CARE DELIVERY ReCAP

Racial, Ethnic, and Socioeconomic Discrepancies in Opioid Prescriptions Among Older Patients With Cancer

Lucas K. Vitzthum, MD, MAS[1]; Vinit Nalawade, MS[2]; Paul Riviere, MD[2]; Whitney Sumner, MD[2]; Tyler Nelson, BS[2]; Loren K. Mell, MD[2]; Timothy Furnish, MD[3]; Brent Rose, MD[2]; María Elena Martínez, PhD[4]; and James D. Murphy, MD, MS[2]

QUESTION ASKED: Among older patients undergoing treatment for nonmetastatic cancer, are there differences in opioid prescribing patterns and adverse pain outcomes by race or socioeconomic status?

SUMMARY ANSWER: There are observable differences in opioid prescribing practices and adverse outcomes among patients with cancer between racial and socioeconomic groups. Patients with cancer from lower-income communities are at particular risk for adverse outcomes, highlighting the need for additional research and optimization in pain management for this population.

WHAT WE DID: We used the SEER registry linked to Medicare claims data to compare rates of new opioid prescriptions, persistent opioid use, and pain-related emergency department visits among patients undergoing definitive cancer treatment by race and socioeconomic status.

WHAT WE FOUND: Non-Hispanic Black patients were less likely to receive an opioid prescription when compared with non-Hispanic White patients with no increased rate of persistent opioid use. Patients from lower-income communities were at increased risk for both becoming a persistent opioid user and presenting to the emergency department for pain.

BIAS, CONFOUNDING FACTOR(S): It is challenging to determine optimal opioid prescribing patterns from population-based claims data that lack information on pain scores, quality of life, or functionality.

REAL-LIFE IMPLICATIONS: Opioids are critically important to cancer-related pain management. Prescribing practices continue to evolve as we navigate the balance of adequate pain control and consequential dependence. Crucial to this mission is a keen awareness of implicit biases and access to care that may shift this careful balance and ultimately harm these vulnerable patients. Our data suggest that patients from lower-income communities are at risk for both adverse opioid outcomes and inadequate pain management. This warrants comprehensive research to better understand the basis of inequities and provide actionable, durable solutions.

CORRESPONDING AUTHOR

Lucas K. Vitzthum, MD, MAS, Department of Radiation Oncology, Stanford University, 875 Blake Wilbur Drive, Stanford, CA 94304; e-mail: vitzthum@stanford.edu.

ASSOCIATED CONTENT

Appendix

Author affiliations and disclosures are available with the complete article at ascopubs.org/journal/op.

Accepted on December 15, 2020 and published at ascopubs.org/journal/op on February 3, 2021: DOI https://doi.org/10.1200/OP.20.00773

CARE DELIVERY

original contributions

Racial, Ethnic, and Socioeconomic Discrepancies in Opioid Prescriptions Among Older Patients With Cancer

Lucas K. Vitzthum, MD, MAS[1]; Vinit Nalawade, MS[2]; Paul Riviere, MD[2]; Whitney Sumner, MD[2]; Tyler Nelson, BS[2]; Loren K. Mell, MD[2]; Timothy Furnish, MD[3]; Brent Rose, MD[2]; María Elena Martínez, PhD[4]; and James D. Murphy, MD, MS[2]

abstract

PURPOSE Minority race and lower socioeconomic status are associated with lower rates of opioid prescription and undertreatment of pain in multiple noncancer healthcare settings. It is not known whether these differences in opioid prescribing exist among patients undergoing cancer treatment.

METHODS AND MATERIALS This observational cohort study involved 33,872 opioid-naive patients of age > 65 years undergoing definitive cancer treatment. We compared rates of new opioid prescriptions by race or ethnicity and socioeconomic status controlling for differences in baseline patient, cancer, and treatment factors. To evaluate downstream impacts of opioid prescribing and pain management, we also compared rates of persistent opioid use and pain-related emergency department (ED) visits.

RESULTS Compared with non-Hispanic White patients, the covariate-adjusted odds of receiving an opioid prescription were 24.9% (95% CI, 16.0 to 33.9, $P < .001$) lower for non-Hispanic Blacks, 115.0% (84.7 to 150.3, $P < .001$) higher for Asian–Pacific Islanders, and not statistically different for Hispanics (−1.0 to 14.0, $P = .06$). There was no significant association between race or ethnicity and persistent opioid use or pain-related ED visits. Patients living in a high-poverty area had higher odds (53.9% [25.4 to 88.8, $P < .001$]) of developing persistent use and having a pain-related ED visit (39.4% [16.4 to 66.9, $P < .001$]).

CONCLUSION For older patients with cancer, rates of opioid prescriptions and pain-related outcomes significantly differed by race and area-level poverty. Non-Hispanic Black patients were associated with a significantly decreased likelihood of receiving an opioid prescription. Patients from high-poverty areas were more likely to develop persistent opioid use and have a pain-related ED visit.

JCO Oncol Pract 17:e703-e713. © 2021 by American Society of Clinical Oncology

INTRODUCTION

Opioid prescribing patterns for patients with cancer are under increased scrutiny in the setting of the ongoing opioid crisis.[1,2] As in the general population, rates of opioid-related deaths and emergency department (ED) visits have increased among patients with cancer over the past decade.[3,4] There is also concern, however, that in response to the opioid epidemic, restrictive policies or fears over addiction could lead to systematic undertreatment of cancer pain.[5] Prior studies suggest that up to 50% of patients with cancer have inadequate pain management and that minority patients are especially at risk for undertreatment.[1,6,7]

Disparities in opioid prescribing exist in the noncancer acute care setting, with non-Hispanic White (NHW) patients being more likely to receive opioid analgesics compared with non-Hispanic Black (NHB), Hispanic, or Asian–Pacific Islander (API) patients.[7-9] Patients from more affluent and educated neighborhoods are also more likely to receive an opioid prescription when presenting to the ED.[10] It is not clear whether discrepancies in opioid prescribing exist among patients with cancer, who often undergo more protracted treatment regimens with multidisciplinary care. It is also not known if discrepancies in initial opioid prescribing by race, ethnicity, or socioeconomic status correlate with persistent opioid use or inadequate pain management among patients with cancer.

