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Association of Socio-economic and Practical Unmet Needs with Self-reported Nonadherence to Cancer Treatment Appointments in Low-income Latino and Black Cancer Patients

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Abstract

Objective—Treatment adherence, with minimal numbers of missed appointments, is an important determinant of survival among cancer patients. This study aims to determine if unmet financial, logistic and supportive care needs predict self-reported adherence to cancer treatment appointments of chemotherapy and/or radiation among low-income ethnic minority patients.

Design—The sample included 1098 underserved Latino and Black patients recruited from cancer clinics in New York City through the Cancer Portal Project (CPP). Participants completed a survey which included sociodemographic, health-related questions and a needs assessment, in their preferred language. Patients' adherence to chemotherapy and/or radiation treatment appointments was assessed using a self-report.

Results—A sample of 1098 patients (581 Latino and 517 Black cancer patients) was recruited. Forty-two Latino cancer patients (7.4%) and seventy-eight Black cancer patients (15.5%) reported missing treatment appointments. Patients, who experienced four or more unmet needs (OR's=2.02-3.36), and those with unmet housing needs (OR's=3.10-3.31), were more likely to report missing cancer treatment appointments, regardless of their ethnicity/race. Black patients with unmet supportive care (OR=2.27) and health insurance needs (OR=3.80) were more likely to miss appointments. Amongst Latinos, legal health-related issues (OR=2.51) was a significant predictor of missed appointments.

Conclusions—Among ethnic minority cancer patients, unmet socioeconomic and supportive care needs, housing needs in particular, predicted patient-reported missed radiation and/or chemotherapy appointments. Future research should focus on exploring the impact of practical and

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Conflict of Interest

The authors indicated no potential conflicts of interest.

supportive unmet needs on adherence and development of interventions aiming to improve cancer treatment adherence.

Keywords

cancer; adherence; unmet needs; Latinos; Blacks; immigrant health

1. Introduction

Blacks have higher cancer mortality rates (Hershman et al. 2005, American Cancer Society 2013), and Latinos higher mortality rates when diagnosed at a similar age and stage, than non-Hispanic whites in the U.S. (American Cancer Society 2012). Receipt of optimal chemotherapy and radiation therapy dosage and treatment adherence, with minimal numbers of missed appointments, are important determinants of survival among patients receiving cancer treatment (Lyman 2009, Weaver et al. 2013, Howard, Pechansky, and Brown 1998). Further, missing chemotherapy treatment appointments has a significant impact on lower total chemotherapy dose delivered and the treatment duration (Abu-Rustum et al. 2001). Missed appointments for chemotherapy or radiation therapy is one of the most important causes of treatment delays and interruptions (Abu-Rustum et al. 2001, Formenti et al. 1995, Hershman et al. 2009). Immigrants and ethnic minorities face multiple potential barriers to cancer treatment adherence (Hershman et al. 2005, Hershman et al. 2009, Formenti et al. 1995, Livaudais et al. 2012, Li 2005); however, the disparities literature lacks important information regarding patterns of cancer treatment adherence among immigrant and ethnic minority groups.

The few studies that have examined such patterns have found that ethnic minority groups are more likely to be non-adherent than non-Hispanic whites (Hershman et al. 2005, Formenti et al. 1995, Hershman et al. 2009, Hershman et al. 2010, Hershman et al. 2003, Magai et al. 2008, Gwyn et al. 2004, Ashing-Giwa et al. 2010). African-American diagnosed with breast cancer are more likely to experience early discontinuation or delays of treatment (Ashing-Giwa et al. 2010, Hershman et al. 2005), mostly because of missed appointments (Hershman et al. 2009). Latina breast and cervical cancer patients experience higher diagnostic and therapeutic delays when compared to non-Hispanic whites (Ashing-Giwa et al. 2010); and Latina patients experience poorer radiation treatment adherence for cervical cancer when compared with national rates (16% vs. 63%) (Formenti et al. 1995). However in a randomized controlled trial conducted by Ell and colleagues (2009) to improve adherence to cancer treatment, they found strikingly high rates of adherence among low-income ethnic minority women, attributing these rates to availability of treatment funding for the cancer clinics, which in turn might facilitate treatment adherence.

