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Una Mano Amiga: Pilot Test of a Patient Navigator Program for Southwest New Mexico

Hugo Vilchis[1] · Lynn E. Onstad[2] · Rachel Benavidez[3] · Rebecca Castillo[3] · Nigel Bush[4] · Janet Sanchez[5] · Mary O'Connell[6] · Beti Thompson[2] · Carol M. Moinpour[7]

Abstract We conducted a pilot test of a patient navigation intervention (*Una Mano Amiga*) to address cancer health disparities in three rural counties in southwest New Mexico. We trained two bilingual lay health workers (*promotoras*) as patient navigators (PNs) to help adult cancer patients and their participating families in Grant, Luna, and Hidalgo counties "navigate" the health care system, including appropriate access to social and financial services. Our hypothesized outcome was a reduction in time from diagnosis to treatment initiation compared to the average time without PNs in each of the three counties (2000–2009). We enrolled 85 eligible patients and 43 eligible family members who had completed psychosocial and demographic forms in this PN intervention. Mean time from cancer diagnosis to treatment initiation among 41 study patients was 59.6 days across the three counties. Mean time from non-intervention comparison data was 47.1 days. In the intervention group, on a 0–10 satisfaction scale (higher = more), patient mean scores for three items ranged from 9.3 to 9.6, family members, 8.9–9.3. Caregiver stress as measured by a Caregiver Self-Assessment score ≥ 10 (highest stress = 16) decreased from 23.8% of caregivers at study entry to 14.3% at follow-up (not statistically significantly different). Although the PN intervention did not decrease time from diagnosis to treatment initiation compared to three

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✉ Carol M. Moinpour
cmoinpou@fredhutch.org

Hugo Vilchis
hvilchis@bcomnm.org

Lynn E. Onstad
lonstad@fredhutch.org

Rachel Benavidez
rbenavidez@grmc.org

Rebecca Castillo
dccastillo7@comcast.net

Nigel Bush
nigelbush@comcast.net

Janet Sanchez
jisanche@fredhutch.org

Mary O'Connell
moconnel@nmsu.edu

Beti Thompson
bthompso@fredhutch.org

[1] Burrell Institute of Health Policy Research, Burrell College of Osteopathic Medicine, New Mexico State University, Las Cruces, NM, USA

[2] Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA, USA

[3] Gila Regional Medical Center and Cancer Center, Silver City, NM, USA

[4] National Center for Telehealth and Technology |T2|, Joint Base Lewis-McChord, Lewis-McChord, WA, USA

[5] School of Public Health, University of Washington, Seattle, WA, USA

[6] Plant & Environmental Sciences, New Mexico State University, Las Cruces, NM, USA

[7] Cancer Prevention Program, Public Health Sciences Division (Emerita), Fred Hutchinson Cancer Research Center, 1100 Fairview Ave N, M3-C102, P.O. Box 19024, Seattle, WA 98109-1024, USA

comparison counties, positive reactions of patients and family members support further research with larger samples.

Keywords Patient navigator · Cancer · Rural health · Health disparities

Background

Early detection and timely treatment are important for reducing unfavorable clinical outcomes and decreasing risk of death from cancer. In New Mexico, estimated cancer mortality rates consistently exceed Healthy People goals [1, 2]. Meeting the Healthy People goals is especially challenging for New Mexico's southern rural counties that tend to be sparsely populated, with many communities meeting federally designated medically underserved criteria. Additionally, the distance to large cities (e.g., Albuquerque and Las Cruces) is often a barrier to accessing cancer services and treatment in these areas [3]. Grant, Luna, and Hidalgo counties, for example, have only 11 Federally Qualified Health Centers (FQHCs) to serve an estimated 61,000 individuals. In Grant County, cancer is the second leading cause of death after heart disease and far exceeds the rates of respiratory disease, cerebrovascular disease, and diabetes during the time this study was conducted [4]. In addition to the geographic challenges, economic, social, and cultural factors also pose significant obstacles to patients' ability to seek and maintain care for a cancer diagnosis [3, 5].

