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African American Males Have More Distress During Cancer Treatment Than White Males

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Abstract

African American (AA) males have a higher incidence and mortality rate for some cancers than other races and sexes, which could be associated with distress during treatment, medical mistrust, and health disparities. We hypothesize distress in AA males during treatment is higher than in other races and sexes. We assessed effect modification of moderate to severe (≥ 4) distress scores during cancer treatment by race and sex, age, and socioeconomic status (SES). National Comprehensive Cancer Network's distress thermometer (scale 0–10) and characteristics for 770 cancer patients were collected from a Philadelphia hospital. Variables included age, sex, race, smoking status, marital status, SES, comorbidities, mental health, period before and during COVID-19, cancer diagnosis, and stage. Descriptive statistics, chi-square tests, and *t*-tests were used to compare AA and White patients. Effect modification of ≥ 4 distress by race and sex, age, and SES were analyzed by logistic regression. A *p* value of $\leq .05$ was significant, and 95% confidence intervals (CIs) were reported. On average, AA patients had a non-significant, higher distress score (4.53, *SD* = 3.0) than White patients (4.22, *SD* = 2.9) (*p* = .196). The adjusted odds ratio of ≥ 4 distress was 2.8 (95% CI [1.4, 5.7]) for AA males compared with White males. There was no significant difference between White and AA females, race and age, or race and SES. There was an effect modification of ≥ 4 distress by race and sex. AA males in cancer treatment had higher odds of ≥ 4 distress compared with White males.

Keywords

distress, cancer, race, sex, disparities

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Introduction

In the United States, racial disparities in cancer incidence and mortality are an ongoing reality. For instance, African American (AA) females have the highest mortality rate for breast and gynecological cancers despite having a lower incidence rate for breast cancer (Siegel et al., 2018). AA males have the highest incidence and mortality rates for colon, lung, and prostate cancers, and, overall, AA males have higher cancer incidence and mortality rates than all other races and sexes (Siegel et al., 2018). AA patients also experience discrimination within the health care system due to conscious or unconscious bias (Ryn & Saha, 2011; Vo et al., 2021). Historical unethical experimentation such as the Tuskegee Experiment has created mistrust between AA patients and providers

(Scharff et al., 2010). AAs are also more likely to be from lower socioeconomic neighborhoods and have barriers to health care because of insurance status, income, transportation needs, or health literacy (Benkert et al., 2006; O'Malley et al., 2004; Palmer et al., 2015; Walton et al., 2019).

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Taking these social determinants of health into account, one possible mediator to explain racial disparities in cancer mortality is distress during cancer treatment. The National Comprehensive Cancer Network (NCCN, 2020, p. 7) defines distress as

an unpleasant experience of a mental, physical, social, or spiritual nature . . . (that) can affect the way you think, feel, or act . . . (and) is normal during cancer care, but it may make it harder to cope with cancer.

Cancer patients with high levels of distress may have worse quality of life, decreased treatment adherence, decreased sleep, and increased risk of mortality (Chirico et al., 2017; Hamer et al., 2009; NCCN, 2020). The American College of Surgeons Commission on Cancer (2015) added screening for cancer patient distress as a requirement for accreditation and many countries view cancer patient distress as a sixth vital sign (Howell & Olsen, 2011). Detecting distress early is important to identify psychosocial needs and offer referrals to social workers or nutritionists (Riba et al., 2018).

Studies on the prevalence of cancer distress have found higher rates among females, single patients and younger patients (Carlson et al., 2004, 2019; Mehnert et al., 2018; Tuinman et al., 2008). Distress differs by cancer type, with the highest distress for lung, pancreatic, brain, hematological, head and neck, and female gynecological cancers and the lowest distress for prostate cancer (Carlson et al., 2013, 2019; Mehnert et al., 2018). A high proportion of patients with distress have emotional concerns such as depression, worry, and sadness, as well as physical concerns such as pain, fatigue, and sleep problems (Kendall et al., 2011; Carlson et al., 2004; Mehnert et al., 2018).