Barriers to treatment adherence are multifactorial. Research with multi-ethnic populations points to the impact of differences in socioeconomic characteristics, access to health care (including both breast cancer screening and treatment services), lifestyle factors, and tumor characteristics on treatment adherence and survival disparities (Li 2005). In a study conducted by Formenti and colleagues (1995) with Latinas undergoing radiation treatment for cervical cancer, all of the employed patients expressed concerns about losing income,

their jobs or being unable to perform their duties adequately during treatment. Other barriers cited by these cervical cancer patients were lack of transportation and child care, and not having Spanish-speaking and/or female physicians. Gany et al. (2011a) found that Latino patients with diverse cancer diagnoses most commonly reported needing assistance with financial support to enable appointment keeping. Guidry et al. (1997) found that Latinos are more likely to have experienced cost-related barriers associated with medications, diagnostic tests, hospitalizations, and significant out-of-pocket costs in paying for cancer treatment.

Patient navigation programs were designed to address barriers faced by medically underserved populations, such as financial barriers and other determinants of health care access (Wells et al. 2008). However there is little evidence of the impact of patient navigation programs in treatment initiation or adherence (Wells et al. 2008, Paskett, Harrop, and Wells 2011). Some studies have used qualitative methods (Formenti et al. 1995) and survey data to identify barriers to cancer treatment adherence (Ashing-Giwa et al. 2010, Guidry et al. 1997, 1998). However, to our knowledge, none have used a needs assessment tool to determine socioeconomic and supportive care unmet needs to predict treatment adherence in the context of a patient navigation program.

The Cancer Portal Project is a patient navigation program in New York City that connects cancer patients with a variety of services and resources that can help ease the enormous financial burden of cancer treatment. At the core of the intervention are multilingual access facilitators who are trained in a wide range of areas, including assessing needs/advising patients on available assistance and cancer support organizations; providing assistance with access to health care services and treatment; and addressing practical, logistic, supportive care and linguistic unmet needs. Portal Service Access Facilitators identify patients' needs by administering an intake needs assessment survey in the patient's preferred language. The purpose of this study is to determine if the areas (financial, transportation, supportive care, etc.) and level (high need versus low needs) of unmet needs predict non-adherence to chemotherapy and/or radiation appointments in a sample of Latino and Black cancer patients.

2. Methods

2.1 Participants

The current study uses data from the Cancer Portal Project for 1098 consecutive adult cancer patients. These patients underwent outpatient treatment at 10 hospital-based cancer clinics in NYC over the time period of March 2011 to June 2013, and reported being Latino, Hispanic, Black, or African-American. The ten hospital-based cancer clinics are located in ethnically diverse and underserved areas of NYC and offer services to patients with a wide variety of health insurances including Medicaid. For more information about the Cancer Portal Project, please visit the website: <http://www.mskcc.org/research/immigrant-health-disparities-service/integrated-care-access-network>. The study was approved by the MSKCC and participant cancer clinic sites Institutional Review Boards.

2.2 Procedure and Measures

Consecutive patients were approached in the waiting room before provider visits by bilingual Portal Service Access Facilitators. During his or her session the Portal Service Access Facilitators approached all patients who have not being previously recruited, explored interest, sought verbal consent for participation, administered the survey, identified patient's needs and conducted follow-ups to address patients unmet needs. In the initial contact patients are asked to complete an intake needs assessment survey, sociodemographic questions, and a set of standardized scales in the patient's preferred language (Spanish, English). For this study baseline information from the Cancer Portal Project was used. A detailed description of the project methodology and recruitment procedures has been published previously (Gany et al. 2011a). Sociodemographic questions assessed participants' age, marital status, income, education, employment status, health insurance coverage, ethnicity, language, and birth country. Cancer-related factors included cancer type, stage, years since diagnosis, treatments received, and comorbidities were also obtained.