In New Mexico, numerous programs have been implemented over the years to try to overcome cultural, language, and geographic barriers that contribute to cancer health disparities in underserved communities. One popular approach that has been successfully implemented in both urban and rural areas along the US–Mexico border [6–12] is the utilization of lay health workers (LHW), also known as *promotoras,* to educate community members about health and prevention, including cancer. [13]. *Promotoras* are individuals who live in communities they served, which frequently are targeted underserved communities; *promotoras* are primarily employed by health organizations to act as trusted links between health care providers and individuals [2]. Another similar approach to the LHW for overcoming barriers to medical care in underserved areas is the Patient Navigator Program, described in more detail in *Cancer Epidemiology, Biomarkers and Prevention* (pages 1655–1700) [14]. Patient navigators (PNs) have specialized skills and knowledge about health care services. The primary role of PNs is to help patients navigate the health system. PNs work with patients to access and navigate the health care system as issues arise. In addition to providing health education, the PN may also address insurance, financial, and logistical issues as they related to the health system. PNs also identify barriers associated with addressing financial and medical or mental health issues faced by patients and family members.

Thus, to address the serious geographic and economic health disparities in this isolated corner of New Mexico, we implemented and tested a culturally appropriate rural patient navigator program employing pre-existing health *promotoras* from within the local communities. Combining LHW and PN roles could have widespread implications for health service in underserved rural areas.

Methods

Study Design

The Partnership for the Advancement of Cancer Research Project is a collaborative U54 award shared by the two institutions involved in designing and monitoring the *Una Mano Amiga* pilot study [Fred Hutchinson Cancer Research Center (FHCRC) and New Mexico State University (NMSU)] as well as other pilot studies funded under this grant. The *Una Mano Amiga* project implemented and evaluated the pilot program in which LHWs were trained as PNs. This program provided and evaluated services to cancer patients and their families in three counties in southwest (SW) New Mexico: Grant, Luna, and Hidalgo counties. In phase one of the *Una Mano Amiga* project, we assessed cancer health trends and existing resources for patients in the targeted study area to determine how best to implement the PN program. In addition, we conducted focus groups with cancer survivors/patients, family members of cancer patients, health care professionals, and community leaders. The goals of these focus groups were to qualitatively assess the perceived cancer health care needs in the area and to determine the linguistic and cultural appropriateness of all participant-completed measures. The aims of the *Una Mano Amiga* project were to (1) assess the detailed cancer navigation needs of patients and their families in an underserved target area of rural southwest New Mexico; (2) test the feasibility of training local *promotoras* as patient navigators; and (3) evaluate the process and effectiveness of *promotora* patient navigator activities across the target region.

Aim 3 was the primary evaluation objective of the pilot intervention study; it assessed whether a patient navigator intervention could reduce the time between patients' cancer diagnoses and initiation of treatment. To accomplish this, we compared current study data from our PN-assisted patients to historic data from a period without PN intervention (between 2000 and 2009). We made those comparisons in each of three counties: Grant, Luna, and Hidalgo. The time between diagnosis and treatment initiation for study participants was based on data obtained from the Gila Regional Medical Center (GRMC) for those patients who received their cancer treatment at GRMC. For the comparison counties, this information was based on data provided by the New Mexico Tumor Registry (Personal Communication, Charles Wiggins, Director and Principal Investigator, New Mexico Tumor Registry, May, 2014), which identifies incident cancer cases through routine and systematic review of pathology reports, medical records, radiation therapy records, hospital discharge lists, and vital records.

PN Intervention

Two bilingual (English-Spanish) *promotoras* received in-person training conducted by the Patient Navigator Training Program at the University of Colorado Cancer Center (http://patientnavigatortraining.org/), supplemented by additional training in study procedures provided by study investigators. Although the *Una Mano Amiga* pilot study was not part of the National Cancer Institute National Patient Navigation Program, we were able to have our two PNs trained by one of the funded national programs. In this study, examples of PN tasks were assisting in the coordination of health care services and provider referrals for diagnosed individuals, linking patients with community organizations/services to receive better access to high-quality health care services, and identifying barriers within the health care system and assisting patients to overcome them to ensure prompt treatment.

Patient Selection

To be eligible for the study, patients had to be ≥ 18 years of age, living in one of the three study counties, and with a recent diagnosis of cancer with treatment not yet initiated. The initial accrual goal of 161 cancer patients was found not to be feasible, and a new target of 98 patients with data from the two assessment periods was approved by the Institutional Review Board.

Recruitment Procedures

We recruited patients from the beginning of 2008 through 2012 at the Gila Regional Medical Center/Cancer Treatment Center and collaborating medical clinics and outreach agencies primarily in the three counties noted above. Bilingual study brochures and information were available at these sites. The two study PNs were available at the recruitment sites to speak with patients and family members. The study PNs recorded interactions with patients and family members on information tracking/data collection forms.