There has been little research on racial or socioeconomic status (SES) disparities of cancer patient distress in the United States. A recent study identified that AA cancer patients had higher odds of high distress compared with non-Hispanic Whites, but the significance disappeared with the multivariable model (Perry et al., 2020). Studies using health-related quality of life (HRQoL) reported AAs had lower mental scores and poorer survival compared with White patients (Belachew et al., 2020; Poghosyan et al., 2015). Other studies outside the United States have reported differing results; one study observed higher distress in low-income patients, but the other study found that distress was more severe in high-income levels (Carlson et al., 2004; Zabora et al., 2001). Tuinman et al. (2008) mentioned patients who reported higher distress had lower educational levels compared with those who reported lower distress.

Some studies have examined disparities in distress for prostate or breast cancer patients only. Nelson et al. (2010) found that AA males had similar distress levels and higher emotional well-being compared with White males. Although they matched patients by age, education, and diagnosis stage, only 8% of the sample was AA and other potential confounders were not controlled. On the other hand, compared with non-AA males, AA males more often had a higher prevalence of clinically significant traumatic stress symptoms associated with a prostate cancer diagnosis at several follow-up intervals (Purnell et al., 2010). In addition, among breast cancer patients, AA females reportedly have lower distress than White females (Fayanju et al., 2021). These findings indicate a need for further research to determine whether distress disparities exist by racial/ethnic and/or SES groups, especially within the United States.

In this study, we will further explore racial and SES disparities in cancer patient distress using the NCCN distress thermometer (DT) tool. As a theoretical framework, we are using the socioeconomic and intersectionality theories to guide our hypotheses and methods. It's important to examine health disparities at the intersection of race, sex, age, and SES. Individuals have multiple identities within systematic environments that affect the way they live, feel, believe, and respond to their life experiences and the world around them (Potter et al., 2019). Exploring whether racial disparities exist between races is not enough. Understanding which groups are most at risk of high distress can help guide future research and inform clinicians. No study to date has explained if an effect modification exists at these intersections within a population with all cancer types and adjusted for potential confounders. We included age in this analysis because younger age has been identified as a risk factor for cancer distress and AAs are diagnosed with cancer at younger ages compared with Whites (Carlson et al., 2019; Siegel et al., 2018). SES is included because it is related to health disparities and health care access (Braveman et al., 2010). Based on these facts and studies that we described previously, we hypothesize that AA patients will have higher distress than White patients; specifically, we hypothesize that AA men, younger AAs, and AAs of low SES will have higher distress.

Materials and Methods

Distress Thermometer

The NCCN's DT is a tested and validated tool for measuring cancer patient distress (Akizuki et al., 2005;

Chambers et al., 2013; Donovan et al., 2013). In total, the DT is a holistic instrument meant to capture more than just emotional problems. It is one page and includes the picture of a 0 to 10 visual analog scale thermometer where patients can circle the amount of distress they felt in the last week (see Appendix A). They can also indicate whether they are experiencing problems within practical, emotional, spiritual, or physical categories. A score of four or higher is considered moderate or severe distress and has been used by several studies as a cutoff point (Carlson et al., 2013; NCCN, 2020; Perry et al., 2020). The DT is quick and easy to administer and is given to patients to fill out on their own; therefore, it is less stigmatizing and increases communication between the patient and the provider (Dabrowski et al., 2007).

Our Population

Main Line Health's Lankenau Medical Center (LMC) sits near the border of Philadelphia County and Montgomery County. Philadelphia county has a lower health ranking compared with other counties of similar size in the United States despite a significant number of medical schools and hospitals (University of Wisconsin Population Health Institute, 2021). Historically, redlined neighborhoods continue to be racially segregated, have lower financial investment, and worse health outcomes (City of Philadelphia, Office of the Controller, 2020). West Philadelphia is served by LMC and has higher rates of diabetes, infant mortality, hypertension, cardiovascular deaths, and all-cause mortality compared with other counties that border Philadelphia (Southeastern Pennsylvania Community Health Needs Assessment, 2019). The majority of LMC's AA population lives in West Philadelphia or neighborhoods nearby that are of lower SES. Similarly, LMC's White population lives in mostly high-income, high-SES suburban neighborhoods.

