


CancerSupportSource-Spanish: Development of a Distress Screening Measure for Spanish-Speaking Hispanic and Latino Individuals with Cancer

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Abstract

Introduction: CancerSupportSource (CSS), a distress screening and referral program, identifies unmet needs of people with cancer and links them to resources and support. We developed and validated a Spanish-language version (CSS-Spanish) to better serve Hispanic and Latino communities and promote health equity. **Methods:** The 25-item CSS-Spanish was created leveraging rigorous translation methods and cognitive interviews to ensure cultural relevance and topical breadth. A total of 210 Spanish-speaking Hispanic and Latino individuals completed CSS-Spanish and comparison measures. Psychometric analyses examined dimensionality and statistical validation, and determined scoring thresholds for depression and anxiety risk subscales. **Results:** CSS-Spanish represented key concerns across five factors and exhibited strong internal consistency and test–retest reliability, convergent validity, and known-groups validity. Risk subscales demonstrated adequate sensitivity. **Conclusion:** CSS-Spanish is a reliable, valid multidimensional distress screener that rapidly assesses needs of Hispanic and Latino individuals. Embedded depression and anxiety risk flags can support staff in identifying those with high-acuity needs.

Keywords

psychometric evaluation of translated and adapted surveys, psychological measurement, oncology, quality of life, depression, Hispanic and Latino Americans

Introduction

Cancer patients' experiences of distress and unmet psychosocial and logistical needs not only affect well-being but are also linked to adverse implications for clinical outcomes, use of health services, treatment adherence, and healthcare costs (Han et al., 2015). Distress screening is, therefore, an integral part of cancer care (Institute of Medicine, 2008; National Comprehensive Cancer Network, 2020). In an effort to provide oncology teams with feasible and practical tools to screen for distress among cancer patients and survivors, Cancer Support Community developed the CancerSupportSource (CSS) distress screening and referral program. CSS identifies important concerns and unmet needs through a validated, multidimensional distress screener (Buzaglo et al., 2020; Zaleta et al., 2021), alerts healthcare providers when patients desire additional support, and flags respondents at risk for clinically significant levels of depression and anxiety. CSS has been successfully implemented across Cancer Support Community's networks, including Cancer Support Community and Gilda's Club partners, as well as in hospital and healthcare settings across the U.S.

Though distress screening is critical for people of all races and ethnicities, those who do not speak English—particularly Hispanic and Latino individuals, who account for nearly 20% of the U.S. population (Miller et al., 2021)—often lack access to culturally and linguistically competent, psychometrically validated tools (Sanchez et al., 2014). Similarly, providers may not have referral mechanisms to support Spanish-speaking patients experiencing psychosocial distress (Anatchkova et al., 2018). Lower rates of distress screening and fewer resources to address unmet needs may contribute to the disparities observed in Hispanic and Latino people with cancer (Merz et al., 2011). Hispanic and Latino individuals are more likely to receive a late-stage diagnosis, have increased time between diagnosis

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and initiation of treatment, and report lower quality of life (Yanez, McGinty et al., 2016). Among quality-of-life indicators, poorer mental health outcomes, such as symptoms of depression and anxiety, are more frequently reported among Hispanic and Latino people with cancer than non-Hispanic patients. Poorer mental health among Hispanic and Latino patients and survivors may be due not only to socioeconomic status differences and later-stage diagnoses, but also to language barriers, culturally relevant beliefs and expectations, and knowledge of the healthcare system in the U.S. (Ashing-Giwa et al., 2004; Yanez, McGinty et al., 2016; Yanez, Thompson et al., 2011). Considering these important disparities, a critical need exists to develop and validate tools that support systematic screening for distress among Spanish-speaking Hispanic and Latino individuals living with cancer.

To address this need, Cancer Support Community developed a Spanish language adaptation of CSS, CancerSupportSource-Spanish (CSS-Spanish), as a feasible, multidimensional distress screening and referral program for use among Spanish-speaking Hispanic and Latino individuals living with cancer. Here, we describe the development and validation of the CSS-Spanish distress screener, addressing the following specific aims: (1) use gold standard translation methods and cognitive testing to create a Spanish version of the CSS distress screener; and (2) examine the psychometric properties of the CSS-Spanish distress screener, including the depression and anxiety risk screening subscales to establish appropriate cutoffs, via survey validation.