The needs assessment included questions on needs for assistance with (1) financial support, (2) food and nutrition, (3) transportation, (4) housing, (5) supportive, social and psychosocial services, (6) health insurance issues, (7) health legal issues (i.e. health-care related) and (8) legal issues (i.e. migration, work-related, etc.). The needs assessment tool was developed by the investigators based on the previous research conducted by the research team, documenting the relevant unmet needs of ethnic minority and immigrant cancer patients, (Gany, et.al. 2011a 2011b). Patients were asked in their preferred language "Do you feel that you need assistance with..." the seven areas previously mentioned. Unmet needs were defined by patients responding positive (yes or no) to the question. A high unmet need was defined by the endorsement of four or more questions (upper quantile of the unmet needs index).

Non-adherence was defined by asking respondents if they have ever missed cancer-related appointments and, if so, for what type of treatment (chemotherapy, radiation). Due to the low frequency of missed appointments for any given treatment, a variable that included missed appointments for chemotherapy and radiation treatment was used.

2.3 Statistical Analysis

Statistical analyses were performed using the IBM SPSS software, version 20 (IBM North America, New York, NY, USA). Descriptive data are presented using means for continuous variables, and frequencies and percentages for categorical variables. Binary logistic regressions established significant associations between the sociodemographic characteristics, all unmet needs and patient's non-adherence to chemotherapy or radiation appointments, by race/ethnicity. All the unmet needs: (1) financial support, (2) food and nutrition, (3) transportation, (4) housing, (5) supportive, social and psychosocial services, (6) health insurance issues, (7) health legal issues and (8) legal issues, were included as potential predictors of non-adherence. First, we conducted univariate logistic models and the second step adjusting for demographic (age, gender, marital status, education, income) and medical/health variables (insurance status, time since diagnosis).

3. Results

The total sample for this study consisted of 1098 ethnic minority patients, 581 Latino and 517 Black cancer patients. A total of 1576 Latino cancer patients were approached for this study, 1098 patients completed the assessments. Characteristics of the patients are displayed in Table 1. Forty-two Latino cancer patients (7.4%) reported ever missing appointments for their cancer treatment (chemotherapy or radiation). Seventy-eight Black cancer patients reported missing treatment appointments (15.5%).

Latino patients' mean age was 54, the majority of Latino patients were female (61%), unmarried or not partnered (62%), unemployed (69%), had no income (44%) and had completed less than a high school degree (58%). About a third of the Latino sample reported being uninsured (15%) or having Medicaid for emergency care (21%). The most prevalent cancer diagnosis was breast (40%), followed by gastro-intestinal diagnoses (18%). Half of the Latino sample reported being diagnosed with advanced cancer (Stage III or IV) and, on average, had been diagnosed for nine months.

The mean age of Black patients was 57 years. The majority of the Black patients were women (63%), unmarried or not partnered (70%), 67% completed high school or more, 36% had no income, and 63% were unemployed. One third of the sample was uninsured (17%) or had Medicaid for emergency care (17%). The most common diagnosis for Black patients was breast cancer (34%), they had an average of ten months since diagnosis, and 59% had an advanced diagnosis (Stage III or IV). Half of the sample was born in the Caribbean (49%) and 38% in United States. The most frequent unmet needs were financial (Latinos: 78%, Blacks: 81%), transportation (Latinos: 69%, Blacks: 68%), and food assistance (Latinos: 42%, Blacks: 53%).