Methods

DTs in our system were assessed before the start of radiation, chemotherapy, or upon recurrence. Cancer social workers consent and administer the DT to cancer patients within our hospital. After Institutional Review Board (IRB) exemption, cancer patients' electronic health records (EHR) from LMC were obtained. Out of 946 unique patients, 791 consented to fill out a DT and 770 were AA or White race. This study categorized AAs as patients who identified as Black or AA. Patients who did not identify as White and Black or AA or did not fill out a DT were

excluded from this study. The records were from the start of an EHR implementation (Epic) on March 3, 2018 to June 30, 2021. To avoid correlation and due to a small sample of repeated DTs, only the first DT encounter for each patient was included in the data. Demographics, DT data, cancer characteristics, and comorbidities were collected. Continuous variables included age and categorical variables were race, smoking status, marital status, SES, comorbidities, prior mental health diagnoses, cancer diagnosis, stage, and recurrence status. Any prior mental health diagnoses were combined into a binary variable as any mental health disorder and included any diagnosis of anxiety, depression, bipolar disorder, schizophrenia, and attention deficit disorder. Similarly, comorbidities were combined into a binary variable as any comorbidity and included any diagnosis of diabetes, kidney disease, hypertension, heart disease, arthritis, and chronic obstructive pulmonary disease (COPD). In addition, to consider possible differences due to the COVID-19 pandemic, we included a binary variable for time period. The start date for the pandemic is based on Philadelphia's first COVID-19 case, March 6, 2020. Data extracted from the DT were categorized into binary variables for distress scores <4 and ≥ 4 , any practical, any family, any emotional, and any physical problems (see Appendix A).

Area Deprivation Index

In this study, we utilized the Area Deprivation Index (ADI) developed by the University of Wisconsin School of Medicine and Public Health as a proxy for SES. ADI has been used by recent studies on cancer patients (Kind & Buckingham, 2018; Mora et al., 2021; Rosenzweig et al., 2021). ADI is measured on a decile scale (1–10) for each patient's neighborhood. One on the ADI scale indicates an area with low disadvantage and a 10 indicates an area with high disadvantage. The scale is based on census block data from the American Community Survey and accounts for poverty, education, housing, and employment (Kind & Buckingham, 2018). We considered a decile of 1 to 5 to be high SES and 6 to 10 to be low SES.

Data Analysis

Categorical variables were summarized as frequency (percent) and continuous variables as mean (standard deviation). Chi-square test for independence and two sample *t*-tests were used to compare demographics, cancer characteristics, and DT data between White and AA patients. We further evaluated the mean distress score and frequencies of ≥ 4 distress by the

different subgroups of race (White and AA) by age groups (< 65 years, ≥65 years), sex (male, female), and SES (high and low).

Next, we performed bivariate logistic regression analyses to test the association of ≥4 distress with the interactions of race and age, race and sex, and race and SES, and their main effects. We tested the parameter estimates for each interaction with a Wald test, and those interactions with a $p < .1$ were included in a multivariable analysis. To avoid confounding, we included any variable that was significantly different between the two racial groups in the descriptive analysis or anything identified in the literature as associated with higher distress. Possible confounders were age, marital status, any mental health disorder, any comorbidity, smoking status, cancer stage, cancer-type insurance payor, COVID-19 time period, any family problem, any practical problem, any emotional problem, and any physical problem. We evaluated each confounder by entering it into a model with the interaction, its main effects, and the confounder. Any variable that changed the interaction odds ratio (OR) by more than 10% was entered into the full model. We used stepwise selection to build a parsimonious model and evaluated fit via the Akaike Information Criterion. The model with the best fit included marital status, cancer stage, any practical problem, any emotional problem, and any physical problem. Finally, marginal effects of significant interactions were graphed to illustrate the predicted probabilities of the different groups.

Unadjusted and adjusted ORs (ORs and aORs) and 95% CIs are reported. All analyses were done in Stata 16.0 (Stata Corp., Inc., College Station, TX), and a p value of < .05 was considered statistically significant.

