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Effect of patient navigation on satisfaction with cancer-related care

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Abstract

Purpose—Despite growing popularity of patient navigation (PN) as a means to improve cancer care quality and reduce cancer-related disparities, there are few well-designed controlled trials assessing the impact of PN on patient outcomes like satisfaction with care. The present controlled study examined effect of PN on satisfaction with cancer-related care.

Methods—Patients who presented with a symptom or abnormal screening test ($n=1788$) or definitive diagnosis ($n=445$) of breast, cervical, colorectal, or prostate cancer from eight Patient

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Compliance with ethical standards All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of interest The authors declare that they have no competing interests.

Informed consent Informed consent was obtained from all individual participants included in the study.

Navigator Research Program sites were included in one of two groups: intervention (PN) or comparison (usual care or usual care plus cancer educational materials). Trained patient navigators met with intervention group participants to help them assess and identify resources to address barriers to cancer diagnostic or treatment care. Using a validated instrument, we assessed participants' satisfaction with their cancer diagnostic or treatment care up to 3 months after diagnostic resolution of a cancer-related abnormality or within 3 months of initiation of cancer treatment.

Results—Overall, patients reported high satisfaction with diagnostic care and cancer treatment. There were no statistically significant differences between PN and control groups in satisfaction with cancer-related care ($p>0.05$). Hispanic and African American participants were less likely to report high satisfaction with cancer care when compared to White patients. Middle-aged participants with higher education, higher household income, private insurance, owning their own home, working full-time, and those whose primary language is English had higher satisfaction with cancer-related diagnostic care.

Conclusions—PN had no statistically significant effect on patients' satisfaction with cancer-related care. Further research is needed to define the patient populations who might benefit from PN, content of PN that is most useful, and services that might enhance PN.

Keywords

Patient navigation; Patient satisfaction; Cancer-related care; Disparities; Patient navigator

Introduction

Patient navigation (PN), a model of care coordination designed to reduce barriers to achieving positive health outcomes, is most frequently applied to cancer care [1–4]. Even though PN programs are widely and increasingly implemented to improve the quality of cancer care, studies that examine whether PN interventions are associated with higher patient satisfaction are still needed because of important limitations in the current literature [5, 6]. There are relatively few well-designed studies measuring satisfaction. Studies have measured satisfaction with PN [7–13], satisfaction with a statewide program that includes patient navigation [14], and satisfaction with health care [15–17] among patients who received PN. Most studies have found patients are highly satisfied with PN services or health care [7–16]. Four known studies have evaluated whether patients receiving usual care with PN were more satisfied with health care by comparing them to patients who received usual care without PN [16–18] or by comparing patients' ratings of satisfaction before and after participating in a PN intervention [19]. Two studies found that patients who received PN had higher health care satisfaction than those who did not receive PN [18, 19], whereas two studies did not find a difference between those who received PN and those who received usual care [16, 17]. There are a number of limitations in some of the previous research evaluating the effect of PN on satisfaction with care. Some studies did not have a control group, had a small sample size, or did not use psychometrically validated measures of patient satisfaction [7–16, 19–21]. Additionally, several PN studies that evaluated patient satisfaction were conducted with patients who had breast and/or cervical abnormalities, and thus, had limited male participation [7–10, 13, 15, 18, 20].

The Patient Navigation Research Program (PNRP) is a cooperative effort of ten project sites across the USA designed to assess the efficacy and cost-effectiveness of PN [22]. Eight grantees were funded by National Cancer Institute (with one grantee having two sites), and one was funded by American Cancer Society. All PNRP sites defined PN as “support and guidance offered to vulnerable persons with an abnormal cancer screening or cancer diagnosis with the goal of overcoming barriers to timely, quality care [22].” Sites in the program utilized various models of patient navigation designed to improve cancer care delivery to racial and ethnic minorities and those of low socioeconomic status. All patient navigators received standardized annual training in addition to local training [23]. All PNRP study participants experienced an abnormal cancer screening or symptom, or a diagnosis of breast, cervical, colorectal, or prostate cancer [22]. The present study combined data collected from eight of the ten PNRP sites which collected satisfaction data between 2007 and 2011. Data were collected on satisfaction with cancer-related care following diagnostic resolution of the cancer abnormality or within 3 months of the initiation of cancer treatment. The goal of this study was to evaluate the effect of PN on satisfaction with cancer-related care.

Materials and methods

Participants

As published elsewhere [22], patients eligible for the PNRP were those who had an abnormal screening test or clinical finding suspicious for cancer that warranted a referral to a specialist for one of four cancers: breast, colorectal, cervical, and prostate or had been diagnosed with one of the four cancers but had not yet started treatment. Patients were excluded if they (1) had a history of cancer (other than non-melanoma skin cancer), (2) were previously provided PN for a cancer screening abnormality, (3) were pregnant, or (4) were younger than 18 years of age [22]. For the present analysis, we included the subset of participants from eight of the ten sites who took part in the patient-reported outcomes survey which included assessment of satisfaction with cancer-related care after diagnostic resolution of the abnormality suspicious for cancer and/or within 3 months of initiation of cancer treatment.

Procedures

Institutional Review Boards for the eight participating sites located in Boston, Chicago, Denver, Columbus, Ohio; Rochester, San Antonio, and Tampa approved this study. Sites of participant recruitment included federally qualified and hospital affiliated primary or outpatient specialty care clinics. Each site allocated participants to one of two groups: (1) an intervention group that received PN or (2) a comparison group that received usual standard of care or usual standard care plus patient education. The study designs for each site varied according to their individual site's protocol (Table 1). These are described elsewhere and included individual randomized controlled trials, group randomized controlled trials, and quasi-experimental studies that included both control and intervention groups [16, 24–35].

All programs employed “lay” navigators, that is, navigators without clinical or professional training. In addition, some sites employed professional navigators (i.e., social work or nurse

navigators) to either supervise the navigators or to navigate the more complex cases. All patient navigators received annual standardized training from the PNRP, continuing education from the PNRP, and site-specific training [23]. Supervisors at each site observed navigators quarterly and rated them on a standardized competency checklist to ensure standardization of their activities. After enrollment, participants allocated to a PN intervention received support and guidance in accessing and managing the cancer care system, overcoming barriers, and activating timely, quality care provided in a culturally sensitive manner [22]. PN services were tailored to the needs of each individual patient, and more detail is provided about the delivery of PN in each project elsewhere [16, 24–35]. Once participants were enrolled in the study, patient navigators provided PN services until the time of diagnostic resolution of the cancer-related abnormality or completion of initial cancer treatment. Across sites, the median amount of time that patient navigators spent with individual patients was 60 min (interquartile range [IQR]: 30, 134). Participants included in comparison groups received the standard care delivered in their health care system.

All data were collected using standard methods approved by the PNRP steering committee [22]. The study investigators developed a standardized data code book with definitions of all variables and sources for collection of data. Clinical outcome data were collected through standardized chart review of clinical records. Questions from the sites regarding definitions of variables were reviewed by a senior team of adjudicators on a weekly basis, and the findings were reviewed monthly with all investigators. Eight sites collected satisfaction data and were included in this analysis. Each of these sites measured patient satisfaction with cancer-related care using the Patient Satisfaction with Cancer-Related Care (PSCC) scale [36] at one or two time points: (1) up to 3 months after diagnostic resolution of a cancer-related abnormality or (2) within 3 months of initiation of cancer treatment. The survey was administered one time if participants had diagnostic resolution of a cancer-related abnormality and that resolution did not indicate the participant had cancer or if the participant entered the study with a cancer diagnosis. It was administered twice if a participant had both a diagnostic resolution of a cancer-related abnormality, was diagnosed with cancer, and initiated cancer treatment.

The PSCC was administered by research staff through a variety of methods, including telephone interviews, in-person interviews, or mailed surveys. On average, the diagnostic resolution PSCC was administered 225 days (median; IQR: 198,253) after identification of the screening abnormality. On average, the cancer treatment PSCC was administered 184 days (median; IQR: 161,194) after treatment initiation. Depending on the site, demographic and clinical covariates were obtained from self-report data and data obtained from participants' medical records.

Determination of patient satisfaction with cancer-related care

Patient satisfaction with cancer care was measured by the PSCC scale in either English or Spanish. The PSCC is an 18-item validated measure that was developed to assess patients' satisfaction with the cancer care they received [36]. The PSCC was designed specifically for use in the PNRP and validated in previous research in both English and Spanish [36, 37]. Response options for each item of the PSCC range on a Likert scale from 1 (strongly

disagree) to 5 (strongly agree). A total scale score for the PSCC was calculated by summing all 18 items (possible range: 18–90), with a lower score indicating less satisfaction with cancer-related care. The PSCC has demonstrated strong internal consistency in English (Cronbach's alpha in two samples=0.95 and 0.96) [36] and Spanish (Cronbach's alpha=0.92) [37]. Analysis confirmed the reliability of the PSCC in our present sample (English Cronbach's alpha=0.94; Spanish Cronbach's alpha=0.94).