Method and Results

Phase 1: Translation and Cognitive Interviews

Translation. Following gold standard translation procedures (Eremenco et al., 2017; Wild et al., 2005) and considering common Spanish dialects in the U.S., our translation process was accomplished in five steps, the last four of which were completed by TransPerfect Translations International: (1) Prepare the 25 items for Spanish translation to ensure cultural appropriateness and relevance by reviewing them with a project advisory committee consisting of a patient advocate, psychologist, oncology certified nurse, and social workers with direct experience working with Spanish-speaking Hispanic and Latino communities; (2) Forward translation, whereby a linguistic team translated the items from English to Spanish; (3) Back translation, where a separate linguistic team translated the items from Spanish to English; (4) Reconciliation, where item translations were compared and edits made to ensure conceptual equivalence between languages; and (5) Review and harmonization, where we reviewed multiple translations in consultation with the project advisory committee, identifying content for further review via cognitive interviews.

Cognitive Interview Participants and Procedures. We partnered with NORC at the University of Chicago, where three bilingual researchers performed interviews with study participants to assess item translation, cultural appropriateness, and breadth

of content covered by the CSS-Spanish screener. Interviews were conducted over 3 weeks in November and December of 2020. Participants were presented with a brief description of the project's goals prior to administering the CSS-Spanish distress screener items. In instances where multiple versions of the item translations were considered, participants were asked to reflect on which phrasing best captured the intended meaning in the context of cancer. Interviewers probed in situations where participants had problems with a particular phrase or question. After performing cognitive interviews, NORC researchers provided results and recommendations to our study team, which were then discussed with the project advisory committee prior to determining the final CSS-Spanish screener content.

Participant recruitment. In partnership with Cancer Support Community's networks, including local Cancer Support Community and Gilda's Club partners, hospital and health care partners, social media, and advocacy partnerships, we recruited 10 cancer patients and survivors who identified as Hispanic or Latino, were native Spanish speakers, and at least 18 years old. Potential respondents completed a screening questionnaire distributed via email. Those who met inclusion criteria were contacted to schedule a virtual interview, which were conducted via phone ($n=9$) or Zoom ($n=1$), per their preference.

NORC IRB. Institutional review was completed and, in accordance with all ethical standards, IRB approval was obtained by the NORC IRB (Protocol Number: 20.11.10). Interviewers obtained verbal informed consent and received permission to record prior to initiating the interviews.

Results. Participant characteristics. All 10 participants identified as Hispanic or Latino and native Spanish speakers; half reported speaking Spanish at least 50% of the time. Participants (eight women; Mean age=46) resided in California, Illinois, Indiana, Michigan, and Texas, with their year of diagnosis between 2005 and 2020 and half in remission at the time of interview.

Cognitive interview findings. Findings confirmed that 11 of the 25 CSS-Spanish items (44%) were understood as intended, and no wording changes were recommended. For 10 items (40%), participants were probed on two versions of translations, and the NORC researchers recommended a version based on participants' feedback. For the remaining four items (16%), participant feedback suggested using a hybrid of the two translations; these items were flagged for further discussion among our study team. All recommendations and learnings from the cognitive interviews were reviewed with the project advisory committee, after which the 25-item CSS-Spanish distress screener was finalized for survey validation.

Phase 2: Survey Validation

Our second aim was survey validation, which we accomplished by examining the psychometric properties of the final CSS-Spanish distress screener.

Participants and Procedures. Data were collected from November 2021 to August 2022 through Cancer Support Community's network, including local Cancer Support Community and Gilda's Club partners, other cancer advocacy organizations serving Hispanic and Latino communities, and health care providers. Participants were 18 years or older, had been diagnosed with cancer at some point in their life, lived in the U.S., and self-identified as Hispanic and/or Latino and fluent in Spanish. All survey materials, including the informed consent, were presented exclusively in Spanish.

WCG IRB (IRB00000533) served as the IRB of record (Protocol number: 20215203). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained after verifying respondents met criteria for participation. No data or identifiable information was retained for respondents who did not meet criteria.

Measures. *CancerSupportSource-Spanish (CSS-Spanish).* CSS-Spanish is a 25-item distress screening measure developed and implemented by Cancer Support Community. Participants rated their level of concern using a 5-point scale (English translation of items: 0 = *Not at all*, 1 = *Slightly*, 2 = *Moderately*, 3 = *Seriously*, 4 = *Very seriously*). A total distress score was calculated as the sum of item ratings. A depression risk score was calculated by summing two items (feeling sad or depressed; feeling lonely or isolated). An anxiety risk score was calculated by summing two items (feeling nervous or afraid; worrying about the future and what lies ahead). Participants completed the measure twice: once at the beginning of the survey and again at the end, allowing for test–retest analysis.