Results

There were a total of 575 (74.7%) White patients and 195 (25.3%) AA patients (Table 1). Of 770 total patients, most were female (558 [72.5%]). White patients, on average, were significantly older than AA patients (67.2 years [$SD = 12.0$] and 64.9 years [$SD = 11.7$], $p = .022$). A higher prevalence of White patients were married compared with AA patients (372 [64.7%] and 73 [37.4%], $p < .0001$). The majority of White patients were of high SES compared with AA patients (524 [91.1%] and 59 [30.3%], $p < .0001$). Similarly, a lower percentage of White patients had Medicaid insurance compared with AA patients (9 [1.6%] vs. 25 [12.8%], $p < .0001$). Only 7.5% of White patients were currently smoking compared with

13.3% of AA patients ($p = .011$). In contrast to White patients, AA patients had a significantly higher prevalence of comorbidities (345 [60.0%] and 148 [75.9%], respectively; $p < .0001$). The two groups did not differ by mental health diagnoses. Most patients, White or AA, were diagnosed as Stage 1 (209 [35.7%] and 62 [31.8%], $p = .152$), and the most common cancer type for both White and AA patients was breast cancer (220 [38.9%] and 69 [35.4%], $p = .068$). Nearly, half of all patients were assessed pre-pandemic regardless of the race (56.6% $p = .666$).

The DT data in Table 1 show on average, AA patients had a non-significant higher mean distress score (4.53, $SD = 3.0$) than White patients (4.22, $SD = 2.9$) ($p = .196$). Approximately, 114 (58%) of AA patients had a distress score of ≥4 compared with 298 (51.8%) of White patients who had a distress score ≥ 4 ($p = .108$). White patients had a higher prevalence of practical, family, and emotional problems (225 [39.1%], 93 [16.2%], and 338 [58.8%], respectively) compared with the reported practical, family, and emotional problems of AA patients (75 [38.5%], 23 [11.8%], and 102 [52.3%], respectively). AA patients had a higher prevalence of physical problems compared with White patients (125 [64.1%] and 324 [56.4%], $p = .058$). However, none of these differences in DT data were statistically significant. Descriptive statistics for the various interactions we evaluated are listed in Table 2. None of the groups, race and sex, race and age, or race and SES were significantly different. AA men had the highest mean distress score and highest proportion of distress ≥ 4 of all the groups (4.7 [$SD = 2.8$], 35 [67.3%]).

Table 3 identifies the bivariable and multivariable regression analyses with interactions for race and sex, age, and SES with their main effects. In the bivariate analysis, AA males had an increased odds of ≥4 distress compared with White males (OR = 2.4, 95% CI [1.2, 4.6], $p = .009$). The interactions for race and age, and race and SES were not significant. The adjusted OR of ≥4 distress increased for AA male patients to 2.8 (95% CI [1.4, 5.7], $p = .003$) compared with White males. White females and AA females were not significantly different from White males. The predictive margins for distress score by race and sex are represented in Figure 1. Based on this figure, there was a significant increase in the probability of ≥4 distress for AA male patients compared with all other patients.

Discussion

Our analysis revealed an effect modification of ≥4 distress by race and sex. AA males were more likely to

