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A Scoping Review of Strategies to Increase Black Enrollment and Retention in Cancer Clinical Trials

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To address health disparities faced by Black patients with cancer, it is critical that researchers conducting cancer clinical trials (CCTs) equitably recruit and retain Black participants, develop strategies toward this aim, and document associated outcomes. This narrative scoping literature review, as part of a larger study, aimed to identify, describe, and categorize strategies and interventions intended to improve the recruitment and retention of Black participants with breast, lung, prostate, colorectal, or multiple myeloma cancer into CCTs. We conducted comprehensive searches in PubMed, Embase, Cochrane Library, PsycInfo, CINAHL, Scopus, and Web of Science with three main concepts: Black persons, neoplasms, and clinical trial recruitment. The search resulted in 1,506 articles, of which 15 met inclusion criteria. Five main categories of recruitment and retention strategies and interventions were identified based on their specific population focus and type of approach: (1) participant identification, (2) provider awareness/resources, (3) focused research staff interventions, (4) patient and community-focused awareness strategies, and (5) participant-directed resources. Thirteen studies had recruitment acceptance rates of over 30%. Eight studies with acceptance rates of $\geq 50\%$ reported implementing ≥ 5 strategies, with an average use of seven strategies across multiple categories. Five studies with acceptance rates $\geq 50\%$ implemented strategies in ≥ 3 categories. Four studies reported retention rates $\geq 74\%$. Three studies with reported retention rates $\geq 74\%$ used strategies in ≥ 3 categories, and all included strategies aimed at meeting participant needs beyond the study. Our results show that many efforts that aim to increase the recruitment and retention of Black participants into CCTs have great potential, but the most promising strategies use a multiprong approach.

JCO Oncol Pract 00. © 2022 by American Society of Clinical Oncology

INTRODUCTION

Although innovations in cancer prevention, diagnosis, and treatment decreased overall cancer-related mortality across the United States by 32% since 1991,¹ racial and ethnic minorities still bear a disproportionate number of negative cancer outcomes.² Among Black populations in the United States, lung, prostate, multiple myeloma, and colorectal cancer have both higher rates of incidence and mortality rates when compared with non-Hispanic Whites.³ Complicating these trends is the low recruitment and retention of Black participants in cancer clinical trials (CCTs),⁴⁻⁶ which adversely affect the generalizability of promising therapies to those with higher risk and poorer prognosis. Although considerable efforts have been made to increase the diversity of CCT participants, only 10% of study participants in National Cancer Institute (NCI) trials are of a minority racial or ethnic background.⁷ Black people, who represent approximately 13% of the US population, comprised only 3.1% of enrollees in

Federal Drug Administration Cancer Drug approval requests and only 10.4% of CCT enrollees in 2016.^{8,9}

Numerous patient, provider, and system-level barriers to Black participation in CCTs have been reported.¹⁰⁻¹⁵ Commonly identified patient-level impediments to successful recruitment of Black populations to CCTs include individuals' fear and mistrust of researchers and medical institutions,¹⁶ religious beliefs,¹⁴ health illiteracy,^{9,17-19} and limited awareness that studies may be available or relevant to them.^{20,21} Social barriers associated with participation in CCTs such as the cost of cancer care, lost wages from time off work, securing childcare, and managing travel burden have also been implicated in patients' inability to enroll in or continue to participate in clinical trials.^{22,23}

Patient decisions about enrollment in CCTs also depend on the ability of recruiters to communicate information about the trial or study clearly and effectively, with an understanding of how patients' values may influence their decisions.²⁴ Morgan et al identified several behaviors among research coordinators, study

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

Accepted on May 4, 2022 and published at ascopubs.org/journal/op on June 7, 2022; DOI <https://doi.org/10.1200/OP.21.00863>

nurses, and professional recruiters that supported recruitment, such as establishing personal connections, demonstrating respect, expressing empathy, simplifying study information, encouraging questions, equally discussing the risks and benefits of participation, maintaining ongoing contact, and being flexible.^{25,26} Eggly et al²⁷ found that in the setting of a positive patient-provider relationship, there was a significant positive association between oncologists' recommendations and patients' decisions to participate in CCTs. Conversely, providers' time constraints as well as biased assumptions of patient disinterest or noncompliance with CCT can thwart accrual of Black patients.^{6,28-31} System-level barriers to CCT recruitment include health system factors such as the lack of accessible clinics or facilities with clinical trials and the overall limited availability of applicable clinical trials for patients of color.³²

Much of the treatment of cancers highly prevalent in Black individuals continue to be based largely on outcomes from clinical trials with fewer than 10% Black representation. Hence, current treatments may be inadequate in Black patients with these cancer diagnoses. Improving the enrollment and retention of Black participants in CCTs is important not only to ensure the generalizability of trial results but to improve patient responses to treatments that may have long-term benefits. Strategies aimed to improve the successful recruitment and retention of Black participants in CCTs must address barriers across patient, provider, and system levels. To do so, however, it is imperative to understand which strategies, interventions, or practices have been implemented, at what level (patient, provider, or system), and how and which work best. The objective of this narrative scoping review, as part of a larger study aimed to develop interventions to increase Black (inclusive of Black patients from Caribbean, African American, and/or sub-Saharan African descent) patient participation in cancer clinical trials, was to identify, describe, and categorize strategies or interventions intended to improve the recruitment and retention of Black patients with breast, lung, prostate, colorectal, or multiple myeloma cancer into CCTs and the outcomes of these strategies or interventions on accrual and retention rates.