The purpose of this study is to determine if race and poverty are associated with the likelihood of receiving opioid analgesics during definitive cancer treatment. Understanding potential disparities in opioid prescriptions

Author affiliations and support information (if applicable) appear at the end of this article.

Accepted on December 15, 2020 and published at ascopubs.org/journal/op on February 3, 2021: DOI https://doi.org/10.1200/OP.20.00773

can highlight a need for additional research or a change in practice patterns to ensure equitable care. We evaluated rates of new opioid prescriptions in patients with breast, colon, lung, or prostate cancer among Medicare beneficiaries. Opioid prescription rates during cancer treatment were compared by race, ethnicity, and neighborhood poverty levels. To determine if initial discrepancies in prescribing affect long-term opioid behavior, we also compared rates of persistent opioid use one to 2 years after treatment. Rates of pain-related ED visits were also evaluated as a potential surrogate for inadequate pain management.

METHODS AND MATERIALS

Data Source and Patient Selection

This retrospective cohort study evaluated patients in the SEER registry linked to Medicare claims data diagnosed with cancer from 2008 to 2013. SEER registry linked to Medicare claims data was chosen as a nationwide population-based data set with prescription data coupled with a cancer registry and demographic data. We included patients with one of the four most common noncutaneous solid malignancies (breast, colorectal, lung, and prostate), of age $>$ 65 years, and with continuous Medicare Part A and B coverage, without enrollment in Medicare Part C (managed care) throughout the study period. Patients listed as other were not included because of low sample sizes. We included only patients with Medicare Part D coverage to capture opioid prescription data. We restricted the analysis to patients treated with definitive local therapy including surgery, radiation therapy, or both. Metastatic and palliative intent patients were excluded to analyze longer-term opioid prescribing patterns. This analysis only included opioid-naive patients who were defined as not having received an opioid prescription from one to twelve months prior to the cancer diagnosis.[11-13] Patients were also excluded for metastatic disease, death within the first 2 years since starting treatment, or missing follow-up data. The final study cohort included 33,057 patients that met eligibility criteria. Appendix Figure A1 (online only) demonstrates the patient selection process.

Covariates, Exposures, and Outcomes

Baseline patient and cancer-related factors including age, sex, race, ethnicity, marital status, stage, and cancer type were extracted from the SEER database. Patients were categorized as NHW, API, NHB, or Hispanic. Patients were categorized as Hispanic if they were of Hispanic ethnicity irrespective of their race. Poverty rate was estimated using median household income data at the census-tract level and represents the percent of the local population living below the poverty level.[14] Rural zip codes were defined as those with a population center $<$ 20,000.[15] The non–age-adjusted Charlson Comorbidity Index was calculated from Medicare claims data using the International Classification of Diseases, Ninth Edition diagnostic codes, as previously described.[16] Similarly, claims and diagnostic codes were used to identify prior diagnoses of depression; alcohol abuse; and high-risk psychiatric conditions including schizophrenia, attention deficit disorder, and obsessive compulsive disease.[17,18] The primary end point of a new opioid prescription during treatment was defined as receiving any opioid analgesic from one month prior to 3 months after the date of cancer diagnosis.[11,12] Persistent opioid use was identified as having filled $\geq$ 120 days' supply or 10 or more opioid prescriptions in the window between 1 and 2 years after the start of treatment.[11-13] Pain-related ED visits within 2 years of starting treatment were identified using International Classification of Diseases, Ninth Edition claims data.

Statistical Methods

The median and interquartile ranges were calculated for continuous variables by opioid prescription status and compared using a Mann-Whitney *U* Test. The absolute number and percentage were calculated for categorical variables and cohorts were compared using a chi-squared test.

Rates of new opioid prescriptions and persistent opioid use were calculated by race or ethnicity and area-level poverty subgroups; 95% CIs were estimated using a Pearson-Clopper interval.[19] In an exploratory analysis, we also tested for differences in outcomes by poverty level when stratified by race. Multivariable logistic regression was used to estimate the odds of a new opioid prescription or persistent use when accounting for baseline patient, cancer-related, and treatment factors. Model covariates were considered significant with a two-sided P value $<$ .05. Statistical analyses were performed using R version 3.5.3.[20]

RESULTS

Patient Characteristics and Outcomes

This cohort of opioid-naive patients undergoing definitive cancer treatment included 28,779 (84.9%) NHWs, 815 (2.4%) APIs, 2,559 (7.6%) NHBs, and 1,719 (5.1%) Hispanics (Table 1). There were 5,562 (16.4%) patients identified as living in areas with poverty levels $\geq$ 20%. When separated by race and ethnicity, rates of living in a high-poverty area were 13.0%, 17.1%, 46.0%, and 28.6% for NHW, API, NHB, and Hispanic patients, respectively. Rates of new opioid prescriptions during cancer treatment differed significantly ($P <$ .001) among NHW (24.3%), API (38.0%), NHB (18.2%), and Hispanic (28.1%) patients (Fig 1A). Patients living in high-poverty areas had increased rates of new opioid prescriptions (25.2% *v* 23.9%, $P =$ .03) (Fig 1B). On average, patients prescribed an opioid during treatment were younger than those not given a prescription (73.8 *v* 74.6, $P <$ .001). Prescription rates also varied significantly by sex, marital status, cancer type, tumor stage, nodal stage, and local and systemic treatment (Table 1).

