[30] NCI-designated cancer centers were more likely to have dedicated educational/training and research programs in palliative care, and peer-reviewed funding and philanthropic grants than non-designated centers.[31] Moreover, NCI-designated cancer center executives and leadership were more likely to endorse increased funding and staffing for palliative care.[32] Our cancer center is non-NCI-designated, and had limited staffing and clinic-based resources for palliative care, especially prior to 2017 when palliative care was not yet a formal division at TMC. Given resource limitations, the priority for TMC's palliative care team was to address urgent inpatient consultations, and then tend to select outpatient oncology referrals on a case-by-case basis, starting with the most acute presentations. Patients who were clinically stable and less symptomatic at diagnosis likely were deferred to later evaluation by palliative care.

Other potential barriers to early palliative care in our patients include but are not limited to resistance to referrals

Table 3. Advance care discussions with outpatient oncologists within 6 months before death (*N* = 96).

Variable	Asian (*N* = 22)	White (*N* = 74)	*P*-value
Code status discussions			.01
No	22 (100%)	56 (75.7%)	
Yes	0 (0%)	18 (24.3%)	
Health care proxy discussions			.29
No	18 (81.8%)	50 (67.6%)	
Yes	4 (18.2%)	24 (32.4%)	
Hospice care discussions			.41
No	18 (81.8%)	53 (71.6.%)	
Yes	4 (18.2%)	21 (28.4%)	

Table 4. End-of-life care in Asian and White patients who died (*N* = 96).

Variable	Asian (*N* = 22)	White (*N* = 74)	*P*-value
Place of death			.004
Inpatient	15 (68.2%)	24 (32.4%)	
Floor service	6 (27.3%)	6 (8.1%)	
Intensive care unit	9 (40.9%)	18 (24.3%)	
Non-hospital setting	5 (22.7%)	42 (56.8%)	
Unknown place	2 (9.1%)	8 (10.8%)	
Mechanical ventilation			1.00
No	15 (68.2%)	51 (68.9%)	
Yes	4 (18.2%)	12 (16.2%)	
Unknown	3 (13.6%)	11 (14.9%)	
Cardiopulmonary resuscitation			1.00
No	19 (86.4%)	62 (83.8%)	
Yes	0 (0%)	1 (1.4%)	
Unknown	3 (13.6%)	11 (14.9%)	

among patients and caregivers, variations in oncologists' attitudes toward and comfort with concurrent palliative care, oncologists' overestimation of patients' prognosis, and tendency to wait for increased symptoms burden and/or exhaustion of novel cancer-directed treatments prior to palliative care referral. We note that the 2010 clinical trial by Temel et al demonstrating improved quality of life and survival with early palliative care in metastatic lung cancer was done in patients who received cytotoxic chemotherapy, and that the impact of early palliative care in TKI-treated or immunotherapy-treated patients with metastatic lung cancer is less defined.[3,4] A 2021 survey revealed that 39% of medical oncologists identified patients' and caregivers' resistance to palliative care consults, and 28% identified lack of well-trained available staff as the greatest barrier in delivering effective palliative care. This survey also demonstrated broad variation in how oncologists selected patients for referral to palliative care, with only 17% reporting referral of patients upon diagnosis of metastatic disease, and 63% reporting referrals based on symptoms and life expectancy.[33]

Although not statistically significant, we found a 3.2 months difference in TTPC in Asian versus White patients, despite comparable disease characteristics. To the best of our knowledge, this is the first study to examine potential racial disparity in the timing of palliative care involvement among Asian patients with advanced lung cancer in the era of novel therapy. We previously reported that a higher percentage of Asian than White patients in our study population had *EGFR*-mutated NSCLC, associated with greater targeted therapy use.[22] In our study, a higher percentage of Asian than White patients received frontline targeted therapy (20.2% vs. 4.1%), which may have effectively delayed symptomatic progression of lung cancer, deferring palliative care referral. Additionally, lack of familiarity and low acceptance of palliative care in Asian patients, and absence of culturally competent training, policy and/or guidance for providers making palliative care referrals may also play a role.[34]

