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Research Article

Examining Clinical Trial Interest and Motivators among Diverse Populations Across a Comprehensive Cancer Center's Catchment Area

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ABSTRACT

Introduction: Although diverse representation in cancer clinical trials is crucial for developing effective treatments for all populations, some groups remain underrepresented leading to disparities in treatment outcomes. What motivates someone to engage in a clinical trial can differ by racial and cultural background. This study explored possible motivators of clinical trial participation among diverse residents in a catchment area of an NCI-designated Comprehensive Cancer Center in the Southeastern United States.

Methods: Data were collected *via* a cross-sectional survey from January to March 2022, targeting residents within a 23-county area spanning Southeastern Florida (n=1,745). The survey assessed respondents' interest in cancer clinical trial participation based on potential motivators, including health improvement, altruism, financial incentives and support services such as transportation. Ordinal logistic regression examined differences in clinical trial interest by race/ethnicity.

Results: Based on self-report, 16.8% (n=288) were previously invited to participate in a clinical trial. Among those invited, 45.1% (n=130) reported having participated in a clinical trial. Compared to NH Whites, Hispanic (OR=0.58, p=0.0004) and NH Black respondents (OR=0.65, p=0.0001) were less likely to be influenced by the ability to get better. Additionally, Hispanic (OR=0.81, p=0.0432) and Non-Hispanic Other respondents (OR=0.59, p=0.0389) were less likely to be influenced by having treatment costs covered that were not covered by insurance.

Conclusion: Understanding racial and ethnic differences in factors influencing cancer clinical trial participation can guide strategies to improve diversity in clinical trials. Addressing these motivators through culturally tailored approaches may enhance participation and contribute to more equitable healthcare outcomes.

Keywords: Clinical trial; Cancer; Health outcomes; Recruitment

INTRODUCTION

Participation in clinical trials is critical for advancing treatment outcomes for individuals diagnosed with cancer [1]. Equally important is ensuring diversity within clinical trial populations because different groups may respond differently to treatment [2]. Unfortunately, multiple studies indicate that racial and ethnic minority groups are often underrepresented in clinical trials, contributing to a notable research gap [3-5]. This underrepresentation highlights the need to better understand disease mechanisms across different populations to ensure safety, efficacy and equitable treatments for underserved groups

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[6]. Moreover, when treatments are evaluated in the general population, they can result in poorer outcomes for the populations not included in the trials. For instance, certain genetic variations, which are more prevalent in specific racial or ethnic groups, can influence drug metabolism and response [7].

Racial and ethnic minority groups and socioeconomically disadvantaged populations, often face barriers to accessing clinical trials such as transportation issues, language barriers, financial constraints and a lack of information about available trials [8]. A research statement by the American Society of Clinical Oncology and the Association of Community Cancer Centers identified four distinct levels and relevant barriers to minority enrollment in clinical trials: 1) clinicians, often the ones referring patients to clinical trials and may exhibit selection bias leading to less discussions with certain groups [9]; 2) patients, for a number of complex reasons including transportation, childcare responsibilities, the absence of health insurance, lack of trust in medical community and ineligibility due to cancer type; 3) trials, in which the design of the trial may inadvertently exclude certain groups due to the presence of comorbid conditions [10]; and 4) institutional, where institutions influence the availability of trials, where to conduct them and the diversity of the workforce employed to run the trials [2].

Understanding factors that influence one's decision to participate in a clinical trial at a local level, such as distance to travel, is critical. A study by Borno, et al., found that, based on a sample of 1,600 cancer clinical trial patients between 1993 and 2014 for multiple different cancers, the median distance to travel to participate in the clinical trial was between 13.9-41.2 miles and travel distance was furthest among those enrolled in NIH-sponsored trials, phase I studies, or for individuals living in low income areas [11]. This understanding is essential for cancer centers that often serve as a hub for novel treatment trials [12].

Given the complexity of these barriers, a comprehensive framework is needed to understand how multiple factors interact to influence clinical trial participation, rather than viewing them as isolated challenges. The Glass and McAtee Risk Regulator Model provides a valuable framework for understanding how various interconnected factors influence health-related decision-making [13]. This model posits those decisions such as whether to participate in clinical trials are not shaped by a single determinant, but rather by the broader social, economic and environmental contexts in which individuals exist [13].

By considering these external influences, the model offers a more comprehensive perspective on barriers to clinical trial participation, moving beyond individual-level explanations to recognize the cumulative impact of lived experiences, systemic inequities and structural constraints. Applying this framework to clinical trial participation allows for a more nuanced understanding of how different risk regulators such as past experiences with healthcare, financial stability and access to culturally adapted recruitment strategies interact to shape individuals' decisions.

Non-profit hospitals receiving tax exemption status are mandated by the Internal Revenue Service (IRS) to conduct a Community Health Needs Assessment (CHNA) every three years. This assessment must include key informant interviews with community members, healthcare providers and leaders in social services, as well as secondary data analysis specific to the defined "community." Additionally, it may include a survey assessment distributed among the hospital's service area [14]. The goal of the CHNA, as defined by the IRS, is to identify and evaluate the health needs of the community served by the hospital and to develop a strategy to address those needs. Similarly, for National Cancer Institute (NCI)-Designated Comprehensive Cancer Centers, the expectation is to improve the health of their catchment areas by addressing the local cancer burden [15,16].