Table 1. Demographics, Cancer Characteristics, and Distress Tool Data by Race

Patient Characteristics	White N = 575	Black or African American N = 195	Total N = 770	p value
Age (M/SD)	67.16 (12.0)	64.90 (11.7)	66.6 (12.0)	.022
Age, n (%)				.023
<65 years	221 (38.4)	93 (47.7)	314 (40.8)	
≥65 years	354 (61.6)	102 (52.3)	456 (59.2)	
Sex, n (%)				.754
Female	415 (72.2)	143 (73.3)	558 (72.5)	
Male	160 (27.8)	52 (26.7)	212 (27.5)	
Marital status, n (%)				<.0001
Married/partnered	372 (64.7)	73 (37.4)	445 (57.8)	
Single	82 (14.3)	66 (33.9)	148 (19.2)	
Divorced/separated	48 (8.3)	29 (14.9)	77 (10)	
Widowed	73 (12.7)	27 (13.8)	100 (13.0)	
SES, n (%)				<.0001
High	524 (91.1)	59 (30.3)	583 (75.7)	
Low	51 (8.9)	136 (69.7)	187 (24.3)	
Payor, n (%)				<.0001
Managed care	3 (0.5)	5 (2.6)	8 (1.0)	
Medicaid	9 (1.6)	25 (12.8)	34 (4.4)	
Medicare	263 (45.7)	67 (34.4)	330 (42.9)	
Other	15 (2.6)	5 (2.6)	20 (2.6)	
Private	285 (49.6)	93 (47.7)	378 (49.1)	
Smoker status, n (%)				.011
Current	43 (7.5)	26 (13.3)	69 (9.0)	
Former	262 (45.5)	70 (35.9)	332 (43.1)	
Never	270 (47.0)	99 (50.8)	369 (47.9)	
Any comorbidity, n (%)				<.0001
No	230 (40.00)	47 (24.1)	277 (36.0)	
Yes	345 (60.0)	148 (75.9)	493 (64.0)	
Any mental health diagnosis, n (%)				.395
No	437 (76.0)	154 (79.0)	591 (76.8)	
Yes	138 (24.0)	41 (21.0)	179 (23.2)	
Cancer stage, n (%)				.152
0	47 (8.2)	13 (6.7)	60 (7.8)	
1	204 (35.7)	62 (31.8)	266 (34.7)	
2	79 (13.8)	28 (14.4)	107 (14.0)	
3	115 (20.1)	32 (16.4)	147 (19.2)	
4	126 (22.1)	60 (30.8)	186 (24.3)	
Cancer type, n (%)				.068
Lung	98 (17.1)	40 (20.5)	138 (18.0)	
Breast	220 (38.4)	69 (35.4)	289 (37.6)	
Gastrointestinal	65 (11.3)	17 (8.7)	82 (10.7)	
Brain/sarcoma	9 (1.6)	3 (1.5)	12 (1.6)	
Head and neck	15 (2.6)	8 (4.1)	23 (3.0)	
Gynecological	71 (12.4)	27 (13.8)	98 (12.8)	
Prostate	26 (4.5)	7 (3.6)	33 (4.3)	
Urinary	10 (1.7)	4 (2.05)	14 (1.82)	
Hematological	11 (1.9)	11 (5.6)	22 (2.86)	
Skin	20 (3.5)	1 (0.5)	21 (2.7)	
Liver and biliary	10 (1.8)	6 (3.1)	16 (2.1)	
Esophageal	18 (3.1)	2 (1.0)	20 (2.6)	
COVID-19 time period				.666
Pre-pandemic	323 (56.2)	113 (58.0)	436 (56.6)	
During pandemic	252 (43.8)	82 (42.0)	334 (43.4)	
Distress tool				
Distress score (M/SD)	4.22 (2.9)	4.53 (3.0)	4.3 (2.9)	.196
Distress ≥4, n (%)	298 (51.8)	114 (58.5)	412 (53.5)	.108
Distress tool checklist items				
Yes only, n (%)				
Any practical	225 (39.1)	75 (38.5)	300 (39.0)	.869
Any emotional	338 (58.8)	102 (52.3)	440 (57.1)	.114
Any physical	324 (56.4)	125 (64.1)	449 (58.3)	.058
Any family	93 (16.2)	23 (11.8)	116 (15.1)	.14

Note. SES = socioeconomic status.