METHODS

This narrative review was conducted using the Joanna Briggs Institute approach for scoping reviews³³ and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews criteria.³⁴

Eligibility Criteria

Eligible studies included published projects (research and/or quality) written in English that focused on Black adults in the United States with breast, lung, prostate, colorectal, or multiple myeloma cancer and that specifically reported strategies used for the recruitment and/or retention of Black patients for a cancer clinical

trial and the recruitment and/or retention outcomes of those strategies/interventions. Specific inclusion and exclusion criteria are listed in [Table 1](#).

Information Sources and Literature Search

A library informationist (KMS) performed comprehensive searches of PubMed, Embase (Elsevier), Cochrane Library (Wiley), PsycInfo (EBSCO), CINAHL (EBSCO), Scopus (Elsevier), and Web of Science (SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, and CCR-EXPANDED) with members of the research team on March 22, 2021. The searches were built around three main concepts: Black persons, neoplasms, and clinical trial recruitment. Major search terms for all databases were represented by both controlled vocabulary and keywords ([Table 2](#)). The resulting citations were imported into the citation manager Endnote X9 (Clarivate Analytics) for multipass duplicate detection and removal. Unique citation records were uploaded to Covidence for screening.³⁵ The scoping review protocol was deposited in the University of Michigan's Institutional Repository, Deep Blue.³⁶ All reproducible searches for all databases and associated search files have also been deposited in Deep Blue.³⁷

Study Selection

Articles were screened for eligibility in two phases. In phase I, the title and abstract of every article was screened by two of the three reviewers (N.M.A., B.L.B., or L.A.-P.) using the inclusion and exclusion criteria. Eligibility differences were reconciled through discussion. The same process was followed for the full-text review. Data from each study including general information, characteristics of included studies, participants' characteristics, recruitment and retention strategies, and outcome was extracted in Covidence by two authors (R.H. and A.H.). Any disagreements were addressed by a third author (N.M.A.).

RESULTS

Our search, after removal of duplicates, resulted in 1,506 articles. Screening of abstracts and titles resulted in the exclusion of 1,435 articles after applying inclusion and exclusion criteria. An additional 56 articles were excluded in the full-text review. The reasons for exclusion, in order of frequency, were wrong patient population (20), abstract only (13), wrong study design (11), wrong study outcomes (eight), and wrong intervention (four). Our process resulted with 15 articles that met all inclusion criteria ([Fig 1](#)).

Characteristics of Included Studies

Study characteristics are described categorically below by trial type, trial timing, trial location, and participant characteristics and are summarized in [Table 3](#).

Trial type. Most studies (11) recruited exclusively for supportive care trials,^{38-42,45-47,50-52} which are studies that treat symptoms or side effects from cancer or cancer treatment. Three studies recruited exclusively for cancer

TABLE 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Black adults in the United States with breast, lung, prostate, colorectal, or multiple myeloma cancer	Written in languages other than English
Specifically reports recruitment and/or retention strategies for a cancer clinical trial	Opinion pieces, editorials, and letters to editor
Reports either retention and/or recruitment outcomes of strategies/interventions on the Black population/community	Systematic or scoping reviews
Written in English	Pediatric populations
Conducted in the United States	Nonhuman subjects
May include research studies, quality, and/or process improvement projects	Conducted outside of the United States

treatment trials, which are studies that test interventions (eg, drugs, approaches to surgery, and/or radiation therapy) as a treatment for cancer.^{43,48,49} One study recruited for both supportive care and treatment trials.⁴⁴

Trial timing. Nine studies exclusively recruited post-treatment cancer survivors (cancer survivor no longer receiving active cancer treatment).^{38-41,45,47,50-52} Four studies exclusively recruited Black patients actively receiving cancer treatment (eg, chemotherapy, radiation, and/or

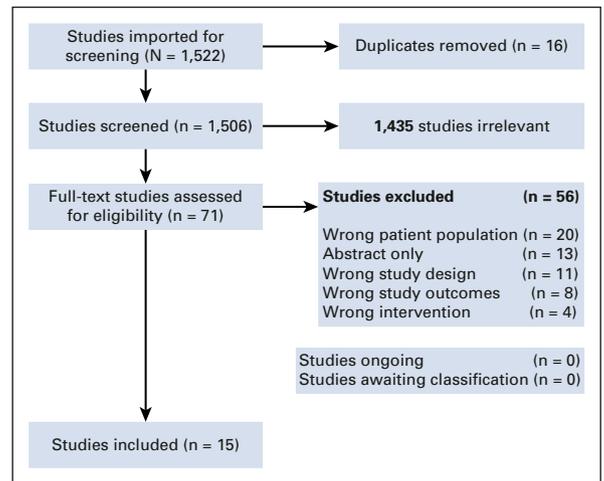


FIG 1. PRISMA diagram.