TABLE 1. Baseline Characteristics of Patients Undergoing Curative-Intent Cancer Treatment Stratified by Opioid Prescription During Treatment

	No Opioid Rx	New Opioid Rx	
Factor	**n = 25,590 (75.5%)**	**n = 8,282 (24.5%)**	***P***
Age, median (IQR)	74.0 (70.0-79.0)	73.0 (69.00-77.0)	< .001
Sex (%)			
Female	11,560 (68.5)	5,306 (31.5)	< .001
Male	14,030 (82.5)	2,976 (17.5)	
Race (%)			
NHW	21,763 (75.6)	7,016 (24.4)	< .001
API	515 (62.0)	315 (38.0)	
NHB	2091 (81.7)	468 (18.3)	
Hispanic	1,221 (71.7)	483 (28.3)	
Area-level poverty ≥ 20% (%)			
Yes	4,137 (74.4)	1,425 (25.6)	.028
No	21,453 (75.8)	6,857 (24.2)	
Rural area (%)			
Yes	2,436 (68.9)	1,099 (31.1)	< .001
No	23,154 (76.3)	7,183 (23.7)	
CCI ≥ 1 (%)			
Yes	9,536 (75.0)	3,171 (25.0)	.097
No	16,054 (75.9)	5,111 (24.1)	
Married (%)			
Yes	16,045 (77.3)	4,720 (22.7)	< .001
No	9,545 (72.8)	3,562 (27.2)	
High-risk psychiatric condition (%)			
Yes	132 (75.4)	43 (24.6)	1
No	25,458 (75.5)	8,239 (24.5)	
Depression (%)			
Yes	2,957 (74.8)	994 (25.2)	.280
No	22,633 (75.8)	7,288 (24.2)	
Primary cancer (%)			< .001
Prostate	11,345 (84.3)	2,112 (15.7)	
Breast	8,351 (67.0)	4,123 (33.0)	
Colon	4,090 (75.7)	1,311 (24.3)	
Lung	1804 (71.0)	736 (29.0)	
T stage ≥ 3 (%)			
Yes	4,259 (74.3)	1,475 (25.7)	.015
No	21,331 (75.8)	6,807 (24.2)	
N stage ≥ 1 (%)			
Yes	3,184 (68.9)	1,438 (31.1)	< .001
No	22,406 (76.6)	6,844 (23.4)	
Local treatment (%)			< .001
Surgery	12,578 (71.1)	5,117 (28.9)	
Radiation	7,676 (93.3)	549 (6.7)	
Both	5,336 (67.1)	2,616 (32.9)	

(continued on following page)

TABLE 1. Baseline Characteristics of Patients Undergoing Curative-Intent Cancer Treatment Stratified by Opioid Prescription During Treatment (continued)

Factor	No Opioid Rx n = 25,590 (75.5%)	New Opioid Rx n = 8,282 (24.5%)	*P*
Chemotherapy (%)			
Yes	7,463 (77.3)	2,191 (22.7)	< .001
No	18,127 (74.8)	6,091 (25.2)	

Abbreviations: API, Asian–Pacific Islander; CCI, Charlson Comorbidity Index; IQR, interquartile range; N stage, nodal stage; NHB, non-Hispanic Black; NHW, non-Hispanic White; T stage, tumor stage.

Rates of persistent opioid use did not differ significantly by race ($P = .427$) (Fig 2A). In contrast, patients living in communities with high poverty levels had a significantly increased rate of persistent opioid use (2.6% *v* 1.5%, $P < .001$) (Fig 2B). For the overall cohort, 2.4% of patients had a pain-related ED visit within 2 years since starting treatment. This rate did not vary significantly by race ($P = .75$) but did vary between patients living in high- and low-poverty areas, respectively (3.2% *v* 2.3%, $P < .001$) (Fig 3).

When stratified by race and ethnicity, living in a high-poverty area was associated with significantly increased rates of new opioid prescriptions for NHB (21.1% *v* 15.9%, $P = .001$) and Hispanic (32.9% *v* 26.2%, $P = .006$) patients but not NHWs (25.6% *v* 24.2%, $P = .075$) or APIs (40.3 *v* 38.2, $P = .71$) (Appendix Fig A2, online only). Living in a high-poverty area was associated with increased rates of persistent use among NHW (2.6% *v* 1.5%, $P < .001$) patients (Appendix Fig A2). There was no significant association between poverty and increased persistent opioid use within NHB (2.2% *v* 1.7%, $P = .48$), Hispanic (2.9% *v* 1.6%, $P = .11$), or API (2.9% *v* 1.0%, $P = .19$) patients.

Multivariable Logistic Regression

Compared with NHWs, the covariate-adjusted odds ratio for receiving a new opioid prescription was 0.75 (95% CI, 0.67 to 0.84, $P < .001$) for NHBs, 2.15 (1.85 to 2.50, $P < .001$) for APIs, and 1.14 (0.99 to 1.30, $P = .06$) for Hispanics (Table 2). There was no statistically significant association between race or ethnicity and persistent opioid use or pain-related ED visits. Patients living in a rural community had increased odds of receiving a new prescription (odds ratio [95% CI], 1.54 [1.42 to 1.67], $P < .001$) and decreased odds of having a pain-related ED visit (0.72 [0.56 to 0.93], $P = .01$). Living in a higher-poverty area was not associated with an increased likelihood of receiving a prescription during treatment on multivariable analysis but was associated with a higher likelihood for persistent opioid use (1.54 [1.25 to 1.89], $P < .001$) and having a pain-related ED visit (1.39 [1.16 to 1.67], $P < .001$]). Additional patient, cancer, and treatment factors correlated with receiving an opioid prescription or becoming a persistent user on multivariable analysis (Table 2).