Nearly a third of both Asian and White patients were documented to have enrolled in hospice care in our study. This finding contrasts with an older report using data from 1988 to 1998 showing lower rates of hospice care in older Asian American and Pacific Islander (AAPI) versus White patients dying from various solid tumor malignancies including lung cancer.[35] Another study of older patients with NSCLC who died between 1991 and 2005 found that AAPI patients, particularly those with the lowest socioeconomic status, were less likely to receive hospice services compared to White patients.[36] Similar rates of hospice enrollment in Asian and White patients diagnosed with metastatic lung cancer at our institution between 2014 to 2019 may reflect more recent work to bridge racial disparity in hospice care and institution-specific efforts to improve the care of Asian patients in our community.

Our finding that Asian patients were more likely to die in-hospital is consistent with previous reports.[37-39] We also found that time from last systemic cancer-directed treatment to death was comparable between Asian and White patients. In contrast to a previous observation by Ernst et al. that more Chinese American than White patients with metastatic solid tumor malignancies received mechanical ventilation before death,[37] we found no significant differences in the use of high-intensity resuscitation measures between Asian and White patients in our study. Thus, while Asian patients were more likely to die inpatient, they did not necessarily receive more aggressive end-of-life care. This may suggest racial disparity in aspects of end-of-life care for Asian patients, or unique cultural values and preferences regarding place of death and end-of-life care. Asian patients may view staying in the hospital as a way to sustain hope in the face of advancing/terminal disease, to continue safe monitoring of clinical changes, to allow the younger generation to fulfill the moral obligation of "filial piety" in advocating for life-sustaining management, to mitigate the emotional distress on family, and to avoid bringing bad luck home.[40,41] Remaining hospitalized at end of life could also reflect lack of caregiving resources or support at home, a congested living environment, and difficulty accessing non-hospital settings in which to pass away, such as hospice facilities.[37,39]

Among decedents in our study, a disparity was observed in the occurrence of documented code status discussions between Asian versus White patients and their oncologists; none of the Asian decedents had such a documented discussion. This finding differs from that of a study by Glover et al. in which Chinese and White decedents from 2013-2018 with metastatic cancer were found with similar rates of documented advance care planning discussions and similar documentation of DNR/DNI status. The context of the Glover et al. study is notably different in that it included patients with diverse cancer types, with only a small subgroup of patients with lung cancer, examined the experiences of Chinese rather than Asian patients in aggregate, and described rates of completion of DNR/DNI, which could have been performed by clinical team members other than the primary oncologist.[42]

Multiple factors could contribute to Asian patients' lack of code status discussions in our study. Linguistic barriers make communication between outpatient oncologists and Asian patients challenging, especially with regard to nuanced end-of-life care conversations.[43] In our study, only half (39/78) of patients who spoke a non-English primary language had documented medical interpreter use. Cultural values and traditions (eg, filial piety) may influence children of Asian patients to withhold the diagnosis and/or prognosis for the sake of protecting the parents from upsetting news, or to default to pursuing life-prolonging cancer-directed treatment, as talking about death/dying and code status is taboo. The tendency to convey sensitive information more implicitly, using indirect communication, and favoring family-centered medical decision-making over individual autonomy may complicate and delay advance care planning for Asian patients.[40,41,44-46] With influences from Confucianism, Taoism, Buddhism, and spiritual/philosophical relationship to existing with pain and suffering, Asian patients may not describe symptoms until they become severe, potentially hindering timely receipt of palliative care, goals of care / code status discussions, and end-of-life care planning.[47]

We acknowledge the limitations of this single-institution retrospective study with small sample size, though the single-institution nature of this study may also be its strength. Our institution uniquely serves the Chinatown community of Boston and is committed to improving Asian health, therefore has made efforts to overcome disparities that Asian patients may continue to face at other institutions. For this study, Asian patients were considered in the aggregate, and differences in palliative and end-of-life care across heterogeneous Asian ethnicities were not assessed due to sample size concerns. Our study was unable to differentiate foreign-born from U.S.

born Asian patients or to assess the degree of acculturation in patients, variables that can impact palliative care or hospice care involvement. The contemporary limited and evolving availability of palliative care services is specific to our institution, so our results may be less generalizable. Our findings were based on data extracted from the EMR, which presents inherent challenges to collecting accurate and full advance care planning, goals of care and end-of-life care discussions.[39] Lastly, some data could not be obtained, such as admissions details, palliative and end-of-life care use at outside institutions, and some potential confounders could not be assessed such as patients' education level and religious preference.

