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The Advance Care Planning Readiness Scale: Development and Validation of a Measure of Willingness to Discuss and Acceptance of End of Life Care in Gynecologic Cancer Patients

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Abstract

Objective—To develop and validate a scale that assesses the readiness of gynecologic oncology patients to engage in advance care planning.

Methods—The Advance Care Planning Readiness Scale (ACPRS) was validated across three independent samples of gynecologic oncology patients. In Step I, patients underwent cognitive interviewing to determine if the scale items were comprehensible and applicable to patients. Based on this, modifications to the scale (addition, removal, and merger of items) were completed. In Step II, the revised scale was administered to a new sample of patients to assess scale reliability and validity. An exploratory factor analysis determined if the scale loaded onto unique factors. In Step III, the revised scale was administered to a third sample of patients and a confirmatory factor

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analysis was conducted to test the factor structure proposed in Step II. Associations between ACPRS score and completion of advance directives were evaluated.

Results—Based on patients' responses, the original ACPRS used in Step I was modified to the ACPRS used in Step II. The final 8-item ACPRS is a valid, reliable (Cronbach's $\alpha = 0.81$) scale and has two primary factors. Women with medical power of attorney documents and living wills had higher ACPRS total scores than those who did not have these advance directives ($p = 0.0030$). Women with do-not-resuscitate orders (DNRs) had higher ACPRS total scores than women without DNRs ($p = 0.0176$).

Conclusions—The ACPRS is a valid and reliable 8-item scale that assesses the readiness of gynecologic oncology patients to discuss advance care planning issues.

Introduction

Communication regarding advance care planning is an important, but often neglected, component of caring for patients with cancer (1). Early advance care planning allows the patient to transition from active treatment of cancer to the management of the physical, spiritual, and emotional needs of the terminally ill patient. Advance care planning is defined as the activities that the patient participates in with her healthcare team and her family to determine her end-of-life care (EOLC) goals (2, 3). This planning includes the creation of advance directives such as a Medical Power of Attorney, Living Will, and Do Not Resuscitate (DNR) order and discussions between the patient, the healthcare team, and the patient's family regarding the patient's overall EOLC goals relating to the management of her disease and the transition to the end of life (2, 3).

Research demonstrates that early EOLC discussions can improve the likelihood that patients' final wishes are honored at the end of life and may result in decreased distress for the patient (4). Early EOLC discussions are associated with a decreased number of invasive procedures and treatments at the end of life, resulting in increased quality of life (QOL) and decreased health-care costs (5–7). Both the American Society of Clinical Oncology (ASCO) and the National Comprehensive Cancer Network (NCCN) recommend that advance care planning discussions occur early in a cancer patient's disease course (8, 9).

Patients experience differing levels of comfort discussing EOLC issues with their providers, making this an area that could benefit from interventions targeted at improving patient-provider communication. Specifically, the ability to objectively assess a patient's interest in discussing EOLC issues could allow for better patient/provider communication by identifying those patients who are interested in and open to talking about their EOLC preferences. Unfortunately, no standardized scale currently exists to assist providers in assessing oncology patients' willingness and readiness to discuss these topics. The goal of this study was to develop and validate a scale that assesses the readiness of gynecologic oncology patients to engage in EOLC discussions, which are a critical part of advance care planning.

Materials and Methods

The Advance Care Planning Readiness Scale (ACPRS) was validated across three independent samples (Steps I-III) of gynecologic oncology patients at The University of Texas MD Anderson Cancer Center. Patients were eligible to participate in the IRB approved study if they: 1) had a gynecologic malignancy, 2) were currently receiving treatment or in active surveillance at our institution, 3) had an ECOG (Eastern Cooperative Oncology Group) performance score of 2 or less, 4) were able to speak, read, and understand English, 5) were able to provide written informed consent. Patients meeting the eligibility criteria were identified using clinic templates and the electronic medical record. Eligible patients were then recruited from the Gynecology Clinic at their follow-up appointment. Patients were intentionally recruited to evenly represent women receiving treatment and those not in order to allow equal representation of patients undergoing treatment and those in surveillance. Participation was voluntary and without compensation. The anonymity of the participants was maintained throughout the study and patients' attending physician (treating provider) had no knowledge of patient survey responses. All results were anonymized before statistical analyses. The three steps necessary for validation of a scale were conducted in the present study. Step I is the formation and development of the scale. Step II tests the reliability and validity of the scale and examines how many factors (or subcategories) the scale has. Step III confirms that the number of factors identified in Step II is correct. The methodology of each step in the scale validation is described below.