3.1 Hispanic and/or Latino Cancer Patients

Univariate logistic regressions were computed for non-adherence and socio-demographic variables. Significant predictors of missed appointments among the Latino patients were being not partnered (OR=2.34, CI=1.10-4.99), longer time since diagnosis (OR=1.17, CI=1.00-1.37), cancer recurrence (OR=2.12, CI=1.06-4.23), metastatic tumor (OR=2.08, CI=1.00-4.39) and English language preferred by patient (OR=2.36, CI=1.25-4.46).

Patients who reported needing assistance with housing (OR=3.10, CI=1.53-6.26) and health law issues (OR=2.51, CI=1.04-6.02) were more likely to report missing appointments. However, after adjusting for sociodemographic and medical characteristics (age, gender, marital status, income, educational level, insurance status and time since diagnosis), Latino patients who reported needing assistance in more than four areas (OR=2.41, CI=1.03-5.60) were more than two times as likely to report missing appointments.

3.2 Black African-American, Afro-Caribbean and/or African Immigrant Cancer Patients

Patients who reported having no income (OR=0.44, CI=0.20-0.95), Medicaid for emergency care (OR=0.10, CI=0.02-0.42), and being born in Africa (OR=0.38, CI=0.23-0.64) were less likely to report ever missing appointments for their cancer treatment. Patients born in the

Continental US (OR=2.44, CI=1.49-3.98) were more than two times as likely to report missing appointments.

After adjusting for demographic and health-related factors, patients needing supportive care services (OR=2.27, CI=1.18-4.34) were more than two times as likely to report ever missing appointments for their cancer treatment. In the adjusted analyses, patients needing assistance with health insurance (OR=3.80, CI=1.82-7.93), health law (OR=3.07, CI=1.37-6.87), housing issues (OR=3.25, CI=1.64-6.46), and with more than four unmet needs (OR=3.24, CI=1.74-6.04) were more than three times as likely to report missed appointments.

4. Discussion

This research examines socioeconomic unmet needs as potential predictors of nonadherence to chemotherapy and/or radiation appointments. Several studies and reports provide evidence that ethnic minority patients face numerous barriers to accessing optimal treatment (Formenti et al. 1995, Ashing-Giwa et al. 2010, Gany et al. 2011a), but this is the first study to identify areas of unmet needs as potential predictors of treatment nonadherence with a sample of Latino and Black cancer patients undergoing cancer treatment.

Our findings suggest that Latino and Black patients who experience four or more unmet needs, such as financial, food, housing, transportation, health insurance, legal, health law, supportive care services, and cancer diagnostic and treatment information, are at higher risk of being nonadherent with their cancer treatment appointments, regardless of their ethnicity and/or race. Patients who face housing instability are particularly at risk of not adhering to optimal treatment. Programs addressing housing needs of cancer patients are nearly nonexistent. As rents soar in cities such as New York, and incomes in vulnerable cancer populations decrease during treatment, such patients risk slipping into homelessness and/or treatment nonadherence. This issue needs to be addressed through innovative programs, potentially modeled on programs for persons living with HIV (US Department of Housing and Urban Development).

Previous studies (Formenti et al. 1995, Ashing-Giwa et al. 2010, Gany et al. 2011a, 2011b) have consistently found that patients facing practical and economic barriers have more difficulty adhering to their cancer treatment regimen. This research sheds important light on the detrimental effect of the experience of economic deprivation and unmet needs on the cancer care of ethnic minority patients. In the face of many competing priorities, patients facing practical problems might deprioritize their medical care, possibly affecting their long-term survival. For Black patients (US born African-Americans, Afro-Caribbeans, and Black African Immigrants) specific unmet needs, supportive care services, health insurance, and housing issues, predicted nonadherence to chemotherapy and/or radiation appointments. For the Latino patients, needing assistance with housing and legal issues related to health care emerged as significant predictors of missed appointments.

US-born Latinos and African-Americans were found to be at higher risk of missing appointments than those born abroad. For the Latino sample, longer time since the cancer diagnosis and higher/better English proficiency placed them at higher risk of nonadherence.