Guideline-recommended early palliative care remains poorly integrated into real-world oncologic practice,[5,48,49] especially in resource-limited settings. Along with updates in precision oncology, perhaps specific patient populations are best served by precision palliative and end-of-life care. For the growing Asian patient population with significant lung cancer burden often amenable to targeted therapy,[22] at the institutional level, equitable precision palliative and end-of-life care can involve follow-up with a multidisciplinary oncologic care team including clinic-based medical interpreters and bilingual patient navigators/advocates with direct knowledge of patients' cultural norms/mores and communication preferences that promote patient/family engagement.[40] Outside of the institution, building partnerships for multisite prospective trials to study promising palliative care interventions, improving models of palliative care provision (eg, embedded thoracic oncology-palliative care clinic, telehealth, stepped palliative care),[50-52] enhancing community-based outreach, and educational efforts to improve understanding of palliative and end-of-life care needs among Asian patients, would be impactful.

Conclusion

Accessible, timely, and effective palliative and end-of-life care are essential components of quality cancer care. While our study did not reveal obvious racial disparity in palliative care involvement for Asian and White patients with metastatic lung cancer, Asian patients had more in-hospital deaths and no documented code status discussions with their outpatient oncologists in the six months preceding death, reflecting possible racial disparity in end-of-life care and/or population-specific cultural preferences. Increasingly, a more tailored, patient-centered approach to integrating palliative and end-of-life care based on individualized care needs may make the most sense in the rapidly evolving landscape of precision oncology. Larger multi-institutional prospective studies are warranted to clarify further what constitutes timely and effective palliative and end-of-life care in Asian patients with metastatic lung cancer and whether true racial disparity exists in these care domains for Asian patients in the United States.

Acknowledgments

The authors respectfully express special thanks to the patients at Tufts Medical Center whose experiences contributed to this work. The authors also thank Dr. Tamara Vesel, MD (Chief of Division of Palliative Care in the Department of Medicine at Tufts Medical Center), Dr. Rachel Bernstein (attending palliative care physician at Tufts Medical Center), Dr. Mary K. Buss, MD, MPH (Director of Outpatient Palliative Care at Tufts Medical Center), and Ms. Feng Wang (multilingual oncology patient navigator) for their valuable comments.

Author contributions

Xiao Hu (Conception/Design, Collection and/or assembly of data, Data analysis and interpretation, Manuscript writing, Final approval of manuscript), John W. Melson (Conception/Design, Collection and/or assembly of data, Data analysis and interpretation, Manuscript writing, Final approval of manuscript), Stacey S. Pan (Collection and/or assembly of data, Manuscript editing, Final approval of manuscript), Yana V. Salei (Collection and/or assembly of data, Final approval of manuscript), Lori Pai (Manuscript editing, Final approval of manuscript), Susan K. Parsons (Manuscript editing, Final approval of manuscript), Yu Cao (Conception/Design, Provision of study material or patients, Collection and/or assembly of data, Data analysis and interpretation, Manuscript writing, Final approval of manuscript)

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest

The authors indicate no financial or other Conflict of Interest relationships.

Data availability

The data that support the findings of this study are available on reasonable request to the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Prior presentations

04/18/2023 [2023 AACR annual meeting, poster presentation]: Hu X, Melson J, Pan S, Salei Y, Cao Y. Palliative and end of life care utilization in Asian and White patients with stage IV lung cancer. Published online April 04, 2023. Cancer Res (2023) 83 (7_Supplement): 5528.

https://doi.org/10.1158/1538-7445.AM2023-5528.[53]

Supplementary material

Supplementary material is available at *The Oncologist* online.

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