surgery).^{43,44,48,49} Two studies included both post-treatment and active treatment cancer patients.^{42,46}

Trial location. Studies were conducted around the United States including Birmingham, AL (two),^{42,44} California (four entire state³⁸⁻⁴¹ and one Los Angeles⁴⁸), Philadelphia, PA (two),^{50,51} Columbia, SC (two),^{46,47} Washington, DC area (two),^{49,52} Detroit, MI (one),⁴³ and Chapel Hill, NC (one).⁴⁵ Most (14 of 15) were conducted at NCI Comprehensive Cancer Centers,^{38,40-52} and three studies included community cancer centers.^{42,46,48}

Participant characteristics. The majority (14) of studies included Black female patients with breast cancer, of which 12 included exclusively Black female patients with breast cancer.^{38-46,48-52} Two studies included Black patients with prostate cancer,^{44,47} two studies included Black patients with lung cancer,^{42,44} and one study included Black patients with colorectal cancer.⁴² There were no studies including Black patients with multiple myeloma.

Strategies and Interventions

As detailed in Table 4, five categories of recruitment and retention strategies or interventions were identified for Black patients with cancer on the basis of their specific audience and type or focus of intervention: (1) participant identification, (2) provider awareness/resources, (3) focused research staff interventions, (4) patient and community-focused awareness strategies, and (5) participant-directed resources. Participant identification strategies were used by 10 studies and included using registry databases (six), physician referrals (six), and clinic schedules (three) to locate and identify potential participants for clinical trials.^{38,39,41,42,44,47,49-51} Seven studies used provider awareness/resource strategies to educate and highlight the need for Black participant recruitment in CCTs; these included letters to treating physicians (three) and professional collaborations (two).^{38,41,44,46-48,50,53} Five studies used focused research staff interventions including providing cultural competency training (three) and ensuring

TABLE 2. Example PubMed Search Strategies

- "African Continental Ancestry Group"[Mesh] OR "African Americans"[Mesh] OR "African Americans"[tw] OR "African American"[tw] OR black[tw] OR blacks[tw]
- "Breast Neoplasms"[Mesh] OR "Lung Neoplasms"[Mesh] OR "Colonic Neoplasms"[Mesh] OR "Prostatic Neoplasms"[Mesh] OR "Multiple Myeloma"[Mesh] OR ((sigmoid[tw] OR rectum[tw] OR rectal[tw] OR anal[tw] OR anus[tw] OR colorectal[tw] OR Breast[tw] OR breasts[tw] OR Mammary[tw] OR lung[tw] OR lungs[tw] OR Pulmonary[tw] OR colon[tw] OR Colonic[tw] OR prostate[tw] OR Prostatic[tw] OR "multiple myeloma"[tw] OR "Multiple Myelomas"[tw] OR Mesothelioma[tw] OR "myeloma multiplex"[tw] OR myelomatosis[tw]) AND ("Neoplasms"[Mesh] OR Neoplasia[tw] OR Neoplasias[tw] OR Neoplasm[tw] OR Tumors[tw] OR Tumor[tw] OR Cancer[tw] OR Cancers[tw] OR Cancerous[tw] OR Carcinoma[tw] OR Carcinomas[tw] OR oncology[tw] OR Sarcoma[tw] OR carcinogenesis[tw] OR granuloma[tw] OR Adenoma[tw] OR oncology[tw] OR oncologic[tw]))
- "Community Participation"[Mesh] OR "Patient Dropouts"[Mesh] OR "Patient Selection"[Mesh] OR "Patient Participation"[Mesh] OR "Refusal to Participate"[Mesh] OR "Lost to Follow-Up"[Mesh] OR "Research Subjects"[Mesh] OR "Clinical Trials as Topic"[Mesh] OR ((Trial[tw] OR trials[tw] OR "Research Volunteers"[tw] OR "Research Subject"[tw] OR "Research participants"[tw] OR "Health Sciences Research"[tw] OR "Biomedical Research"[Mesh] OR "Biomedical Research"[tw] OR "medical Research"[tw] OR "health Research"[tw] OR "cancer Research"[tw] OR "oncology Research"[tw]) AND (Recruit[tw] OR recruited[tw] OR Recruits[tw] OR recruitment[tw] OR enroll[tw] OR enrolled[tw] OR enrollment[tw] OR enrolls[tw] OR retention[tw] OR attrition[tw] OR dropout[tw] OR dropouts[tw] OR accrual[tw]))