Description of covariates

In addition to intervention assignment (navigation, control), which was the primary predictor of satisfaction in both models predicting satisfaction with cancer care, we included the following demographic and clinical covariates: gender (male, female); age (less than 40, 40–49, 50–59, 60 years or older); race/ethnicity (Hispanic, Non-Hispanic White, Non-Hispanic Black, other race [including multiracial]); primary language (English, other [Spanish plus other languages]); birth country (USA, other); education (less than high school, high school diploma [including equivalency], some college/vocational/associate's degree, college graduate/professional degree); median household income by ZIP code (less than \$30,000; \$30,000 to less than \$40,000; \$40,000 to less than \$50,000; \$50,000 or more); insurance status (uninsured, public, private); employment status (none, part-time, full-time); housing status (rent, own, other); distance from the clinic in miles (less than 1.5; 1.5 to less than 4.0; 4.0 to less than 8.5; 8.5 or more); cancer type (breast, cervix, colorectal, prostate); and cancer stage at diagnosis for those with a cancer diagnosis, including precancerous conditions such as ductal carcinoma in situ or high grade intraepithelial cervical lesion. Two variables (median household income and distance from the clinic) were estimated using other sources of data. Median household income by ZIP code was based on 2000 United States Census data [38]. Distance from the clinic was estimated using the distance in miles from the centroid of the ZIP code in which a participant resided to the centroid of the ZIP code in which the clinic is located.

Statistical methods

To evaluate the effect of PN on satisfaction with cancer-related care, we compared scores on the PSCC in the patients receiving PN to PSCC scores from participants who did not receive PN when controlling for demographic and clinical covariates. Participants in the diagnostic resolution group were analyzed separately from participants who were receiving cancer treatment. Percentages of those who answered questions on the PSCC were calculated for our sample as well as for categories of selected demographic and clinical variables. Significant associations between demographic and clinical variables were determined using the chi-square test. Odds ratios for adjusted models were obtained using logistic regression. All models included enrollment status, gender, age, and race/ethnicity. The final model was obtained by starting with a full model including all covariates and eliminating variables with the highest *p* value one at a time. Variance was calculated using the Taylor-series linearization method with study site as the stratum and clinic as the primary sampling unit (PSU). A *p* value of 0.05 or less was considered to be statistically significant. All analyses were conducted using SAS-callable SUDAAN software version 10.0.1 [39] and SAS software version 9.2 [40] on the Windows 7 32-bit platform.

Results

Since participants in the diagnostic resolution group were analyzed separately from participants who were receiving cancer treatment, results of the analyses are presented separately. A total of 1788 participants (171 males and 1617 females; mean age 45 ± 2.0 years) responded to the PSCC within 3 months after diagnostic resolution of their cancer-related abnormality. Of those, 1758 individuals (98.3 %) provided complete data on all covariates included in the final adjusted model (see Appendix). Participants who completed the PSCC 3 months after diagnostic resolution had a mean PSCC score of 75.7 and standard error of 0.70. Similar to previous research using the PSCC [16], the PSCC distribution was left skewed (coefficient of skewness: -0.90) indicating a tendency toward reporting higher levels of satisfaction. Because of the non-normality of the data and lack of a sufficient transformation, a dichotomous score was created using the median as a cut-off (PSCC score of less than 75 versus 75 or higher).

The sample of participants receiving treatment for cancer or precancerous lesions included 445 individuals (54 males and 391 females; mean age 56 ± 0.87 years) who responded to the PSCC. Of those, 435 individuals (98 %) provided complete data on all covariates and were included in the final adjusted model. Participants who completed the PSCC within 3 months of initiating cancer treatment had a mean PSCC score of 78.2 with a standard error of 1.92. Similar to previous research using the PSCC [16], distribution of the responses was left skewed (coefficient of skewness: -1.68). Like the diagnostic resolution analyses, a dichotomous score was created using the median as a cut-off (PSCC score of less than 80 versus 80 or higher).

There were no significant differences in demographics between intervention groups indicating a good balance of group allocation (see Appendix). Table 2 shows the percentages of those with PSCC scores above and below the median of the study population for patients in the diagnostic resolution group and the cancer treatment group separately. We found no statistically significant difference between the PN and control groups in satisfaction with cancer-related care scores at diagnostic resolution or within 3 months of initiating cancer treatment ($p > 0.05$). Middle-aged, Whites, those with higher education, higher household income, having private insurance, owning their own home, working full-time, and those whose primary language is English had higher satisfaction with cancer-related care for the diagnostic resolution group (all associations $p < 0.05$). Among patients receiving treatment for cancer, there were no significant predictors of satisfaction with cancer-related care in bivariate analysis. However, trends appeared to be in the same direction for both navigated and control groups with patients with lower socioeconomic status and patients from an ethnic or racial minority group reporting lower levels of satisfaction.

Table 3 shows the odds ratios for the probability of having PSCC scores above the median at both diagnostic resolution and within 3 months of initiating cancer treatment. The PN group did not show significantly greater odds of having satisfaction with cancer-related care scores above the median when compared to the control group either at diagnostic resolution or within 3 months of initiating cancer treatment ($p > 0.05$). Age, gender, race/ethnicity, income,

and insurance status were significant predictors of having a satisfaction score above the median in the final model for those in the diagnostic resolution group. Participants who were female, 40 years and older, with higher income, and with private insurance were more likely to report higher PSCC scores. Hispanics were less likely to report a high PSCC score when compared to Whites. For the participants being treated for cancer, race/ethnicity, and cancer site were significant predictors of having a PSCC score above the median. Within 3 months of initiating cancer treatment, Black patients were less likely to report high PSCC scores when compared to White patients.

Discussion

This study indicates that, in general, patients who participated in the PNRP were highly satisfied with their cancer-related care, irrespective of their allocated groups (i.e., PN or control), which is similar to the findings of previous studies [16, 17]. Our findings differ from two known studies with control groups, which found that patients who received PN had higher satisfaction with health care [18, 19]. Our study differed from these previous studies in a number of ways. First, our multisite study with 2539 participants was much larger in scope than previous studies of the effect of PN on satisfaction with care, including a diverse group of participants and with both English and Spanish speakers. Our study also differed from one previous study [19] because our study used a validated and reliable measure of satisfaction and included a concurrent control group. These differences in sample size and measurement of satisfaction between the present study and other previous studies may account for the differences in findings.

After controlling for demographic and clinical factors, older age was a significant predictor of high patient satisfaction with cancer-related diagnostic care in this diverse multisite sample of patients. Patients receiving diagnostic care whose satisfaction scores were at or above the median were older than those who were below the median after receiving resolution of their cancer-related abnormality. This finding is similar to most research in patient satisfaction, which indicates that older adults are more likely to be satisfied with health care [41–43]. At the time of diagnostic resolution of a cancer abnormality, other characteristics generally related to higher levels of patient satisfaction in our study were linked to socio-economic status (higher income, having private insurance, home ownership). Our findings are similar to one previous review which found that patients with higher social status are more likely to report higher satisfaction with health care [42]. In contrast, in our study, Hispanic ethnicity predicted not reporting high patient satisfaction with cancer-related care at diagnostic resolution of a cancer-related abnormality, and Black race predicted not reporting high satisfaction with cancer-related care within 3 months of initiation of cancer treatment. Our study findings differ from two previous reviews which found no association between satisfaction with health care and ethnicity [41, 42]. These differing findings may reflect the fact that patient satisfaction research is extremely complex and heterogeneous, with multiple theoretical conceptualizations of satisfaction, and multiple, sometimes non-validated instruments measuring the satisfaction construct [41, 43–45].

Our study has a number of strengths and represents an important contribution to research evaluating whether PN is associated with patient satisfaction [7–11, 13–15, 17–21]. First,

our large sample collected as part of the PNRP represents multiple states, clinics, and PN models across the USA. Data were collected from eight sites evaluating PN programs using multiple study designs. This approach decreases the internal validity of the findings but increases the external validity. Second, our study used a scale that has been validated in both English and Spanish to measure patient's satisfaction with cancer-related care [36, 37]. Validated instruments measuring satisfaction with cancer-related care are rarely used in PN research [19] and sometimes lacking in patient satisfaction research related to other interventions or diseases. Third, unlike some previous PN satisfaction research, the present study included both men and women and also included patients presenting with abnormalities or diagnoses of one of four cancers. Fourth, unlike some previous research evaluating satisfaction with care [7–11, 13, 14, 19, 21], the present study included control participants who did not receive PN.

