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Effects of Patient Navigation on Patient Satisfaction Outcomes

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Abstract

Patient navigation (PN) may reduce cancer health disparities. Few studies have investigated the effects of PN on patient-reported satisfaction with care or assessed patients' satisfaction with navigators. The objectives of this study are to test the effects of PN on patient satisfaction with cancer care, assess patients' satisfaction with navigators, and examine the impact of barriers to care on satisfaction for persons with abnormal cancer-related screening tests or symptoms. Study participants included women and men with abnormal breast, cervical, or colorectal cancer screening tests and/or symptoms receiving care at 18 clinics. Navigated ($n=416$) and non-navigated ($n=292$) patients completed baseline and end-of-study measures. There was no significant difference between navigated and non-navigated patients in change in patient satisfaction with cancer care from baseline to exit. African-American ($p<0.001$), single ($p=0.03$), low income ($p<0.01$), and uninsured patients ($p<0.001$) were significantly less likely to report high patient satisfaction at baseline. A significant effect was found for change in satisfaction over time by employment status ($p=0.04$), with full-time employment showing the most improvement. The interaction between satisfaction with navigators and satisfaction with care over time was marginally significant ($p=0.08$). Baseline satisfaction was lower for patients who reported a barrier to care ($p=0.02$). Patients reporting other-focused barriers ($p=0.03$), including transportation ($p=0.02$), had significantly lower increases in satisfaction over time. Overall, results suggested that assessing barriers to cancer care and tailoring navigation to barrier type could enhance patients' experiences with health care. PN may have positive effects for healthcare organizations struggling to enhance quality of care.

Keywords

Patient satisfaction; Oncology; Cancer screening; Patient navigation; Disparities; Quality improvement

Introduction

Advances in screening, reductions in risk factors, and more effective treatments have contributed to vast improvements in cancer survival rates over time [1]. However, significant disparities in cancer outcomes by race and socioeconomic status remain [2]. These disparities may be attributed to sociodemographic factors, barriers associated with cancer and cancer treatment, the health care system, the social environment, and patient-clinician communication [2]. Previous research indicates these factors negatively impact cancer care once a screening abnormality has been identified [3, 4].

Patient navigation (PN) programs have grown, in part, to help address issues of access and quality of cancer care [5, 6]. PN assists individuals, particularly the medically underserved, in overcoming obstacles encountered across the entire cancer care continuum [7]. PN is traditionally administered by a health professional, such as a nurse, social worker, health educator, or a lay health worker [8]. PN has been demonstrated to increase cancer screening rates [9, 10], improve follow-up rates after an abnormal screening test [11], and reduce time to diagnosis and treatment [12]. Although effective, previous studies have found disparities in navigation time by employment and financial status [3, 4]

Previous research has indicated that PN may increase patient satisfaction with care [3, 13–16]. However, findings have been limited by lack of control groups [16], small sample size [3, 14, 15], or non-use of a validated scale for patient satisfaction [13, 15]. To the authors' knowledge, only three studies have evaluated whether navigated patients were more satisfied with care by either comparing the intervention to usual care [14, 15] or comparing patients' satisfaction ratings before and after the intervention [11]. Two of the three studies found that navigated patients had higher satisfaction with cancer-related care than non-navigated patients [14, 15]. No studies have assessed the relationship between patient satisfaction with care, patient barriers to care, and patients' satisfaction with their navigator. There is a need for scientifically rigorous research that examines the effects of PN on patients' satisfaction with health care, an important measure tracked by all healthcare organizations [17].

The primary objective of this study was to investigate the effects of a telephone-based PN intervention on satisfaction with cancer-related care as reported by individuals with abnormal breast, cervical, or colorectal cancer screening tests or symptoms. We also examined participants' satisfaction with their navigators and the impact of patient-reported barriers on patient satisfaction with cancer care.