TABLE 3. Study Characteristics

Study	Location	Type of Cancer Center	Cancer Population	Active or Post-Treatment	Study Design	Type of Trial Targeted	Behavioral Theory	Community Engaged Approach
Ashing et al ³⁸	CA	NCI	Breast	Post-treatment	Quasi-experimental (level II)	Supportive care		
Ashing-Giwa et al ³⁹	CA		Breast	Post-treatment	Quasi-experimental (level II)	Supportive care		
Ashing-Giwa and Ganz ⁴⁰	CA	NCI	Breast	Post-treatment	Quasi-experimental (level II)	Supportive care		
Ashing-Giwa and Rosales ⁴¹	CA	NCI	Breast	Post-treatment	Quasi-experimental (level II)	Supportive care	Contextual model of HRQOL	
Dignan et al ⁴²	Birmingham, AL	Community Cancer Center and NCI	Colorectal, lung, breast	Active and post-treatment	Quasi-experimental (level II)	Supportive care		
Du et al ⁴³	Detroit, MI	NCI	Breast	Active treatment	Randomized control trial (level I)	Cancer treatment		
Fouad et al ⁴⁴	Birmingham, AL	NCI	Prostate, lung, breast	Active treatment	Quasi-experimental (level II)	Supportive care and cancer treatment	Social Network Theory And the Community Health Advisors Network (CHAN) Model	
Germino et al ⁴⁵	Chapel Hill, NC	NCI	Breast	Post-treatment	Randomized control trial (level I)	Supportive care		Established relationships with community and religious organizations. Attended community events
Heiney et al ⁴⁶	Columbia, SC	Community Cancer Center and NCI	Breast	Active and post-treatment	Randomized control trial (level I)	Supportive care	Heiney-Adams Recruitment Model	Community advisory board
Heiney et al ⁴⁷	Columbia, SC	NCI	Prostate	Post-treatment	Quasi-experimental mixed methods (level II)	Supportive care	Heiney-Adams Recruitment Model	Community partnerships with cancer and grassroots organizations
Holmes et al ⁴⁸	Los Angeles, CA	Community Cancer Center and NCI	Breast	Active treatment	Quality improvement (level V)	Cancer treatment		
Robinson et al ⁴⁹	Baltimore, MD; Washington, DC	NCI	Breast	Active treatment	Quasi-experimental (level II)	Cancer treatment	Theory of Planned Behavior	
Rogerino et al ⁵⁰	Philadelphia, PA	NCI	Breast	Post-treatment	Randomized control trial (level I)	Supportive care		Established relationships with religious organizations and attended community events
Sturgeon et al ⁵¹	Philadelphia, PA	NCI	Breast	Post-treatment	Randomized control trial (level I)	Supportive care		Participated in community events
Wallington et al ⁵²	Washington, DC	NCI	Breast	Post-treatment	Quasi-experimental mixed methods (level II)	Supportive care		Used two community advisory boards

Abbreviations: AL, Alabama; CA, California; DC, District of Columbia; HRQOL, health-related quality of life; MD, Maryland; MI, Michigan; NC, North Carolina; NCI, National Cancer Institute; PA, Pennsylvania; SC, South Carolina.

TABLE 4. Recruitment and Retention Strategies

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community-Focused Awareness Strategies	Participant-Directed Resources
Holmes et al ⁴⁸	51/59 (86%)		Patients with breast cancer Active treatment	Treatment		Professional collaborations were established with a private surgical oncologist, a private breast surgeon, a private oncologist, and an oncologist at an LA county care facility with the study team \$300 USD grant awarded to physicians for each patient enrolled in at least one CT, courtesy of the Drew Medical Society. Medical oncologists were also offered \$500 USD a month to offset the nurse navigators use of office space		Culturally sensitive CT brochures provided in offices	Employed a nurse navigator; to inform patients about and enroll eligible patients in CTs; to facilitate physician participation in CTs; to coordinate referrals to investigators; and to reduce community physician trial-related workload by providing in-office assistance with patient screening, treatment (when appropriate), follow-up, and symptom management Nurse navigator met participants needs beyond the study requirements ie, transportation assistance and emotional support

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TABLE 4. Recruitment and Retention Strategies (continued)

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community-Focused Awareness Strategies	Participant-Directed Resources
Ashing-Giwa and Rosales⁴¹	304/378 (80.4%)	226/304 (74.5%)	Patients with breast cancer Post-treatment	Supportive care	Used California population-based cancer center registry, hospital cancer registries, and community agencies	Letters to treating physicians describing the study and included a list of potential participants	Staff cultural competency training Linguistically competent (Spanish speaking) CRAs were matched to participants on the basis of the participants preferred language	Letters to potential participants in English or Spanish included a toll-free number to call, also included a personalized welcome letter Up to seven phone calls were made to potential participants by linguistically matched CRA if no response was received after 2-weeks	All participants received reminder phone calls for forthcoming baseline Letters addressed to participants were carefully crafted to be communicative, culturally sensitive, and brief. CRAs sent a follow-up for any issue or request sent to the study team. CRAs met participant's needs beyond the study requirements by responding to any clinical-related question from participants and provided participants with appropriate resources and referrals including community resources, legal resources, social services Participants received a \$20 USD grocery card and a \$40 USD gift card after completion of the postbaseline survey