DISCUSSION

In this population-based cohort study, NHBs were less likely to receive an opioid prescription during definitive cancer treatment when compared with NHWs, with no difference in rates of persistent opioid use or pain-related ED visits. APIs were more likely to receive an opioid during treatment; however, this did not translate into increased rates of persistent use. Patients in rural communities had an increased likelihood of having an opioid prescribed

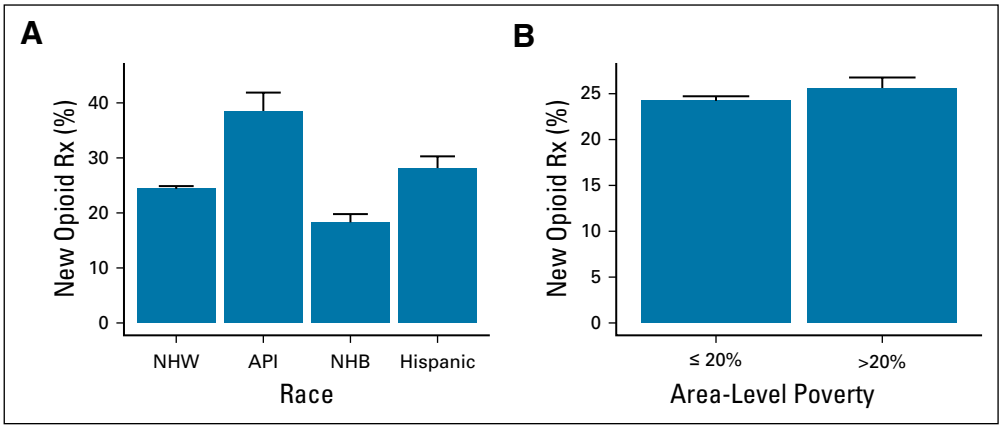

FIG 1. Opioid prescription rates during cancer treatment by (A) race and (B) area-level poverty. API, Asian–Pacific Islander; NHB, non-Hispanic Black; NHW, non-Hispanic White; Rx, prescription.

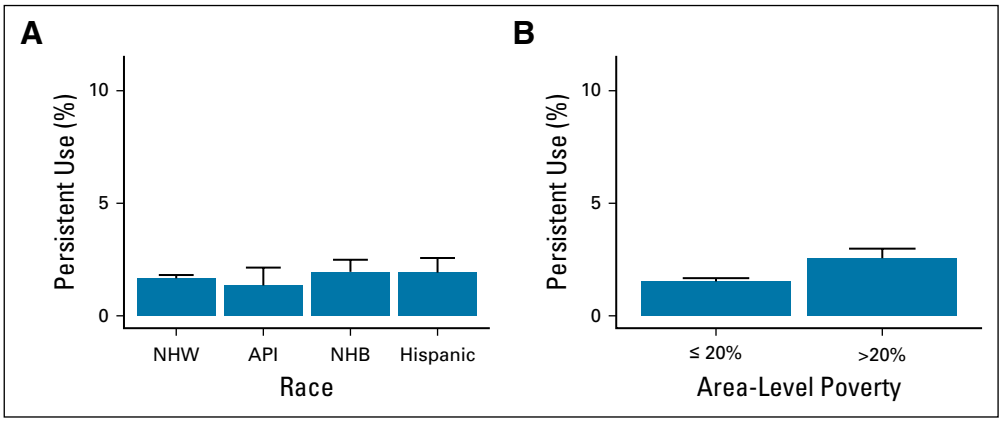

FIG 2. Rates of persistent opioid use after cancer treatment by (A) race and (B) area-level poverty. API, Asian–Pacific Islander; NHB, non-Hispanic Black; NHW, non-Hispanic White; Rx, prescription.

during treatment and a decreased likelihood of presenting to the ED for pain. We found that patients living in areas of high poverty had an increased likelihood of becoming a persistent user and having a pain-related ED visit. Within racial or ethnic groups, high area-level poverty was associated with increased rates of new opioid use for NHB and Hispanic but not NHW or API patients. High area-level poverty was associated with increased persistent use for NHW but not API, NHB, or Hispanic patients. Subgroup analysis for persistent opioid use among the NHB and Hispanic patients had limited power because of smaller sample sizes and limited events.

Associations between race and both adequate pain management and opioid prescriptions have been previously described in multiple healthcare settings.[21-24] In an analysis of the National Hospital Ambulatory Medical Care Survey, NHW patients presenting to the ED for pain-related visits were more likely to receive an opioid compared with NHB, Hispanic, or API patients.[8] NHB children were less likely to receive analgesia for a diagnosis of appendicitis and less likely to receive opioids for severe pain in a population-based study of ED visits.[25] To what degree race is associated with opioid analgesic use among patients with cancer is less clear, especially during the era of the ongoing opioid crisis. In a cross-sectional study of older patients with cancer living in nursing homes from the 1990s, minority race and advanced age were associated with undertreatment of daily pain.[6] A more recent prospective cohort study found that among ambulatory patients with cancer, the odds of undertreatment of pain was twice as high for minority patients.[7]

The etiology of disparities in pain management by race and ethnicity is not fully understood. Hypothesized barriers to optimal pain management include factors related to healthcare systems, providers, implicit biases, communication, and individual patient beliefs and coping strategies.[22] In a survey study of minority patients with cancer and their providers, inadequate pain assessment was identified as a primary barrier for optimal pain management.[26] Others have suggested that challenges in communication between NHW providers and minority patients may limit trust and result in discrepancies in the perceived levels of pain.[26-28]

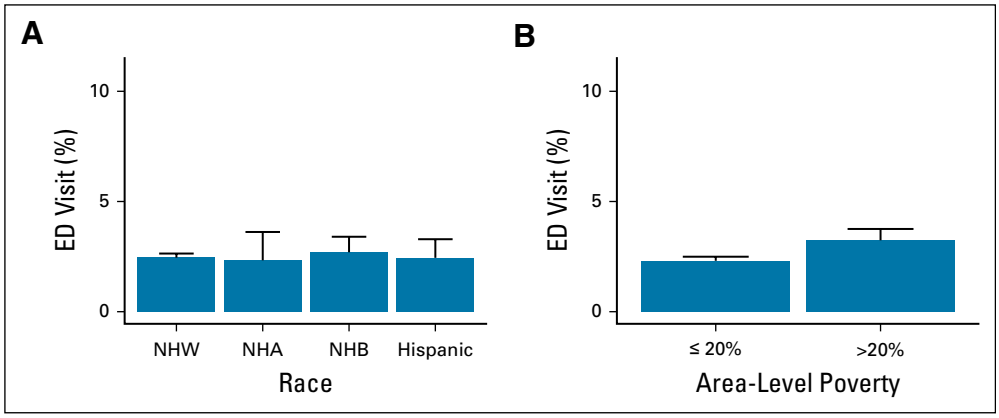

FIG 3. Rates of pain-related ED visits after cancer treatment by (A) race and (B) area-level poverty. API, Asian–Pacific Islander; ED, emergency department; NHB, non-Hispanic Black; NHW, non-Hispanic White.