Table 2. Descriptive Statistics for Distress Score by Race and Interactions Sex, Age, SES

Patient Characteristics	Distress score			
	M (SD)	p value	≥4, n (%)	p value
Sex		.454	Row (%)	.056
White/male	4.0 (3.0)		74 (46.2)	
White/female	4.3 (2.9)		224 (54.0)	
AA/male	4.7 (2.8)		35 (67.3)	
AA/female	4.5 (3.0)		79 (55.2)	
Age		.535		.423
White/< 65	4.1 (2.8)		113 (51.1)	
White/≥ 65	4.3 (3.0)		185 (52.4)	
AA/< 65	4.6 (2.9)		53 (57.0)	
AA/≥ 65	4.5 (3.1)		61 (59.8)	
SES		.501		.36
White/high SES	4.2 (2.9)		271 (51.7)	
White/low SES	4.3 (2.9)		27 (52.9)	
AA/high SES	4.3 (2.9)		32 (54.2)	
AA/low SES	4.6 (2.7)		82 (60.3)	

Note. SES = socioeconomic status; AA= African American.

Table 3. Bivariable and Multivariable Analyses of Association of ≥4 Distress, Race, Sex, Age, and SES

Interactions	Bivariable		Multivariable	
	OR [95% CI]	p value	OR ± [95% CI]	p value
AA	2.4 [1.2, 4.6]	.009	3.2 [1.5, 7.1]	.004
Female	1.4 [0.9, 2.0]	.097	1.5 [0.97, 2.4]	.069
Race × Sex		.059		.02
White/male	Ref.		Ref.	
White/female	1.4 [0.9, 2.0]	.097	1.5 [.99, 2.3]	.054
Black/male	2.4 [1.2, 4.6]	.009	2.8 [1.4, 5.7]	.003
Black/female	1.4 [0.9, 2.3]	.118	1.2 [0.7, 2.1]	.443
AA	5.8 [0.9, 38.4]	.066		
Age	1.0 [0.9, 1.0]	.245		
Race × Age	0.98 [0.95, 1.0]	.114		
AA	1.1 [0.6, 1.9]	.714		
Low SES	1.1 [0.6, 1.9]	.867		
Race × SES		.365		
White/high SES	Ref.			
White/low SES	1.1 [0.6, 1.9]	.867		
AA/low SES	1.4 [0.97, 2.1]	.075		
AA/high SES	1.1 [0.6, 1.9]	.714		

Note. SES = socioeconomic status; AA = African American; OR = odds ratio; CI = confidence interval.

± Adjusted for marital status, cancer stage, any practical, any emotional, or any physical problems.

have higher distress compared with White males. White females and AA females did not have significantly higher odds of distress compared with White males. In the predicted probability graph, there was a clear difference between AA males and White males, which agreed with the ORs. This is an important finding because distress has been shown to decrease

treatment adherence and increase mortality. Our analysis did not find a significant interaction between race and age, and race and SES. As females were included in these interactions, the effects of age or SES may be masked.

Our findings support the work of previous studies. Purnell et al. (2010) stated AA men with prostate cancer had significantly higher traumatic stress symptoms over time compared with non-AA patients. In addition, Fayanju et al. (2021) observed no difference in distress scores between AA and White breast cancer patients. However, several articles also reported conflicting results among prostate cancer patients. Nelson et al. (2010) identified better emotional resilience in older AA patients compared with White men, and Bryant et al. (2016) reported no difference in HRQoL by race after prostate therapy. Research based on Nelson et al.'s study concluded that African centered coping strategies were not associated with lower psychological distress (Martin et al., 2021).

A lack of disparity in HRQoL between AA and White cancer patients has been attributed to the perceived increased social support in the AA community, such as networking within church or other spiritual communities (Pineiro et al., 2014). However, when a family member requires additional care such as cancer treatments, not only is the cancer diagnosis stressful for one member of the family but the entire family as well (Purnell et al., 2010). Having support through family may seem valuable during cancer treatments, but problems may arise when seeking care due to embarrassment and the desire to keep the problems confidential within the family (Weiss et al., 2012). While AA may find support through spirituality and relationships, it does not ignore historical systemic racism, medical mistrust, and financial hardships AA males endure while coping with cancer treatments. In addition, the cancer diagnosis for AA males and the subsequent side effects during treatment can lead to feelings of decreased masculinity for AA males (Kunkel et al., 2000). Treatment potentially forces a change in lifestyle habits and behaviors, interrupts work, loss of finances, and so on, all of which may affect how the patient supports himself or family, creating pressure to maintain emotional stability.