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TABLE 4. Recruitment and Retention Strategies (continued)

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community-Focused Awareness Strategies	Participant-Directed Resources
Dignan et al ⁴²	143/194 (74%)	111/143 (77.6%)	Patients with breast, colorectal, prostate, lung, hematologic, head and neck, GI tract, gynecological, prostate cancer Active and post-treatment	Supportive care	Used clinic schedules to approach potential participants while minimizing disruption of workflow Clinic staff were consulted regarding the eligibility of patients Treating physicians in clinic-referred potential participants New patients at the clinic would not be approached so that the staff did not attempt recruitment when they could be receiving their first cancer diagnosis		Consistent with the participant pool, most study recruiters were Black	Participants were called a maximum of 15 times to complete the baseline assessment, if no response was noted the research team would attempt to reach out using other contact methods	Paid parking and \$5 USD for transportation (\$10 USD when gas prices rose dramatically in 2008). Participants without access to a car were provided transportation \$15 USD for completing each survey (\$45 USD maximum)
Ashing et al ³⁸	118/162 (73%)	88/162 (54%)	Patients with breast cancer Post-treatment	Supportive care	Patients identified using registry databases and community agencies Patients referred to study by treating physicians	Letters mailed to treating physicians described the study along with a list of potential patients for study inclusion		Recruitment letters were mailed to all potential participants describing the study and instructed Black cancer survivors to call for more information and eligibility screening Created recruitment flyers Shared study information packets with potential participants which included study instruments	\$20 USD grocery card and a \$40 USD gift card after completion of second assessment postbaselines

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TABLE 4. Recruitment and Retention Strategies (continued)

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community-Focused Awareness Strategies	Participant-Directed Resources
Fouad et al ⁴⁴	272/378 (72%)	208/272 (74.5%)	Patients with lung, breast, prostate, cervical, lymphoma, leukemia, head, and neck cancer Active treatment	Supportive care Treatment	The program manager received the clinic schedule and identified potential participants Patients identified through referrals by nurses, social workers, and physicians	Hired research nurse			Hired and trained two individuals, who matched the study's demographic profile, as lay patient navigators. The navigators were trained in the study protocol and the roles of the study team. The navigators attended clinic visits for social support and communicated regularly with treatment team to receive updates on participants Reminder phone calls for appointments were made by lay patient navigators Met participant needs by creating individualized plans with lay patient navigators, linking participants to community resources, and making flexible arrangements on the basis of needs Transportation and lodging assistance coordinated with lay patient navigator

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TABLE 4. Recruitment and Retention Strategies (continued)

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community–Focused Awareness Strategies	Participant-Directed Resources
Heiney et al ⁴⁶	88/133 (66%)		Patients with breast cancer Active and post-treatment	Supportive care		Brochures were mailed to Black RNs in the state	Staff cultural competency training	Letters to potential participants included a cover letter from the PI, the treating physician, and the agency staff Flyers/brochures developed with the help of community advisory boards and placed in clinics and community events Used participant testimonials in recruitment materials Book marks PSAs on radio, newspaper, and TV outlets Participated in health fairs Shared study information packets with potential participants Community partnership/advisory board used to develop study materials and to build relationships within the community	Thank you gifts (eg, gift card from a local store or small gift) after each assessment and throughout the study

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TABLE 4. Recruitment and Retention Strategies (continued)

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community-Focused Awareness Strategies	Participant-Directed Resources
Sturgeon et al ⁵¹	168/287 (59%)		Patients with breast cancer Post-treatment	Supportive care	State registries used to identify potential participants			Letters mailed to invite potential patients to participate Study website designed and maintained Media announcements in print and broadcasted Research staff attended community events and held 12 educational events for Black survivors of breast cancer	
Rogerino et al ⁵⁰	112/223 (50%)		Patients with breast cancer Post-treatment	Supportive care	Identified potential participants through state and hospital registries	Professional collaboration with YMCAs across Philadelphia which acted as intervention sites and helped disseminate information about the study		Invitation letters were mailed in waves and included paid return postcards to indicate interest or decline Print and broadcast media were disseminated with information about the study Information disseminated in churches, breast cancer survivor events, and support groups	Paid parking Participants received up to \$145 USD over the course of the year for completing measurement visits
Ashing-Giwa and Ganz ⁴⁰	117/263 (44%)		Patients with breast cancer Post-treatment	Supportive care	Patients identified by state registry			Letters invited patients to participate, which included study instrument	Half of the participants were given a \$5 USD gift card with the initial questionnaire and half received the same \$5 USD gift card after the completion and return of their survey

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TABLE 4. Recruitment and Retention Strategies (continued)