Black patients who report having no income and immigrants born in the Caribbean were less likely to report that they are missing their treatment appointments. In this sample, Latino and Black immigrants with limited English proficiency might be more motivated to use and adhere to their medical regimen once they have secure access to treatment and to the health care system. The finding that Black patients with no income were less likely to miss appointments was surprising and contrary to our expectations. However, although we chose not to include the data in this paper to minimize redundancy, we conducted further analyses with other measures of income and non-adherence to chemotherapy and/or radiation appointments. We found that 96% of the patients reporting having no income depended economically on their families and/or friends. When source of income (i.e. own earnings, retirement pension or family and friends) and income was entered into a logistic model, income was no longer a significant predictor and family financial support explained higher adherence to chemotherapy and/or radiation appointments. We speculate that because almost all patients with no income were financially supported by their families, they might be receiving other kinds of support from their families including practical support (transportation), and/or encouragement to attend treatment appointments.

4.1 Limitations

This study has limitations. The first limitation is that the current data consists of retrospective self-reports, and thus may be subjected to recall accuracy. The measure of adherence is based on a self-reported question. Although other studies have used a similar approach to study missed appointments and delays (Ashing-Giwa et al. 2010, Lebovits et al. 1990), a more robust and objective measure of adherence would be advantageous. The ideal way to measure adherence is through a prospective longitudinal study with medical record abstraction as the primary collection method. However, abstracting data from medical records from hundreds of patients for a multisite program such as this, presents logistic challenges due to inconsistencies in medical records and different formats (paper vs. electronic). This study offers a great contribution by identifying possible predictors of treatment adherence. Few studies have documented that indigent and low income patients often missed appointments due to logistic, practical and economic reasons (Abu-Rustum et al. 2001, Formenti et al. 1995, Hershman et al. 2009), relying on patients' qualitative reports (Formenti et al. 1995, Ell et al. 2009). This is the first study that focuses, from a quantitative standpoint, on the predictive value of identifying unmet logistic, practical and economic issues that might impede or delayed optimal access to treatment. Despite the obstacles, future studies should use objective sources of information such as medical chart review. A related limitation is that the lack of standardization of the measurement of adherence affects the comparability of our study to other studies. This study also does not address the complex pathways between unmet needs and adherence behaviors. Future studies using quantitative and qualitative means should explore the pathways of these associations.

4.2 Conclusions

In the past two decades important attention has been given to the detrimental impact of socioeconomic status on health care access and survival (Smedley, Stith, and Nelson 2003, American Cancer Society 1989, Mandelblatt, Yabroff, and Kerner 1999). Patient navigation programs have been developed to address known barriers to obtaining cancer care (Wells et

al. 2008). However other socioeconomic determinants, such as food insecurity, housing instability, and legal issues, and the impact of these areas of need on adherence and treatment completion, have received less attention. Clinicians can address patients' financial and practical issues by screening and exploring patients' economic pressures and how they might impact their cancer treatment adherence or overall adjustment, provide advice about the importance of following the medical regimen as prescribed and the possible consequences of non-adherence, refer patients to patient navigators and case managers to assist them with their financial needs, and/ or refer them to community-based agencies for financial and practical services.

These findings speak to the need to expand our conceptualizations of nonadherence risk factors to a broader biopsychosocial model and to the importance of assessing patient barriers to adherence. Interventions aiming to improve health equity and decrease cancer disparities should include culturally responsive comprehensive programs that address patients' practical, logistical and socioeconomic needs. These programs should incorporate a screening phase that includes a comprehensive evaluation of such needs. This contribution provides evidence about which logistical and practical issues often faced by low-income minority patients, such as housing instability, health insurance, health law issues, and supportive services needs, directly affect their cancer treatment.