The study also has several limitations. First, because it is a multisite study, there is little information known regarding whether the findings would generalize to other populations not included in the eight study sites. However, due to its large sample size and the diversity of sites located in both urban and rural areas of the USA, it is likely that the sample represents a diverse group of patients obtaining health care in the USA. Also, one potential source of bias in the study was that data were collected only from patients who were able to obtain diagnostic resolution of their screening abnormality or initiate cancer treatment. The higher level of satisfaction may be due in part to the fact that the patients in the study were able to access recommended care. One additional limitation of the study is that two of the study variables, income and distance from the clinic, were estimated using 2000 U.S. Census data [38] and ZIP codes, rather than being collected through actual self-report data.

Although satisfaction with cancer-related care was generally high for most participants in the study, future research may evaluate whether there were specific aspects of satisfaction with cancer-related care that were improved through PN. In addition, future research could determine what services might enhance satisfaction with cancer-related care among those who reported low satisfaction. Future studies could also include patients who did not achieve the recommended health care goal or who required different types of cancer care, had different cancers, and had cancer care delivered at other points along the cancer continuum (i.e., survivorship). In addition, there are a number of other patient-reported outcomes which could be evaluated to determine whether PN affects patients' experiences with health care. Future research is also needed to determine which patients who receive PN are more likely to be satisfied with cancer care and the aspects of PN that increase the cancer care experience.

Conclusion

Patients who participated in the PNRP had high satisfaction with cancer-related care. PN had no significant effect on patient satisfaction with cancer-related care in a large sample with multiple PN models and with data collected at eight of the ten PNRP study sites in the USA. Future studies should include participants who did not obtain recommended care, should evaluate the context and patient populations in which PN is associated with high

satisfaction, and should evaluate additional patient-reported outcomes to more fully evaluate the effectiveness of PN in monitoring and improving patients' experiences with cancer care.

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Appendix

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Table 1

Study site characteristics

Characteristic	Site A	Site B	Site C	Site D	Site E	Site F	Site G	Site H
Targeted cancer sites								
Breast	X	X	X	X	X	X	X	X
Cervical	X	X		X	X		X	
Colorectal			X	X	X	X		X
Prostate			X	X				
Design								
Randomized—individual level			X		X			
Randomized—group level				X				X
Nonrandomized	X	X	X				X	
Unit of assignment								
Individual			X			X		
Group	X	X	X	X			X	X
Controls								
Actively recruited controls			X	X	X			
Medical record-based controls	X	X	X			X	X	X
Clinics/care sites number (no. of navigated sites/no. of control sites)	6 (3/3)	9 (5/4)	1	1	16 (8/8)	11	5 (2/3)	12 (7/5)
Background of patient navigators								
Lay	X	X	X	X	X	X	X	X
Professional		X	X				X	
Enrollment as of 1 June 2011								
Total participants	3042	1023	513	1249	674	344	1052	1320
Participants with cancer	196	118	0	171	27	321	9	53

Table 2

High satisfaction with care (median cut-off) by demographics

Independent variable	Diagnostic resolution		p value	Cancer treatment		p value
	High satisfaction (n=938)	Not high satisfaction (n=850)		High satisfaction (n=221)	Not high satisfaction (n=226)	
Group allocation			0.6897			0.2345
Control	53.9 % (320)	46.1 % (274)		52.3 % (102)	47.7 % (93)	
Patient navigation	51.8 % (618)	48.2 % (576)		47.2 % (119)	52.8 % (133)	
Gender			0.0996			0.5159
Female	54.2 % (876)	45.8 % (741)		50.9 % (200)	49.1 % (193)	
Male	36.3 % (62)	63.7 % (109)		38.9 % (21)	61.1 % (33)	
Age categorized			0.0249			0.2489
<40	47.5 % (290)	52.5 % (321)		32.3 % (10)	67.7 % (21)	
40<49	57.9 % (263)	42.1 % (191)		47.2 % (42)	52.8 % (47)	
50<60	54.9 % (213)	45.1 % (175)		49.4 % (80)	50.6 % (82)	
60+	51.3 % (172)	48.7 % (163)		53.9 % (89)	46.1 % (76)	
Race/ethnicity			0.0009			0.2032
Black	52.2 % (229)	47.8 % (210)		42.7 % (47)	57.3 % (63)	
White	63.2 % (421)	36.8 % (245)		55.4 % (138)	44.6 % (111)	
Hispanic	41.9 % (272)	58.1 % (377)		38.6 % (27)	61.4 % (43)	
Other	47.1 % (16)	52.9 % (18)		50 % (9)	50 % (9)	
Primary language			0.0160			0.4712
English	56.1 % (741)	43.9 % (581)		50 % (203)	50 % (203)	
Other	42.3 % (197)	57.7 % (269)		43.9 % (18)	56.1 % (23)	
Birth country			0.0216			0.1064
Outside of USA	44.3 % (217)	55.7 % (273)		41.7 % (25)	58.3 % (35)	
USA	55.8 % (611)	44.2 % (484)		50.4 % (194)	49.6 % (191)	
Education			0.0041			0.4125
Less than high school	42.3 % (161)	57.7 % (220)		44 % (40)	56 % (51)	
High school diploma	49.8 % (159)	50.2 % (160)		51.9 % (56)	48.1 % (52)	
Some college/associate	56.7 % (234)	43.3 % (179)		50 % (69)	50 % (69)	

Independent variable	Diagnostic resolution		p value Chi-square ^a	Cancer treatment		p value Chi-square ^d
	High satisfaction (n=938)	Not high satisfaction (n=850)		High satisfaction (n=221)	Not high satisfaction (n=226)	
College grad/professional	63.7 % (226)	36.3 % (129)		50.9 % (54)	49.1 % (52)	
Median household income by ZIP			0.0158			0.2198
Less than \$30,000	51.1 % (165)	48.9 % (158)		45.2 % (42)	54.8 % (51)	
\$30,000 to 39,999	47.4 % (336)	52.6 % (373)		46.6 % (61)	53.4 % (70)	
\$40,000 to 49,999	49.2 % (153)	50.8 % (158)		43.7 % (38)	56.3 % (49)	
\$50,000 or more	64.7 % (275)	35.3 % (150)		60.5 % (78)	39.5 % (51)	
Insurance status			0.0027			0.3534
Uninsured	44 % (219)	56 % (279)		34.7 % (25)	65.3 % (47)	
Public	47.3 % (301)	52.7 % (336)		48.6 % (67)	51.4 % (71)	
Private	64.2 % (413)	35.8 % (230)		54.2 % (128)	45.8 % (108)	
Employment status			0.0509			0.7121
Unemployed	47.7 % (358)	52.3 % (393)		48.2 % (133)	51.8 % (143)	
Part-time	53.5 % (138)	46.5 % (120)		43.5 % (20)	56.5 % (26)	
Full-time	58.9 % (308)	41.1 % (215)		53.7 % (66)	46.3 % (57)	
Housing status			0.0342			0.1761
Renting	48.2 % (289)	51.8 % (310)		39.4 % (65)	60.6 % (100)	
Own home	61.2 % (377)	38.8 % (239)		56.4 % (132)	43.6 % (102)	
Other	49.1 % (83)	50.9 % (86)		50 % (21)	50 % (21)	
Distance			0.4598			0.1019
<1.5	51.3 % (194)	48.7 % (184)		41.4 % (12)	58.6 % (17)	
1.5–<4.0	52.9 % (210)	47.1 % (187)		40.5 % (47)	59.5 % (69)	
4–<8.5	47.6 % (205)	52.4 % (226)		58 % (87)	42 % (63)	
8.5+	51.5 % (211)	48.5 % (199)		50.7 % (73)	49.3 % (71)	
Cancer site				0.1331		0.0861
Breast	54.9 % (612)	45.1 % (502)		52.2 % (178)	47.8 % (163)	
Cervix	52.4 % (259)	47.6 % (235)		30 % (6)	70 % (14)	
Colorectal	38.5 % (10)	61.5 % (16)		50.8 % (33)	49.2 % (32)	
Prostate	37 % (57)	63 % (97)		19.0 % (4)	81 % (17)	
Stage						0.0750

Independent variable	Diagnostic resolution		Cancer treatment		<i>p</i> value Chi-square ^a
	High satisfaction (<i>n</i> =938)	Not high satisfaction (<i>n</i> =850)	High satisfaction (<i>n</i> =221)	Not high satisfaction (<i>n</i> =226)	
Stage 0			42.9 % (18)	57.1 % (24)	
Stage 1			58.1 % (72)	41.9 % (52)	
Stage 2			56 % (75)	44 % (59)	
Stage 3			46.2 % (43)	53.8 % (50)	
Stage 4			30.8 % (8)	69.2 % (18)	
CIN2 or CIN3			30 % (3)	70 % (7)	