Measures

Study participants completed a number of questionnaires at study entry and at the 2-year follow-up assessment. Those described in this report are a background survey by patients and family members at study entry only and the American Medical Association (AMA) Caregiver Self-Assessment Questionnaire (CSA) [15, 16] completed by a family member at both time points. At the last assessment, both patients and family members answered two questions addressing satisfaction with PN aid to the patient and family as well as overall satisfaction with the treatment and care received by the patient; these items were developed by project research staff.

Analysis

We calculated descriptive frequencies, means, medians, and ranges for the various measures and scales as appropriate, and we computed Cronbach's alpha to measure internal consistency of items comprising scales. We compared changes in scales between the two time points using paired *t*-tests and McNemar's test, and we used regression methods to examine associations of measures with the CSA score at the second time point.

Results

Of 98 eligible patients initially recruited to the study, 85 patients with 43 eligible family members completed psychosocial and demographic forms and were enrolled (Table 1). Five patients died during the study and are missing 2-year follow-up data. Forty-two of the eligible patients did not have a participating family member; all of these individuals completed the required patient study forms.

Demographic Information

Table 1 shows patient and family member demographic and health care-related data. Patients and family members were predominately between the ages of 50 and 69 years; one quarter of the patients was between the ages of 70–79. Most patients and family members were white high school graduates or with some college. English was the language used to complete study forms by 88% of the family members and 89% of the patients. More than 70% had some health care coverage during the past year. Table 1 also shows cultural characteristics of the study sample: 35% of the patients and 23% of participating family members characterized themselves as American. Hispanic origin (Mexican, Chicano, Mexican American, Spanish American) accounts for 45.9% of the patient sample and 51.2% of the participating family members. Just over 75% of both patients and family members were highly acculturated, with acculturation scores ≥ 0.75 (range 0–1) [data not shown].

Table 1 Background survey

	Patient (*N* = 85)		Family member (*N* = 43)	
Item	*N*	%	*N*	%
Language used				
Spanish	9	10.6	5	11.6
English	76	89.4	38	88.4
Gender				
Female	44	51.8	28	65.1
Male	41	48.2	15	34.9
Age				
< 40	3	3.5	8	18.6
40–49	7	8.2	6	14.0
50–59	25	29.4	12	27.9
60–69	22	25.9	10	23.3
70–79	21	24.7	4	9.3
80+	3	3.5	1	2.3
Not available	4	4.7	2	4.7
Education				
<high school	14	16.5	4	9.3
Some high school	11	12.9	5	11.6
High school graduate	18	21.2	17	39.5
Some college	22	25.9	9	20.9
College graduate	8	9.4	6	14.0
Some post-graduate	5	5.9	0	–
Graduate degree	7	8.2	2	4.7
Ethnicity[a]				
Mexican	11	12.9	4	9.3
Chicano	8	9.4	2	4.7
Mexican American	16	18.8	10	23.3
Spanish American	4	4.7	6	14.0
Anglo-American	12	14.1	6	14.0
American	30	35.3	10	23.3
Other	3	3.5	5	11.6
Missing	1	1.2	0	–
Is there a health place you usually use				
Yes	59	69.4	30	69.8
No	21	24.7	8	18.6
Not available	5	5.9	5	11.6
Have you had any health care coverage in the last 12 months				
Yes	60	70.6	31	72.1
No	24	28.2	9	20.9
Not available	1	1.2	3	7.0
Income				
< $10,000	13	15.3	5	11.6
$10,000–$19,000	26	30.6	11	25.6
$20,000–$29,000	21	24.7	8	18.6
$30,000–$39,000	8	9.4	5	11.6
≥ $40,000	11	12.9	9	20.9
Not available	6	7.1	5	11.6

