RESEARCH LETTER

Kidney Replacement Therapy Use at End-of-Life Among Critically Ill Chinese and Non-Hispanic White Americans: A Single-Center Study

To the Editor:

Asian Americans represent the fastest growing racial group in the United States.[1] There is significant heterogeneity of cultural beliefs and end-of-life care intensity preferences among ethnic subgroups within this population.[2-4] We sought to investigate the incidence of kidney replacement therapy (KRT) use at end-of-life (EOL) among critically ill Chinese American and White American decedents at a single urban tertiary medical center located in the Northeastern United States.

Chinese American and White American intensive care unit (ICU) decedents between 2014 and 2020 were previously identified from the electronic health record and matched using a 1:1 ratio on year of ICU admission, biological sex, age, and reason for ICU admission. Chinese Americans were defined as individuals whose documented race was Asian with language proficiency in Chinese, Mandarin, Cantonese, or Taishanese, whereas White Americans were defined as individuals whose race was documented as non-Hispanic White. Matches were excluded from analyses if either individual received KRT preceding time of ICU admission. We determined the incidence of KRT use and then examined the association of Chinese American versus White American and KRT use at EOL using 2 conditional logistic regression models: 1) unadjusted; and 2) model 1, adjusted for illness severity as assessed using Charlson comorbidity index score[5] and serum creatinine level at time of admission. Interpreter services were available for the duration of the study. Informed consent was waived, and the study was exempt from ethics review because the study was not deemed human individuals research.

Forty ICU decedents were excluded for prior recipience of KRT (ie, were treated with maintenance outpatient dialysis before admission), resulting in a final cohort of 266 patients. Mean age of Chinese American and White American decedents was 79 ± 11 (SD) and 77 ± 10 years, with median serum creatinine levels at time of ICU admission of 1.49 (interquartile range [IQR], 1.04-2.20) and 1.31 (IQR, 0.89-2.17) mg/dL, respectively. Fourteen (10.5%) Chinese American and 130 (97.7%) White American decedents had English documented as their primary language. Prevalent comorbid conditions, receipt of invasive mechanical ventilation, and rates of advanced care planning at time of ICU admission were similar between the 2 groups (Table 1).

Thirty-eight of 266 ICU decedents received KRT (cumulative incidence 14.3% of entire cohort; 10.5% and 18.0% of Chinese American and White Americans, respectively). The unadjusted odds of KRT use among Chinese American ICU decedents compared with White American ICU decedents was 0.50 (95% confidence interval [CI], 0.23-1.07), which did not change significantly after adjusting for baseline illness severity and kidney function on admission (odds ratio [OR], 0.42; 95% CI, 0.15-1.13) (Table 2).

Here, we report the first ever evaluation of KRT use at EOL among Chinese American ICU decedents at a single urban tertiary medical center. We observed that Chinese American ICU decedents received KRT at an absolute incidence rate of 4.19 events per 1,000 patient-days lower than White Americans and had 58% lower odds of receiving KRT in adjusted analyses, despite comparable illness severity and EOL care intensity preferences (Table 2). Our findings suggest practice differences between these 2 populations, which may be driven by individual (clinician bias and patient preference), institutional, and societal factors (culture and language discordance) or a combination thereof.

Our findings are surprisingly at odds with previously described EOL care intensity trends observed among Asian Americans, including higher rates of invasive mechanical ventilation use, in-hospital death, and decreased hospice use compared with White Americans.[6-9] Prior studies have attributed higher intensity of care at EOL used by Chinese Americans to 1) value systems that promote filial piety; 2) expectations of family that may indirectly obligate caregivers to sustain the lives of loved ones; and 3) avoidance of advanced care planning because of cultural views on death.[2,3] We hypothesize that our findings may be attributed, in part, to physician–patient language discordance, which has previously been associated with inadequate ascertainment of patient preferences and worse health outcomes.[10] However, we were unable to evaluate for an interaction among patients' race and ethnicity, primary language, and KRT use because of small sample size.

The major strength of this study is the evaluation of EOL care use within a specific ethnic category, Chinese American, disaggregated from the US federal race category "Asian," which acknowledges the heterogeneity of cultural preferences and clinical outcomes observed among different Asian American groups.[4] Limitations of this study include small sample size, single-center nature, sparse sociodemographic data, non–self-reported race and ethnicity, and the potential for residual confounding by illness severity at time of ICU admission.