^aRow percentages reported; *p* value for Chi-square test of association

Table 3
Logistic regression results with high satisfaction with care (median cut-off) as the dependent variable

Independent variable	Diagnostic resolution		<i>p</i> value Wald χ^2	Cancer treatment		<i>p</i> value Wald χ^2
	Odds ratio	Lower 95 % confidence limit		Odds ratio	Lower 95 % confidence limit	
Group allocation			0.5808			0.6059
Control	1.00	1.00		1.00	1.00	
Patient navigation	1.07	0.85		0.9	0.65	
Gender			0.0462			0.9709
Female	2.55	1.02		0.98	0.29	
Male	1.00	1.00		1.00	1.00	
Age categorized			0.0008			0.0714
<40	1.00	1.00		1.00	1.00	
40–49	1.57	1.26		1.64	0.86	
50–<60	1.45	1.10		1.79	0.63	
60+	1.45	1.04		2.20	0.91	
Race/ethnicity			<0.0001			0.0053
Black	0.85	0.62		0.64	0.49	
White	1.00	1.00		1.00	1.00	
Hispanic	0.56	0.44		0.59	0.23	
Other	0.54	0.26		0.73	0.31	
Median household income by ZIP			0.0037			
Less than \$30,000	0.84	0.62				
\$30,000 to 39,999	0.67	0.53				
\$40,000 to 49,999	0.68	0.54				
\$50,000 or more	1.00	1.00				
Insurance status			0.0104			
Uninsured	0.72	0.57				
Public	0.69	0.50				
Private	1.00	1.00				
Cancer site			0.0709			0.0414

Independent variable	Diagnostic resolution			Cancer treatment			<i>p</i> value Wald F ^a
	Odds ratio	Lower 95 % confidence limit	Upper 95 % confidence limit	Odds ratio	Lower 95 % confidence limit	Upper 95 % confidence limit	
Breast	0.89	0.35	2.27	4.47	0.74	26.98	
Cervix	1.08	0.48	2.40	2.80	0.34	22.90	
Colorectal	0.69	0.41	1.17	4.22	0.98	18.18	
Prostate	1.00	1.00	1.00	1.00	1.00	1.00	

^a *p* value for F test from SUDAAN PROC LOGIST with site as stratum and clinic as PSU

Table 4
Site A high satisfaction with care (median cut-off) by demographics

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=134)	Not high satisfaction (n=109)	High satisfaction (n=9)	Not high satisfaction (n=19)
Group allocation				
Control	22.39 % (30)	19.27 % (21)	0.00 % (0)	0.00 % (0)
Patient navigation	77.61 % (104)	80.73 % (88)	100.0 % (9)	100.0 % (19)
Gender				
Female	100.0 % (134)	100.0 % (109)	100.0 % (9)	100.0 % (19)
Male	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Age categorized				
<40	57.46 % (77)	61.47 % (67)	0.00 % (0)	21.05 % (4)
40–<49	29.10 % (39)	19.27 % (21)	22.22 % (2)	26.32 % (5)
50–<60	9.70 % (13)	15.60 % (17)	66.67 % (6)	36.84 % (7)
60+	3.73 % (5)	3.67 % (4)	11.11 % (1)	15.79 % (3)
Race/ethnicity				
Black	44.78 % (60)	26.61 % (29)	77.78 % (7)	73.68 % (14)
White	0.75 % (1)	0.92 % (1)	11.11 % (1)	10.53 % (2)
Hispanic	54.48 % (73)	71.56 % (78)	11.11 % (1)	10.53 % (2)
Other	0.00 % (0)	0.92 % (1)	0.00 % (0)	5.26 % (1)
Primary language				
English	49.25 % (66)	34.86 % (38)	100.0 % (9)	84.21 % (16)
Other	50.75 % (68)	65.14 % (71)	0.00 % (0)	15.79 % (3)
Birth country				
Outside of USA	50.39 % (64)	66.67 % (70)	0.00 % (0)	15.79 % (3)
USA	49.61 % (63)	33.33 % (35)	100.0 % (8)	84.21 % (16)
Education				
Less than high school	40.31 % (52)	49.52 % (52)	50.00 % (4)	26.32 % (5)
High school diploma	31.01 % (40)	28.57 % (30)	0.00 % (0)	15.79 % (3)
Some college/associate	21.71 % (28)	15.24 % (16)	25.00 % (2)	26.32 % (5)
College grad/professional	6.98 % (9)	6.67 % (7)	25.00 % (2)	31.58 % (6)
Median household income by ZIP				
Less than \$30,000	35.61 % (47)	17.76 % (19)	44.44 % (4)	27.78 % (5)
\$30,000 to 39,999	47.73 % (63)	56.07 % (60)	11.11 % (1)	50.00 % (9)
\$40,000 to 49,999	12.12 % (16)	20.56 % (22)	33.33 % (3)	16.67 % (3)
\$50,000 or more	4.55 % (6)	5.61 % (6)	11.11 % (1)	5.56 % (1)
Insurance status				
Uninsured	60.90 % (81)	72.48 % (79)	0.00 % (0)	5.26 % (1)
Public	31.58 % (42)	22.02 % (24)	75.00 % (6)	52.63 % (10)
Private	7.52 % (10)	5.50 % (6)	25.00 % (2)	42.11 % (8)
Employment status				

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=134)	Not high satisfaction (n=109)	High satisfaction (n=9)	Not high satisfaction (n=19)
Unemployed	50.76 % (67)	51.85 % (56)	75.00 % (6)	68.42 % (13)
Part-time	26.52 % (35)	23.15 % (25)	0.00 % (0)	5.26 % (1)
Full-time	22.73 % (30)	25.00 % (27)	25.00 % (2)	26.32 % (5)
Housing status				
Renting	54.26 % (70)	65.38 % (68)	50.00 % (4)	52.63 % (10)
Own home	23.26 % (30)	16.35 % (17)	37.50 % (3)	36.84 % (7)
Other	22.48 % (29)	18.27 % (19)	12.50 % (1)	10.53 % (2)
Distance				
<1.5	49.62 % (66)	55.96 % (61)	0.00 % (0)	11.11 % (2)
1.5-<4.0	28.57 % (38)	22.02 % (24)	11.11 % (1)	11.11 % (2)
4-<8.5	13.53 % (18)	12.84 % (14)	55.56 % (5)	27.78 % (5)
8.5+	8.27 % (11)	9.17 % (10)	33.33 % (3)	50.00 % (9)
Cancer site				
Breast	50.75 % (68)	48.62 % (53)	66.67 % (6)	63.16 % (12)
Cervix	49.25 % (66)	51.38 % (56)	33.33 % (3)	36.84 % (7)
Colorectal	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Prostate	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Stage				
Stage 0			0.00 % (0)	0.00 % (0)
Stage 1			55.56 % (5)	50.00 % (7)
Stage 2			44.44 % (4)	21.43 % (3)
Stage 3			0.00 % (0)	28.57 % (4)
Stage 4			0.00 % (0)	0.00 % (0)
CIN2 or CIN3			0.00 % (0)	0.00 % (0)

Table 5
Site B high satisfaction with care (median cut-off) by demographics

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=134)	Not high satisfaction (n=109)	High satisfaction (n=9)	Not high satisfaction (n=19)
Group allocation				
Control	22.39 % (30)	19.27 % (21)	0.00 % (0)	0.00 % (0)
Patient navigation	77.61 % (104)	80.73 % (88)	100.0 % (9)	100.0 % (19)
Gender				
Female	100.0 % (134)	100.0 % (109)	100.0 % (9)	100.0 % (19)
Male	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Age categorized				
<40	57.46 % (77)	61.47 % (67)	0.00 % (0)	21.05 % (4)
40–<49	29.10 % (39)	19.27 % (21)	22.22 % (2)	26.32 % (5)
50–<60	9.70 % (13)	15.60 % (17)	66.67 % (6)	36.84 % (7)
60+	3.73 % (5)	3.67 % (4)	11.11 % (1)	15.79 % (3)
Race/ethnicity				
Black	44.78 % (60)	26.61 % (29)	77.78 % (7)	73.68 % (14)
White	0.75 % (1)	0.92 % (1)	11.11 % (1)	10.53 % (2)
Hispanic	54.48 % (73)	71.56 % (78)	11.11 % (1)	10.53 % (2)
Other	0.00 % (0)	0.92 % (1)	0.00 % (0)	5.26 % (1)
Primary language				
English	49.25 % (66)	34.86 % (38)	100.0 % (9)	84.21 % (16)
Other	50.75 % (68)	65.14 % (71)	0.00 % (0)	15.79 % (3)
Birth country				
Outside of USA	50.39 % (64)	66.67 % (70)	0.00 % (0)	15.79 % (3)
USA	49.61 % (63)	33.33 % (35)	100.0 % (8)	84.21 % (16)
Education				
Less than high school	40.31 % (52)	49.52 % (52)	50.00 % (4)	26.32 % (5)
High school diploma	31.01 % (40)	28.57 % (30)	0.00 % (0)	15.79 % (3)
Some college/associate	21.71 % (28)	15.24 % (16)	25.00 % (2)	26.32 % (5)
College grad/professional	6.98 % (9)	6.67 % (7)	25.00 % (2)	31.58 % (6)
Median household income by ZIP				
Less than \$30,000	35.61 % (47)	17.76 % (19)	44.44 % (4)	27.78 % (5)
\$30,000 to 39,999	47.73 % (63)	56.07 % (60)	11.11 % (1)	50.00 % (9)
\$40,000 to 49,999	12.12 % (16)	20.56 % (22)	33.33 % (3)	16.67 % (3)
\$50,000 or more	4.55 % (6)	5.61 % (6)	11.11 % (1)	5.56 % (1)
Insurance status				
Uninsured	60.90 % (81)	72.48 % (79)	0.00 % (0)	5.26 % (1)
Public	31.58 % (42)	22.02 % (24)	75.00 % (6)	52.63 % (10)
Private	7.52 % (10)	5.50 % (6)	25.00 % (2)	42.11 % (8)
Employment status				

