

SURVIVAL AND EARLY MORTALITY DISPARITIES IN CLASSICAL HODGKIN LYMPHOMA ACROSS THE IMMUNOTHERAPY ERA: A SEER ANALYSIS (2010–2022)

Edward Mwarangu, MD¹; Nahid Suleman, MD²; Joseph A. Moore, MD, FACP³

¹University of Kansas–Wichita, School of Medicine, Wichita, KS, USA; ²University of Missouri, USA; ³Cancer Center of Kansas, Wichita, USA



INTRODUCTION

Programmed death-1 (PD-1) inhibitors have transformed outcomes in classical Hodgkin lymphoma (cHL), yet whether these advances have translated into equitable population-level survival gains remains unclear. Population-based studies have not specifically evaluated whether survival improvements in the immunotherapy era are uniformly distributed across demographic groups.

AIM

To determine whether survival improvements in the immunotherapy era were uniformly realized across age and racial/ethnic groups, with emphasis on early mortality.

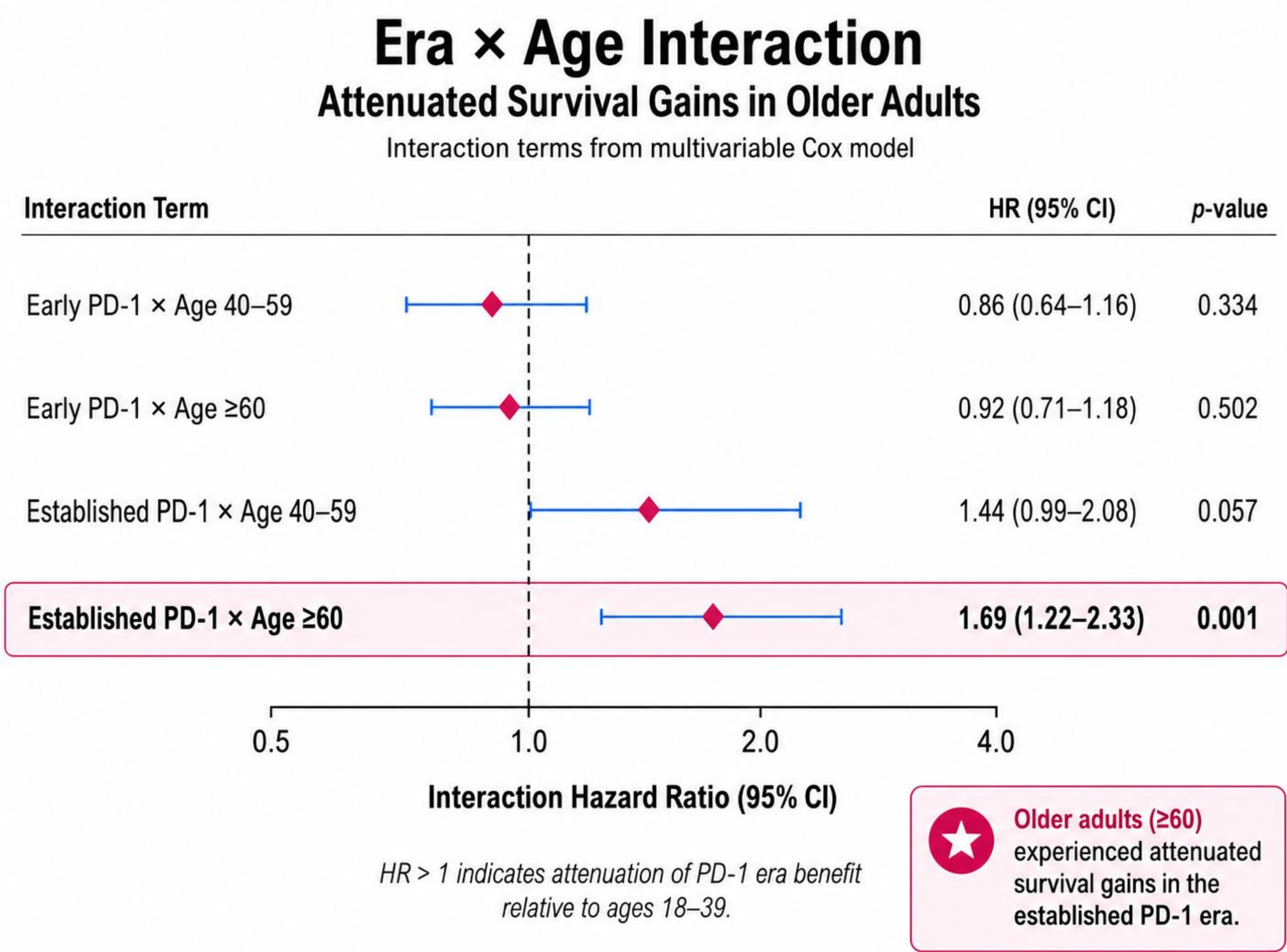
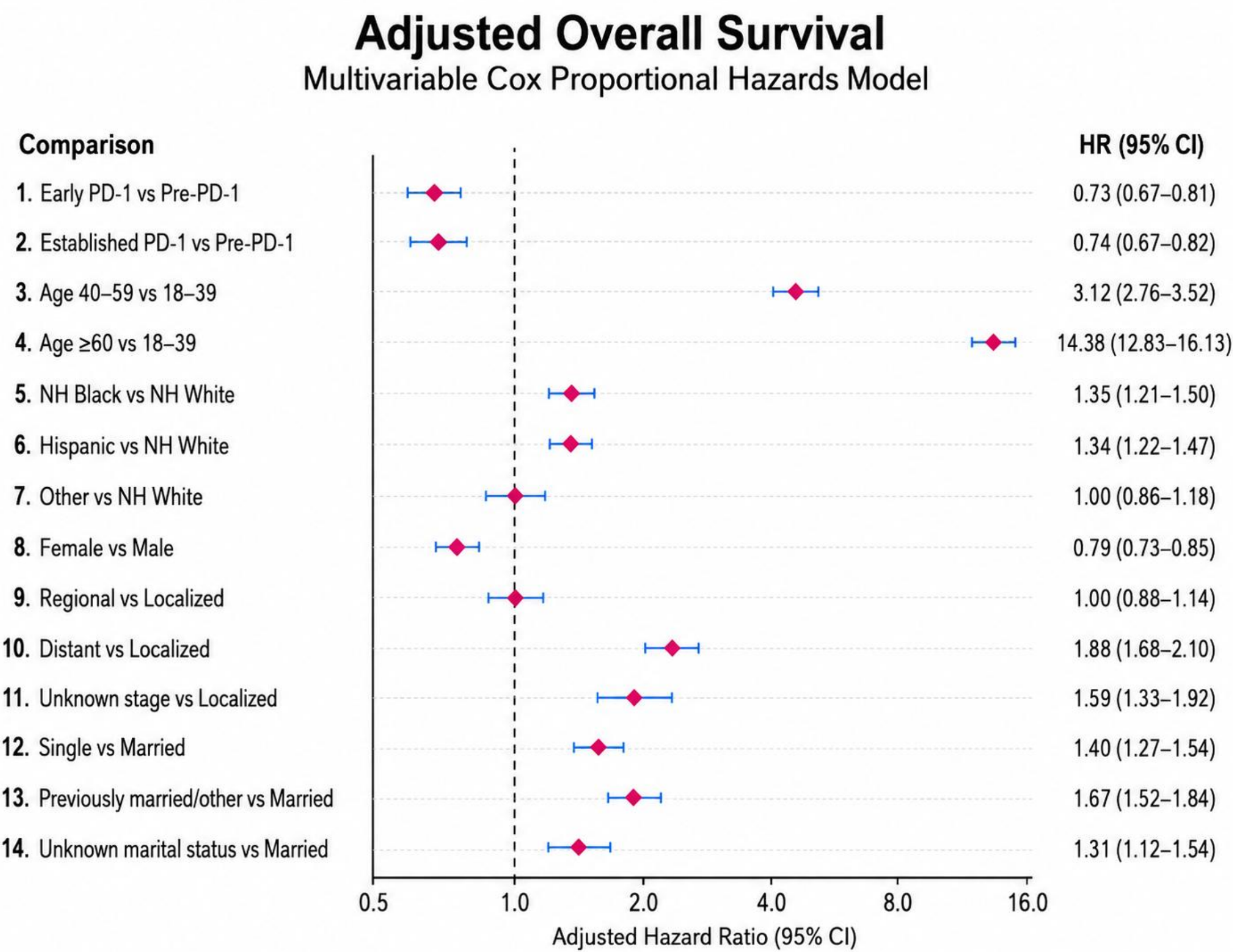
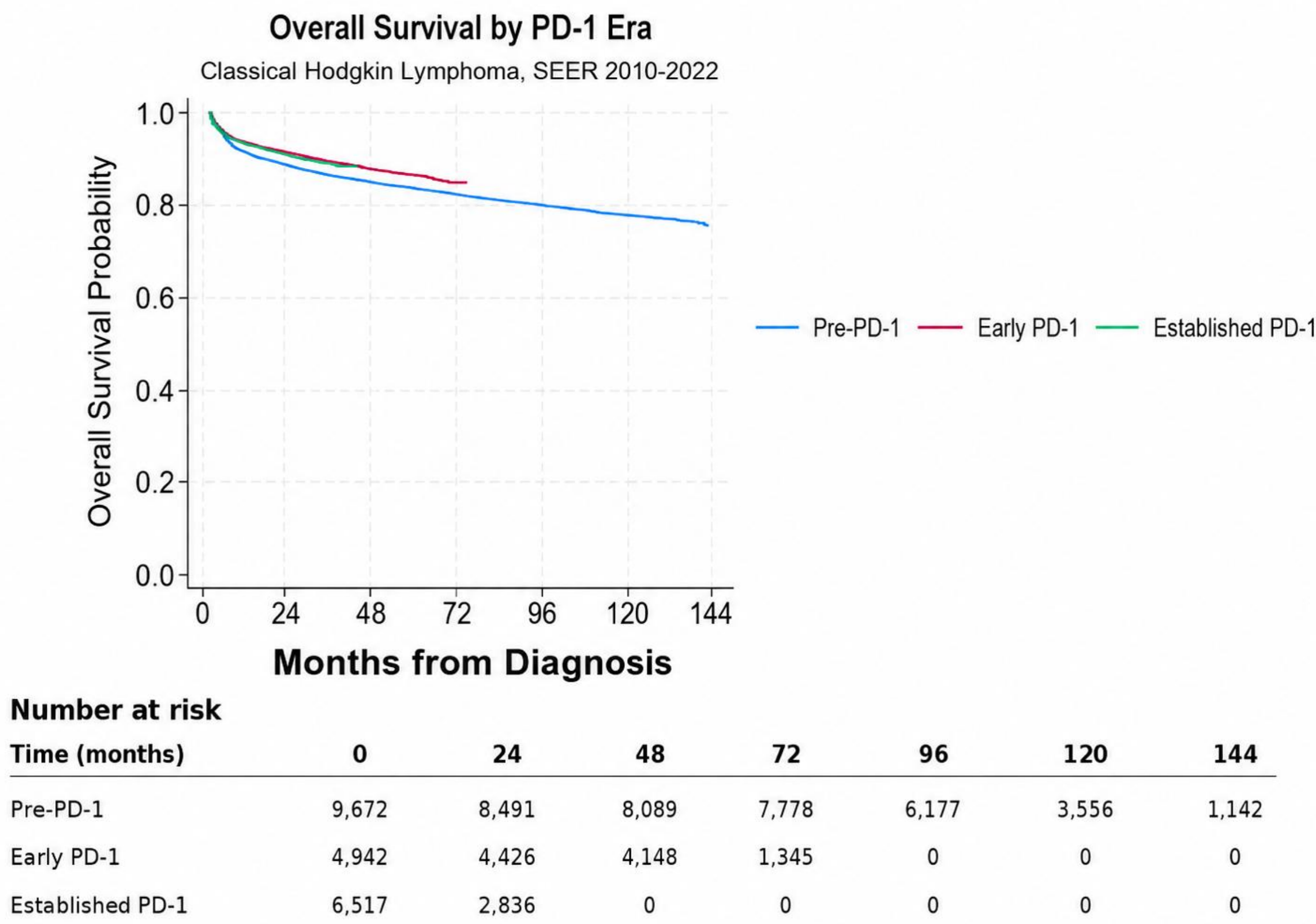
METHOD