As such, it is important for NCI-designated centers to understand factors that may influence cancer clinical trial participation for those within the communities they serve. To address this need, the current study aimed to (1) understand motivators that may influence interest in clinical trial participation among diverse residents of an NCI-designated Comprehensive Cancer Center's catchment area, (2) assess prior invitation and acceptance for clinical trial participation and (3) examine whether these factors vary by ethnicity or race.

MATERIALS AND METHODS

Between January and March 2022, a large NCI-designated Comprehensive Cancer Center in the Southeastern United States gathered self-reported data in English and Spanish through a cross-sectional approach for its triennial CHNA. The Institutional Review Board deemed this study exempt because it did not qualify as research involving human subjects.

Recruitment and Procedure

The "community" for this CHNA is the Cancer Center's 23-county catchment area, representing approximately 10.2 million residents in 2020 (47.4% of state residents) and 50% of all cancer cases in Florida between 2015-2019 [17]. The team partnered with the Carnahan Group, a locally based vendor specializing in non-profit hospital needs assessments, to assist with outreach and promotion of the online CHNA survey. Specifically, the vendor used the key informant interview contacts from the qualitative part of the needs assessment, the Cancer Center's outreach network and social media platforms to disseminate the survey to community members.

Prior to survey deployment, the team used population metrics from the U.S. Census to set goals for the desired number of survey responses by race/ethnicity in the catchment area based on the proportions of the population representing Non-Hispanic Black (11.6%) and Hispanic (23.6%) residents in the catchment area [18]. Throughout data collection, the survey vendor monitored respondent demographics to ensure wide coverage across the catchment area and representation across various sub-populations, focusing on race/ethnicity and Spanish-preferring individuals. Based on 2020 census data, our CHNA survey sample included a higher proportion of Hispanic residents (25.5%) compared to the catchment area (23.6%). The proportion of non-Hispanic Black residents in the survey sample was slightly lower than the catchment area (10.4% *vs.* 11.5, respectively).

To encourage participation, requests for survey participation and links in both English and Spanish were disseminated *via* email and popular social media platforms (e.g., LinkedIn, Facebook). These online recruitment efforts were bolstered by community outreach strategies, which involved collaboration with local non-profit organizations, academic institutions, government agencies and social service organizations. Community partners were encouraged to share the survey widely within their respective communities.

The CHNA sample was designed to represent respondents from all the 23 counties in the catchment area. The survey collected respondents' residential zip codes, which were used to verify whether they resided within one of the 23 counties. Using the R package 'tidy geocoder', the team identified counties represented by the zip codes in the sample. Initially, the sample comprised 1,814 respondents; however, 60 were excluded as they originated from states outside of Florida or counties beyond the 23 in our catchment area (NHW=36; NHB=7, Hispanic=15, NH other=2). After these exclusions, the final sample for analysis was 1,754 respondents.

Measures

The self-report questionnaire was based on the Cancer Center's previous CHNA survey and was adapted by a group of expert population and clinical science researchers [19]. The adaptation aimed to streamline the number of questions posed to community members, focusing on information aligned with the cancer center's objectives, particularly clinical trial participation. Survey questions examined in this analysis were derived largely from the clinical trials section of the Health Information National Trends (HINTS) Cycle 4 survey [20]. As a cancer center, we are interested in factors that motivate participation in cancer clinical trials. However, we wanted to cast a broader net with our CHNA to assess interest in clinical trial participation for a broad range of illnesses/diseases.

Sociodemographic characteristics

The CHNA assessed sociodemographic characteristics including age, gender, sexual orientation, household income and perceptions about income, marital status, employment status, education, health insurance type, healthcare access and language preference. Participants' self-reported race and ethnicity were categorized into four racial/ethnic groups NHW (non-Hispanic/Latinx White), NHB (non-Hispanic/Latinx Black), H/L (Hispanic/Latinx) and NHO (Other non-Hispanic/Latinx), which included Asian, American Indian, Native Hawaiian/Pacific Islander and individuals who self-reported identifying with more than one race.

Clinical trial participation interest

Clinical trial participation interest was assessed with an item adapted from the Health Information National Trends (HINTS) Cycle 4 survey [20]. The question started with the prompt "Imagine that you had a health issue and you were invited to participate in a clinical trial for that issue. How much would each of the following influence your decision to participate in the clinical trial? My decision to participate in a clinical trial would be influenced if…", followed by a list of 8 different potential motivators to clinical trial participation (Table 2). The items assessed whether respondents would be influenced by: 1) the potential to help others, 2) the provision of support in the form of transportation and childcare, 3) receiving encouragement from one's doctor, 4) family, or 5) friends, 6) the possibility of no longer being ill, 7) the opportunity to try a new kind of treatment and 8) having standard care covered if that was not covered by insurance. Responses were based on a 4-point Likert-type scale from Not at all (0) to A lot (3). Each item contributed to an aggregate score, with higher scores indicating a greater level of influence on participation and interest in clinical trials (Question G2 from HINTS, Cycle 4) [20].