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=134)	Not high satisfaction (n=109)	High satisfaction (n=9)	Not high satisfaction (n=19)
Unemployed	50.76 % (67)	51.85 % (56)	75.00 % (6)	68.42 % (13)
Part-time	26.52 % (35)	23.15 % (25)	0.00 % (0)	5.26 % (1)
Full-time	22.73 % (30)	25.00 % (27)	25.00 % (2)	26.32 % (5)
Housing status				
Renting	54.26 % (70)	65.38 % (68)	50.00 % (4)	52.63 % (10)
Own home	23.26 % (30)	16.35 % (17)	37.50 % (3)	36.84 % (7)
Other	22.48 % (29)	18.27 % (19)	12.50 % (1)	10.53 % (2)
Distance				
<1.5	49.62 % (66)	55.96 % (61)	0.00 % (0)	11.11 % (2)
1.5-<4.0	28.57 % (38)	22.02 % (24)	11.11 % (1)	11.11 % (2)
4-<8.5	13.53 % (18)	12.84 % (14)	55.56 % (5)	27.78 % (5)
8.5+	8.27 % (11)	9.17 % (10)	33.33 % (3)	50.00 % (9)
Cancer site				
Breast	50.75 % (68)	48.62 % (53)	66.67 % (6)	63.16 % (12)
Cervix	49.25 % (66)	51.38 % (56)	33.33 % (3)	36.84 % (7)
Colorectal	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Prostate	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Stage				
Stage 0			0.00 % (0)	0.00 % (0)
Stage 1			55.56 % (5)	50.00 % (7)
Stage 2			44.44 % (4)	21.43 % (3)
Stage 3			0.00 % (0)	28.57 % (4)
Stage 4			0.00 % (0)	0.00 % (0)
CIN2 or CIN3			0.00 % (0)	0.00 % (0)

Table 6
Site C high satisfaction with care (median cut-off) by demographics

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=50)	Not high satisfaction (n=73)	High satisfaction (n=0)	Not high satisfaction (n=0)
Group allocation				
Control	2.00 % (1)	1.37 % (1)		
Patient navigation	98.00 % (49)	98.63 % (72)		
Gender				
Female	0.00 % (0)	0.00 % (0)		
Male	100.0 % (50)	100.0 % (73)		
Age categorized				
<40	0.00 % (0)	0.00 % (0)		
40—<49	0.00 % (0)	2.74 % (2)		
50—<60	30.00 % (15)	20.55 % (15)		
60+	70.00 % (35)	76.71 % (56)		
Race/ethnicity				
Black	60.00 % (30)	63.01 % (46)		
White	36.00 % (18)	27.40 % (20)		
Hispanic	4.00 % (2)	6.85 % (5)		
Other	0.00 % (0)	2.74 % (2)		
Primary language				
English	98.00 % (49)	95.89 % (70)		
Other	2.00 % (1)	4.11 % (3)		
Birth country				
Outside of USA	2.00 % (1)	5.48 % (4)		
USA	98.00 % (49)	94.52 % (69)		
Education				
Less than high school	12.00 % (6)	9.59 % (7)		
High school diploma	22.00 % (11)	28.77 % (21)		
Some college/associate	54.00 % (27)	50.68 % (37)		
College grad/professional	12.00 % (6)	10.96 % (8)		
Median household income by ZIP				
Less than \$30,000	16.00 % (8)	29.17 % (21)		
\$30,000 to 39,999	30.00 % (15)	31.94 % (23)		
\$40,000 to 49,999	26.00 % (13)	15.28 % (11)		
\$50,000 or more	28.00 % (14)	23.61 % (17)		
Insurance status				
Uninsured	0.00 % (0)	0.00 % (0)		
Public	78.00 % (39)	79.45 % (58)		
Private	22.00 % (11)	20.55 % (15)		
Employment status				

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=50)	Not high satisfaction (n=73)	High satisfaction (n=0)	Not high satisfaction (n=0)
Unemployed	58.00 % (29)	76.39 % (55)		
Part-time	14.00 % (7)	9.72 % (7)		
Full-time	28.00 % (14)	13.89 % (10)		
Housing status				
Renting	44.00 % (22)	31.94 % (23)		
Own home	48.00 % (24)	58.33 % (42)		
Other	8.00 % (4)	9.72 % (7)		
Distance				
<1.5	0.00 % (0)	1.37 % (1)		
1.5-<4.0	10.00 % (5)	6.85 % (5)		
4-<8.5	20.00 % (10)	17.81 % (13)		
8.5+	70.00 % (35)	73.97 % (54)		
Cancer site				
Breast	0.00 % (0)	0.00 % (0)		
Cervix	0.00 % (0)	0.00 % (0)		
Colorectal	0.00 % (0)	0.00 % (0)		
Prostate	100.0 % (50)	100.0 % (73)		
Stage				
Stage 0				
Stage 1				
Stage 2				
Stage 3				
Stage 4				
CIN2 or CIN3				

Table 7
Site D high satisfaction with care (median cut-off) by demographics

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=123)	Not high satisfaction (n=200)	High satisfaction (n=29)	Not high satisfaction (n=68)
Group allocation				
Control	46.34 % (57)	51.50 % (103)	48.28 % (14)	50.00 % (34)
Patient navigation	53.66 % (66)	48.50 % (97)	51.72 % (15)	50.00 % (34)
Gender				
Female	91.87 % (113)	82.00 % (164)	82.76 % (24)	60.29 % (41)
Male	8.13 % (10)	18.00 % (36)	17.24 % (5)	39.71 % (27)
Age categorized				
<40	8.13 % (10)	16.00 % (32)	6.90 % (2)	4.41 % (3)
40–<49	37.40 % (46)	29.50 % (59)	27.59 % (8)	10.29 % (7)
50–<60	29.27 % (36)	30.50 % (61)	31.03 % (9)	45.59 % (31)
60+	25.20 % (31)	24.00 % (48)	34.48 % (10)	39.71 % (27)
Race/ethnicity				
Black	21.95 % (27)	15.00 % (30)	24.14 % (7)	17.65 % (12)
White	26.83 % (33)	23.50 % (47)	27.59 % (8)	29.41 % (20)
Hispanic	47.15 % (58)	60.00 % (120)	44.83 % (13)	52.94 % (36)
Other	4.07 % (5)	1.50 % (3)	3.45 % (1)	0.00 % (0)
Primary language				
English	76.42 % (94)	63.50 % (127)	75.86 % (22)	76.47 % (52)
Other	23.58 % (29)	36.50 % (73)	24.14 % (7)	23.53 % (16)
Birth country				
Outside of USA	25.20 % (31)	38.00 % (76)	24.14 % (7)	25.00 % (17)
USA	74.80 % (92)	62.00 % (124)	75.86 % (22)	75.00 % (51)
Education				
Less than high school	32.50 % (39)	49.22 % (95)	41.38 % (12)	38.81 % (26)
High school diploma	25.00 % (30)	28.50 % (55)	24.14 % (7)	23.88 % (16)
Some college/associate	31.67 % (38)	13.99 % (27)	20.69 % (6)	25.37 % (17)
College grad/professional	10.83 % (13)	8.29 % (16)	13.79 % (4)	11.94 % (8)
Median household income by ZIP				
Less than \$30,000	21.85 % (26)	20.20 % (40)	32.14 % (9)	24.24 % (16)
\$30,000 to 39,999	36.97 % (44)	48.48 % (96)	35.71 % (10)	42.42 % (28)
\$40,000 to 49,999	26.89 % (32)	22.73 % (45)	21.43 % (6)	25.76 % (17)
\$50,000 or more	14.29 % (17)	8.59 % (17)	10.71 % (3)	7.58 % (5)
Insurance status				
Uninsured	48.78 % (60)	46.50 % (93)	48.28 % (14)	58.82 % (40)
Public	38.21 % (47)	43.00 % (86)	37.93 % (11)	32.35 % (22)
Private	13.01 % (16)	10.50 % (21)	13.79 % (4)	8.82 % (6)
Employment status				