[a] As reported by participants

Primary Outcome

The primary outcome measure for this pilot intervention was the amount of time between a cancer diagnosis and the initiation of treatment. We compared the mean times for patients in the pilot study with historical data from the three counties for the years 2000 to 2009. We were able to collect time from cancer diagnosis to date of treatment initiation for 41 study patients; these patients had a mean time of 59.6 days, median time of 47 days, and a range from 6 to 237 days. The mean times from the 2000–2009 comparison dataset were 53.9 (Grant), 35.6 (Hidalgo), and 51.9 (Luna); median times were 39.5 (Grant), 47.0 (Hidalgo), and 65.0 (Luna). The ranges for the historical comparison data were 1 to 2313 days (Grant), 1 to 154 days (Hidalgo), and 1 to 1022 days (Luna), suggesting considerable variation in this outcome. These comparisons are shown in Fig. 1 and on-line supplementary tables S1a, S1b, and S2. Means (diamond shape) and medians (straight line) are shown as well as the range (short lines at beginning and end of the long vertical lines); the full length of the range for registry data from Grant and Luna counties could not be shown, reflected by a black box at the top of the graph. If we average across the three counties for each data set, we found a mean of 55.9 for the study sample and 51.8 for the registry data, which still suggests a longer time from diagnosis to treatment initiation for the study sample versus the county registry data.

Nature of Patient Navigator/Patient and Family Encounters

Phone calls were the most common type of encounter, followed by in-person sessions. In-person encounters tended to occur at the hospital/clinic or the PN's office. Social support (73%) and financial (67%) issues were the most common barriers reported to have arisen, followed by insurance (53%) and fear (48%) concerns; 26% of patients had at least one study visit at which no barriers were addressed. The PNs successfully addressed the concerns of 61% of patients with financial issues, 45% with social problems, 26.8% with fear, and 24.4% with insurance issues. The PNs provided a wide range of services; the most frequent actions were general support as well as help with records, education, and referrals/arrangements (data not shown).

Patient and Caregiver Satisfaction with Patient Navigator Assistance

Table 2 depicts patient and family member satisfaction with different aspects of the PN intervention (finding needed services for the patient and family member; the treatment and medical care received by the patient). On a 0 (not at all satisfied) to 10 (completely satisfied) rating scale, patient

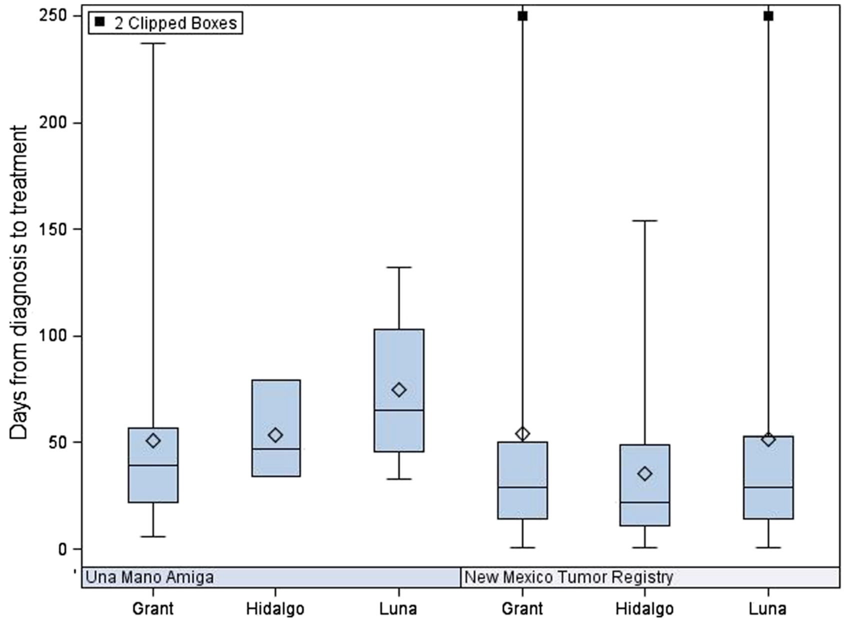

Fig. 1 Box plot comparing Grant, Hidalgo, and Luna counties. Times from diagnosis to treatment initiation for data from the *Una Mano Amiga* pilot study and the New Mexico Tumor Registry. Each box contains a straight line indicating the median number of days and a diamond shape indicating the mean for that study/county. The full ranges of registry times for Grant and Luna counties are clipped in Figure 1 due to the length of the time period (shown by the black box at the top of the graph). Otherwise, the full range is reflected by the short line at the beginning and end of the vertical lines for each county/data set

responses ranged from 9.3 to 9.6 (the range of mean scores for three items) and family member ratings ranged from 8.9 to 9.3.