Clinical trial invitation and participation

The purpose of these questions was to gauge the rate of clinical trial invitation (i.e., being invited to join a clinical trial) and participation. Clinical trial invitation was measured using a slightly adapted HINTS question that asked, "Have you ever been invited to participate in a clinical trial?", with possible responses "Yes", "No", or "I don't remember". If the response was "Yes", the next question asked, "Did you participate in the clinical trial?" with possible responses "Yes", "No", or "I don't remember" (Questions G6 and G7 from HINTS, Cycle 4).

Data analysis

To examine group differences among categorical sociodemographic factors and race/ethnicity including gender, income, income perceptions, marital status, health insurance, education, employment and access to healthcare, we used the Fisher's Exact test; we used Kruskal-Wallis for age, being a continuous numerical value. Clinical trial interest analyses included calculation of Means (M) and Standard Deviations (SD) for aggregate Clinical Trial Interest (CTI) scores for each of the eight categories by race/ethnicity and ordinal logistic regression to examine differences in clinical trial interest by race/ethnicity. Statistical significance established at 0.05. Clinical trial exposure and participation were measured using proportions (%). Analyses were conducted using R 4.4.1.

RESULTS

Sociodemographic characteristics

This analysis includes responses from 1,754 individuals (N=1,060 NHW, 182 NHB, 448 H/L, 55 NHO). See Table 1 for the sociodemographic characteristics by race/ethnicity. We found statistically significant group differences for age, income, marital status, employment, health insurance and healthcare access. The average age of respondents was 53.9 years (SD=18.3). A majority identified as female (67.9%) and heterosexual (87.9%). Additionally, 19.8% graduated from High School or earned a GED, 33.9% were employed full time and over half were partnered (53.2%). Income distributions were wide, with the most frequent income category reported as between $50,000-$74,999 (18.7%) and when asked about income perceptions, most indicated they are "getting by" on present income (35.1%) or "living comfortably" on present income (32.5%). Approximately one quarter of respondents purchased health insurance through their employer or family member's employer (27.5%) or were insured through Medicare (24.9%) (Table 1).

Clinical trial invitation and participation

The overall rate of self-reported clinical trial invitation, defined as rate of people reporting being invited to join a clinical trial, was 16.8%. Most participants reported that they had never been invited to participate in a clinical trial (77.9%, n=1,332), which remained constant across all race/ethnicity groups (Figure 1). Among those invited to participate in a clinical trial (n=288), 45.9% reported participating in a trial (Figure 2). Of the 288 respondents who had been invited to participate in a clinical trial, participation rates were highest among NH Other (75.0%, n=9), followed by Hispanic (48.0%, n=24), NH White (45.4%, n=84) and NH Black (36.1%, n=13).

Table 1: The adult VTE checklist.

Variable	All		*P value*	WNH		BNH		H/L		ONH		Prefer not to answer race	
	N=1754			N=1060	60.40%	N=182	10.40%	N=448	25.50%	N=55	3.10%	N=9	0.50%
	M	SD		M	SD	M	SD	M	SD	M	SD		
Age*	53.92	18.34	<0.001[1]	59.09	16.5	45.84	16.3	45.54	18.1	47.42	17.23	65.89	16.1
	n	%		n	%	n	%	n	%	n	%		
Gender			0.9272										
Male	536	30.60%		328	31.90%	51	28.10%	140	31.30%	15	22.20%	2	22.20%
Female	1191	67.90%		720	67.90%	129	70.90%	296	66.10%	39	70.90%	7	77.80%
Non-Binary/Genderqueer	6	0.30%		4	0.40%	1	0.50%	1	0.20%	0	0.00%		
Transsexual man	4	0.20%		2	0.20%	0	0.00%	2	0.50%	0	0.00%		
Prefer not to answer	16	0.90%		5	0.50%	1	0.50%	9	2.00%	1	1.80%		
Identify in another way	1	0.10%		1	0.10%	0	0.00%	0	0.00%	0	0.00%		
Sexual orientation												1	1
Heterosexual/Straight	1541	87.90%		981	92.60%	164	90.10%	343	76.60%	44	80.00%	9	100.00%
Identify as LGBTQ+	142	8.10%		65	6.10%	16	8.80%	56	12.50%	5	9.10%		
Prefer not to answer	71	4.10%		14	1.30%	2	1.10%	49	10.90%	6	10.90%		
Household income*			<0.001[2]									1	1
$0-$9,999	80	4.60%		31	2.90%	17	9.30%	27	6.30%	4	7.30%		
$10,000-$19,999	139	7.90%		79	7.50%	19	10.40%	37	8.30%	4	7.30%		
$20,000-$34,999	297	16.90%		181	17.10%	33	18.10%	74	16.50%	5	9.10%	4	44.40%
$35,000-$49,999	280	16.00%		159	15.00%	33	18.10%	75	16.70%	12	21.80%	1	11.10%
$50,000-$74,999	328	18.70%		211	19.90%	32	17.60%	70	15.60%	13	23.60%	2	22.20%
$75,000-$99,999	214	12.20%		137	12.90%	18	9.90%	56	12.50%	2	3.60%	1	11.10%
$100,000+	264	15.10%		194	18.30%	17	9.30%	46	10.30%	7	12.70%		
Don't know	30	1.70%		12	1.10%	7	3.90%	8	1.80%	3	5.50%		
Prefer not to answer	122	7.00%		56	5.30%	6	3.30%	54	12.10%	5	9.10%	1	11.10%
Household income perception			0.3272									1	1
Very difficult to get by on present income	150	8.40%		86	8.10%	18	9.90%	39	8.70%	7	12.70%		
Difficult to get by on present income	312	17.60%		193	18.20%	26	14.30%	81	18.10%	8	14.60%	4	44.40%
Getting by on present income	619	35.10%		384	36.20%	73	40.10%	140	31.30%	20	36.40%	2	22.20%