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community-Focused Awareness Strategies	Participant-Directed Resources
<i>Heiney, et al</i> ⁴⁷	13/33 (39%)		Patients with prostate cancer Post-treatment	Supportive care	Physician referral and databases used for subject recruitment	Letters to treating physicians		Letters to potential participants including postage paid, response card Posters created for placement in clinics and brochures targeted at men were given to patients in clinics Study website created Used hospital publications to disseminate recruitment information Community partnerships with cancer and grassroots organizations	Thank you notes when patient enrolled
<i>Ashing-Giwa</i> ³⁹	117/318 (37%)		Patients with breast cancer Post-treatment	Supportive care	Potential participants were identified from the California Tumor Registry and participated in an earlier study			Two letters were mailed to potential participants—the first was an invitation letter from a PI they had worked with prior and the second was from the current PI Study instrument included in the mailing	\$5 USD gift cards were mailed to participants after completion of surveys

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TABLE 4. Recruitment and Retention Strategies (continued)

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community-Focused Awareness Strategies	Participant-Directed Resources
<i>Robinson et al</i> ⁴⁹	39/200 (19.5%)		Patients with breast cancer Active treatment	Treatment	Patients identified through a review of electronic health records Patients identified through clinic schedules Patients identified through physician referral Patients identified through clinician referrals (eg, nurse and social worker)			Shared 15-minute culturally targeted videos of Black patients with cancer to CTs	
<i>Du et al</i> ⁴³	4/89 (4.5%)		Patients with breast cancer Active treatment	Treatment				Phone calls to potential participants Created and shared an 18-minute video to promote awareness and knowledge about clinical trials to be watched at home	

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TABLE 4. Recruitment and Retention Strategies (continued)

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community-Focused Awareness Strategies	Participant-Directed Resources
Germino et al ⁴⁵ , a,b		90/104 (87%)	Patients with breast, lung, and colorectal cancer Post-treatment	Supportive care			Whenever possible Black recruiters were used to recruit Black women	Brochures were developed with Black staff members to explain the study in lay terms and included photos of Black survivors Branded rubber balls with the study title and a toll-free number were given out at community events PSAs on radio stations and in newspapers/magazines serving Black communities Letters were mailed to Bishops who contacted Pastors Study packet included a study newsletter featuring staff members to introduce the team as real people committed to helping BC survivors Established relationships with community organizations and groups that endorsed the credibility of the study to community members Staff members attended community events such as cancer walks, baseball games, and support groups	The study was responsive to participants needs: staff called during a prescheduled time and in the evenings to avoid interrupting the workday; the researchers used recruitment time to identify concerns (ie, underinsurance) and created resources guides for participants Provided prepaid cell phones for low-income women Provided meals for advocacy staff Gas cards were given to advocacy staff to travel to training sessions Small gifts and thank you and birthday cards sent throughout the study and after completion

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TABLE 4. Recruitment and Retention Strategies (continued)

Study	Black Patients With Cancer Acceptance Rate	Black Patients With Cancer Retention Rates	Population	Cancer Clinical Trial Type	Participant Identification	Provider Awareness/Resource Strategies	Focused Research Staff Interventions	Patient and Community-Focused Awareness Strategies	Participant-Directed Resources
Wallington et al ^{52,b,c}			Patients with breast cancer Post-treatment	Supportive care			Staff cultural competency training	Used two community advisory boards as means of entry into communities to build capacity, programming, and support the study's goal of sustained cultural competency in CTs. Advisory boards discuss the needs of the community and best practices for engaging community members	

NOTE. Bold, > 50% acceptance rate; italics, 30% to 49% acceptance rate; bold and italics, < 30% acceptance rate.

Abbreviations: CRA, clinical research associate; CT, clinical trial; PI, principal investigator; PSA, Public Service Announcements; USD, US dollars.

^aAccrual increased by 373% after implementing the reported strategies.

^bUnable to calculate acceptance rate.

^cThree of six included studies met enrollment goals.

racial and ethnic concordance between staff and participants (two).^{41,42,45,46,52} Fourteen studies used patient and community-focused awareness strategies with letters to potential participants (eight) and flyers/brochures (five) being implemented most often.^{38-43,45-47,49-51} Eleven studies implemented participant-directed resource strategies with participant incentives such as money or gift cards (seven) and meeting participant needs beyond study requirements (eg, linked participants to community resources and made flexible arrangements based on needs; four).^{38-42,44-47,50} Five studies used a behavioral theory including the Theory of Planned Behavior, Social Network Theory, and Heiney-Adams Recruitment Model to frame their interventions.^{41,44,46,47,49} Six studies reported the use of a community-engaged research approach, which ranged from having community members on the research team to the use of community advisory boards.^{45-47,50-52} Ten studies reported tailoring their strategies to ensure that they were culturally and/or linguistically appropriate for their Black population through a variety of tactics including focus groups, community advisory boards, local residents as members of the research team, using images of local residents in campaigns, employing community members to deliver the intervention, and using a professional social media marketer to tailor content.^{38,41,44-48,50-52}

Outcomes

We selected acceptance rate as one of our key outcomes. Acceptance rate is defined as the number of Black patients with cancer who agreed to participate in a clinical trial compared with the number of eligible Black patients with cancer approached for recruitment. Acceptance rates were calculated for each study that provided these details (Table 4). Eight of the 15 studies had an acceptance rate \geq 50%.^{38,41,42,44,46,48,50,51} Three of the studies' acceptance rates were between 30% and 49%.^{39,40,47} Two studies had acceptance rates below 30%.^{43,49} Data to calculate acceptance rates were not reported in two studies^{45,52}; however, Germino et al⁴⁵ reported a 373% increase in accrual after implementing their strategies (Table 4).