Participants also completed the following cross-validation measures:

Patient-Reported Outcomes Measurement Information System 29 Profile V2.0 (PROMIS-29+2) (Hays et al., 2018): PROMIS-29+2 assesses health-related quality of life across seven domains: Depression, Anxiety, Pain Interference, Fatigue, Sleep Disturbance, Physical Function, and Ability to Participate in Social Roles and Activities. The PROMIS-29+2 also includes two items on cognitive functioning. Each subscale includes four items with participants rating their experiences over the past 7 days, except for Physical and Social subscales which have no specified time frame. Responses are measured on 5-point scales, summed to create a raw subscale score, and transformed into standardized T-scores (mean = 50, standard deviation = 10), with a normative reference group of the US general population, except Sleep Disturbance, where the reference group includes a mix of US population and people with chronic illness.

NCCN Distress Thermometer and Checklist (DT) (Martínez et al., 2013; National Comprehensive Cancer Network, 1999). Participants rated their distress in the past week from 0 (no distress) to 10 (extreme distress).

Patient Health Questionnaire 2-item (PHQ-2) and *Generalized Anxiety Disorder 2-item (GAD-2)* (Staples et al., 2018). Participants completed the PHQ-2, a 2-item depression screening tool, and the GAD-2, a 2-item anxiety screening tool. Scores for each measure range from 0 to 6, with a score of 3 or higher on either scale indicating risk for depression or risk for anxiety, respectively.

Consumer Assessment of Healthcare Providers and Systems (CAHPS) and *Perceived Efficacy in Patient–Physician Interactions (PEPPI)*. Survey participants completed two measures capturing healthcare team communication.

The CAHPS Cancer Care Survey is a validated tool designed to capture the experiences of adult patients receiving cancer treatment (Evensen et al., 2019). Here, we used the 4-item Cancer Care Team Communication subscale in which patients rate how often (1 = *Never*; 4 = *Always*) their cancer care team engages in positive communication during visits, with higher scores indicating better communication (score range: 4–16).

The PEPPI-Brief is a valid and reliable 5-item scale assessing patients' self-efficacy in gathering information and receiving medical attention (Maly et al., 1998). Participants rated how confident they felt in their ability to interact with care providers (1 = *Not at all confident*; 5 = *Extremely confident*). Responses are summed such that higher scores equal higher patient-perceived self-efficacy (score range: 5–25).

Dyadic Adjustment Scale (DAS). Two subscales from the DAS captured relationship satisfaction and perceptions (Spanier, 1976). The 5-item Dyadic Cohesion subscale (DAS-DC) measured closeness and shared activities, and the 4-item Affectional Expression subscale (DAS-AE) quantified displays of emotional affection. Higher scores reflected more positive dyadic adjustment and less distress. Participants not involved in a romantic relationship could select Not Applicable for these items.

Sociodemographic and clinical characteristics. Participants provided information on age, gender identity, race, Hispanic or Latino origin, percent time they speak Spanish, relationship status, zip code, education, annual income, and employment status. Additionally, participants provided their primary cancer diagnosis, year of diagnosis, stage at diagnosis, current cancer status and stage, ever metastatic (yes/no/do not know), number of cancer recurrences, current and past cancer treatment, and general health status.

Analysis. Data analysis was conducted using IBM SPSS Statistics 24.0 (IBM Corp, Armonk, NY) and R 3.6.2 (R Foundation for Statistical Computing, Vienna, Austria), with GPArotation (Bernaards & Jennrich, 2005), psych (Revelle, 2017), and lavaan (Bernaards & Jennrich, 2005) R packages.

Confirmatory validation analysis and evaluation of psychometric properties. Our goal was to corroborate the dimensionality and psychometric properties of the newly translated CSS-Spanish screener based on the existing factor structure and risk screening subscales of the English version of CSS. Thus, we performed the following analyses: (1) confirmatory factor analysis; (2) evaluation of internal consistency reliability,

test–retest reliability, convergent validity, and known-groups validity; and (3) nonparametric receiver operating characteristic (ROC) curve analyses.

Confirmatory factor analysis was conducted using maximum likelihood factor extraction and fixing factor loadings for the first indicator in each factor to 1.0. We evaluated goodness of fit with absolute and relative fit indices. Overall model fit was assessed using goodness of fit criteria: Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), and Tucker–Lewis Index (TLI). The models were considered to have good fit if the RMSEA was <0.06 , SRMR <0.08 , CFI >0.95 , and TLI >0.95 , while RMSEA <0.08 , CFI >0.90 , and TLI >0.90 were considered an acceptable fit (Hu & Bentler, 1999; Schumacker & Lomax, 2016).