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Table 1

Patient characteristics and odds ratios (OR) and 95% confidence intervals (CI) of sociodemographic characteristics predicting missed appointments in a sample of Latino and Black (African-American, Afro-Caribbean and/or African Immigrant) cancer patients (n=1098)

	Latinos (n=581)				Blacks (n=517)			
	n	(%)	Missed Appointments		n	(%)	Missed Appointments	
			OR	CI			OR	CI
Age ¹	54	(13.03)	.99	(.96-1.10)	57	(12.42)	.99	(.97-1.01)
Gender								
Female	355	(61)	1.00		323	(63)	1.00	
Male	226	(39)	.97	(.51-1.86)	194	(37)	.86	(.52-1.42)
Marital Status								
Married/Partnered	219	(38)	1.00		150	(30)	1.00	
Unmarried ¹	357	(62)	2.34	(1.10-4.99) *	341	(70)	1.48	(.83-2.66)
Education								
High School or more	234	(42)	1.00		338	(67)	1.00	
None to 5 th grade	103	(19)	.63	(.25-1.61)	25	(5)	.0	(0)
6 th to 11 th grade	218	(39)	.70	(.35-1.42)	144	(28)	1.11	(.66-1.90)
Monthly Income								
More than \$900	86	(15)	1.00		129	(27)	1.00	
\$0	252	(44)	.90	(.31-2.57)	176	(36)	.44	(.20-.95) *
\$1-\$900	233	(41)	1.59	(.58-4.34)	178	(37)	1.52	(.82-2.83)
Employment								
Employed	61	(11)	1.00		5	(10)	1.00	
Unemployed	391	(69)	.78	(.33-1.84)	306	(63)	2.01	(.77-5.30)
Retired	116	(20)	.07	(.01-.56) **	129	(27)	.94	(.32-2.73)
Insurance Status								
Other insurance ²	310	(64)	1.00		335	(66)	1.00	
Uninsured	73	(15)	.69	(.23-2.07)	86	(17)	.83	(.44-1.58)
Emergency Medicaid	102	(21)	.63	(.23-1.69)	89	(17)	.10	(.02-.42) **
Cancer Diagnosis								
Breast	230	(40)	1.28	(.68-2.42)	176	(34)	1.27	(.77-2.09)
Gastro-Intestinal	106	(18)	1.05	(.47-2.35)	78	(15)	.80	(.39-1.63)
Prostate	70	(12)	.35	(.08-1.48)	101	(20)	.73	(.38-1.40)
Gynecological	31	(5)	2.11	(.70-6.37)	36	(7)	1.14	(.46-2.83)
Stage								
I or II	114	(50)	1.00		80	(41)	1.00	
III or IV	115	(50)	1.65	(.68-3.99)	114	(59)	.92	(.43-1.96)
Years since Diagnosis ³	.76	(1.36)	1.17	(1.00-1.37) *	.86	(1.50)	1.00	(.97-1.04)
Cancer								

	Latinos (n=581)				Blacks (n=517)			
	n	(%)	Missed Appointments		n	(%)	Missed Appointments	
			OR	CI			OR	CI
Recurrence	105	(19)	2.12	(1.06-4.23) *	86	(18)	1.30	(.70-2.45)
Metastatic	93	(29)	2.08	(1.00-4.39) *	87	(31)	1.02	(.53-1.96)
Birth Region								
USA	43	(7)	2.20	(.87-5.56)	199	(39)	2.44	(1.49-3.98) ***
Dominican Republic	180	(31)	1.10	(.57-2.15)	--	--	--	--
Puerto Rico	129	(22)	1.12	(.53-2.34)	--	--	--	--
Mexico	71	(12)	.17	(.02)1.24	--	--	--	--
Ecuador	55	(10)	.22	(.03)1.65	--	--	--	--
Caribbean	--	--	--	--	254	(49)	.38	(.23-.64) ***
Africa	--	--	--	--	62	(12)	1.23	(.61-2.48)
Language Preferred								
Other ⁴	420	(73)	1.00		20	(5)	1.00	
English	159	(27)	2.36	(1.25-4.46) **	385	(95)	.63	(.25-1.61)
English Proficiency								
None	202	(39)	1.00		8	(2)	1.00	
Limited	200	(38)	.34	(.13-.86) *	30	(6)	.79	(.10-6.50)
Well/Fluent	118	(23)	.50	(.24-1.06)	445	(92)	.55	(.07-4.37)
Years in Mainland								
> 20 years	259	(50)	1.00		98	(34)	1.00	
< 5 years	98	(19)	.82	(.32-2.11)	102	(35)	.33	(.11-.97)
6-20 years	163	(31)	.72	(.32-1.67)	91	(31)	1.18	(.52-2.72)