All studies (eight) with an acceptance rate of \geq 50% reported implementing five or more strategies, with an average of seven strategies being used.^{38,41,42,44,46,48,50,51} The majority (five) of the studies with acceptance rates \geq 50% implemented strategies in three or more categories.^{38,41,42,44,46} Three of the seven studies with acceptance rates \geq 50% also reported using a behavioral theory to develop their strategies.^{41,44,46} Four of the six studies that recruited patients during active cancer treatment into either supportive or treatment clinical trials achieved an acceptance rate of \geq 50% using at least three different categories of interventions.^{42,44,46,48} Two of the four studies recruiting into cancer treatment trials achieved an acceptance rate of \geq 50% and used strategies in three intervention categories including the use of study navigators.^{44,48} Holmes et al⁴⁸ achieved the highest acceptance rate (86%) among

all the studies recruiting for cancer treatment trials by developing professional collaborations with community oncology providers, creating culturally appropriate recruitment materials, and embedding a patient nurse navigator into the community of focus and clinical practices. Both studies that had an acceptance rate of $<$ 30% were recruiting for cancer treatment trials, used a video intervention for participants, and reported using strategies in fewer than two intervention categories.^{43,49}

Of the five studies that reported retention rates as an outcome, four reported retention rates \geq 74% and one reported a retention rate of 54%.^{38,41,42,44,45} Three of the four studies that reported retention rates \geq 74% used strategies in three or more categories and all included strategies aimed at meeting participant needs beyond the study.^{41,44,45} For example, one study created resource guides related to nonstudy topics for participants, and two studies navigated participants to appropriate community resources.^{41,44,45}

Although no study conducted a formal cost analysis of their intervention, four studies reported some associated cost related to their recruitment and retention strategies.^{46-48,50} Chart review, physician referral, and state registry data sets were identified as the most cost-effective strategies for participant identification.^{46,47,50} In one study, nurse navigation was determined to be cost effective at \$5,677 US dollars per patient because it reduced physician time needed to recruit and complete follow-up and was found to be half of the cost when compared with previous cancer clinical trial cost estimates of \$12,000 US dollars per patient.⁴⁸

DISCUSSION

In conclusion, facilitating the recruitment and retention of Black participants into CCTs requires the development of culturally competent strategies and interventions that address multilevel barriers^{14,16,54} and acknowledge historical racism in research.³² Ten of the included studies specifically responded to the cultural, and linguistic, diversity across Black communities by using images of local residents in campaigns and/or employing community members to deliver the intervention, which likely contributed to their success.^{38,41,44-48,50-52} Involving communities in the development of such strategies and interventions through the use of focus groups, community advisory boards, and the inclusion of community members as research partners may also facilitate issues around the Black population's general lack of awareness of studies that may be available or relevant to them, increase trust in the research overall, improve the translation of findings into viable treatments and therapies, and enhance health systems' ability and willingness to address institutional barriers.^{55,56}

Our finding that most (13 of 15) of the studies in our sample had acceptance rates over 30%, which is considerably

higher than the national average of 10.4% for Black enrollment in CCTs, highlights that even minimal efforts to increase the recruitment of Black participants into CCTs may have positive results.⁹ However, this may reflect the number of supportive care trials represented in our review. Similar to previous studies, our results may also show that increasing awareness of available and relevant studies improved the enrollment and retention of Black patients with cancer in CCTs.^{20,21}

Combining approaches that engage key stakeholders along the clinical trial trajectory—from community members, to patients, to caregivers, and to cancer care providers—however, seems to be most effective. Hamel et al⁵⁷ posit that community engagement strategies may help to overcome the barrier of medical mistrust. Furthermore, studies that achieved an acceptance rate above 50% used an average of seven interventions from at least three of our five identified intervention categories while studies that used only one or two interventions obtained lower than a 30% acceptance rate. Our results support the recommendation to use multilevel interventions to improve the racial and ethnic diversity of participants in CCTs.⁵⁷ Additionally, using a behavioral theory to develop interventions may be a promising strategy since three of the seven studies with acceptance rates $\geq 50\%$ reported using one to develop their effective strategies.^{41,44,46} A more holistic approach to recruiting and retaining Black participants in CCTs may also yield a higher likelihood of acceptance. Engaging both the treating providers and the community in recruitment and retention efforts may have played a key role in the success of the chosen strategies.