A special section of the Southeastern Pennsylvania Community Health Needs Assessment (2019) on AAs in the Philadelphia area reported that within the AA population, the fear of hearing bad news from their doctors increases with age and is especially prevalent in men. This statement may help us understand the emotional state of AA men before they have a cancer diagnosis and the downstream effect this can cause.

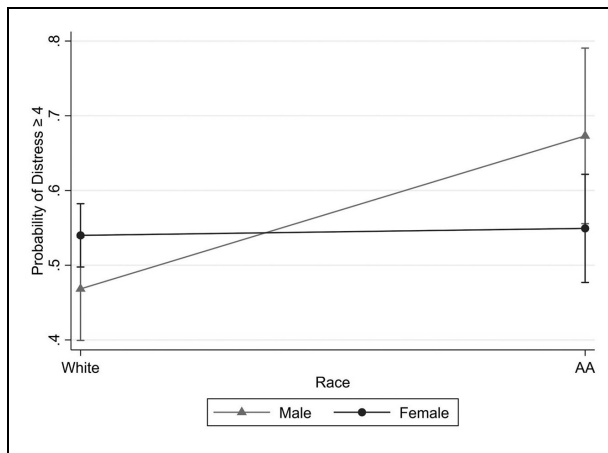


Figure 1. Predictive Margins for Race and Sex
 Note. Predicted probabilities of ≥ 4 distress by race and sex.

For instance, if AA men already fear hearing bad news, their pre-diagnosis distress could be high, and upon hearing they have cancer, distress levels may increase even more. In addition, this fear might preclude them from going to the doctor when symptoms first arise, leading to an advanced cancer diagnosis, which has been linked to higher distress (NCCN, 2020).

Distress may be worse for AA males already coping with the effects of preexisting health disparities; therefore, requiring a longer return to baseline functioning under traumatic events such as cancer treatments and fear for the unforeseeable future may incite mistrust and distress (Purnell et al., 2010). One study reported that the three largest social determinants of cancer disparities are poverty, culture, and social injustice, and social injustices such as racism are a critical delineation in health disparities between races/ethnicities (Freeman, 2004). Addressing underlying health disparities is critical in combating the additional stress AA men may be experiencing.

The distress among AA men could be deep-seated in historical evidence of mistrust. It has been observed that AAs' distrust is commonly rooted in doubts about ethical practices and the belief that individuals in the health care system are lying to make a profit (Armstrong et al., 2008). The extensive mistrust among the AA community is rooted in centuries of medical exploitation of AAs leading to bias in the form of less information, empathy, and attention from physicians and feelings of incompetence and an expectation of experimentation from AA patients (Scharff et al., 2010). Mistrust between AA patients and White and non-AA health care providers create boundaries that are difficult to overcome (Benkert et al., 2006). This

historical evidence highlights differences in relationships between races/ethnicities likely associated with our observed increased distress among AA males.

Psychological barriers such as language, ageism, funding, or difficulty navigating the health care system can contribute to greater levels of stress (Weiss et al., 2012). In addition, AA cancer patients are less satisfied with the communication from their provider stressing the importance of effective communication and cultural competency (Apenteng et al., 2017). Patients may lack a choice in their provider due to limitations from their insurance, associated with health disparities among the underserved community. For example, a study determined lower trust in providers among populations who had fewer options and choices in their provider (Benkert et al., 2006). These boundaries emphasize the need for effective communication between the provider and patient, particularly if there socioeconomic or cultural differences between both individuals. This observation could be attributable to regional differences in health care systems, providers, physician training, and social climate specific to each location.