TABLE 2. Multivariable Logistic Regression for New Opioid Prescription and Persistent Use

	New Prescription	Persistent Use	Pain-Related ED Visit
Covariate	**OR (95% CI)**	**OR (95% CI)**	**OR (95% CI)**
Race or ethnicity (ref: NHW)			
API	2.15 (1.85 to 2.5)	0.79 (0.43 to 1.45)	0.86 (0.54 to 1.36)
NHB	0.75 (0.67 to 0.84)	0.95 (0.7 to 1.29)	0.96 (0.74 to 1.25)
Hispanic	1.14 (1 to 1.3)	1.08 (0.75 to 1.55)	0.82 (0.56 to 1.21)
Area-level poverty ≥ 20%	1.03 (0.96 to 1.11)	1.54 (1.25 to 1.89)	1.39 (1.16 to 1.67)
Rural	1.54 (1.42 to 1.67)	1.38 (1.14 to 1.68)	0.72 (0.56 to 0.93)
Age (y)	0.96 (0.96 to 0.97)	0.99 (0.97 to 1)	1.01 (0.99 to 1.02)
Male	0.84 (0.75 to 0.93)	0.69 (0.5 to 0.94)	0.73 (0.57 to 0.94)
CCI ≥ 1	1.1 (1.04 to 1.16)	1.18 (0.92 to 1.52)	1.45 (1.26 to 1.68)
Married	0.82 (0.77 to 0.87)	1.76 (1.49 to 2.09)	0.9 (0.78 to 1.05)
High-risk psychiatric condition	0.91 (0.64 to 1.3)	0.76 (0.64 to 0.91)	0.77 (0.31 to 1.89)
Depression	0.89 (0.82 to 0.97)	0.75 (0.48 to 1.16)	2.06 (1.73 to 2.44)
Primary (ref: prostate)			
Breast	1.16 (1.02 to 1.33)	1.28 (0.56 to 2.94)	1.01 (0.71 to 1.43)
Colon	0.8 (0.72 to 0.9)	1.34 (0.86 to 2.07)	1.41 (1.03 to 1.92)
Lung	1.27 (1.12 to 1.44)	1.24 (0.83 to 1.87)	1.57 (1.15 to 2.12)
T stage 3-4 (ref: 1-2)	1.05 (0.97 to 1.14)	1.95 (1.59 to 2.39)	0.96 (0.77 to 1.2)
Node-positive	1.13 (1.04 to 1.22)	1.07 (0.81 to 1.39)	1.06 (0.86 to 1.3)
Local treatment (ref: surgery)			
Radiation	0.19 (0.17 to 0.21)	1.21 (0.95 to 1.53)	1.01 (0.8 to 1.28)
Both	0.97 (0.9 to 1.04)	1.23 (0.92 to 1.64)	0.71 (0.57 to 0.88)
Chemotherapy	0.99 (0.93 to 1.06)	0.85 (0.67 to 1.08)	1.22 (1.03 to 1.44)

Abbreviations: API, Asian–Pacific Islander; CCI, Charlson Comorbidity Index; ED, emergency department; NHB, non-Hispanic Black; NHW, non-Hispanic White; OR, odds ratio; T stage, tumor stage.

*Indicates P value $< .05$.

The association between socioeconomic status, pain control, and risk for adverse opioid outcomes in patients with cancer is less studied. We found that patients from lower-income areas had increased rates of prescriptions on univariable but not multivariable analysis. Rurality was a more dominant explanatory variable with increased rates of opioid prescriptions on both univariable and multivariable analyses (results not shown). Prior studies from the non-cancer acute care setting have demonstrated decreased prescription rates among low-income patients.[10,29] An additional study of cancer survivors in Ontario, Canada, found a strong correlation between lower-income quantile and higher rates of opioid prescriptions among cancer survivors.[30]

Although the association between poverty and new opioid prescriptions differs across healthcare settings, the association between poverty and adverse opioid outcomes is more consistent. Several studies have described higher rates of adverse opioid outcomes among patients from lower-income communities, which could correspond to the higher rates of persistent use observed in our study. Our data also suggest that low-income patients are at increased risk for inadequate pain control as evidenced by the increased rate in pain-related ED visits. In a nationwide cross-sectional study of Medicare enrollees, poverty was associated with opioid-related mortality at the county level.[29] Further, a population-based study of opioid-related events requiring emergency room evaluation revealed that opioid-related harms occurred nearly 2.4 times more frequently in the lowest-income quintile when compared with the highest quintile.[31] High levels of opioid-related morbidity and mortality in this population could be attributed to lower healthcare utilization, especially regarding mental health and substance abuse treatment.[32] There may also be decreased access to nonpharmacologic therapies in economically disadvantaged communities.[33]

Optimal treatment of cancer pain with opioid analgesics requires an assessment of risks and benefits for an individual patient.[1] A primary limitation of this study is the inability to measure the level of pain and adequacy of pain control from the available data. Without this information, it is challenging to determine whether opioids are being

prescribed appropriately. Depending on the clinical scenario, the risks associated with opioid use may outweigh benefits and lower prescription rates may be more in line with best practices.[34] Given the history of undertreatment of pain in minority patients with cancer, however, our findings raise concern that NHB patients may be at risk for inadequate pain management with opioids. The higher rates of persistent use among patients from high-poverty areas has not been well-studied in the cancer population. Our findings suggest that this population may be at higher risk for adverse outcomes and could benefit from increased risk mitigation techniques such as integrating nonopioid analgesics or referrals into pain management or counseling services.[35] A lack of resources for pain management is further evidenced by the increased utilization of the ED for pain among lower-income patients.