Patient navigation is also a potentially promising recruitment and retention intervention to recruit Black participants, who have historically low participation because of the barriers and the emotional stress patients face related to treatment decisions for a new and/or ongoing cancer diagnosis, for CCTs.⁵⁸ The use of a research nurse navigator had the highest acceptance rate (86%) overall although the study was recruiting patients for cancer treatment trials.⁴⁸ The patient lay navigator strategy was also used to retain patients into both cancer treatment and supportive care trials.⁴⁴ Lay navigation demonstrated an acceptance rate of 72% and a retention rate of 74.5%.⁴⁴ Both navigation strategies were culturally tailored and provided participants with supports beyond the study requirements, including referrals to community services and providing emotional support which appears to have helped to overcome the additional treatment-related barriers.

One of the limitations of this review is that, as a scoping review, it is exploratory in nature and, therefore, not intended to be generalizable. In addition, given our research focus, most of the studies we initially identified did not qualify for inclusion here, primarily because they did not report specific recruitment and/or retention outcomes for Black participants. Another limitation is that most studies in

our final sample focused on the recruitment and retention of Black female participants to breast cancer clinical trials. Thus, the outcomes of strategies and interventions in our sample may be more applicable to Black female breast cancer survivors. In addition, most studies were in a handful of states, were in urban settings, were carried out by recognized NCI Comprehensive Cancer Centers, and were recruiting for supportive care trials after cancer treatment. We were also unable to tease out the differences in effectiveness of strategies for African Americans as compared with other Black populations or differences between CCT types because of limited data. These findings are similar to those by Loree et al⁸ who found that cancer clinical trials rarely completed subanalyses for Black and Hispanic participants. Detailed reporting and analysis are needed to understand if an intervention is effective for racially and ethnically diverse participants.

Although more may seem better in terms of cross-category interventions, the costs associated with those efforts needs to be clearly calculated and weighed against their outcomes. Cost-benefit analysis may help identify which interventions are most effective for a given type of clinical trial, particularly those comparing cancer treatment trials versus supportive care trials. Determination of the overall costs of strategies and interventions can facilitate a more accurate allocation of resources and determine the sustainability of ongoing recruitment and retention efforts.

Intervention strategies implemented to recruit more participants that fail to address and measure retention are only partially successful. In our sample, only five of the 15 (33%) studies reported retention rates. From our small sample, addressing participant needs beyond the study is a promising retention intervention. However, more research is needed to understand this complex issue.

In summary, our results show that many efforts that aim to increase the recruitment and retention of Black participants into CCTs have great potential, but the most promising strategies use a multiprong approach. Additionally, potentially successful interventions need to be replicated and tested across different populations of Black patients with cancer, need to include cost analyses for sustainability, and accurately measure outcomes in terms of accrual and retention.

Promising new models and frameworks that address the complex trial processes and infrastructure challenges to the recruitment and retention of more racially and ethnically diverse participants in CCTs need to be tested across patient and cancer types.⁵⁹⁻⁶¹ Likewise, interventions used in cancer research, as well as other types of research, that help patients navigate through the social, economic, cultural, and structural complexities of the clinical trial process^{20,62,63} need to be evaluated for their ability to increase CCT participant diversity.

Increasing Black participation in CCTs, more specifically, may be achievable if new approaches obtain buy-in from all stakeholders: patients and their caregivers, the community, health care providers, health care systems, and research institutions. It is also important that new approaches incorporate culturally appropriate measures for each select patient population, with deliberate consideration for cultural diversity across various Black communities. Documentation of what and how interventions work, along with their associated costs, must consider both acceptance and retention rates for any intervention that is used to increase Black participation in clinical trials. Deepening our understanding of why and when Black patients with cancer

leave clinical trials is essential for the development of multilevel and sustainable interventions aimed at increasing accrual of Black patients in CCTs. Engaging Black patients with cancer in the design and conduct of recruitment and retention strategies, involving lay navigators from the communities involved, providing supports that extend beyond the study's requirements, and ensuring that the health care system addresses issues of institutional racism, are all promising areas for increasing Black patients with cancer inclusion in CCTs. Doing so may enhance equitable treatments for Black patients with cancer and improve overall cancer mortality among the US Black population in the future.

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SUPPORT

Supported by a Genentech, Inc, 2020 Health Equity Innovations Fund, award G-89014.

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.21.00863>.

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ACKNOWLEDGMENT

The authors wish to acknowledge oversight of this paper by the Detroit Community-Academic Urban Research Center (Detroit URC) and the PAACT Steering Committee, the latter of which is a collaboration among the University of Michigan Schools of Nursing and Public Health, the Henry Ford Health System, members of the Detroit URC, and eight community-based organizations serving Black communities in Detroit: Caribbean Community Service Center, Eastside Community Network, Friends of Parkside, Ghana Association of Michigan, Grace Community Church, Institute for Population Health, Neighborhood Service Organization, and Survivors Still Serving. This publication was made possible by funding from Genentech, Inc, 2020 Health Equity Innovations Fund, award G-89014.

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

A Scoping Review of Strategies to Increase Black Enrollment and Retention in Cancer Clinical Trials

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](#)).

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Research Funding: Genentech

No other potential conflicts of interest were reported.