Step I Methodology

The initial ACPRS was a 13-item scale developed by generating a larger pool of items based on issues covered in the EOLC literature, physicians' experiences with patients, and items pilot-tested by the investigators. Previous unpublished work by one of the authors of this protocol (AJB) pre-tested an end-of-life care readiness scale composed of two factors: Willingness to Discuss EOLC and the Acceptance of EOLC among 140 patients seen in a Gynecologic Oncology clinic in Baltimore, MD. This evaluation demonstrated good internal reliability within those two factors with a Cronbach's $\alpha = 0.77$ for the Willingness to Discuss EOLC factor and Cronbach's $\alpha = 0.71$ for the Acceptance of EOLC factor. Scale validation was not done during this study but it demonstrated the potential internal validity of this type of construct. Additional items were added to the pilot scale after discussion of important topics relating to end-of-life care with an expert panel of gynecologic oncologists, communication specialists, and survey development experts. The final pool of items included in the current study were reviewed and modified by this expert panel. The 13-item ACPRS had a seven-point Likert-type response scale (1 = strongly disagree, 7 = strongly agree). Higher scores on the ACPRS indicate increased overall readiness to discuss and make EOLC decisions.

Twenty-five patients were enrolled in Step I. Patients completed a background questionnaire regarding age, race/ethnicity, marital status, education, religion, and occupation. Details regarding the patient's cancer, current treatment, and presence of DNR and Advance Directives were obtained from the medical record. Participants completed the self-administered 13-item ACPRS. Following scale completion, trained research personnel

conducted a cognitive interview regarding the 13-item ACPRS using methods outlined by Rubin and Rubin (10). All interviews were recorded via a digital recorder and audited by the study staff who completed the cognitive interviews in order to collect data for the thematic analysis.

Step II Methodology

The modified 11-item scale created from Step I (see results) was tested for reliability and validity in Step II with an independent sample of 110 patients. Patients were asked to complete the Step I background questionnaire, the modified 11-item ACPRS, and three additional measures to assess convergent and divergent validity (detailed below). Details regarding the patient's cancer were obtained from the medical record as in Step I. Patients received an addressed, stamped envelope and were asked to take the ACPRS home and complete it again one week after their initial participation in the study in order to assess test-retest reliability.

Questionnaires Used in Step II

PEACE Questionnaire: A validated 12-item measure composed of two subscales: a 7-item Struggle with Illness subscale and a 5-item Peaceful Acceptance subscale (11). All items are measured using a 4-point Likert type scale (1 = not at all, 4 = to a large extent). Higher scores indicate, respectively, increased struggle with illness or peaceful acceptance. The Struggle with Illness subscale has a significant positive association with advance care planning activities such as living will formation or healthcare proxy designation (11). The Peaceful Acceptance subscale has a significant inverse relationship with feeding tube usage at the end of life. (11) This scale was used to assess the convergent validity of the ACPRS. We hypothesized that the ACPRS would be positively associated with the Struggle with Illness and the Peaceful Acceptance subscales.

Templers' Death Anxiety Scale (DAS): A validated scale composed of 15 true/false questions that assess an individual's level of anxiety surrounding death (12). A higher score indicates increased death anxiety. This scale was used to assess the convergent validity of the ACPRS. We hypothesized that the ACPRS would be negatively associated with the DAS.