Cronbach's alpha estimated internal consistency reliability; intraclass correlation coefficients (ICCs) determined test–retest reliability ($n=206$ completed all retest items). Convergent validity was evaluated through Pearson correlations of the final factors with PROMIS-29+2, DT, PHQ-2, GAD-2, CAHPS, PEPPI, DAS-DC, and DAS-AE scales. Known groups' validity was examined using Cohen's d to estimate effect sizes between identified groups for gender identity, annual income, cancer recurrence, metastatic status, and current treatment. Effect sizes were considered small ($d=0.2$), medium ($d=0.5$), or large ($d=0.8$) based on benchmarks suggested by Cohen (1988). Pearson correlations were used to examine associations with age and time since diagnosis (modeled continuously); correlations were considered large if $r \geq .50$, medium if $r = .30-.49$, and small if $r = .10-.29$ (Cohen, 1992). We hypothesized that younger age, female gender identity, lower annual income ($< \$40K$ vs. $\$40K+$), recurrence, metastatic disease, current treatment, and more recent diagnosis would be associated with greater total distress (Kent & Dionne-Odom, 2018; Wharton & Zivin, 2017; Zabora et al., 2001).

Finally, we conducted ROC analyses to determine scoring thresholds for the 2-item CSS-Spanish depression and anxiety risk scales. The criterion scores used included PROMIS depression ($T \geq 60$) and anxiety ($T \geq 62$) scales (Choi et al., 2014; Schalet et al., 2014) as well as total score ≥ 3 for PHQ-2 and GAD-2 (Staples et al., 2018).

Results

Participant Characteristics. Respondents ($N=210$) were predominantly women (71%) with an average age of 50 (range: 26–79; see Table 1). Education was well-distributed, with roughly equal proportions having education less than or equivalent to high school (33%), some amount of postsecondary schooling (30%), or a bachelor's degree or higher (34%). Nearly half of respondents were working full time (37%) or part time (11%) at the time of survey. Several Latin American and South American countries were represented among participant ethnicities, though the largest group of respondents identified as Mexican or Mexican American (40%), which aligns

Table 1. Descriptive Characteristics and Clinical History of Survey Sample ($N=210$).

		M/n	SD/%
Age		50.0	11.4
Gender identity	Woman	150	71%
	Man/Trans Man	60	29%
Race and ethnicity	Hispanic, Latino/a, or Spanish	181	87%
	Hispanic, Latino/a, or Spanish and White	22	11%
	Hispanic, Latino/a, or Spanish and race other than White	5	2%
	White	1	<1%
	Prefer not to share	1	<1%
Hispanic, Latino/a, or Spanish Origin	Mexican or Mexican American	83	40%
	Columbian	16	8%
	Puerto Rican	16	8%
	Cuban	15	7%
	Dominican	14	7%
	Venezuelan	11	5%
	Peruvian	9	4%
	Honduran	9	4%
	Salvadorian	9	4%
	Ecuadorian	8	4%
	Guatemalan	8	4%
	Other	9	4%
	More than one	1	<1%
	Prefer not to share	2	1%
Primary language at home	Spanish	196	93%
	English	13	6%
	Other	1	<1%
Percent time speaking Spanish	100% of the time	82	39%
	75–99% of the time	70	33%
	50–74% of the time	51	24%
	25–49% of the time	6	3%
	Less than 25% of the time	1	<1%
Relationship status	Legally married	116	55%
	Single, never married	27	13%
	Not married, but in a stable relationship	24	11%
	Divorced, separated, or widowed	40	19%
	Other/prefer not to share	3	2%
Geographic region	Metropolitan area core: primary flow within an urbanized area (UA)	197	92%
	Metropolitan area high commuting: primary flow 30% or more to a UA	10	5%
	Other Metropolitan or Rural area	5	2%
Education	Less than high school	29	14%
	High school diploma/equivalent (GED)	39	19%
	Trade school, some university, or Associate degree	63	30%
	Bachelor's degree	42	20%

(continued)

Table I. (continued)