Materials and Methods

The design, setting, participant recruitment, randomization, and intervention of this study have been described in detail elsewhere [20]. Briefly, our project was one of nine studies in the national Patient Navigation Research Program (PNRP), funded by the National Cancer Institute and the American Cancer Society, which aimed to test PN interventions intended to reduce or eliminate cancer health disparities. PN interventions across study sites were designed to decrease the time: 1) between a cancer-related abnormal finding and diagnostic resolution for a cancer diagnosis; 2) between a definitive cancer diagnosis and the initiation of treatment; and 3) from the start to the conclusion of treatment [18]. The results we report are focused on the interval between an abnormal finding and diagnostic resolution to a benign condition.

The current project was a group-randomized trial with a nested cohort design. Briefly, 18 clinics in Central Ohio were randomized to either receive PN or a comparison condition.

The telephone-based ACS model of PN intervention was based on the Chronic Care Model [19], the Social Support Theory [20], and specifically addressed constructs included in the Health Belief Model [21]. Each participant was assigned to one of three lay patient navigators used for the study. Each navigator was over the age of 30, female, a college graduate, had previously worked within the health care system, and completed multiple training sessions. Among patients of clinics randomized to receive the PN intervention, navigators contacted participants by telephone within 5 days of being assigned a patient.

Barriers to care were identified and documented by navigators asking participants if they were experiencing any specific barriers. Navigators then provided assistance by taking actions tailored to participants' specific needs. For example, supportive listening would be employed if participants discussed social/practical support barriers. If a participant presented

transportation barriers, navigators would discuss problem-solving strategies to help resolve transportation problems. As described in detail elsewhere [12], the majority of the encounters among patients who accepted navigation lasted less than 15 min. The mean number of encounters between patient navigator and their navigated patient was 2.7 (range, 1 to 38).

Participants from comparison clinics were mailed educational materials tailored to their specific abnormality and/or specific cancer test within 1 month of completing a baseline questionnaire. Recruitment began in November 2006. Approval to conduct this project was obtained from the university's Institutional Review Board.

Measures

A trained interviewer administered baseline and end-of-study questionnaires by telephone. Participants in the PN and comparison arms completed an end-of-study questionnaire when their abnormality resolved or at the end of the study (minimum follow-up of 180 days). The end-of-study questionnaire contained items similar to the baseline survey. Measures included patient satisfaction with cancer care, patient satisfaction with interpersonal relationship with navigator, barriers to care, and demographic characteristics.

Patient Satisfaction with Cancer Care—The patient satisfaction with cancer care (PSCC) [22] was a 29-item questionnaire that asked patients to assess satisfaction with care they received at three different time points since being told they had a positive screening test for cancer: 1) during their most recent visit; 2) after their most recent visit; and 3) at all visits since receiving a positive screening test for cancer. Responses to each item are on a 5-point Likert scale (1=“strongly disagree” to 5=“strongly agree”), with higher scores indicating higher satisfaction with care. Total scores range from 20 to 100. Since our study focused on the interval from abnormal screening to diagnostic resolution, we eliminated seven items associated with post-cancer diagnosis visits. The measure is listed in Table 1 (online supplement).

Patient Satisfaction with Interpersonal Relationship with Navigator—Patient satisfaction with interpersonal relationship with navigator (PSN-I) is a 9-item measure that assesses key aspects of navigator performance: technical competence, interpersonal skills, and accessibility [23]. Responses to each item are on a 5-point Likert scale (1=“strongly disagree” to 5=“strongly agree”). Higher scores indicate higher satisfaction with participants' interpersonal relationship with their navigator. Total scores range from 9 to 45. The PSN-I explains 76.6 % of the variance in patient satisfaction with high internal validity (Cronbach's α =0.95–0.96) [23, 24] and is listed in Table 2 (online supplement).

Barriers to Care—A 21-item measure enumerating the number and types of barriers to cancer care a participant experienced, problem-solving action steps taken by the participant and/or patient navigator, as well as time spent on the phone navigating the patient, was completed for each encounter with the navigator. Responses to each item were “yes” or “no”. Barriers to care were organized into patient-, system-, and other-focused barriers by the national PNRP research group [18]. Figure 1 is a diagram that lists the different barriers

to care for each of the above categories. The name given to each barrier was meant to describe the difficulty/problem that interfered with the participant's next step toward diagnostic resolution or end of treatment.