Shortened Marlowe-Crowne Social Desirability Scale (MCSDS): A validated scale composed of 10 true/false questions that assess an individual's endorsement of socially desirable characteristics (13, 14). A higher score indicates increased concern for being viewed as having socially desirable characteristics. This scale was utilized to assess the divergent validity of the ACPRS because the two were not expected to be associated.

Step III: Methodology

A confirmatory factor analysis (CFA) of the ACPRS was conducted with an independent sample of 110 patients in order to verify the results obtained in Step II. Patients completed the Step I background questionnaire and the 11-item ACPRS. Details regarding the patient's cancer were obtained from the medical record as in Step I.

Step I: Statistical Analyses

Thematic analysis was utilized to code the qualitative data from the cognitive interviews to determine which items should be modified (to enhance understanding), cut (due to irrelevance to patients), or added (due to importance to patients) to the 13-item ACPRS prior to beginning Step II.

Step II: Statistical Analyses

Cronbach's alpha was calculated to assess internal reliability. An exploratory factor analysis (EFA) was conducted to determine the factors/constructs that the ACPRS measured. Convergent validity was assessed by correlating ACPRS scores with PEACE Struggle, PEACE Acceptance, and DAS scores. A Bonferroni correction was applied to control for Type I errors when assessing convergent validity; therefore a cutoff of $p < 0.0167$ for correlations was used to assess convergence in order to achieve a familywise Type I error of 0.05.

Divergent validity was assessed by correlating the ACPRS with the MCSDS and testing $H_A: \rho = 0$. If the 90% confidence interval for this correlation was wholly contained within this interval $[-0.30, 0.30]$, we concluded that the scales diverged. Finally, test-retest reliability was assessed by correlating ACPRS scores with those taken a week later by a subset of participants (those who completed the scale within 7 days post-assessment).

Step III: Statistical Analyses

A confirmatory factor analysis (CFA) was conducted to verify that the results obtained from Step II and the EFA performed were reproducible (Figure 1). Model fit was evaluated by examining: 1) the root mean square error of approximation (RMSEA)(15), 2) the Tucker Lewis Index (TLI), also known as the Non-Normed Fit Index (NNFI), 3) the Comparative Fit Index (CFI)(16) and the standardized root mean square residual (SRMR) (18).

Results

Step I: Results

Patients from this sample were predominately white (84%) and had endometrial (44%) or ovarian cancer (40%) (Table 1). Participation rate was 93% (25/27). Most found the ACPRS clear and straightforward. A recurring theme suggested by patients was to add qualifiers to the questions, such as specifying what "medical treatment" meant (e.g., "CPR") as well as using "if my cancer were terminal/untreatable" to specify when EOLC discussions or planning would occur. Using the information collected during the cognitive interviewing in Step I, the original 13-item ACPRS used in Step I was modified to form the 11-item ACPRS used in Step II (Supplementary Table 1).

Step II Results

Patients from this sample were predominately white (76.36%) and had ovarian (46%) or endometrial cancer (35%) (Table 1). Participation rate was 74% (110/149).

Reliability—The initial assessment of reliability indicated that Items 1, 3 and 10 (from the modified 11-item scale administered in Step II) had low correlations with the total score (< 0.3). Accordingly, these items were removed from the ACPRS, resulting in the final 8-item scale (Table 2). Reliability of the modified 8-item scale was good with Cronbach's $\alpha = 0.81$ (Table 3). Reliability was assessed separately for patients with active disease and those in surveillance. Reliability in both cases was similarly good (Supplementary Tables 2 and 3). Test-retest reliability for the modified ACPRS was adequate ($r = 0.73$; 95% CI: 0.60 – 0.83) (Supplementary Table 4). The modified 8-item ACPRS was used for all subsequent analyses (Table 4).

