

Trends in Stem Cell Transplant in Elderly Medicare Beneficiaries with Multiple Myeloma in the United States

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Background

- High dose chemotherapy and autologous hematopoietic cell transplantation (HCT) are considered standard of care for multiple myeloma patients (MM) and have been shown to prolong their event-free and overall survival.
- Data increasingly shows disparities with regard to age, ethnicity/race, geographic residence, insurance type and socioeconomic status which potentially leads to inferior outcomes.
- The availability of HCT for older adults with MM has increased in the last decade due to supportive care and Medicare coverage approval.
- There is little information on the determinants of receipt of HCT in older MM patients and previous studies do not examine very recent and/or nationally representative datasets.

Objectives

- The objective of our study is to examine rates of HCT and identify potential disparities among a real-world database of elderly patients with newly diagnosed MM (NDMM).

Methods

- This retrospective cohort study used the Surveillance, Epidemiology, and End Results registry and linked Medicare claims (SEER-Medicare) database, 2007-2016.
- We identified individuals aged 66+ with an incident diagnosis of MM between 2007 and 2015, and evidence of CRAB (hypercalcemia, renal insufficiency, anemia and bone disease) symptoms based on ICD-9 diagnosis codes found in claims from six months pre- to one month post-MM diagnosis. Patients were followed until death or censoring due to non-continuous Medicare Parts A and B enrollment.
- Administrative billing codes were used to identify HCT receipt. Charlson Comorbidity Index (CCI), derived from medical claims, was used to measure comorbidity burden at the time of MM diagnosis.
- Baseline demographic and clinical characteristics among those who received HCT were compared to those who did not receive HCT using t-tests and Chi-square tests for continuous and categorical variables, respectively.