Caregiver Self-Assessment

Tables 3 and 4 provide baseline and follow-up scores for the caregiver stress outcome as measured by a total Caregiver Self-Assessment (CSA) score ≥ 10 (range 1–16, the higher the score, the higher the stress). Scores ≥ 10 were reported by 23.8% of caregivers at study entry and by 14.3% of caregivers at follow-up (not a statistically significant difference). Although the trend for a number of the CSA scores was to decrease (improve stress status) between the baseline and follow-up assessments, caregiver-reported current health (item 18) compared to a year earlier got worse over the study period (56% at time 2 vs 28% at time 1 had a score ≥ 6, $p = 0.02$, Table 4). Both a CSA total score ≥ 10 and a CSA item 18 score of ≥ 6 are indicative of a high degree of distress [15, 16].

Table 2 Patient and family satisfaction scales. Patient and family member satisfaction with PN intervention

	N	Mean	Min-max
Patient satisfaction with…			
Patient navigator's help to patient[a]	79	9.4	0–10
Patient navigator's help to family[b]	38	9.6	5–10
Treatment and medical care[c]	79	9.3	2–10
Family satisfaction with…			
Patient navigator's help to patient[d]	43	9.3	3–10
Patient navigator's help to family[d]	43	9.3	3–10
Treatment and medical care[e]	42	8.9	0–10

[a] Excludes patient ID = 21113 (missing this item) and the five subjects who died prior to completing T2 forms

[b] Excludes the five subjects who died prior to completing T2 forms, and those with no family (*N* = 42)

[c] Excludes patient ID = 2131 (missing this item) and the five subjects who died prior to completing T2 forms

[d] Excludes the 42 subjects with no family

[e] Excludes patient ID = 2104 (missing this item) and the 42 subjects with no family

Discussion

In this pilot study, we did not achieve our goal of reducing the time between a cancer diagnosis and the initiation of treatment by introducing PN support for patients and family members. Our findings are not consistent with previous research cited above that reported positive outcomes for PN interventions; these earlier studies provided the motivation for doing this study. Our findings are, however, consistent with very recent research [17] that found little evidence for the effect of PN programs on improving outcomes for breast cancer patients.

In understanding the outcomes of our study, one must consider that both patients and family members were highly

Table 3 AMA Caregiver Self-Assessment (CSA) Questionnaire

AMA CSA	*N*	Mean	Median (min, max)	Cronbach α
Time 1	42	6.2	6.0 (0, 14)	.83
Time 2	42	5.3	5.0 (0, 14)	.84
Time 2–Time 1	42	−0.8	− 1.0 (− 13, 13)	$p = .31$

AMA Caregiver Self-Assessment Questionnaire total score measures caregiver stress

Table 4 AMA Caregiver Self-Assessment (CSA) Questionnaire

CSA—measures of high stress	Time 1		Time 2		*p* value
	N	%	*N*	%	
Score ≥ 10	10/42	23.8	6/42	14.3	.39
Q17 (stress level) ≥ 6	24/38	63.2	21/38	55.3	.58
Q18 (current health) ≥ 6	11/39	28.2	22/39	56.4	.02
Q4 (overwhelmed) or Q11 (crying spells) = yes	32/43	74.4	25/43	58.1	.14
Any of the above	38/43	88.4	33/43	76.7	.18

AMA American Medical Association, *Q*= question

satisfied with the PNs assistance. The PNs interacted easily with patients and family members in person or by phone at the PN office site, hospital, or clinic. The PNs addressed a very large range of barriers to accessing needed cancer treatment and had a substantial impact on removing some of these barriers; help with much needed social support, financial, insurance, and fear was particularly valued. To address barriers to obtaining timely care, the PNs helped patients and families with getting and maintaining records, information, and education about the health care system and available services and helped make the needed arrangements for appointments. Due to the low income status of many participants in the study, not all problems were resolvable although PNs were able to help with many problems at various points in time; both patients and family members reported considerable satisfaction with this assistance. In addition, we did see a reduction in stress reported by the family member caregivers, which certainly points to a positive outcome for families.

An important pragmatic goal of this pilot was to see if individuals trained as *promotoras* could be further trained to provide navigation assistance at an acceptable level. A further practical objective was to see if those PNs could be introduced and maintained in rural, SW New Mexico. We were able to train two PNs who took the national PNRP training on-line and were able to provide assistance to patients and families in the three counties; we also had the support of physician offices, which helped with recruitment. As the pilot project outcomes were well received by GRMC in terms of the important aggregated value to patients and family members, GRMC established a permanent PN program.