Exploratory Factor Analysis (EFA)—Principal components factoring was used to extract factors from the data. An examination of the scree plot indicated that two factors would be sufficient to explain 70% of the variability in the data, suggesting that the 8-item ACPRS represents a two-factor scale (Table 5). An examination of the rotated factors indicated that Items 2, 4, 5, 6 and 7 of the 8-item ACPRS loaded heavily onto Factor 1 (Willingness to Discuss EOLC) and Items 8, 9 and 11 loaded heavily onto Factor 2 (Acceptance of EOLC). With the exception of Item 11, uniqueness ranged from 0.19 to 0.32. Accordingly, each item other than Item 11 was assumed to measure a unique component of the two factors.

Validity—The 8-item ACPRS was positively correlated with the PEACE Acceptance subscale ($r = 0.35$, $p = 0.0005$) and negatively correlated with the PEACE Struggle subscale ($r = -0.28$, $p = 0.0055$), providing evidence for convergent validity. It was not significantly correlated with the DAS. It was adequately divergent from the MCSDS ($r = -0.05$; 90% CI: -0.23 – 0.12). Validation of the scale held when examining only those with active disease, but failed to find convergent validity when examining only those in surveillance (Supplementary Table 4).

ACPRS Associations with Demographic, Medical, and EOLC Outcomes—Table 4 provides the association between the ACPRS score with demographic, medical, and EOLC outcomes. Women with a living will or medical power of attorney had higher ACPRS total, willingness, and acceptance scores than those who did not have advance directives ($p = 0.0030$, $p = 0.0328$, and $p = 0.0031$, respectively). Additionally, women with DNRs had higher ACPRS acceptance and total scores than women without DNRs ($p = 0.0322$ and $p = 0.0176$, respectively). Cancer site or stage did not impact patients' ACPRS score.

Step III Results

Patients from this sample were predominately white (75%) and had ovarian cancer (54%) (Table 1). Participation rate was 84% (110/131).

Confirmatory Factor Analysis (CFA)—An initial CFA indicated a modestly fitting model (RMSEA = 0.18, $\text{Pr}[\text{RMSEA} \leq 0.05] < 0.001$; CFI = 0.89; TLI = 0.84; SRMR = 0.07). (15–17). However, modification indices indicated that the error term for Item 3 (Item 5 on the original scale) was correlated with the error term for Item 4 (MI = 36.12) and subsequently Item 5 (MI = 14.87) (Items 6 and 7 on the original scale). Because correlation

between e_3 with both e_4 and e_5 seemed plausible, a final CFA was constructed accounting for these correlations between error terms. The fit of this final model was much improved (RMSEA = 0.096; $\Pr[\text{RMSEA} \leq 0.05] = 0.06$; CFI = 0.97; TLI = 0.96; SRMR = 0.07), giving evidence that the ACPRS does measure two factors: 1) Willingness to Discuss EOLC and 2) Acceptance of EOLC (Figure 1).

Conclusions

The results of our study indicate that the ACPRS is a valid and reliable scale composed of two factors: 1) Willingness to Discuss EOLC and 2) Acceptance of EOLC. The scale was associated with patients' advance care planning documentation, with those with a higher total ACPRS score being more likely to have advance care documentation such as a Medical Power of Attorney, a Living Will, or a DNR order. This suggests that the ACPRS may be useful in assessing a patient's interest in engaging in advance care planning conversations with her medical provider and may indicate to providers when patients are ready to initiate advance care planning documentation.

Convergent validity of the ACPRS was assessed by examining the association between the ACPRS and the PEACE scale and the DAS. We found a positive correlation with the PEACE Acceptance subscale but a negative correlation with the PEACE Struggle subscale. The negative correlation observed between the ACPRS and the PEACE Struggle subscale inherently makes sense, but the directionality is not as originally hypothesized. We had originally thought the two scales would be positively correlated based on findings described in the methods section. The negative correlation noted between the ACPRS and the PEACE Struggle subscale may be due to attributes of the PEACE scale that were not taken into consideration prior to data collection for our study. For example, the original PEACE study consisted only of patients with terminal disease, but 47% of our subjects were free of their cancer and in surveillance (11). Additionally, of those being treated for cancer, terminal disease was not an eligibility requirement for our study. It is possible that because patients in the PEACE study were terminally ill, they were more likely to have addressed EOLC issues when compared to our sample. Additionally, 50% of the patients in the PEACE study were men, but our study only consisted of women. Men may struggle with their illness differently than women and may be more likely to implement advance care planning documentation, thus leading to a positive correlation between Struggle with Illness and advance care planning documents.