The results of this study should be interpreted in the context of its limitations. This analysis was limited to patients of age > 65 years continuously enrolled on Medicare Part D. It is not known if our findings apply to younger patients with cancer or those with varying levels of health insurance coverage. The population-based nature of the study also makes it difficult to determine an etiology for the observed discrepancies in opioid prescribing. Racial and ethnic groups beyond NHBs, Hispanics, and NHWs were underrepresented in this cohort and require future research. This data set was also limited by a lack of information on prescribers and institutions. Future research is warranted to determine if discrepancies in opioid use can be explained by institutional or prescribing practice patterns. Of note, previously observed racial disparities in cancer outcomes have been found to be reduced or absent in equal-access health systems such as the Veteran's Affairs medical system.[36,37] Opioid prescribing patterns are dynamic and have been continuing to evolve over the past two decades.[38] It is possible that the practice patterns, including the presence of disparities, have changed since the time frame of this cohort study from 2008 to 2013.

In conclusion, there are discrepancies in opioid prescriptions by race and area-level income for patients undergoing cancer treatment. In this cohort, NHB patients were less likely to be prescribed an opioid analgesic during cancer treatment without an increased risk for persistent use. Patients from high-poverty areas were more at increased risk for persistent opioid use and presenting to the ED for pain. Prescribing opioids for patients with cancer can involve complicated decision making requiring a personalized assessment of risks and benefits that is further confounded by the ongoing opioid epidemic.[39,40] To ensure equitable, compassionate care, additional research is needed to identify the etiology of and solutions to disparities in opioid prescribing and risk for adverse outcomes.

AFFILIATIONS

[1]Department of Radiation Oncology, Stanford University, Stanford, CA
[2]Department of Radiation Medicine and Applied Sciences, University of California San Diego, La Jolla, CA
[3]Division of Pain Management, Department of Anesthesiology, University of California San Diego, La Jolla, CA
[4]Department of Family Medicine and Public Health, University of California San Diego, La Jolla, CA

CORRESPONDING AUTHOR

Lucas K. Vitzthum, MD, MAS, Department of Radiation Oncology, Stanford University, 875 Blake Wilbur Drive, Stanford, CA 94304; e-mail: vitzthum@stanford.edu.

SUPPORT

Supported by an ASCO Conquer Cancer Foundation Young Investigator Award (L.K.V.) and supported by U54CA132384 and U54CA132379.

AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

Disclosures provided by the authors are available with this article at DOI https://doi.org/10.1200/OP.20.00773.

AUTHOR CONTRIBUTIONS

Conception and design: Lucas K. Vitzthum, Paul Riviere, Timothy Furnish, James D. Murphy
Collection and assembly of data: Lucas K. Vitzthum, Vinit Nalawade, Paul Riviere
Data analysis and interpretation: Lucas K. Vitzthum, Vinit Nalawade, Whitney Sumner, Tyler Nelson, Loren K. Mell, Timothy Furnish, Brent Rose, María Elena Martínez
Manuscript writing: All authors
Final approval of manuscript: All authors
Accountable for all aspects of the work: All authors

REFERENCES

1. Paice JA: A delicate balance: Risks vs benefits of opioids in cancer pain. Pain 161:459-460, 2020
2. Paice JA: Cancer pain management and the opioid crisis in America: How to preserve hard-earned gains in improving the quality of cancer pain management. Cancer 124:2491-2497, 2018
3. Jairam V, Yang DX, Yu JB, et al: Emergency department visits for opioid overdoses among patients with cancer. J Natl Cancer Inst 112:938-943, 2020
4. Chino F, Kamal A, Chino J: Opioid associated deaths in cancer survivors: A population study of the opioid epidemic. JAMA Oncol 6:1100-1102, 2020
5. Paice JA: Managing pain in patients and survivors: Challenges within the United States opioid crisis. J Natl Compr Canc Netw 17:595-598, 2019
6. Bernabei R, Gambassi G, Lapane K, et al: Management of pain in elderly patients with cancer. J Am Med Assoc 279:1877-1882, 1998
7. Fisch MJ, Lee JW, Weiss M, et al: Prospective, observational study of pain and analgesic prescribing in medical oncology outpatients with breast, colorectal, lung, or prostate cancer. J Clin Oncol 30:1980-1988, 2012