Demographic Characteristics—Participants provided information about age, gender, race, ethnicity, primary language, marital status, educational level, housing status, country of birth, number of dependents, household size, employment status, household income, and health insurance.

Analyses

Two modeling approaches were used to analyze study data. The first used only data from the baseline assessment to build a predictive model of patient satisfaction at baseline. Fixed effects were included for demographic factors and a random effect for clinic to account for the group-randomized design. Predictors in the multivariable model were determined by backwards selection of all variables significant at a 0.2 univariate level.

The second used both baseline and exit data longitudinally to determine if any factors affected the change in patient satisfaction with cancer care from baseline to exit. Additional fixed effects for time (baseline or exit), treatment arm, and interactions between time and each of the fixed effects were included. A significant interaction between a given factor and time would indicate a difference in change in patient satisfaction from baseline to exit across the levels of that factor. A random effect for clinic and an unstructured covariance structure was specified for the repeated measures residual error. Using this longitudinal approach, any participant with an outcome for at least one time point was included. A given factor was considered for inclusion in a multivariable model if the interaction between time and the factor had a p value of less than 0.2 in a model that included arm, time, the factor, and interactions with time. Backwards selection was then used to arrive at a final multivariable model.

The effects of barriers to care and satisfaction with navigator (PSN-I) on patient satisfaction were estimated by adding these predictors to the final multivariable models. These data were only available on intervention patients. All analyses were performed using SAS v9.2 (SAS Institute, Cary, NC).

Results

Participants

Participants were 740 men and women, 18 years of age or older, who had either an abnormal screening or diagnostic test, or an abnormal clinical finding leading to diagnostic testing that resolved to a benign condition. Four participants who were missing the outcome at both time points were eliminated, as well as 28 who were missing other covariate data (22 of which were due to insurance status). An additional 41 participants did not provide income, but as this was not a significant predictor in the final multivariate model, these participants were retained. The final sample size was 708 participants.

The average participant age was 46 years, and the majority was female (97 %) and White (73 %). Approximately one-half of participants were married (50.6 %), had completed college or graduate school (49.9 %), were employed full-time (56 %), or reported household incomes US\$50,000/year (55 %). Approximately three-fourths of participants had private health insurance. Cancer sites for abnormal findings/screening tests were breast (59.6 %), cervix (33.9 %), or colorectal (6.5 %).

Patient Satisfaction with Care: All Participants

No significant difference was found between intervention and control groups in mean increase in PSCC ($p=0.43$) from baseline to end-of-study (3.26 vs. 2.53, respectively). Although the difference was non-significant, participants in the intervention group had a higher mean increase in PSCC over time. The final multivariable model for baseline to exit retained both employment ($p=0.04$) and cancer site ($p=0.09$) with effects similar to those presented in Table 1.

Race, marital status, income, and insurance were found to be significant predictors of PSCC at baseline. Specifically, African-American ($p<0.001$) and single ($p=0.03$) participants were significantly less likely to report high PSCC than White and married participants, respectively, ($p<0.001$). Those earning less than US\$50,000/year ($p<0.01$) and without health insurance ($p<0.001$) were also less likely to report high PSCC. However, race, marital status, income, and insurance were not significant predictors of change over time. Employment was found to be a significant predictor of PSCC from baseline to end-of-study. Specifically, those participants employed full-time had higher PSCC over time than those who were retired, disabled, or unemployed ($p=0.04$) (Table 2). The final multivariable model for baseline data included only race ($p<0.001$) and insurance status ($p<0.001$) as predictors, with effects similar to those presented in Table 1.

Patient Satisfaction with Navigators: Intervention Group Participants

Intervention group participants' satisfaction with their navigator was high (scores ranged from 9 to 45; mean=40.19, SD=5.91). Because the distribution of responses was strongly skewed toward higher satisfaction, we dichotomized PSN-I at 42 (<42 and ≥42), the value at the 50th percentile. The interaction between PSN-I and time was marginally significant ($p=0.08$), with participants who were highly satisfied with their navigators showing more of a mean increase in PSCC (4.25) compared to those not satisfied (2.13) from baseline to end-of-study. Similar to all study participants, the interaction between employment and time was significant ($p=0.03$), with intervention group participants employed full-time showing the most mean increase in PSCC (4.82) compared to those who were employed part-time (2.56) and retired/disabled/unemployed (1.39) from baseline to end-of-study.