Living comfortably on present income	564	32.50%		369	34.80%	58	31.90%	118	26.30%	16	29.10%	3	33.30%
Prefer not to answer	109	6.30%		28	2.60%	7	3.90%	70	15.60%	4	7.30%		
Marital status			<0.001[2]									1	1
Partnered	933	53.20%		620	51.50%	66	36.00%	212	48.00%	30	52.60%	5	55.60%
Married/Domestic partner	800	45.60%		543	51.20%	54	29.70%	175	39.10%	23	41.80%	5	55.60%
Living as married	133	7.60%		77	7.30%	12	6.60%	37	8.30%	7	12.70%	0	0.00%
Un-partnered	760	40.30%		472	40.20%	114	62.40%	194	43.00%	21	38.60%	4	44.40%
Divorced	206	11.70%		138	13.00%	22	12.10%	40	8.90%	5	9.10%	1	11.10%
Separated	29	1.70%		14	1.30%	6	3.30%	9	2.00%	0	0.00%	0	0.00%
Single, Never been married	387	22.10%		174	16.40%	74	40.70%	121	27.00%	16	29.10%	2	22.20%
Widowed	138	7.90%		101	9.50%	12	6.60%	24	5.40%	0	0.00%	1	11.10%
Prefer not to answer	61	3.50%		13	1.20%	2	1.10%	42	9.40%	4	7.30%	0	0.00%
Employment status*			<0.001[2]									1	1
Employed full-time	595	33.90%		306	28.70%	77	42.30%	186	41.50%	24	43.60%	2	22.20%
Employed part-time	187	10.70%		113	10.70%	23	12.60%	45	10.00%	6	10.90%	0	0.00%
Unemployed or disabled	232	13.20%		130	12.30%	31	16.50%	64	14.30%	7	12.70%	1	11.10%
Retired	519	29.60%		416	39.30%	28	15.40%	61	13.60%	11	18.20%	4	44.40%
Volunteer or student	162	9.20%		83	7.80%	19	10.40%	53	11.70%	6	10.90%	1	11.10%
Prefer not to answer	59	3.40%		12	1.10%	5	2.80%	39	8.70%	2	3.60%	1	11.10%
Highest level of schooling completed			0.1422									1	1
<High school or some high school (no diploma)	63	3.60%		31	2.90%	11	6.00%	19	4.20%	2	3.60%	0	0.00%
High school (diploma or ged)	347	19.80%		205	19.30%	32	17.60%	94	21.00%	13	23.60%	3	33.30%
Some college, no degree	333	19.00%		224	21.10%	32	17.60%	70	15.60%	5	9.10%	2	22.20%
Associate degree or vocational/ technical school	332	18.90%		203	19.10%	41	22.50%	79	17.60%	7	12.70%	2	22.20%
Bachelor's degree	368	21.00%		226	21.30%	34	18.70%	87	19.40%	20	36.40%	1	11.10%
Masters/graduate degree	259	14.80%		164	15.50%	30	16.50%	58	13.00%	6	10.90%	1	11.10%
Prefer not to answer	52	3.00%		7	0.70%	2	1.10%	41	9.20%	2	3.60%	0	0.00%
Health insurance*			<0.001[2]									1	1
A health insurance plan purchased through an employer or union (including plans purchased through another person's employer)	482	27.50%		287	27.10%	59	32.40%	113	25.20%	20	36.40%	3	33.30%