The ACPRS had a trend toward a negative correlation with the DAS, but the correlation was not significant as originally hypothesized. This could be because the analysis was not properly powered to assess whether or not the relationship was statistically significant since many patients choose not to complete the DAS. Specifically, many patients chose not to complete this scale because they felt it was too "morbid" since it asked pointed questions regarding how the patient felt about death.

Divergent validity of the ACPRS was assessed by examining the relationship between the ACPRS and the MCSDS. The ACPRS was not significantly correlated with the MCSDS, confirming the divergent validity of the scale. Reliability testing of the ACPRS indicate that

the total ACPRS as well as its two subscales (Willingness to Discuss EOLC and Acceptance of EOLC) are internally consistent. Moreover, the test-retest reliability indicates that this measure is reliable over time.

The strengths of our study include that it adhered to stringent psychometric scale development methodology and was developed in conjunction with input from physicians, psychometricians, and patients. The patients in our study were at varying points in their cancer management, which allows for the scale to be generalized to a broader population that includes patients in all stages of cancer management.

Our study was limited by the fact that it was restricted to female participants with a gynecologic malignancy. Additionally, our patients were American and the majority were white. The fact that our study population consisted of American, white women limits the ability to generalize the ACPRS to other populations. Accordingly, the scale in its current state is not reliable to use among patients who are not women, do not speak English, and are not American (i.e. other cultures outside of the one that the ACPRS was validated in). This is a limitation present in all scale validation studies. Future developments of the scale should include male participants, other cultures, and other cancer types to assess whether the scale is valid to administer to other populations outside of American women with a gynecologic cancer. Additionally, future work should examine what potential “cut off” points using this scale would indicate that a patient is ready and willing to begin discussing advance care planning and end-of-life care. This could help guide clinicians regarding when to have these difficult conversations.

Early discussion regarding advance care planning goals for cancer patients is a quality care indicator that is likely to be more scrutinized in the future. Providers must develop ways to improve communication with patients regarding these topics. Tools that assess a patient’s level of comfort and interest in these discussions may encourage the conversations to occur in a timely and efficient manner. Although EOLC conversations are challenging, it is imperative that providers encourage patients to engage in these difficult conversations prior to progressing to an advanced state of illness that renders them unable to make decisions for themselves (18). The ACPRS is an 8-item scale that is valid and reliable. The scale provides a foundation for a tool that may be utilized to assess a gynecologic oncology patient’s readiness to discuss EOLC topics and their acceptance of the need of EOLC support. We plan to conduct further evaluation of the ACPRS scale in other gynecologic oncology patient populations in order to identify the ACPRS score that constitutes patient readiness to discuss EOLC, to evaluate how often the scale should be administered, and to evaluate the best time to administer the scale to patients.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1. Model depicting standardized results from Confirmatory Factor Analysis of modified 8-item Advance Care Planning Readiness Scale

Figure 1. Model depicting standardized results from Confirmatory Factor Analysis (CFA) of modified 8-item Advance Care Planning Readiness Scale (ACPRS). Item 1 in diagram corresponds with Item 2 of original scale; Item 2 in diagram corresponds with Item 4 of original scale. Item 3 above corresponds with previous Item 5; Item 4 above corresponds with previous Item 6, Item 5 above corresponds with previous Item 7; Item 6 above corresponds with previous Item 8; Item 7 above corresponds with previous Item 9; and Item 8 above corresponds with previous Item 11.