Barriers and Patient Satisfaction with Care: Intervention Group Participants

For intervention group participants, slightly less than half (47.4 %) did not report a barrier to care, while 23.3 % reported one barrier and 24.2 % reported two or more barriers. Table 2 lists the reported barriers to care. The three most common barriers, in order, were misperception and beliefs about tests or treatment ($n=60$), communication difficulties with providers ($n=60$), and scheduling problems ($n=38$).

Two multivariate models were used to measure differences in PSC for those with or without a reported barrier at two time points: 1) baseline only controlling for race and insurance; and 2) over time, while controlling for cancer site, employment, and PSN-I 42. In general, if a patient in the intervention arm reported any barrier, their baseline PSCC was lower than those who did not report a barrier ($p=0.02$). Specifically, patients who reported a patient-focused barrier ($p<0.001$), including financial problems ($p=0.02$), fear ($p=0.01$), or perceptions/beliefs about tests/treatment ($p<0.01$) had significantly lower PSCC at baseline, as compared to participants who did not report these barriers (Table 2). Analyses examining a change in PSCC over time found significant effects for other-focused barriers ($p=0.03$), including transportation difficulties ($p=0.02$). Thus, patients reporting other focused barriers, including transportation difficulties, experienced a decrease, while those not reporting these barriers experienced an increase in PSCC.

Discussion

We utilized a GRT design to investigate the effects of a telephone-based PN intervention on satisfaction outcomes reported by individuals with abnormal breast, cervical, or colorectal cancer screening tests or symptoms. Findings indicated a non-significant effect of navigation on PSCC. The absence of a significant difference was unexpected. However, the measure used in this study assessed patients' satisfaction with their most recent visit to a clinic or hospital. Since our intervention was not housed in these settings, perhaps this finding reflects a lack of association between our model of PN and how satisfaction with care was measured. In addition, the low average number of encounters and the short duration of these encounters between the patient and patient navigator may have contributed to the non-significant effect of navigation on PSCC.

Participants who were African-American, single, lower income, and uninsured were less likely to report high PSCC scores at baseline. Furthermore, those that were retired, disabled, or unemployed were less likely to be satisfied with their care over time. Given the ongoing disparities in cancer care and the issues of mistrust in the medical system that exist among poor and underserved populations, these were not unexpected findings [7]. A need continues for a strong, multi-pronged approach to effectively address the health care disparities problem.

Those patients employed full-time had the highest satisfaction with care ratings, as compared to those employed part-time, retired, disabled, and/or unemployed. A possible explanation may be that those patients may have had higher health status (as evidenced by their ability to work full-time), income, and higher rates of private insurance which can decrease the number of barriers to care experienced by patients.

Our study also examined participants' satisfaction with their navigators and used a validated measure (PSN-I) to assess this outcome. To the authors' knowledge, only one study has investigated this outcome; however, a psychometrically valid measure was not used [16]. Results indicated high participant satisfaction with navigators. Of particular interest was our finding that participants who were highly satisfied with their navigator, compared to those less satisfied, demonstrated increased satisfaction with cancer care over time. This suggests

that focusing on interpersonal skills in the hiring and training of patient navigators may pay subsequent dividends in patients' satisfaction with their care.

Our results indicated that barriers to care played an important role in PSCC. Slightly less than half of our sample did not report a barrier to care, and this was unexpected. Patient-focused barriers, such as misperceptions/beliefs about the test or treatment, or system-level barriers, such as communication problems, were reported more frequently. However, these barriers did not significantly impact PSCC. Our finding that "other-focused" barriers, such as transportation, are predictors of patient satisfaction over time provides direction for efforts by the health system to improve PSCC and emphasizes the importance of addressing barriers to care [25]. Given health care institutions' heightened emphasis on patient satisfaction as reimbursement rates are increasingly tied to satisfaction measures, our findings have important implications.