In conclusion, we observed that critically ill Chinese American decedents were less likely to receive KRT compared with White American decedents at EOL at a single tertiary care center. This finding highlights the need for multicenter evaluation, with additional identification of clinician- and patient-specific factors to delineate cultural preferences from health disparities and promote equitable, culturally sensitive care in an increasingly diverse America.

Table 1. Characteristics of the Patients at Baseline by Race and Ethnicity

	White American (N = 133)	Chinese American (N = 133)
Age (y)[a]	77.44 ± 10.07	79.38 ± 10.75
Male, no. (%)	55 (41.4)	56 (42.1)
English as primary language, no. (%)	130 (97.7)	14 (10.5)
Year of admission, no. (%)		
2014	4 (3.0)	5 (3.8)
2015	21 (15.8)	23 (17.3)
2016	24 (18.0)	21 (15.8)
2017	24 (18.0)	24 (18.0)
2018	24 (18.0)	21 (15.8)
2019	22 (16.5)	23 (17.3)
2020	14 (10.5)	16 (12.0)
Admitting diagnosis, no. (%)		
Renal	3 (2.3)	4 (3.0)
Cardiothoracic surgery	3 (2.3)	3 (2.3)
Cardiovascular	33 (24.8)	33 (24.8)
Gastrointestinal	12 (9.0)	12 (9.0)
Metabolic	2 (1.5)	2 (1.5)
Neoplasm	6 (4.5)	6 (4.5)
Neurological	5 (3.8)	5 (3.8)
Postoperative	1 (0.8)	1 (0.8)
Respiratory	26 (19.5)	25 (18.8)
Sepsis	25 (18.8)	24 (18.0)
Trauma/hemorrhage	17 (12.8)	18 (13.5)
Intensive care unit type, no. (%)		
MICU	51 (38.3)	54 (40.6)
SICU	28 (21.1)	27 (20.3)
CCU	26 (19.5)	30 (22.6)
NCCU	28 (21.1)	22 (16.5)
Charlson comorbidity index (IQR)[b]	3 (2.0-4.0)	3 (1.0-4.0)
Length of stay (IQR), days	7 (3.0-15.0)	6 (3.0-10.0)
Serum creatinine (IQR), mg/dL	1.31 (0.89-2.17)	1.49 (1.04-2.20)
Estimated glomerular filtration rate (mL/min/1.73 m^2)	47.93 ± 27.3	43.84 ± 27.0
Invasive mechanical ventilation on admission, no. (%)	97 (36.5)	93 (35.0)
Comorbid condition, no. (%)		
Any CKD	21 (15.8)	22 (16.5)
CKD 3	15 (11.3)	11 (8.3)
CKD 4	5 (3.8)	9 (6.8)
CKD 5	1 (0.8)	2 (1.5)
Dementia	15 (11.3)	15 (11.3)
Cancer	12 (9.0)	21 (15.8)
CHF	47 (35.3)	36 (27.1)
COPD	30 (22.6)	26 (19.5)
Advanced care planning on ICU admission, no. (%)		
DNR	29 (10.9)	25 (9.4)
DNI	20 (7.5)	19 (7.1)
HCP	36 (13.5)	35 (13.2)

Abbreviations: MICU, medical intensive care unit; SICU, surgical intensive care unit; CCU, critical care unit; NCCU, neurocritical care unit; CKD, chronic kidney disease; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; DNR, do not resuscitate; DNI, do not intubate; HCP, health care proxy.
[a]Plus–minus values are means ± SD.
[b]Score ranges between 1 and 6, with higher scores indicating lower 10-year survival.

Table 2. Unadjusted and Adjusted Odds Ratios for Kidney Replacement Therapy Use

	White American	Chinese American
N	133	133
Events	24	14
Total days follow-up	1,412	1,093
Event rate per 1,000 patient-days	17.00	12.81
Unadjusted OR (95% CI)	ref	0.50 (0.23-1.07)
Model 1[a] OR (95% CI)	ref	0.42 (0.15-1.13)

Abbreviations: OR, odds ratio; CI, confidence interval.
[a]Model 1 adjusted for Charlson comorbidity index and admission serum creatinine level.

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