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=123)	Not high satisfaction (n=200)	High satisfaction (n=29)	Not high satisfaction (n=68)
Unemployed	66.67 % (82)	67.34 % (134)	65.52 % (19)	76.47 % (52)
Part-time	14.63 % (18)	17.09 % (34)	3.45 % (1)	11.76 % (8)
Full-time	18.70 % (23)	15.58 % (31)	31.03 % (9)	11.76 % (8)
Housing status				
Renting	53.28 % (65)	58.08 % (115)	48.28 % (14)	56.72 % (38)
Own home	32.79 % (40)	28.28 % (56)	37.93 % (11)	26.87 % (18)
Other	13.93 % (17)	13.64 % (27)	13.79 % (4)	16.42 % (11)
Distance				
<1.5	6.56 % (8)	10.50 % (21)	10.34 % (3)	11.94 % (8)
1.5-<4.0	46.72 % (57)	50.50 % (101)	44.83 % (13)	46.27 % (31)
4-<8.5	28.69 % (35)	24.50 % (49)	37.93 % (11)	28.36 % (19)
8.5+	18.03 % (22)	14.50 % (29)	6.90 % (2)	13.43 % (9)
Cancer site				
Breast	88.62 % (109)	81.50 % (163)	68.97 % (20)	52.94 % (36)
Cervix	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Colorectal	5.69 % (7)	6.50 % (13)	17.24 % (5)	22.06 % (15)
Prostate	5.69 % (7)	12.00 % (24)	13.79 % (4)	25.00 % (17)
Stage				
Stage 0			14.81 % (4)	12.28 % (7)
Stage 1			25.93 % (7)	12.28 % (7)
Stage 2			18.52 % (5)	26.32 % (15)
Stage 3			29.63 % (8)	29.82 % (17)
Stage 4			11.11 % (3)	19.30 % (11)
CIN2 or CIN3			0.00 % (0)	0.00 % (0)

Table 8
Site E high satisfaction with care (median cut-off) by demographics

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=361)	Not high satisfaction (n=186)	High satisfaction (n=9)	Not high satisfaction (n=16)
Group allocation				
Control	41.83 % (151)	39.78 % (74)	22.22 % (2)	18.75 % (3)
Patient navigation	58.17 % (210)	60.22 % (112)	77.78 % (7)	81.25 % (13)
Gender				
Female	99.45 % (359)	100.0 % (186)	100.0 % (9)	100.0 % (16)
Male	0.55 % (2)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Age categorized				
<40	24.10 % (87)	36.02 % (67)	22.22 % (2)	37.50 % (6)
40–<49	29.92 % (108)	24.19 % (45)	44.44 % (4)	25.00 % (4)
50–<60	26.87 % (97)	25.81 % (48)	33.33 % (3)	18.75 % (3)
60+	19.11 % (69)	13.98 % (26)	0.00 % (0)	18.75 % (3)
Race/ethnicity				
Black	15.24 % (55)	26.88 % (50)	33.33 % (3)	18.75 % (3)
White	80.33 % (290)	65.59 % (122)	66.67 % (6)	75.00 % (12)
Hispanic	2.22 % (8)	4.84 % (9)	0.00 % (0)	6.25 % (1)
Other	2.22 % (8)	2.69 % (5)	0.00 % (0)	0.00 % (0)
Primary language				
English	96.95 % (350)	94.62 % (176)	88.89 % (8)	100.0 % (16)
Other	3.05 % (11)	5.38 % (10)	11.11 % (1)	0.00 % (0)
Birth country				
Outside of USA	7.20 % (26)	7.53 % (14)	22.22 % (2)	6.25 % (1)
USA	92.80 % (335)	92.47 % (172)	77.78 % (7)	93.75 % (15)
Education				
Less than high school	1.39 % (5)	4.86 % (9)	0.00 % (0)	6.25 % (1)
High school diploma	13.57 % (49)	11.35 % (21)	11.11 % (1)	25.00 % (4)
Some college/associate	31.86 % (115)	35.14 % (65)	44.44 % (4)	18.75 % (3)
College grad/professional	53.19 % (192)	48.65 % (90)	44.44 % (4)	50.00 % (8)
Median household income by ZIP				
Less than \$30,000	8.03 % (29)	11.29 % (21)	22.22 % (2)	12.50 % (2)
\$30,000 to 39,999	26.04 % (94)	36.02 % (67)	33.33 % (3)	50.00 % (8)
\$40,000 to 49,999	12.47 % (45)	11.83 % (22)	0.00 % (0)	6.25 % (1)
\$50,000 or more	53.46 % (193)	40.86 % (76)	44.44 % (4)	31.25 % (5)
Insurance status				
Uninsured	1.12 % (4)	6.63 % (12)	11.11 % (1)	12.50 % (2)
Public	10.92 % (39)	16.57 % (30)	22.22 % (2)	12.50 % (2)
Private	87.96 % (314)	76.80 % (139)	66.67 % (6)	75.00 % (12)
Employment status				

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=361)	Not high satisfaction (n=186)	High satisfaction (n=9)	Not high satisfaction (n=16)
Unemployed	30.08 % (108)	35.68 % (66)	11.11 % (1)	25.00 % (4)
Part-time	13.65 % (49)	11.35 % (21)	22.22 % (2)	12.50 % (2)
Full-time	56.27 % (202)	52.97 % (98)	66.67 % (6)	62.50 % (10)
Housing status				
Renting	26.04 % (94)	36.56 % (68)	55.56 % (5)	56.25 % (9)
Own home	70.36 % (254)	57.53 % (107)	44.44 % (4)	43.75 % (7)
Other	3.60 % (13)	5.91 % (11)	0.00 % (0)	0.00 % (0)
Distance				
<1.5	14.57 % (36)	15.04 % (20)	28.57 % (2)	8.33 % (1)
1.5-<4.0	24.29 % (60)	16.54 % (22)	14.29 % (1)	16.67 % (2)
4-<8.5	31.58 % (78)	42.11 % (56)	28.57 % (2)	50.00 % (6)
8.5+	29.55 % (73)	26.32 % (35)	28.57 % (2)	25.00 % (3)
Cancer site				
Breast	74.24 % (268)	66.13 % (123)	66.67 % (6)	50.00 % (8)
Cervix	24.93 % (90)	32.80 % (61)	33.33 % (3)	43.75 % (7)
Colorectal	0.83 % (3)	1.08 % (2)	0.00 % (0)	6.25 % (1)
Prostate	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Stage				
Stage 0			11.11 % (1)	25.00 % (4)
Stage 1			22.22 % (2)	6.25 % (1)
Stage 2			33.33 % (3)	18.75 % (3)
Stage 3			0.00 % (0)	0.00 % (0)
Stage 4			0.00 % (0)	6.25 % (1)
CIN2 or CIN3			33.33 % (3)	43.75 % (7)

Table 9
Site F high satisfaction with care (median cut-off) by demographics

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=0)	Not high satisfaction (n=0)	High satisfaction (n=173)	Not high satisfaction (n=122)
Group allocation				
Control			49.71 % (86)	45.90 % (56)
Patient navigation			50.29 % (87)	54.10 % (66)
Gender				
Female			90.75 % (157)	95.08 % (116)
Male			9.25 % (16)	4.92 % (6)
Age categorized				
<40			3.47 % (6)	6.56 % (8)
40–<49			16.18 % (28)	25.41 % (31)
50–<60			35.84 % (62)	33.61 % (41)
60+			44.51 % (77)	34.43 % (42)
Race/ethnicity				
Black			16.76 % (29)	27.87 % (34)
White			71.10 % (123)	62.30 % (76)
Hispanic			7.51 % (13)	3.28 % (4)
Other			4.62 % (8)	6.56 % (8)
Primary language				
English			94.80 % (164)	96.72 % (118)
Other			5.20 % (9)	3.28 % (4)
Birth country				
Outside of USA			9.25 % (16)	11.48 % (14)
USA			90.75 % (157)	88.52 % (108)
Education				
Less than high school			13.87 % (24)	15.70 % (19)
High school diploma			27.75 % (48)	23.97 % (29)
Some college/associate			32.95 % (57)	35.54 % (43)
College grad/professional			25.43 % (44)	24.79 % (30)
Median household income by ZIP				
Less than \$30,000			15.70 % (27)	23.33 % (28)
\$30,000 to 39,999			27.33 % (47)	20.00 % (24)
\$40,000 to 49,999			16.28 % (28)	23.33 % (28)
\$50,000 or more			40.70 % (70)	33.33 % (40)
Insurance status				
Uninsured			5.78 % (10)	3.28 % (4)
Public			27.17 % (47)	29.51 % (36)
Private			67.05 % (116)	67.21 % (82)
Employment status				