A health insurance plan that you or another family member buys on your own	176	10.00%		87	8.20%	24	13.20%	60	13.40%	4	7.30%	1	11.10%
Medicare	436	24.90%		344	32.50%	19	10.40%	63	14.10%	8	14.60%	2	22.20%
Medicaid or other state program	163	9.30%		77	7.30%	32	17.60%	49	10.90%	5	9.10%	0	0.00%
County health plan/indian health services/tricare	55	3.10%		29	2.70%	4	2.20%	21	5.00%	1	1.80%	0	0.00%
I pay cash/I don't have health insurance	136	7.80%		80	7.60%	12	6.60%	39	8.70%	5	9.10%	0	0.00%
Another way/prefer not to answer	119	6.80%		36	3.40%	10	5.50%	68	15.20%	5	9.10%	0	0.00%
More than one type of health insurance	187	10.70%		120	11.30%	22	12.10%	35	7.80%	7	12.70%	3	33.30%
Healthcare access: Was there a time in the past 12 months where you needed healthcare but did not receive it?			<0.001[2]								1	1	1
Yes	348	19.80%		199	18.80%	44	24.20%	97	21.70%	7	12.70%	1	11.10%
No	1249	71.20%		802	75.70%	128	70.30%	273	60.90%	38	69.10%	8	88.90%
I don't know	86	4.90%		39	3.70%	9	5.00%	34	7.60%	4	7.30%		
Prefer not to answer	71	4.00%		20	1.90%	1	0.10%	44	9.80%	6	10.90%		
Reason for not getting needed healthcare (n=348)												1	1
Appointment delay/cancel due to covid	59	17.00%		34	17.10%	8	18.20%	16	16.50%	1	14.30%		
Too expensive	149	42.80%		85	42.70%	12	27.30%	49	50.50%	3	42.90%		
No primary physician	9	2.60%		5	2.50%	1	2.30%	3	3.10%	0	0.00%		
No insurance	33	9.50%		15	7.50%	5	11.40%	13	13.40%	0	0.00%		
Not sure where to go	11	3.20%		4	2.00%	3	6.80%	3	3.10%	0	0.00%	1	100.00%
No transportation	24	6.90%		18	9.10%	4	9.10%	2	2.10%	0	0.00%		
Trouble getting an appointment	42	12.10%		27	13.60%	5	11.40%	8	8.30%	2	28.60%		
Other reason	21	6.00%		11	5.50%	6	13.60%	3	3.10%	1	14.30%		
Speak language other than English at home												1	1
No	1391	79.30%		1014	95.66%	167	91.76%	162	36.16%	39	71.91%	9	100.00%
Yes	314	17.90%		41	3.87%	13	7.14%	246	54.91%	14	25.45%		
Spanish	234	74.50%		12	29.27%	2	15.38%	219	89.02%	1	7.14%		
Portuguese	4	1.30%		2	4.88%	0	0.00%	1	0.41%	1	7.14%		
German	4	1.30%		3	7.32%	0	0.00%	1	0.41%	0	0.00%		
Greek	2	0.60%		2	4.88%	0	0.00%	0	0.00%	0	0.00%		
American Sign Language (ASL)	2	0.60%		0	0.00%	1	7.69%	1	0.41%	0	0.00%		

French	2	0.60%	1	2.44%	1	7.69%	0	0.00%	0	0.00%
Dutch	2	0.60%	1	2.40%	0	0.00%	0	0.00%	1	7.14%
Other*	13	4.10%	3		1	7.69%	2	0.81%	7	50
More than one language	9	2.90%	4	9.76%	2	15.38%	3	1.22%	0	0.00%
Prefer not to answer	42	13.40%	13	31.71%	6	46.15%	19	7.72%	4	28.57%

Note: [1]p-value calculated using Kruskal-Wallis test, .05; [2]p-values calculated using Fisher's Exact Test, .05; *Includes languages with only 1 response: Creole, Arabic, Bahasa, Bulgarian, Chinese (unspecified), Hebrew, Korean, Lakota Sioux, Mandarin, Tagalog, Thia, Urdu, Vietnamese

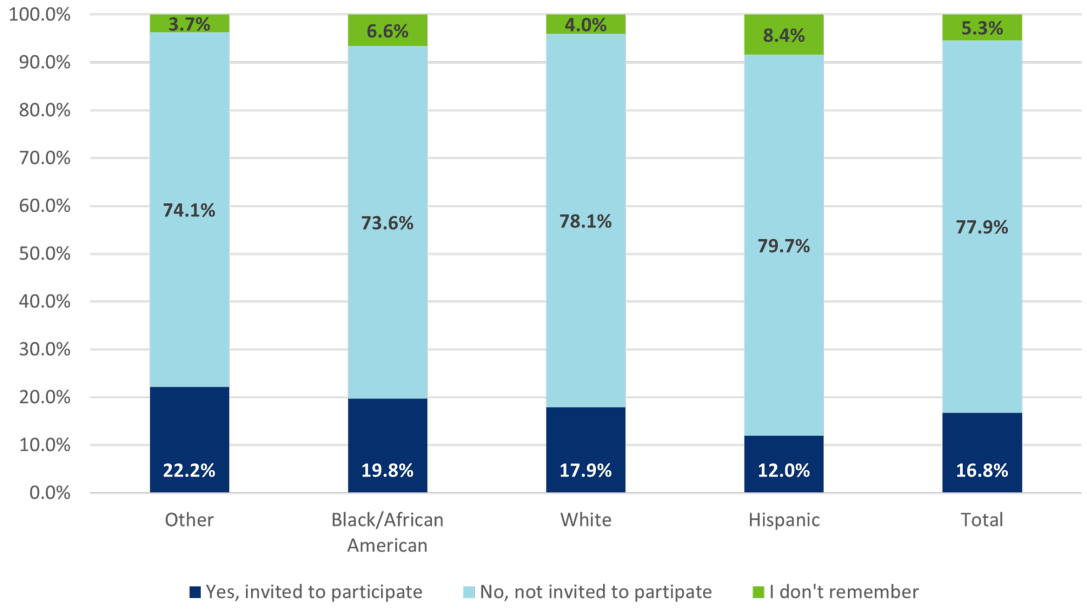

Figure 1: Ever been invited to participate in a clinical trial (n=1,710).