Note.

* p < .05

** p < .01

*** p < .001

¹ Single, divorced, separated, widowed

² Other included Medicaid, Medicare, and private health insurances

³ Time since diagnosis in years

⁴ Other languages included Spanish French/Creole or Portuguese

Table 2

Frequency of patients' unmet needs (n=1098)

Unmet Needs	Latinos (n=581)		Blacks (517)	
	n	(%)	n	(%)
Financial	455	(78)	417	(81)
Transportation	400	(69)	352	(68)
Food	246	(42)	275	(53)
Health Insurance	59	(10)	81	(16)
Health Law	45	(7)	51	(10)
Legal	53	(9)	80	(16)
Housing	80	(14)	90	(17)
Supportive Services	97	(17)	115	(22)
High Needs ⁴	153	(26)	172	(33)

Note: Blacks included: African Americans born in USA, Afro-Caribbean immigrants, African immigrants and Black Latino immigrants

¹ For Age and Years since Diagnosis: Mean (Standard Deviation)

² Gastro-Intestinal: Anal, Appendix, Colon, Esophageal, Gallbladder, Gastric, Liver, Pancreatic, Rectal, Small Intestine, Stomach

³ Gynecological: cervical, ovarian, uterine, vaginal, and vulvar

⁴ High Needs: Four or more needs.

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Table 3

Odds ratios (OR) and 95% confidence intervals (CI) of unmet needs predicting missed appointments in a sample of Latino and Black (African-American, Afro-Caribbean and/or African Immigrant) cancer patients

Unmet Needs	Latino				Blacks			
	Univariate		Adjusted		Univariate		Adjusted	
	OR	CI	OR	CI	OR	CI	OR	CI
Financial	2.01	(.77-5.22)	2.12	(.61-7.38)	1.36	(.69-2.70)	1.74	(.72-4.21)
Transportation	1.29	(.63-2.63)	1.28	(.52-3.11)	.72	(.43-1.18)	1.01	(.53-1.90)
Food	1.32	(.59-2.98)	1.17	(.43-3.16)	.77	(.42-1.40)	.80	(.36-1.78)
Health Insurance	.11	(.03-1.46)	.38	(.05-3.09)	2.52	(1.43-4.45) ***	3.80	(1.82-7.93) ***
Health Law	2.51	(1.04-6.02) *	2.53	(.76-8.45)	2.38	(1.21-4.66) *	3.07	(1.37-6.87) *
Legal	.75	(.22-2.51)	.62	(.13-2.89)	.99	(.51-1.93)	1.45	(.62-3.36)
Housing	3.10	(1.53-6.26) *	1.49	(.53-4.15)	3.31	(1.93-5.65) ***	3.25	(1.64-6.46) ***
Supportive Care Services	1.79	(.87-3.69)	1.48	(.54-4.06)	1.90	(1.12-3.21) *	2.27	(1.18-4.34) *
High Needs ¹	3.36	(1.66-6.80) ***	2.41	(1.03-5.60) *	2.02	(1.24-3.29) *	3.24	(1.74-6.04) ***

Note.

¹ High Needs: Four or more needs. Adjusted for: Age, gender, marital status, educational level, monthly income, insurance status and time since diagnosis.

* p < .05

* 8 p < .01

*** p < .001