Table 1

Demographic and Clinical Summary of Steps I, II and III

		Step 1 N (%)	Step 2 N (%)	Step 3 N (%)	p-value
Age	N	25	110	110	0.8008
	Mean (SD)	60.01 (10.47)	58.82 (12.06)	58.18 (14.19)	
	Median	63	61	58	
	Min - Max	41 – 81	24 – 82	28 – 85	
Race	White	21 (84.00%)	84 (76.36%)	82 (74.55%)	0.2474
	African American	1 (4.00%)	4 (3.64%)	9 (8.18%)	
	Hispanic	1 (4.00%)	18 (16.36%)	16 (14.55%)	
	Asian	0 (0.00%)	3 (2.73%)	2 (1.82%)	
	Other	2 (8.00%)	1 (0.91%)	1 (0.91%)	
Education	Elementary, HS, GED	7 (28.00%)	31 (28.18%)	48 (43.64%)	0.0441
	Associate, Undergraduate, Graduate	18 (72.00%)	79 (71.82%)	62 (56.36%)	
Cancer Site	Ovarian	10 (40.00%)	51 (46.36%)	59 (53.64%)	0.2981
	Uterine	11 (44.00%)	38 (34.55%)	26 (23.64%)	
	Cervical	4 (16.00%)	17 (15.45%)	17 (15.45%)	
	Vulvar/Vaginal	0 (0.00%)	4 (3.64%)	8 (7.27%)	
Stage	Not Staged	0 (0.00%)	12 (11.01%)	13 (11.82%)	0.7273
	Stage I	7 (29.17%)	31 (28.44%)	27 (24.55%)	
	Stage II	2 (8.33%)	9 (8.26%)	13 (11.82%)	
	Stage III	11 (45.83%)	43 (39.45%)	39 (35.45%)	
	Stage IV	4 (16.67%)	14 (12.84%)	18 (16.36%)	
	Unknown/Missing	1	1	0	
Cancer Management	Surveillance	13 (52.00%)	55 (50.00%)	46 (41.82%)	0.4125
	Primary/Recurrence	12 (48.00%)	55 (50.00%)	64 (58.18%)	
Current Treatment	Current Treatment	13 (52.00%)	55 (50.00%)	55 (50.00%)	> 0.9999
	No Treatment or Maintenance	12 (48.00%)	55 (50.00%)	55 (50.00%)	

Table 2

8-item Advance Care Planning Readiness Scale (ACPRS)

Item	Correlation with Total	Action Taken	On final, 8 item ACPRS?
Item 1. I have thought about whether or not I would want medical help to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.*	0.19	Removed item	No
Item 2. It is important to tell my family whether or not I want medical help to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.	0.40	Kept item	Yes
Item 3. I am uncomfortable thinking about whether or not I would want medical help to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.*	0.24	Removed item	No
Item 4. I feel ok talking with my doctor about what medical help I would want to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.	0.48	Kept item	Yes
Item 5. If I have tried many treatments and my cancer cannot be cured, I feel ok with my doctor talking to me about medications that will reduce the symptoms of my cancer but will not treat my cancer.	0.68	Kept item	Yes
Item 6. I feel ok with my doctor talking to me about hospice care.	0.72	Kept item	Yes
Item 7. I feel ok talking with my family about what medical help I would want to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.	0.57	Kept item	Yes
Item 8. If my cancer is not responding to treatment and I am prevented from doing most of the things I enjoy, there is no point in continuing treatment.	0.54	Kept item	Yes
Item 9. I would prefer to live a shorter life with mild symptoms of my cancer than live a longer life with severe symptoms of my cancer.	0.33	Kept item	Yes
Item 10. I will want to try all cancer treatments possible even if my doctor tells me there is no cure for my cancer.*	0.16	Removed item	No
Item 11. I am peaceful when talking about the end of my life.	0.37	Kept item	Yes

* Item was removed from the Advance Care Planning Readiness Scale because it had a low correlation with the total score (<0.3).