Further, the Affordable Care Act supports Patient Centered Medical Home (PCMH) concepts that include team-based and coordinated care, whole person orientation, emphasis on quality and safety, and enhanced access to care [26, 27]. PN can be fully integrated into this model of care delivery. Navigators can play an integral role in coordinating care, facilitating access, and promoting patient activation to improve the quality and safety of health care. As medical home models evolve, evaluating PN effectiveness within the PCMH to improve the quality, efficiency, and patient experience of care will be needed [26, 27].

Overall, our results suggest a tailored approach to navigation for patients with abnormal cancer-related screening results or symptoms could be useful. Clinics could devise a process in which all patients who have an abnormal cancer-related finding complete a barriers-to-care checklist. When a checklist is positive, PN could be initiated. The navigator would have baseline information and actions could be tailored to patients' needs. Results could be documented to ensure that care providers have information regarding patients' experiences with navigation. For healthcare organizations that can transmit this information electronically, an integrated PN approach might have particular appeal. Ultimately, this tailored PN process could have important and positive effects for healthcare organizations struggling to improve quality and patient satisfaction, as well as for patients challenged by the limitations of a complex and fragmented health care system.

Strengths/Limitations

This study possesses several strengths, including use of a GRT design, focus on three common cancers, use of a valid measure of satisfaction with navigators, and investigation of a large sample of participants from a mix of clinic types. Moreover, our PN intervention used well-trained lay navigators representing communities from which the participants were drawn. Lastly, our intervention is likely less costly than clinic-based navigation models because our intervention was delivered over the phone. Nonetheless, there are limitations of this study. First, most participants were white women with breast cancer, limiting generalizability across populations and cancer types. Second, because we studied navigation in Ohio-based clinics, we do not know whether these findings generalize to other parts of the country with different populations and clinic arrangements. And third, our satisfaction with cancer care measure has not been validated.

Conclusion

Patient navigation can help enhance relationships between patients and the health care team and may help increase patient satisfaction by focusing on reducing barriers and promoting patient-centeredness in the care process. A multidisciplinary approach to PN that involves assessing barriers to care and tailoring navigation to barrier type may help clinics provide comprehensive care across the cancer care continuum and enhance patients' experiences with the health care system.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Funders

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Fig. 1.
Patient-identified barriers

Table 1

Results for predictors of patient satisfaction with care from models using baseline data only and both baseline and exit data for all participants

Predictor	Level	Baseline only		Baseline to exit		Interaction <i>p</i> value ^a
		Estimated mean (95 % CI)	<i>p</i> value	Mean increase from baseline (95 % CI)		
Arm	Intervention	82.12(79.37, 84.87)		3.26 (2.12, 4.40)		0.42
	Control	82.80 (79.93, 85.67)		2.53 (1.15,3.91)		
Gender	Male	83.33 (78.23, 88.43)	0.77	1.98 (-3.08, 7.04)		0.70
	Female	82.57 (80.44, 84.70)		2.99 (2.10, 3.89)		
Race	Black	79.25 (77.38,81.11)	<0.0001	2.39 (0.37, 4.40)		0.48
	Other	82.15 (78.91,85.39)		1.33 (-1.99, 4.66)		
	White	84.10 (83.11,85.09)		3.21 (2.19,4.24)		
Marital status	Married	84.12 (82.63, 85.60)	0.03	2.99 (1.76,4.21)		0.99
	Divorced/separated/widowed	82.19 (80.33, 84.04)		2.86 (1.01,4.71)		
	Single	81.43 (79.71,83.15)		2.94 (1.18,4.70)		
Education	High school	81.24(79.06, 83.42)	0.19	1.84 (-0.43, 4.11)		0.41
	Some college/associate degree	82.91 (81.46, 84.36)		2.65 (1.13,4.18)		
	College graduate/graduate degree	83.55 (82.33, 84.76)		3.48(2.25,4.71)		
Employment	Full-time	82.13 (80.08, 84.18)	0.54	3.96 (2.78, 5.13)		0.04
	Part-time	81.91 (79.27, 84.55)		2.35 (-0.00, 4.70)		
	Retired/disabled/unemployed	83.17 (81.09, 85.26)		1.38 (-0.23, 2.99)		
Income US\$50 K+	Yes	84.27 (83.09, 85.44)	<0.01	3.62(2.41,4.82)		0.26
	No	81.74(80.44, 83.04)		2.57 (1.19, 3.95)		
Insurance	Private	83.27 (82.28, 84.26)	<0.0001	3.46 (2.44, 4.48)		0.11
	Public	83.55 (81.79, 85.31)		1.21 (-0.64,3.05)		
	Uninsured	73.67 (69.34, 77.99)		3.24 (-1.57, 8.05)		
Age	<45	81.89 (80.07, 83.70)	0.27	3.44 (2.08, 4.80)		0.46
	45-64	82.91 (81.13, 84.70)		2.39 (1.13,3.64)		
	65+	84.42(81.19, 87.66)		3.73 (0.72, 6.74)		
Cancer site	Cervix	82.09 (80.31, 83.87)	0.10	3.74 (2.17, 5.32)		0.07
	Colorectal	80.05 (76.57, 83.52)		-0.67 (-4.13, 2.79)		
	Breast	83.50 (81.93, 85.07)		2.92 (1.81,4.04)		