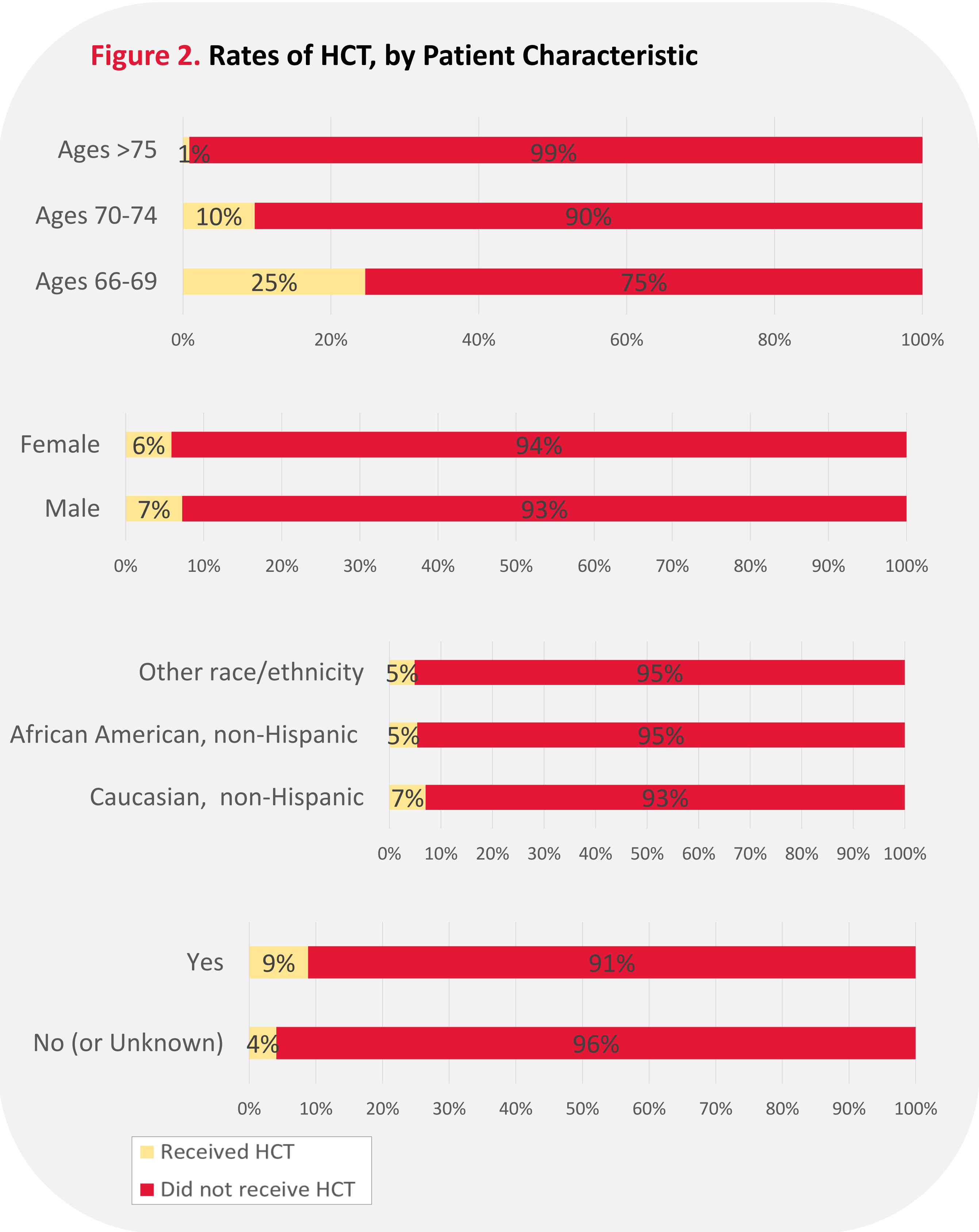
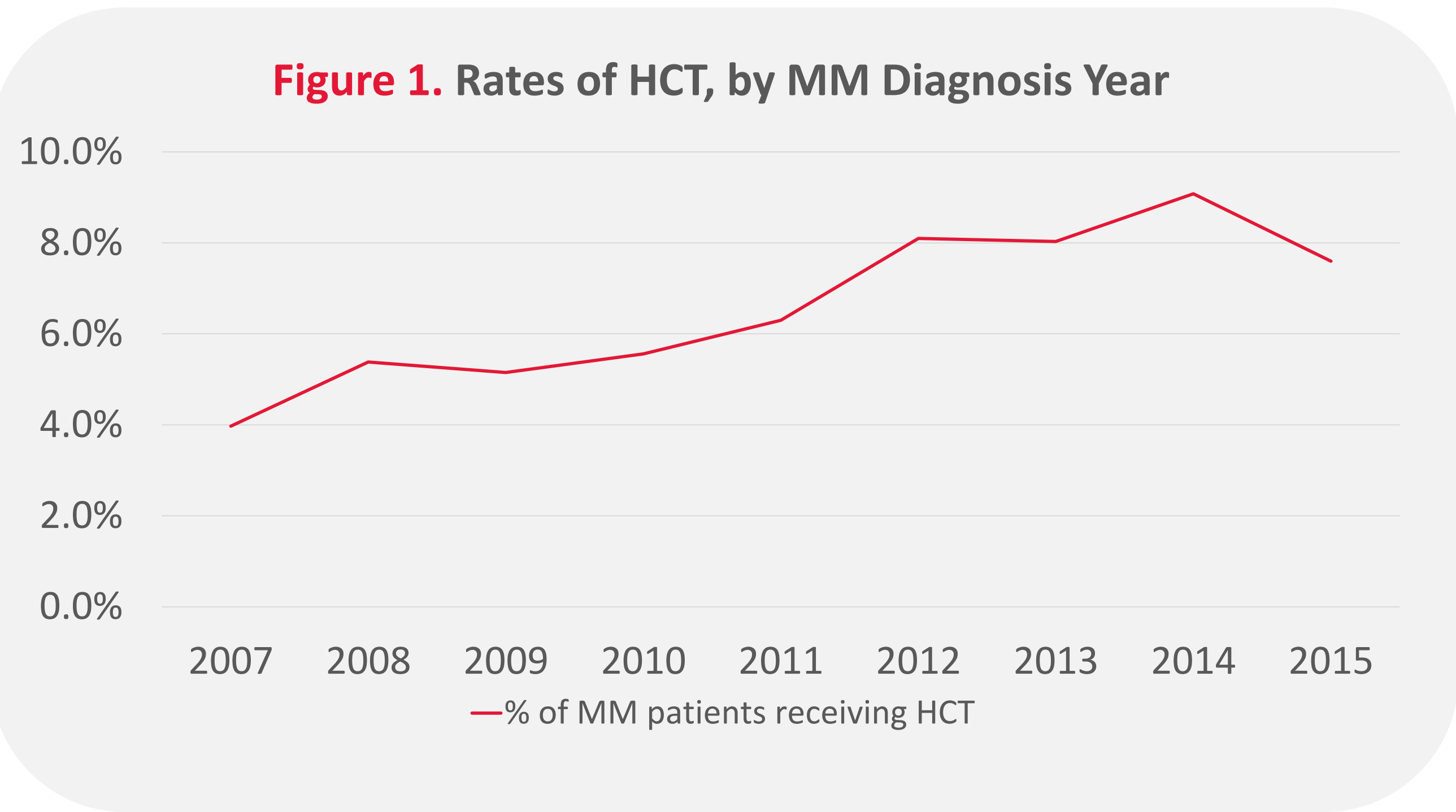
Results