Table 3
Reliability for 8-item Advance Care Planning Readiness Scale: Step II Study Population

Item	Mean (SD)	Correlation with Total	Cronbach's α
Total Score	44.86 (7.77) N: 99 Median: 46 Min - Max: 11 - 56		0.81
Item 2. It is important to tell my family whether or not I want medical help to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.	6.05 (1.66)	0.41	0.80
Item 4. I feel ok talking with my doctor about what medical help I would want to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.	5.86 (1.48)	0.49	0.79
Item 5. If I have tried many treatments and my cancer cannot be cured, I feel ok with my doctor talking to me about medications that will reduce the symptoms of my cancer but will not treat my cancer.	6.01 (1.42)	0.69	0.76
Item 6. I feel ok with my doctor talking to me about hospice care.	5.94 (1.32)	0.76	0.75
Item 7. I feel ok talking with my family about what medical help I would want to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.	6.12 (1.16)	0.58	0.77
Item 8. If my cancer is not responding to treatment and I am prevented from doing most of the things I enjoy, there is no point in continuing treatment.	4.58 (1.92)	0.52	0.78
Item 9. I would prefer to live a shorter life with mild symptoms of my cancer than live a longer life with severe symptoms of my cancer.	5.05 (1.59)	0.30	0.81
Item 11. I am peaceful when talking about the end of my life.	5.25 (1.51)	0.41	0.80

Advance Care Planning Readiness Scale's Association with Demographics, Disease, and Advance Care Planning Documents (Step II Study Population, $n=110^*$).

Table 4

Characteristic	Total Score			Willingness			Acceptance		
	N	Mean (SD)	Median (Min-Max)	N	Mean (SD)	Median (Min-Max)	N	Mean (SD)	Median (Min-Max)
Age			$p = 0.1339$ $r = 0.15$		$p = 0.3764$ $r = 0.09$			$p = 0.0755$ $r = 0.18$	
Race			$p = 0.0582$			$p = 0.0664$			$p = 0.2154$
White	76	45.67 (7.32)	46.5 (26 – 56)	76	45.67 (7.32)	46.5 (26 – 56)	76	45.67 (7.32)	46.5 (26 – 56)
Non-White	23	42.17 (8.74)	44.0 (11 – 54)	23	42.17 (8.74)	44.0 (11 – 54)	23	42.17 (8.74)	44.0 (11 – 54)
Education			$p = 0.3911$			$p = 0.5256$			$p = 0.4022$
Elementary, HS, GED	28	43.79 (6.72)	44.0 (27 – 56)	28	43.79 (6.72)	44.0 (27 – 56)	28	43.79 (6.72)	44.0 (27 – 56)
Associate, Undergraduate, Graduate	71	45.28 (8.15)	46.0 (11 – 56)	71	45.28 (8.15)	46.0 (11 – 56)	71	45.28 (8.15)	46.0 (11 – 56)
Cancer Site			$p = 0.6967$			$p = 0.9773$			$p = 0.2900$
Ovarian	50	45.62 (7.20)	46.5 (27 – 56)	50	45.62 (7.20)	46.5 (27 – 56)	50	45.62 (7.20)	46.5 (27 – 56)
Uterine	30	44.07 (9.12)	46.0 (11 – 56)	30	44.07 (9.12)	46.0 (11 – 56)	30	44.07 (9.12)	46.0 (11 – 56)
Cervical	16	43.56 (7.42)	43.0 (28 – 56)	16	43.56 (7.42)	43.0 (28 – 56)	16	43.56 (7.42)	43.0 (28 – 56)
Vulvar/Vaginal	3	47.00 (5.20)	44.0 (44 – 53)	3	47.00 (5.20)	44.0 (44 – 53)	3	47.00 (5.20)	44.0 (44 – 53)
Stage			$p = 0.5929$			$p = 0.6418$			$p = 0.7464$
Not Staged	12	45.75 (7.36)	47.5 (30 – 56)	12	45.75 (7.36)	47.5 (30 – 56)	12	45.75 (7.36)	47.5 (30 – 56)
Stage I	27	46.19 (6.95)	46.0 (28 – 56)	27	46.19 (6.95)	46.0 (28 – 56)	27	46.19 (6.95)	46.0 (28 – 56)
Stage II	7	47.14 (4.95)	45.0 (42 – 55)	7	47.14 (4.95)	45.0 (42 – 55)	7	47.14 (4.95)	45.0 (42 – 55)
Stage III	41	43.49 (9.16)	45.0 (11 – 56)	41	43.49 (9.16)	45.0 (11 – 56)	41	43.49 (9.16)	45.0 (11 – 56)
Stage IV	11	44.36 (6.23)	45.0 (34 – 56)	11	44.36 (6.23)	45.0 (34 – 56)	11	44.36 (6.23)	45.0 (34 – 56)
Current Treatment			$p = 0.9781$			$p = 0.4817$			$p = 0.2996$
Surveillance	49	44.84 (7.66)	46.0 (11 – 56)	49	30.37 (5.41)	31.0 (5 – 35)	49	14.47 (4.07)	15.0 (5 – 21)
Current Treatment	50	44.88 (7.95)	46.0 (26 – 56)	50	29.60 (5.40)	30.0 (13 – 35)	50	15.28 (3.65)	16.0 (6 – 21)
Have DNR			$p = 0.0176$			$p = 0.0826$			$p = 0.0322$
Yes	35	47.09 (5.60)	47.0 (30 – 56)	35	31.09 (3.60)	32.0 (20 – 35)	35	16.00 (3.16)	16.0 (9 – 21)