Limitations

We were able to collect the date of diagnosis and date of treatment initiation for only half of our patient sample; in addition, one of the three counties (Hidalgo) contributed a much smaller number of cases to the three countries' cancer registry data sets. Further, although both the current study and the Tumor Registry used medical records in determining the dates of diagnosis and treatment initiation, it is possible that the Tumor Registry had access to more resources that may have resulted in more definitive dates. However, because both sets of data were essentially based on the same source material, we believe that differences between the Tumor Registry and our study data might more likely be due to differences in cancer site/type. Due to the small sample size, we made no attempt to evaluate the role of cancer site/type on time from cancer diagnosis to treatment initiation. Finally, the pilot funding level could only support two PNs for this study, which would constrain the impact level over several counties. However, the two PNs were able to address an impressive level of issues for patients and families at encounters, which helps explain the high level of satisfaction with the intervention reported by patients and their family members.

Conclusion

Although PNs were not effective in reducing the time between cancer diagnosis and treatment initiation in our small pilot sample, we believe that the positive reactions of patients and families to services provided by the PNs argue for future investigations of the PN model in rural areas, particularly in SW New Mexico.

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References

1. National Center for Health Statistics (2001) Healthy People 2000: final review. Hyattsville, Maryland: National Center for Health Statistics: Public Health Service
2. U.S. Department of Health and Human Services (2000) Healthy People (2010) Understanding and improving health and objectives for improving health. Volumes 1 & 2. U.S. Government Printing Office, Washington, D. C
3. Chan L, Hart L, Goodman D (2006) Geographic access to health care for rural Medicare beneficiaries. J Rural Health 22(2):140–146

4. New Mexico Department of Health (2012) NM-IBIS: Health Highlight Report for Grant County
5. Casey MM, Call KT, Klinger JM (2001) Are rural residents less likely to obtain recommended preventive healthcare services? Am J Prev Med 21(3):182–188
6. Zapka JG, Harris DR, Hosmer D, Costanza ME, Mas E, Barth R (1993) Effect of a community health center intervention on breast cancer screening among Hispanic American women. Health Serv Res 28(2):223
7. Larson SL, Fleishman JA (2003) Rural-urban differences in usual source of care and ambulatory service use: analyses of national data using Urban Influence Codes. *Med Care* 41(7):III-65–III-74
8. Families USA. 2003. Who's uninsured in New Mexico and why http://www.familiesusa.org/assets/pdfs/the-uninsured-state-factsheet-nov2003/Uninsured-in-New-Mexico.pdf. Accessed May 12 2008
9. Centers for Disease Control and Prevention. 2006. The futures initiative [Online] http://www.cdc.gov/futures/. Accessed May 5 2008
10. National Cancer Institute. 2006. SEER Cancer Statistics Review, 1975–2005. http://seer.cancer.gove/csr/1975_2005/. Accessed May 12 2008
11. Agency for Healthcare Research and Quality. 2007. National Healthcare Disparities Report 2007. http://www.ahrq.gov/qual/qrdr07.htm. Accessed May 5 2008
12. Navarro AM, McNicholas LJ, Cruz M, McKennett M, Sánchez O, Senn KL, Cañez B (2007) Development and implementation of a curriculum on cancer screening for small groups of Latino women. J Cancer Educ 22(3):186–190
13. Freund KM, Battaglia TA, Calhoun E, Dudley DJ, Fiscella K, Paskett E, Raich PC, Roetzheim RG, The Patient Navigator research Program Group (2008) National Cancer Institute Patient Navigation Research Program. Methods, protocol, and measures. Cancer 113(12):3391–3399
14. Freeman HP (2012) The origin, evolution, and principles of patient navigation. Cancer Epidemiol Biomark Prev 21(10):1614–1617. https://doi.org/10.1158/1055-9965.EPI-12-0982
15. American Medical Association. 2007. Caregiver Self-Assessment Questionnaire. http://www.caregiverslibrary.org/Portals/0/CaringforYourself_CaregiverSelfAssessmentQuestionaire.pdf. Accessed
16. Epstein-Lubow G, Gaudiano BS, Hinckley M, Salloway S, Miller IW (2010) Evidence for the validity of the American Medical Association's Caregiver Self-Assessment Questionnaire as a screening measure for depression. *J Am Geriatr Soc* 58(2):387–388. https://doi.org/10.1111/j.1532-5415.2009.02701.x
17. Baik SH, Gallo LC, Wells KJ (2016) Patient navigation in breast cancer treatment and survivorship: a systematic review. J Clin Oncol 34(30):3686–3696. https://doi.org/10.1200/jco.2016.67.5454