Limitations

This study used health records from one community hospital near Philadelphia; therefore, the results are specific to one area. Furthermore, this study analyzed electronic records of 770 patients; 52 (6.8%) of whom are AA and male. Due to the sample size, this limits the generalizability to larger populations and populations outside of the Philadelphia area. About 17% of our cancer patients did not consent to fill out a DT, therefore, these missing patients may bias the results. However, we feel we have an accurate representation of the patients who get care at our hospital based on the demographic information. In addition, the definitive date between the COVID-19 time periods is based on local records but does not reflect national or global incidents of COVID-19. Although we account for COVID-19, the political protests rooted in racial injustices that surged across the country during the pandemic that possibly incited added distress to our AA patients were not accounted for in this retrospective study. Only the first DT encounter before the start of treatment for each patient was considered. Therefore, this study is limited in determining whether the distress was an ongoing occurrence. Also, there is no way to know if distress was associated with cancer treatment or if the patient was distressed prior to cancer treatments. Despite these limitations, we believe inferences can be made about AA male cancer patients and initiate a call to action to continue research on this

topic. Future studies should include data from more than one location and monitor the distress of patients over time. Additional studies could also examine the distress of patients across various health care settings such as public and private facilities. Mixed-methods research that incorporates structural racism, discrimination, and medical mistrust among minority populations could help in quantifying the impact these events may have on the distress of cancer patients.

Strengths

Our research has contributed to the scarcity of information on racial disparities in cancer distress by examining the effect modification of distress by race while controlling for confounders. According to Weiss et al. (2012), there has been a lack of research among older Black and Hispanic cancer patients. Our research has contributed to this gap in information to include covariates such as age and SES. We have addressed all cancer types in our study. Several aforementioned articles focused on specific cancer types such as prostate or breast cancer, whereas this study considered all cancer patients at all stages. In addition, distress scores were collected and

analyzed from 770 patients (25% of whom were AA), both men and women, of various ages, races, and health conditions over a 2.5-year period. Many prior studies examining racial disparities and distress suffered from a small sample of AA patients. The DT is a validated tool also used in several other articles such as Perry et al. (2020) and Weiss et al. (2012), demonstrating reliable and effective results.

Conclusion

AA cancer patients had a higher average distress score in comparison with their White counterparts. AA males in cancer treatment had an increased odds of moderate to severe distress relative to White males. We echo the call from past studies for the need of qualitative studies to tease out the major contributors of distress for AA men. These types of studies could inform culturally competent interventions. They may also provide valuable insights for oncologists, nurses, and social workers. For now, these providers should be conscious of the distress their AA male patients may be experiencing.

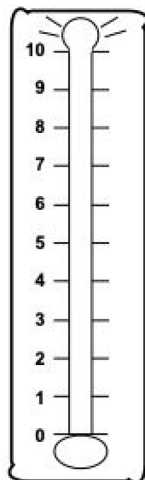
Appendix A

NCCN DISTRESS THERMOMETER

Distress is an unpleasant experience of a mental, physical, social, or spiritual nature. It can affect the way you think, feel, or act. Distress may make it harder to cope with having cancer, its symptoms, or its treatment.

Instructions: Please circle the number (0–10) that best describes how much distress you have been experiencing in the past week, including today.

Extreme distress



No distress

PROBLEM LIST

Have you had concerns about any of the items below in the past week, including today? (Mark all that apply)

Physical Concerns

- Pain
- Sleep
- Fatigue
- Tobacco use
- Substance use
- Memory or concentration
- Sexual health
- Changes in eating
- Loss or change of physical abilities

Emotional Concerns

- Worry or anxiety
- Sadness or depression
- Loss of interest or enjoyment
- Grief or loss
- Fear
- Loneliness
- Anger
- Changes in appearance
- Feelings of worthlessness or being a burden

Social Concerns

- Relationship with spouse or partner
- Relationship with children
- Relationship with family members
- Relationship with friends or coworkers
- Communication with health care team
- Ability to have children

Practical Concerns

- Taking care of myself
- Taking care of others
- Work
- School
- Housing
- Finances
- Insurance
- Transportation
- Child care
- Having enough food
- Access to medicine
- Treatment decisions

Spiritual or Religious Concerns

- Sense of meaning or purpose
- Changes in faith or beliefs
- Death, dying or afterlife
- Conflict between beliefs and cancer treatments
- Relationship with the sacred
- Ritual or dietary needs

Other Concerns:

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Ethics Approval and Consent to Participate

The data collected for this study were given exemption status by the IRB at Main Line Health.

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