A retrospective population cohort study using the Surveillance, Epidemiology, and End Results (SEER) database (2010–2022), including adults with cHL was conducted. Patients were stratified into pre–PD-1 (2010–2015), early PD-1 (2016–2018), and established PD-1 (2019–2022) eras, defined a priori to reflect regulatory approval and subsequent clinical adoption of PD-1 inhibitors. Diagnostic era was used as a surrogate for evolving therapeutic context. Overall survival (OS) was estimated using Kaplan–Meier methods and compared using the log-rank test. Multivariable Cox models adjusted for age, sex, race/ethnicity, stage, and marital status. Interaction terms (era×age, era×race/ethnicity) assessed differential survival gains. One-year mortality was evaluated using multivariable logistic regression, and Hodgkin lymphoma–specific survival was examined in sensitivity analyses.

Table 1. Baseline Demographic and Clinical Characteristics by PD-1 Era
Values are n (%)

Characteristic	Pre-PD-1	Early PD-1	Established PD-1	Total	P-value
Total cohort	9,963 (45.4%)	5,076 (23.1%)	6,917 (31.5%)	21,956 (100.0%)	
Age group					
18–39	5,207 (52.3%)	2,631 (51.8%)	3,651 (52.8%)	11,489 (52.3%)	<0.001
40–59	2,799 (28.1%)	1,316 (25.9%)	1,687 (24.4%)	5,802 (26.4%)	
≥60	1,957 (19.6%)	1,129 (22.2%)	1,579 (22.8%)	4,665 (21.2%)	
Sex					
Male	5,493 (55.1%)	2,750 (54.2%)	3,770 (54.5%)	12,013 (54.7%)	0.490
Female	4,470 (44.9%)	2,326 (45.8%)	3,147 (45.5%)	9,943 (45.3%)	
Race/ethnicity					
NH White	6,213 (62.4%)	3,124 (61.5%)	3,971 (57.4%)	13,308 (60.6%)	<0.001
NH Black	1,214 (12.2%)	601 (11.8%)	832 (12.0%)	2,647 (12.1%)	
Hispanic	1,812 (18.2%)	965 (19.0%)	1,490 (21.5%)	4,267 (19.4%)	
Other	724 (7.3%)	386 (7.6%)	624 (9.0%)	1,734 (7.9%)	
Stage					
Localized	1,440 (14.5%)	655 (12.9%)	918 (13.3%)	3,013 (13.7%)	<0.001
Regional	3,898 (39.1%)	1,930 (38.0%)	2,593 (37.5%)	8,421 (38.4%)	
Distant	4,100 (41.2%)	2,200 (43.3%)	3,105 (44.9%)	9,405 (42.8%)	
Unknown	525 (5.3%)	291 (5.7%)	301 (4.4%)	1,117 (5.1%)	
Marital status					
Married	4,177 (41.9%)	2,141 (42.2%)	2,840 (41.1%)	9,158 (41.7%)	0.008
Single	4,144 (41.6%)	2,119 (41.7%)	3,030 (43.8%)	9,293 (42.3%)	
Prev/other	1,042 (10.5%)	523 (10.3%)	713 (10.3%)	2,278 (10.4%)	
Unknown	600 (6.0%)	293 (5.8%)	334 (4.8%)	1,227 (5.6%)	

RESULTS



CONCLUSIONS

Survival and early mortality in cHL improved in the immunotherapy era; however, gains were not equitably distributed. Older adults derived less benefit, and racial/ethnic disparities persisted. These findings highlight a gap between therapeutic innovation and real-world benefit.

ACKNOWLEDGEMENTS

Nahid Suleman, MD- University of Missouri, USA and University of Kansas–Wichita, School of Medicine, and Joseph Moore MD - CCK

CONTACT INFORMATION

Edward Mwarangu MD
Internal Medicine Resident Year 3
University of Kansas, Wichita
emwarangu@kumc.edu

REFERENCES

- Herrera AF, LeBlanc M, Castellino SM, et al. Nivolumab+AVD in advanced-stage classic Hodgkin's lymphoma. N Engl J Med. 2024;391(15):1379-1389.
- Shah H, Jang H, Kim S, Halwani AS. A comprehensive SEER registry analysis of elderly patients with classical Hodgkin lymphoma based on treatment era and race. Br J Haematol. 2023;200(5):579-586.
- Evens AM, Antillón M, Aschebrook-Kilfoy B, Chiu BC. Racial disparities in Hodgkin's lymphoma: a comprehensive population-based analysis. Ann Oncol. 2012;23(8):2128-2137.