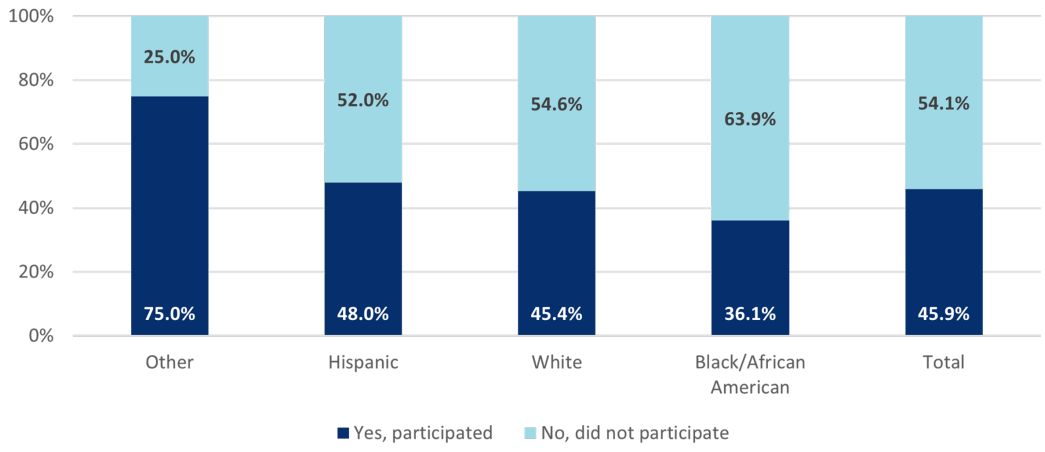

Figure 2: Participated in a clinical trial (n=283).

Clinical trial interest

Across all respondents, the most positively influential factors to clinical trial interest were those related to health improvement, where 48.1% of respondents identified the ability to "not be sick anymore" as a strong motivator ("A lot") and if standard care was not already covered by their health insurance. Altruistic motives, such as helping others and financial incentives were also significant but to a lesser extent (Table 2). Encouragement from doctors or family/friends generally had the lowest impact as a potential motivator. The average Clinical Trial Interest (CTI) score was 16.5 (possible overall score ranging from 0-27), with item-specific averages ranging from 1.6 to 2.2, out of a possible 3 (Table 3).

Table 2: Clinical trial interest score: Reasons influencing interest in clinical trial participation.

	NH White (M, SD)	NH Black (av, SD)	Hispanic (av, SD)	NH other (av, SD)	Total score (av, SD)
I would be helping others by participating	2,228 (2.11, 0.91)	359 (2.02, 0.97)	799 (1.94, 0.95)	102 (1.92, 1.09)	3,488 (2.06, 0.94)
I would get paid to participate	2,028 (1.94, 1.01)	353 (1.98, 0.99)	768 (1.86, 1.06)	94 (1.74, 1.12)	3,243 (1.92, 1.02)
I receive support (transportation, childcare, PTO)	1,670 (1.60, 1.11)	310 (1.98, 1.15)	697 (1.86, 1.10)	81 (1.74, 1.15)	2,758 (1.92, 1.11)
I receive encouragement to participate from doctor	1,816 (1.73, 1.03)	297 (1.67, 1.03)	674 (1.64, 1.04)	78 (1.47, 1.07)	2,865 (1.70, 1.03)
I receive encouragement to participate from family/friends	1,653 (1.59, 1.00)	263 (1.50, 1.03)	646 (1.59, 1.05)	77 (1.45, 1.07)	2,639 (1.57, 1.02)
Participating would help me not be sick anymore	2,343 (2.24, 0.96)	344 (1.93, 1.11)	827 (2.02, 1.03)	95 (1.79, 1.20)	3,609 (2.14, 1.01)
I get the chance to try a new kind of care	1,897 (1.84, 0.96)	295 (1.68, 1.02)	711 (1.76, 1.00)	82 (1.55, 1.07)	2,985 (1.79, 0.98)
If the standard care was not covered by my insurance	2,095 (2.03, 1.05)	357 (2.02, 1.07)	783 (1.92, 1.03)	89 (1.71, 1.14)	3,324 (1.99, 1.06)
Clinical Trial Interest Score (Av, SD)	17,771 (16.80, 5.68)	2,904 (16.22, 6.55)	6,647 (16.06, 6.18)	802 (15.13, 6.69)	28,124 (16.50, 5.95)

Note: *Clinical Trial Interest scale: Not at all=0; A little=1; Somewhat=2; A lot=3

Table 3: Ordinal logistic regression: Factors influencing interest in clinical trial participation.