Characteristic	Total Score			Willingness			Acceptance		
	N	Mean (SD)	Median (Min-Max)	N	Mean (SD)	Median (Min-Max)	N	Mean (SD)	Median (Min-Max)
No	64	43.64 (8.53)	44.0 (11 – 56)	64	29.38 (6.10)	30.0 (5 – 35)	64	14.27 (4.10)	14.0 (5 – 21)
Have Living Will or Medical Power of Attorney									
Yes	50	47.12 (6.79)	47.5 (27 – 56)	50	31.12 (4.81)	32.0 (13 – 35)	50	16.00 (3.27)	16.0 (9 – 21)
No	49	42.55 (8.09)	44.0 (11 – 56)	49	28.82 (5.74)	30.0 (5 – 35)	49	13.73 (4.12)	14.0 (5 – 21)

p = 0.0030

p = 0.0328

p = 0.0031

Table 5

Factor loadings for final version of Advance Care Planning Readiness Scale after rotation (Step II Study Population, $n=110$).

Item	Factor1 (Willingness to Discuss EOLC*)	Factor2 (Acceptance of EOLC*)	Uniqueness
Item 2. It is important to tell my family whether or not I want medical help to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.	0.91	-0.21	0.27
Item 4. I feel ok talking with my doctor about what medical help I would want to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.	0.83	-0.02	0.32
Item 5. If I have tried many treatments and my cancer cannot be cured, I feel ok with my doctor talking to me about medications that will reduce the symptoms of my cancer but will not treat my cancer.	0.75	0.25	0.24
Item 6. I feel ok with my doctor talking to me about hospice care.	0.73	0.33	0.19
Item 7. I feel ok talking with my family about what medical help I would want to keep my heart and lungs working (cardiopulmonary resuscitation (CPR) or letting a machine breathe for me) if I were unconscious and unlikely to recover.	0.83	0.03	0.29
Item 8. If my cancer is not responding to treatment and I am prevented from doing most of the things I enjoy, there is no point in continuing treatment.	0.13	0.77	0.32
Item 9. I would prefer to live a shorter life with mild symptoms of my cancer than live a longer life with severe symptoms of my cancer.	-0.16	0.91	0.24
Item 11. I am peaceful when talking about the end of my life.	0.14	0.59	0.57

* EOLC= End of life care