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Baseline results are univariate for given covariates. Baseline and exit models are multivariate including arm, time point, covariate, interactions between time point and arm, and interaction between time point and covariate. Interaction p value between time point and covariate is shown

Interaction between time and the variable t_g

Differences in patient satisfaction with care for PN arm participants with and without the barrier at baseline and over time

Table 2

Barrier	Baseline only: estimated satisfaction difference for those with barrier vs. those without barrier (95 % CI)	Baseline only: <i>p</i> value for barrier	Number (%) reporting the barrier (<i>n</i> =354)	Baseline to exit interaction <i>p</i> value ^a
Patient focused	-4.22 (-6.59, -1.85)	<0.001	118(33.5 %)	0.48
Insurance	-3.56 (-7.94, 0.81)	0.11	26 (7.3 %)	0.15
Financial problems	-10.09 (-18.31, 1.88)	0.02	7 (2.0 %)	0.58
Housing	-9.48 (-22.80, 3.84)	0.16	2 (0.6 %)	0.71
Comorbidities	-2.95 (-6.75, 0.84)	0.13	34 (9.7 %)	0.65
Attitudes toward providers	-2.44 (-9.19, 4.30)	0.48	11 (3.1 %)	0.92
Perceptions/beliefs about tests/treatment	-4.38 (-7.38, -1.39)	<0.01	60(17.0 %)	0.62
Fear	-7.21 (-12.86, -1.56)	0.01	16(4.5 %)	0.26
Not a priority	-0.86 (-4.89, 3.17)	0.68	30 (8.5 %)	0.24
Other focused	-1.97 (-5.45, 1.52)	0.27	43 (12.1 %)	0.03
Transportation	2.25 (-3.30, 7.79)	0.43	18(5.1 %)	0.02
Location of facility	-2.05 (-8.55, 4.45)	0.54	11 (3.1 %)	0.30
Out of town	-12.46 (-25.71, 0.79)	0.07	3 (0.9 %)	0.76
Social support	-1.93 (-12.24, 8.38)	0.71	3 (0.9 %)	0.66
Child care	3.23 (-13.04, 19.50)	0.70	1 (0.3 %)	0.53
Adult care	-3.00 (-11.20, 5.19)	0.47	6 (1.7 %)	0.42
Employment demands	-4.27 (-10.77, 2.22)	0.20	11 (3.1 %)	0.07
System focused	-2.35 (-5.03, 0.34)	0.09	81 (23.0 %)	0.43
System/logistical	-1.86 (-5.35, 1.64)	0.30	38(10.8 %)	0.28
Communication	-2.75 (-5.82, 0.32)	0.08	60(17.0 %)	0.90
Language	17.71 (-6.16,41.57)	0.15	1 (0.3 %)	0.43
Any barrier	-2.79 (-5.07, -0.52)	0.02	167 (47.4 %)	0.85

^aInteraction between time and barrier