8. Pletcher MJ, Kertesz SG, Kohn MA, et al: Trends in opioid prescribing by race/ethnicity for patients seeking care in US emergency departments. JAMA 299: 70-78. 2008
9. Lawrence AE, Deans KJ, Chisolm DJ, et al: Racial disparities in receipt of postoperative opioids after pediatric cholecystectomy. J Surg Res 245:309-314, 2020
10. Joynt M, Train MK, Robbins BW, et al: The impact of neighborhood socioeconomic status and race on the prescribing of opioids in emergency departments throughout the United States. J Gen Intern Med 28:1604-1610, 2013
11. Vitzthum LK, Riviere P, Sheridan P, et al: Predicting persistent opioid use, abuse and toxicity among cancer survivors. J Natl Cancer Inst 112:720-727, 2020
12. Lee JSJ, Hu HM, Edelman AL, et al: New persistent opioid use among patients with cancer after curative-intent surgery. J Clin Oncol 35:4042-4049, 2017
13. Brummett CM, Waljee JF, Goesling J, et al: New persistent opioid use after minor and major surgical procedures in US adults. JAMA Surg 152:e170504, 2017
14. Schootman M, Jeffe DB, Lian M, et al: The role of poverty rate and racial distribution in the geographic clustering of breast cancer survival among older women: A geographic and multilevel analysis. Am J Epidemiol 169:554-561, 2009
15. Mollica MA, Weaver KE, McNeel TS, et al: Examining urban and rural differences in perceived timeliness of care among cancer patients: A SEER-CAHPS study. Cancer 124:3257-3265, 2018
16. Deyo RA, Cherkin DC, Ciol MA: Adapting a clinical comorbidity index for use with ICD-9-CM administrative databases. J Clin Epidemiol 45:613-619, 1992
17. Regier DA, Farmer ME, Rae DS, et al: Comorbidity of mental disorders with alcohol and other drug abuse. Results from the Epidemiologic Catchment Area (ECA) Study. JAMA 264:2511-2518, 1990
18. Webster LR, Webster RM: Predicting aberrant behaviors in opioid-treated patients: Preliminary validation of the opioid risk tool. Pain Med 6:432-442, 2005
19. Clopper CJ, Pearson ES: The use of confidence or fiducial limits illustrated in the case of the binomial. Biometrika 26:404, 1934
20. R Core Team: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, 2019. https://www.r-project.org/
21. Todd KH, Samaroo N, Hoffman JR: Ethnicity as a risk factor for inadequate emergency department analgesia. JAMA 269:1537-1539, 1993
22. Anderson KO, Green CR, Payne R: Racial and ethnic disparities in pain: Causes and consequences of unequal care. J Pain 10:1187-1204, 2009
23. Green CR, Baker TA, Sato Y, et al: Race and chronic pain: A comparative study of young black and white Americans presenting for management. J Pain 4: 176-183, 2003
24. Ng B, Dimsdale JE, Rollnik JD, et al: The effect of ethnicity on prescriptions for patient-controlled analgesia for post-operative pain. Pain 66:9-12, 1996
25. Goyal MK, Kuppermann N, Cleary SD, et al: Racial disparities in pain management of children with appendicitis in emergency departments. JAMA Pediatr 169: 996-1002, 2015
26. Anderson KO, Mendoza TR, Valero V, et al: Minority cancer patients and their providers. Cancer 88:1929-1938, 2000
27. Gordon HS, Street RL, Sharf BF, et al: Racial differences in trust and lung cancer patients' perceptions of physician communication. J Clin Oncol 24:904-909, 2006
28. Surbone A: Cultural competence in oncology: Where do we stand? Ann Oncol 21:3-5, 2010
29. Grigoras CA, Karanika S, Velmahos E, et al: Correlation of opioid mortality with prescriptions and social determinants: A cross-sectional study of Medicare enrollees. Drugs 78:111-121, 2018
30. Sutradhar R, Lokku A, Barbera L: Cancer survivorship and opioid prescribing rates: A population-based matched cohort study among individuals with and without a history of cancer. Cancer 123:4286-4293, 2017
31. Cairncross ZF, Herring J, van Ingen T, et al: Relation between opioid-related harms and socioeconomic inequalities in Ontario: A population-based descriptive study. C Open 6:E478-E485, 2018
32. Mack KA, Zhang K, Paulozzi L, et al: Prescription practices involving opioid analgesics among Americans with Medicaid, 2010. J Health Care Poor Underserved 26:182-198, 2015
33. Gebauer S, Salas J, Scherrer JF: Neighborhood socioeconomic status and receipt of opioid medication for new back pain diagnosis. J Am Board Fam Med 30: 775-783, 2017
34. Lee JS, Howard RA, Klueh MP, et al: The impact of education and prescribing guidelines on opioid prescribing for breast and melanoma procedures. Ann Surg Oncol 26:17-24, 2019
35. Dalal S, Bruera E: Pain management for patients with advanced cancer in the opioid epidemic era. Am Soc Clin Oncol Educ Book 39:24-35, 2019
36. Riviere P, Luterstein E, Kumar A, et al: Survival of African American and non-Hispanic white men with prostate cancer in an equal-access health care system. Cancer 126:1683-1690, 2020
37. Deka R, Parsons JK, Simpson DR, et al: African-American men with low-risk prostate cancer treated with radical prostatectomy in an equal-access health care system: Implications for active surveillance. Prostate Cancer Prostatic Dis 23:581-588, 2020
38. Jones MR, Viswanath O, Peck J, et al: A brief history of the opioid epidemic and strategies for pain medicine. Pain Ther 7:13-21, 2018
39. Schatz AA, Oliver TK, Swarm RA, et al: Bridging the gap among clinical practice guidelines for pain management in cancer and sickle cell disease. JCO Oncol Pract 18:392-399, 2020
40. Vitzthum LK, Riviere P, Murphy JD: Managing cancer pain during the opioid epidemic—balancing caution and compassion. JAMA Oncol 6:1103-1104, 2020

AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

Racial, Ethnic, and Socioeconomic Discrepancies in Opioid Prescriptions Among Older Patients With Cancer

The following represents disclosure information provided by authors of this manuscript. All relationships are considered compensated unless otherwise noted. Relationships are self-held unless noted. I = Immediate Family Member, Inst = My Institution. Relationships may not relate to the subject matter of this manuscript. For more information about ASCO's conflict of interest policy, please refer to www.asco.org/rwc or ascopubs.org/op/authors/author-center.

Open Payments is a public database containing information reported by companies about payments made to US-licensed physicians (Open Payments).

Paul Riviere
Consulting or Advisory Role: Peptide Logic

Loren K. Mell
Honoraria: Nanobiotix
Consulting or Advisory Role: Bayer
Research Funding: Merck, AstraZeneca

Timothy Furnish
Travel, Accommodations, Expenses: Boston Scientific, Medtronic, Abbott Laboratories, Nevro

James D. Murphy
Consulting or Advisory Role: Boston Consulting Group
Research Funding: eContour

No other potential conflicts of interest were reported.