- Among 16,005 individuals with NDMM who met our inclusion criteria, 13,320 had evidence of CRAB symptoms at the time of diagnosis.
- Overall, 882 (6.6%) of the patients underwent HCT during the follow-up period.
- Figure 1 describes the proportion of patients receiving HCT by year of their MM diagnosis. Overall, rates of HCT increased over the last decade.
- Rates of HCT were higher among younger or non-Hispanic Caucasian patients as compared to older or non-Hispanic African American patients. Patients receiving HCT were more likely to be male, married and have fewer comorbid conditions (Figure 2).

Table 1. Characteristics of MM Patients with ASCT Treatment Receipt

Characteristic*	HCT	No HCT	p-value (Chi-squared or t-test)
	n=882 (6.6%)	n=12,438 (93.4%)	
Mean Age (years (SD))	69.5 (3.0)	78.0 (7.0)	<0.01
Age Categories			
66-69	521 (59.1)	1,592 (12.8)	<0.01
70-74	291 (33.0)	2,708 (21.8)	
≥75	70 (7.9)	8,138 (65.4)	
Sex			
Male (%)	526 (59.6)	6,735 (54.2)	<0.01
Female (%)	356 (40.4)	5,703 (45.9)	
Race/ethnicity			
Caucasian, non-Hispanic (%)	726 (82.3)	9,616 (77.3)	<0.01
African American, non-Hispanic (%)	110 (12.5)	1,929 (15.5)	
Other race/ethnicity (%)	46 (5.2)	893 (7.2)	
Geographic Region			
Northeast (%)	212 (24.0)	2,616 (21.0)	<0.01
Midwest (%)	125 (14.2)	1,676 (13.5)	
South (%)	263 (29.8)	3,228 (26.0)	
West (%)	282 (31.2)	4,918 (39.5)	
Charlson Comorbidity Index (CCI)			
CCI = 0 (%)	525 (60.0)	4,411 (36.0)	<0.01
CCI = 1 (%)	204 (23.1)	2,587 (21.1)	
CCI = >1 (%)	146 (16.6)	5,256 (42.9)	
Baseline CRAB symptoms			
Hypercalcemia	191 (21.7)	2,594 (20.9)	0.57
Renal dysfunction	455 (51.6)	8,047 (64.7)	<0.01
Anemia	699 (79.3)	10,479 (84.3)	<0.01
Bone disease	294 (33.3)	3,494 (28.1)	<0.01
Married at Diagnosis			
No (or Unknown)	217 (25.8)	5,107 (44.2)	<0.01
Yes	625 (74.2)	6,445 (55.8)	

*n (%) except where indicated



Conclusions

- Highest rates of HCT occur in younger patients with few comorbidities, consistent with clinical guidelines.
- Rates of HCT are higher among males and white patients compared to females and non-white patients, which suggest possible treatment disparities related to sex and race/ethnicity.
- The rate of HCT in married patients is approximately twice the rate in unmarried patients, potentially due to lack of caregiver availability in unmarried patients which can be an exclusion criteria for HCT.
- Further research is needed to clarify the factors contributing to these disparities and their impact on patient outcomes.

Disclosures

- Eberechukwu Onukwugha reports Pfizer and Bayer research contracts unrelated to the work with funds paid to the University
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