	NH White-NH Black		NH White-Hispanic		NH White-NH other	
(Reference race=NH White)	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
I would be helping other by participating	0.85 (0.64-1.14)	0.2792	0.72 (0.58-0.89)	0.0019	0.76 (0.45-1.28)	0.3048
I would get paid to participate	1.08 (0.81-1.45)	0.5814	0.90 (0.73-1.11)	0.3262	0.73 (0.44-1.21)	0.2247
I receive support (transportation, childcare, PTO)	1.27 (0.95-1.70)	0.104	1.17 (0.96-1.45)	0.1241	0.89 (0.54-1.46)	0.644
I receive encouragement to participate from doctor	0.89 (0.66-1.17)	0.4035	0.86 (0.70-1.05)	0.1397	0.63 (0.38-1.04)	0.0716
I receive encouragement to participate from family/friends	0.87 (0.65-1.16)	0.3359	1.02 (0.83-1.26)	0.8675	0.79 (0.48-1.30)	0.3464
Participating would help me not be sick anymore	0.58 (0.43-0.79)	0.0004	0.65 (0.53-0.80)	0.0001	0.47 (0.28-0.79)	0.0045
I get the chance to try a new kind of care	0.75 (0.56-1.00)	0.0521	0.87 (0.70-1.07)	0.1977	0.61 (0.37-1.02)	0.0577
If the standard care was not covered by my insurance	1.00 (0.74-1.34)	0.9777	0.81 (0.66-0.99)	0.0432	0.59 (0.35-0.97)	0.0389

Health improvement and altruism

Health improvement, particularly the desire to "not be sick anymore," was the most influential factor overall, with an average CTI score of 2.24 (SD=1.01). NH White respondents were especially driven by this motivator (M=2.24, SD=0.96), whereas NH Black respondents were 42% less likely to be influenced by the prospect of not being sick anymore compared to NH Whites (OR=0.58, p=0.0004) and Hispanic respondents were 35% less likely to be influenced by this factor (OR=0.65, p=0.0001) relative to NH White respondents. The motivation to help others was also high (M=2.06, SD=0.94), particularly for NH White respondents (M=2.11, SD=0.91), while Hispanic respondents were 28% less likely to be influenced by this factor (OR=0.72, p=0.0019).

Financial incentives and support services

Getting paid to participate had moderate influence overall (M=2.11,

SD=0.91), with NH Black respondents (M=1.98, SD=0.99) slightly more likely to be influenced by payment compared to NH White respondents (M=1.94, SD=1.01), though not significant (OR=1.08, p=0.5814). Among NH White respondents, a strong motivator of clinical trial interest was "when standard of care was not covered by their health insurance" (M=2.03, SD=1.05) and NH Black respondents were equally likely to be influenced by receiving standard care when it was not covered by their health insurance (OR=1.00, p=0.9777). There were significant differences for Hispanic and NH Other, where Hispanic respondents were 19% less likely to be influenced (OR=0.81, p=0.0432) and NH Other respondents were 41% less likely to be influenced by receiving standard care for free (OR=0.59, p=0.0389).

Compared to NH White respondents, support services (i.e., transportation, childcare) were most positively influential for NH Black respondents, who were 27% more likely to be influenced by this factor (OR=1.27, p=0.1040), however, there were no statistically significant differences between NH White respondents and other racial/ethnic groups.

Encouragement from doctors and family/friends

Without including race/ethnicity, encouragement from doctors had a moderate influence (M=1.70, SD=1.0), with NH Other respondents being 37% less likely to be influenced, with the result being marginally significant (OR=0.63, p=0.0716). Family/friend encouragement was least influential overall (M=1.57, SD=1.02) and there was no significant difference by race/ethnicity.

Trying new treatment

Including all observations, the "chance to try a new kind of care" through the clinical trial was the lowest rated among the influential factors (M=1.79, SD=0.98). There were marginally significant differences for NH Black and NH Other respondents regarding trying a new type of care, where NH Black respondents were 25% less likely to be influenced (OR=0.75, p=0.0521) and NH other respondents were 39% less likely to be influenced by trying new care (OR=0.61, p=0.0577), compared to NH White respondents.

DISCUSSION

The aims of this research were to examine self-reported differences by race/ethnicity in motivators influencing interest in clinical trial participation, looking at the odds of individuals from specific racial groups being influenced by clinical trial motivators and to examine the rate of invitation and engagement in clinical trials. Although less than half (45.8%) of those invited to participate in clinical trials did so, findings from our sample suggested that NH Other and NH Black individuals residing in our 23-county catchment area have higher rates of being invited to participate in a clinical trial, compared to NH White and Hispanic individuals residing in our 23-county catchment area. Clinical trial exposure and participation are associated in that we would expect groups that are more exposed to (invited to participate in) clinical trials to have higher rates of involvement in clinical trials. In our sample NH Other respondents reported the highest rate of exposure (22.2%) and highest rate of participation (75%). However, despite having the lowest exposure rates (11.9%), Hispanic individuals had the second highest participation rate (48%) when invited. In this sample, rates of invitation ranged from 11.9%-22.2%, a much narrower range compared to other studies using HINTS data. For example, Williams, et al., analyzed a HINTS sample of 3,689 respondents and found that 9% of respondents reported being invited to participate in a clinical trial and rates of invitation between 5.8%-57.2% with the highest rate of invitation among NH White (57.2%) whereas NH Whites in our sample had invitation rate of 17.9%. Our sample had a similar overall rate of clinical trial participation at 45.8% compared to 47% in the study by [21].