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=0)	Not high satisfaction (n=0)	High satisfaction (n=173)	Not high satisfaction (n=122)
Unemployed			61.85 % (107)	59.84 % (73)
Part-time			9.83 % (17)	12.30 % (15)
Full-time			28.32 % (49)	27.87 % (34)
Housing status				
Renting			24.42 % (42)	35.54 % (43)
Own home			66.28 % (114)	57.85 % (70)
Other			9.30 % (16)	6.61 % (8)
Distance				
<1.5			4.05 % (7)	4.92 % (6)
1.5-<4.0			18.50 % (32)	27.87 % (34)
4-<8.5			39.31 % (68)	26.23 % (32)
8.5+			38.15 % (66)	40.98 % (50)
Cancer site				
Breast			83.82 % (145)	87.70 % (107)
Cervix			0.00 % (0)	0.00 % (0)
Colorectal			16.18 % (28)	12.30 % (15)
Prostate			0.00 % (0)	0.00 % (0)
Stage				
Stage 0			7.51 % (13)	10.66 % (13)
Stage 1			32.95 % (57)	30.33 % (37)
Stage 2			36.42 % (63)	31.15 % (38)
Stage 3			20.23 % (35)	23.77 % (29)
Stage 4			2.89 % (5)	4.10 % (5)
CIN2 or CIN3			0.00 % (0)	0.00 % (0)

Table 10
Site G high satisfaction with care (median cut-off) by demographics

Independent variable	Diagnostic resolution	
	High satisfaction (n=103)	Not high satisfaction (n=105)
Group allocation		
Control	15.53 % (16)	28.57 % (30)
Patient navigation	84.47 % (87)	71.43 % (75)
Gender		
Female	100.0 % (103)	100.0 % (105)
Male	0.00 % (0)	0.00 % (0)
Age categorized		
<40	48.54 % (50)	61.90 % (65)
40–<49	20.39 % (21)	12.38 % (13)
50–<60	20.39 % (21)	12.38 % (13)
60+	10.68 % (11)	13.33 % (14)
Race/ethnicity		
Black	2.91 % (3)	10.48 % (11)
White	9.71 % (10)	9.52 % (10)
Hispanic	86.41 % (89)	80.00 % (84)
Other	0.97 % (1)	0.00 % (0)
Primary language		
English	48.54 % (50)	67.62 % (71)
Other	51.46 % (53)	32.38 % (34)
Birth country		
Outside of USA	50.49 % (52)	34.29 % (36)
USA	49.51 % (51)	65.71 % (69)
Education		
Less than high school	48.28 % (42)	33.77 % (26)
High school diploma	24.14 % (21)	22.08 % (17)
Some college/associate	24.14 % (21)	35.06 % (27)
College grad/professional	3.45 % (3)	9.09 % (7)
Median household income by ZIP		
Less than \$30,000	40.78 % (42)	34.29 % (36)
\$30,000 to 39,999	35.92 % (37)	35.24 % (37)
\$40,000 to 49,999	8.74 % (9)	15.24 % (16)
\$50,000 or more	14.56 % (15)	15.24 % (16)
Insurance status		
Uninsured	29.13 % (30)	21.90 % (23)
Public	65.05 % (67)	65.71 % (69)
Private	5.83 % (6)	12.38 % (13)
Employment status		
Unemployed	46.53 % (47)	46.39 % (45)

Independent variable	Diagnostic resolution	
	High satisfaction (n=103)	Not high satisfaction (n=105)
Part-time	22.77 % (23)	25.77 % (25)
Full-time	30.69 % (31)	27.84 % (27)
Housing status		
Renting	43.68 % (38)	48.00 % (36)
Own home	33.33 % (29)	22.67 % (17)
Other	22.99 % (20)	29.33 % (22)
Distance		
<1.5	8.91 % (9)	3.85 % (4)
1.5—<4.0	19.80 % (20)	10.58 % (11)
4—<8.5	32.67 % (33)	48.08 % (50)
8.5+	38.61 % (39)	37.50 % (39)
Cancer site		
Breast	45.63 % (47)	32.38 % (34)
Cervix	54.37 % (56)	67.62 % (71)
Colorectal	0.00 % (0)	0.00 % (0)
Prostate	0.00 % (0)	0.00 % (0)
Stage		
Stage 0		
Stage 1		
Stage 2		
Stage 3		
Stage 4		
CIN2 or CIN3		

Table 11
Site H high satisfaction with care (median cut-off) by demographics

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=42)	Not high satisfaction (n=72)	High satisfaction (n=1)	Not high satisfaction (n=1)
Group allocation				
Control	16.67 % (58)	30.48 % (32)	0.00 % (0)	0.00 % (0)
Patient navigation	53.60 % (67)	69.52 % (73)	100.0 % (1)	100.0 % (1)
Gender				
Female	100.0 % (42)	100.0 % (72)	100.0 % (1)	100.0 % (1)
Male	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Age categorized				
<40	35.71 % (15)	48.61 % (35)	0.00 % (0)	0.00 % (0)
40–<49	30.95 % (13)	31.94 % (23)	0.00 % (0)	0.00 % (0)
50–<60	16.67 % (7)	11.11 % (8)	0.00 % (0)	0.00 % (0)
60+	16.67 % (7)	8.33 % (6)	100.0 % (1)	100.0 % (1)
Race/ethnicity				
Black	7.14 % (3)	5.56 % (4)	100.0 % (1)	0.00 % (0)
White	26.19 % (11)	9.72 % (7)	0.00 % (0)	100.0 % (1)
Hispanic	66.67 % (28)	83.33 % (60)	0.00 % (0)	0.00 % (0)
Other	0.00 % (0)	1.39 % (1)	0.00 % (0)	0.00 % (0)
Primary language				
English	35.71 % (15)	13.89 % (10)	0.00 % (0)	100.0 % (1)
Other	64.29 % (27)	86.11 % (62)	100.0 % (1)	0.00 % (0)
Birth country				
Outside of USA	72.41 % (21)	89.47 % (51)	0.00 % (0)	0.00 % (0)
USA	27.59 % (8)	10.53 % (6)	100.0 % (1)	0.00 % (0)
Education				
Less than high school	51.52 % (17)	56.36 % (31)	0.00 % (0)	0.00 % (0)
High school diploma	24.24 % (8)	29.09 % (16)	0.00 % (0)	0.00 % (0)
Some college/associate	15.15 % (5)	12.73 % (7)	0.00 % (0)	100.0 % (1)
College grad/professional	9.09 % (3)	1.82 % (1)	0.00 % (0)	0.00 % (0)
Median household income by ZIP				
Less than \$30,000	17.50 % (7)	16.67 % (11)	0.00 % (0)	0.00 % (0)
\$30,000 to 39,999	40.00 % (16)	54.55 % (36)	0.00 % (0)	100.0 % (1)
\$40,000 to 49,999	22.50 % (9)	21.21 % (14)	100.0 % (1)	0.00 % (0)
\$50,000 or more	20.00 % (8)	7.58 % (5)	0.00 % (0)	0.00 % (0)
Insurance status				
Uninsured	73.81 % (31)	79.17 % (57)	0.00 % (0)	0.00 % (0)
Public	19.05 % (8)	19.44 % (14)	100.0 % (1)	100.0 % (1)
Private	7.14 % (3)	1.39 % (1)	0.00 % (0)	0.00 % (0)
Employment status				