APPENDIX

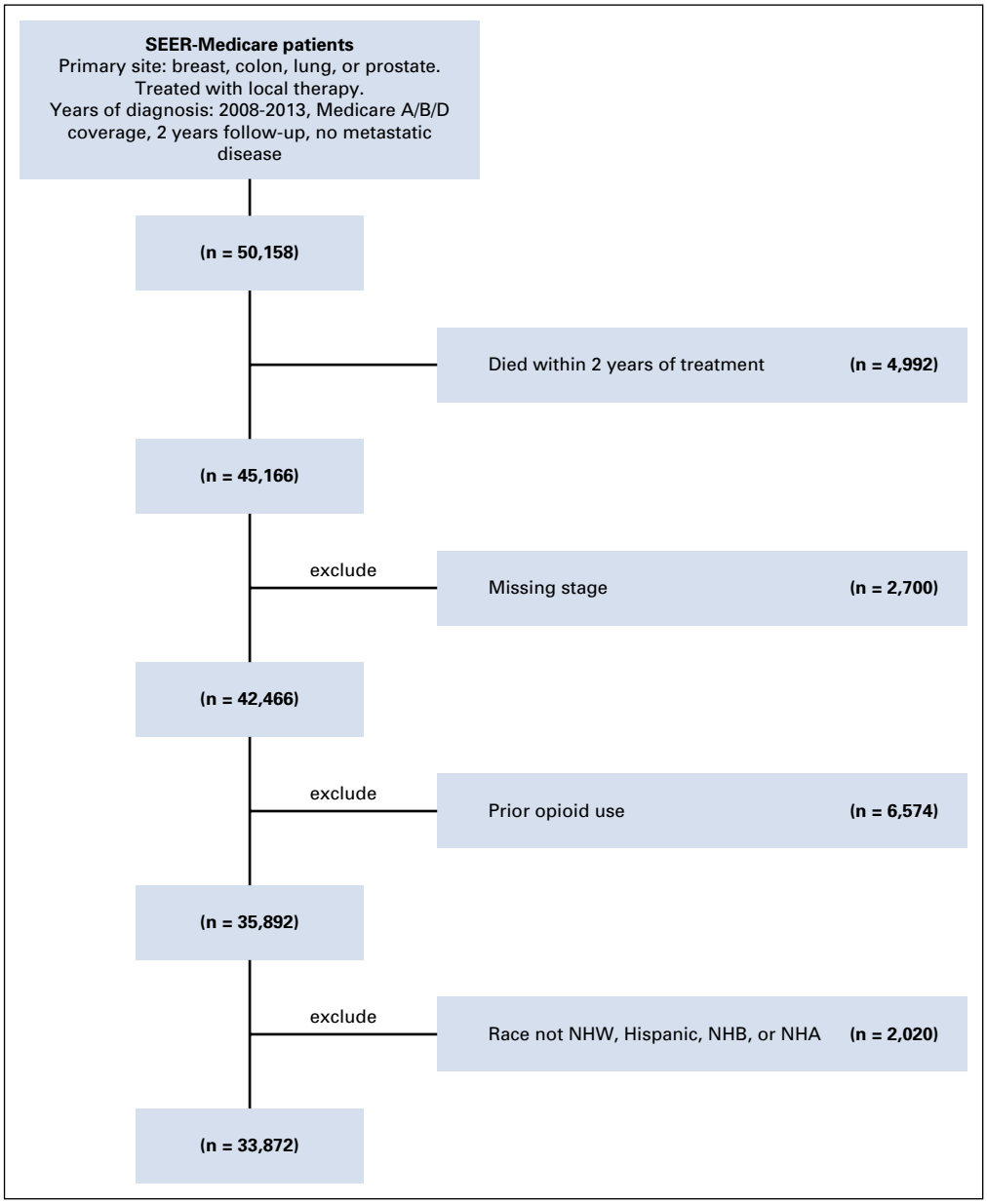

FIG A1. Flow diagram showing patient inclusion and exclusion in observational cohort. NHW, non-Hispanic White; NHB, non-Hispanic Black; NHA, non-Hispanic Asian.

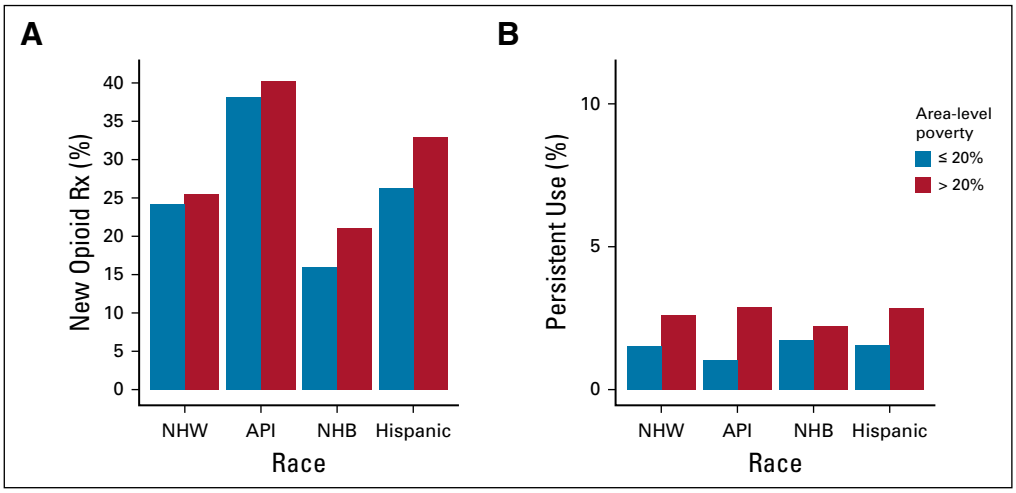

FIG A2. Rates of (A) new opioid prescription during treatment and (B) persistent opioid use after treatment stratified by race and area-level poverty. API, Asian–Pacific Islander; NHB, non-Hispanic Black; NHW, non-Hispanic White; Rx, prescription.