The most influential factors for clinical trial interest were the potential for health improvement (M=2.24, SD=1.01), financial incentives (M=2.11, SD=0.91), altruism (helping others) (M=2.06, SD=0.94) and access to standard care when not covered by insurance (M=2.03, SD=1.05). Compared to NH White respondents, NH Black respondents perceived financial compensation and support services to be the most influential. Hispanic respondents reported being most influenced by the potential to avoid illness compared to NH White respondents. NH Other respondents exhibited the most variability in their motivations compared to NH White respondents, with the influence of trying a new treatment showing a marginal association, as reflected in an average CTI score of 1.79 (σ=1.20, OR=0.61, p=0.0577).

Receiving financial compensation and support services are documented motivators for clinical trial participation, as observed by research with oncologists and, depending on racial group, for some patients [22,23]. Our results suggest that although financial compensation and logistical support (such as transportation, childcare, or paid time off) are key motivators, these factors alone may not be sufficient to increase participation rates among NH Black individuals. Regarding possible covariate influence, our sample had a statistically significant difference by race/ethnicity in the distribution of annual income (p=0.0003), but not in self-reported income perceptions (p=0.320). Conversely, a study by Commaroto et al., found that Hispanics were the group most likely to indicate financial assistance as influential [24].

Although not statistically significant in our sample, NH Black individuals reported being more likely to be influenced by financial incentives and support services. The positive effect size for NH Black individuals reporting being more likely to be influenced by financial incentives and support indicates the potential for this factor to influence NH Black participants favorably, which could be explored further. These non-significant results, particularly with odds ratios close to 1 or with confidence intervals nearing statistical significance, can be seen as having potentially meaningful effects; they can reveal preferences that may be valuable for understanding participant motivations and used to refining engagement approaches, especially in sociodemographic subgroups [24].

Applying the Glass and McAtee Risk Regulator Model to clinical trial participation highlights the importance of addressing structural and contextual barriers rather than relying solely on individual-level preferences [13]. While financial incentives and logistical support may help reduce some barriers, they do not fully address deeper-rooted issues such as mistrust stemming from historical healthcare injustices or the lack of culturally relevant communication. Incentives or other benefits that do not reach statistical significance may still hold practical relevance in informing clinical trial engagement strategies. For instance, the positive effect size observed for NH Black individuals who reported being more influenced by financial incentives and support services suggests that these factors may still play a role in decision-making, even if the results were not statistically significant. These findings align with prior research indicating that certain motivators may be particularly relevant for specific sociodemographic groups

[5]. By integrating such insights into recruitment strategies such as offering financial assistance where appropriate, emphasizing culturally adapted messaging and ensuring that study protocols reflect participants' lived experiences researchers can create an environment where participation in clinical trials is more accessible and appealing. Recognizing and mitigating the cumulative effects of negative healthcare experiences, while also incorporating non-significant but potentially meaningful findings, may be essential to increasing historically underrepresented groups in cancer clinical trials.

A limitation of this study is the small sample size for some variables (e.g. n=12 for Non-Hispanic Other) when observed by race/ethnicity, making the extrapolation to population level attitudes difficult. Although we exceed the proportion of Hispanic residents in our survey compared to the catchment area (catchment area: 23.6%, CHNA survey: 25.5%) we had a lower response rate for NH Black populations compared to the catchment area (catchment area: 11.6% CHNA survey: 10.4%). Another limitation is that we did not collect information about personal or family history of cancer or high-risk health conditions among those who had been invited to participate in a clinical trial. This information could provide insight into how individuals became aware of clinical trials, for example, through a known family history of cancer [25,26] and heightened awareness of cancer risk associated with other medical conditions such as Crohn's Disease [27]. Future directions for this research include obtaining a larger sample size and a survey that is specific to clinical trial interest and participation to focus the assessment on this specific topic of cancer clinical trial engagement, considering that perceptions about clinical trial participation might differ dramatically across disease/illness types and severity, as observed by Ohmann and Deimling where there were differences in participation likelihood among surgical (lowest), dental and pharmaceutical trials [29]. Notable in our sample is the high variability in responses among NH Other respondents, as evidenced by their low CTI scores and highest standard deviations. This variability indicates that NH Other individuals do not respond uniformly to the same motivational factors, which is likely reflective of the fact that this group included multiple different racial groups.

CONCLUSION

The factors influencing participation in clinical trials can be considered as risk regulators meaning they are influential to the decision to participate in a clinical trial, but not deterministic. In a review of barriers and enablers to cancer clinical trials, McPhee et al., found that community based approaches to recruitment can facilitate recruitment strategies that increase trust among the community, such as using patient-centered messaging through storytelling and testimonials and reduce the amount of overly technical and medicalized language [30]. Clinical trial participation is shaped by a complex interplay of individual, social, economic and systemic factors that act as risk regulators influencing health decisions. Effective communication about clinical trials, in culturally and linguistically appropriate ways, can enhance understanding of the process and trust in the healthcare professionals carrying it out fostering the possibility of increased participation rates among underserved populations.

Overcoming barriers to recruitment requires clinical trial administrators to move beyond traditional outreach and actively construct an inclusive, patient-centered trial experience one that acknowledges historical mistrust, integrates culturally and linguistically responsive strategies and mitigates logistical and financial obstacles. By addressing multilevel influences, trial administrators can transform access to cancer clinical trials, ensuring that historically underrepresented populations are not only invited to participate but also feel empowered to do so.

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