Independent variable	Diagnostic resolution		Cancer treatment	
	High satisfaction (n=42)	Not high satisfaction (n=72)	High satisfaction (n=1)	Not high satisfaction (n=1)
Unemployed	64.10 % (25)	55.22 % (37)	0.00 % (0)	100.0 % (1)
Part-time	15.38 % (6)	11.94 % (8)	0.00 % (0)	0.00 % (0)
Full-time	20.51 % (8)	32.84 % (22)	0.00 % (0)	0.00 % (0)
Housing status				
Renting				
Own home				
Other				
Distance				
<1.5	16.67 % (7)	18.06 % (13)	0.00 % (0)	0.00 % (0)
1.5-<4.0	2.38 % (1)	12.50 % (9)	0.00 % (0)	0.00 % (0)
4-<8.5	40.48 % (17)	37.50 % (27)	100.0 % (1)	100.0 % (1)
8.5+	40.48 % (17)	31.94 % (23)	0.00 % (0)	0.00 % (0)
Cancer site				
Breast	100.0 % (42)	98.61 % (71)	100.0 % (1)	0.00 % (0)
Cervix	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Colorectal	0.00 % (0)	1.39 % (1)	0.00 % (0)	100.0 % (1)
Prostate	0.00 % (0)	0.00 % (0)	0.00 % (0)	0.00 % (0)
Stage				
Stage 0			0.00 % (0)	0.00 % (0)
Stage 1			100.0 % (1)	0.00 % (0)
Stage 2			0.00 % (0)	0.00 % (0)
Stage 3			0.00 % (0)	0.00 % (0)
Stage 4			0.00 % (0)	100.0 % (1)
CIN2 or CIN3			0.00 % (0)	0.00 % (0)

Table 12
Site A clinical variables by time of measurement

	Diagnostic resolution (<i>n</i> =243)	Cancer treatment (<i>n</i> =28)
Clinic setting	% (<i>n</i>)	% (<i>n</i>)
Neighborhood health center	0.00 % (0)	0.00 % (0)
Public hospital ambulatory care	2.88 % (7)	100.0 % (28)
Other	97.12 % (236)	0.00 % (0)
Clinic size		
<12,000	22.22 % (54)	0.00 % (0)
12,000–<40,000	77.78 % (189)	100.0 % (28)
40,000–<200,000	0.00 % (0)	0.00 % (0)
200,000+	0.00 % (0)	0.00 % (0)
Clinic % Hispanic		
<25 %	40.33 % (98)	100.0 % (28)
25 %+	59.67 % (145)	0.00 % (0)
Clinic % White		
<25 %	100.0 % (243)	100.0 % (28)
25 %+	0.00 % (0)	0.00 % (0)
Clinic % Black		
<25 %	59.67 % (145)	0.00 % (0)
25 %+	40.33 % (98)	100.0 % (28)

Table 13
Site B clinical variables by time of measurement

	Diagnostic resolution (n=243)	Cancer treatment (n=28)
Clinic setting	% (n)	% (n)
Neighborhood health center	0.00 % (0)	0.00 % (0)
Public hospital ambulatory care	2.88 % (7)	100.0 % (28)
Other	97.12 % (236)	0.00 % (0)
Clinic size		
<12,000	22.22 % (54)	0.00 % (0)
12,000–<40,000	77.78 % (189)	100.0 % (28)
40,000–<200,000	0.00 % (0)	0.00 % (0)
200,000+	0.00 % (0)	0.00 % (0)
Clinic % Hispanic		
<25 %	40.33 % (98)	100.0 % (28)
25 %+	59.67 % (145)	0.00 % (0)
Clinic % White		
<25 %	100.0 % (243)	100.0 % (28)
25 %+	0.00 % (0)	0.00 % (0)
Clinic % Black		
<25 %	59.67 % (145)	0.00 % (0)
25 %+	40.33 % (98)	100.0 % (28)

Table 14
Site C clinical variables by time of measurement

	Diagnostic resolution (n=123)
Clinic setting	% (n)
Neighborhood health center	0.00 % (0)
Public hospital ambulatory care	0.00 % (0)
Other	100.0 % (123)
Clinic size	
<12,000	0.00 % (0)
12,000–<40,000	0.00 % (0)
40,000–<200,000	0.00 % (0)
200,000+	100.0 % (123)
Clinic % Hispanic	
<25 %	100.0 % (123)
25 %+	0.00 % (0)
Clinic % White	
<25 %	0.00 % (0)
25 %+	100.0 % (123)
Clinic % Black	
<25 %	0.00 % (0)
25 %+	100.0 % (123)

Table 15
Site D clinical variables by time of measurement

	Diagnostic resolution (<i>n</i> =323)	Cancer treatment (<i>n</i> =97)
Clinic setting	% (<i>n</i>)	% (<i>n</i>)
Neighborhood health center	0.00 % (0)	0.00 % (0)
Public hospital ambulatory care	100.0 % (323)	100.0 % (97)
Other	0.00 % (0)	0.00 % (0)
Clinic size		
<12,000	0.00 % (0)	0.00 % (0)
12,000–<40,000	0.00 % (0)	0.00 % (0)
40,000–<200,000	0.00 % (0)	0.00 % (0)
200,000+	100.0 % (323)	100.0 % (97)
Clinic % Hispanic		
<25 %	0.00 % (0)	0.00 % (0)
25 %+	100.0 % (323)	100.0 % (97)
Clinic % White		
<25 %	100.0 % (323)	100.0 % (97)
25 %+	0.00 % (0)	0.00 % (0)
Clinic % Black		
<25 %	100.0 % (323)	100.0 % (97)
25 %+	0.00 % (0)	0.00 % (0)

Table 16
Site E clinical variables by time of measurement

	Diagnostic resolution (<i>n</i> =547)	Cancer treatment (<i>n</i> =25)
Clinic setting	% (<i>n</i>)	% (<i>n</i>)
Neighborhood health center	4.39 % (24)	20.00 % (5)
Public hospital ambulatory care	95.61 % (523)	80.00 % (20)
Other	0.00 % (0)	0.00 % (0)
Clinic Size		
<12,000	31.76 % (121)	15.79 % (3)
12,000–<40,000	68.24 % (260)	84.21 % (16)
40,000–<200,000	0.00 % (0)	0.00 % (0)
200,000+	0.00 % (0)	0.00 % (0)
Clinic % Hispanic		
<25 %	98.43 % (375)	100.0 % (19)
25 %+	1.57 % (6)	0.00 % (0)
Clinic % White		
<25 %	3.67 % (14)	21.05 % (4)
25 %+	96.33 % (367)	78.95 % (15)
Clinic % Black		
<25 %	65.35 % (249)	47.37 % (9)
25 %+	34.65 % (132)	52.63 % (10)

Table 17
Site F clinical variables by time of measurement

	Cancer treatment (<i>n</i> =295)
Clinic setting	% (<i>n</i>)
Neighborhood health center	2.37 % (7)
Public hospital ambulatory care	19.66 % (58)
Private hospital ambulatory care	0.34 % (1)
Other	77.63 % (229)
Clinic size	
<12,000	19.64 % (54)
12,000—<40,000	78.91 % (217)
40,000—<200,000	1.45 % (4)
200,000+	0.00 % (0)
Clinic % Hispanic	
<25 %	100.0 % (225)
25 %+	0.00 % (0)
Clinic % White	
<25 %	0.44 % (1)
25 %+	99.56 % (224)
Clinic % Black	
<25 %	91.11 % (205)
25 %+	8.89 % (20)

Table 18
Site G clinical variables by time of measurement

	Diagnostic resolution (<i>n</i> =208)	Cancer treatment (<i>n</i> =0)
Clinic setting	% (<i>n</i>)	% (<i>n</i>)
Neighborhood health center	3.90 % (8)	
Public hospital ambulatory care	91.71 % (188)	
Other	4.39 % (9)	
Clinic size		
<12,000	18.78 % (37)	
12,000–<40,000	81.22 % (160)	
40,000–<200,000	0.00 % (0)	
200,000+	0.00 % (0)	
Clinic % Hispanic		
<25 %	0.00 % (0)	
25 %+	100.0 % (39)	
Clinic % White		
<25 %	100.0 % (39)	
25 %+	0.00 % (0)	
Clinic % Black		
<25 %	87.18 % (34)	
25 %+	12.82 % (5)	

Table 19
Site H clinical variables by time of measurement

	Diagnostic resolution (n=114)	Cancer treatment (n=2)
Clinic setting	% (n)	%(n)
Neighborhood health center	95.61 % (109)	100.0 % (2)
Public hospital ambulatory care	4.39 % (5)	0.00 % (0)
Other	0.00 % (0)	0.00 % (0)
Clinic size		
<12,000	94.74 % (108)	100.0 % (2)
12,000–<40,000	5.26 % (6)	0.00 % (0)
40,000–<200,000	0.00 % (0)	0.00 % (0)
200,000+	0.00 % (0)	0.00 % (0)
Clinic % Hispanic		
<25 %	3.51 % (4)	50.0 % (1)
25 %+	96.49 % (110)	50.0 % (1)
Clinic % White		
<25 %	14.04 % (16)	0.00 % (0)
25 %+	85.96 % (98)	100.0 % (2)
Clinic % Black		
<25 %	100.0 % (114)	100.0 % (2)
25 %+	0.00 % (0)	0.00 % (0)