		M/n	SD/%	
Annual income	Masters, doctorate, or specialist degree	30	14%	
	Other/prefer not to share	7	3%	
	<\$20K	61	29%	
	\$20–39K	37	18%	
	\$40–59K	31	15%	
	\$60–79K	22	11%	
	\$80–99K	9	4%	
	\$100K+	23	11%	
Employment	Prefer not to share / I don't know	27	13%	
	Full time	78	37%	
	Part time	23	11%	
	Temporary employment	8	4%	
	Retired	18	9%	
	Not employed, housewife	51	24%	
	Not employed, disability	21	10%	
	Not employed, other	10	5%	
Insurance	Prefer not to share	1	<1%	
	Employer	71	34%	
	Medicaid	27	13%	
	Medicare	25	12%	
	Multiple	16	8%	
	Private	10	5%	
	Marketplace	9	4%	
	Other	9	4%	
Primary cancer diagnosis	Don't Know / Prefer not to share	5	2%	
	None	38	18%	
	Breast cancer	106	51%	
	Prostate cancer	15	7%	
	Lung cancer	13	6%	
	Colorectal cancer	11	5%	
	Ovarian cancer	11	5%	
	Skin cancer (nonmelanoma)	10	5%	
Years since diagnosis ^a	Blood cancer ^b	6	3%	
	Other ^b	38	18%	
	Range: 0–34	5.7	5.7	
	Stage at diagnosis	0	6	3%
		I	50	24%
		II	62	30%
		III	54	26%
		IV	20	10%
My cancer doesn't have a stage		4	2%	
Other		8	4%	
I don't know		6	3%	
Current stage	Localized disease (has not spread)	129	61%	
	Metastatic/Stage IV (widespread)	35	17%	
	My cancer does not have a stage/Not applicable	17	8%	
	I don't know	29	14%	

(continued)

Table I. (continued)

		M/n	SD/%
Current status	I have been diagnosed, but have never experienced a recurrence or relapse	53	25%
	I am currently experiencing cancer recurrence/relapse	47	22%
	I am in remission or have no current evidence of disease	81	39%
	Other	15	7%
Ever metastatic	I don't know	13	6%
	No	158	75%
	Yes	44	21%
Recurrence	I don't know	8	4%
	0	115	55%
	I	50	24%
	2+	38	18%
Currently receiving treatment	I don't know	1	<1%
	Yes	136	65%
Treatment history	No	74	35%
	Current chemotherapy	54	26%
	Current radiation	39	19%
	Current hormone therapy	47	22%
	Current oral therapy	40	19%
	Current immunotherapy	38	18%
	Current other	8	4%
	Past surgery	159	76%
	Past chemotherapy	136	65%
	Past radiation	118	56%
General health	Past hormone therapy	51	24%
	Past oral therapy	49	23%
	Past immunotherapy	34	16%
	Past other	1	0%
	Excellent	15	7%
	Very good	33	16%
	Good	66	31%
	Fair	67	32%
Poor	29	14%	

^aSubsample sizes: Years Since Diagnosis ($n = 205$), Current status ($n = 209$), and Recurrence ($n = 204$).

^bBlood cancers included lymphoma, leukemia, and multiple myeloma. Other cancer diagnoses included endometrial, bladder, kidney, thyroid, brain, melanoma, and pancreatic, among others.

Note. Unless otherwise noted, the reported proportions above are calculated out of the total sample ($N = 210$). Percentages may not total 100% due to incomplete or missing data.

with the largest Hispanic and Latino origin group seen in the U.S. (Miller et al., 2021). For 93% of respondents, Spanish was the primary language spoken in the home.

Several cancer types were represented in our sample, though the largest group of respondents were initially diagnosed with breast cancer (51%). The average time since diagnosis was 6 years (range <1–34 years). Most respondents were currently receiving treatment (65%) and reported no evidence of metastatic disease (75%).

Survey Validation Analysis and Evaluation of Psychometric Properties. Confirmatory factor analysis. Confirmatory factor analysis confirmed a five-factor structure of the CSS-Spanish distress screener ($N = 210$) and demonstrated good to acceptable model fit (RMSEA = 0.08[CI = 0.069–0.086], SRMR = 0.06, CFI = 0.90, TLI = 0.89, $\chi^2 = 546.48$). Table 2 includes item endorsement by factor, item discrimination, and item correlations. The five factors are: (1) Emotional Well-Being (eight items); (2) Symptom Burden and Impact (eight items); (3) Body Image and Healthy Lifestyle (four items); (4) Health Care Team Communication (two items); and (5) Relationships and Intimacy (two items). The final item, on substance use, does

Table 2. CancerSupportSource-Spanish Distress Screener Item Endorsement, Item Discrimination, and Item Correlations ($N = 210$).

Factors and items (English)	Spanish translations	% score \geq 3	%score \geq 2	IDI	Item total r	Item factor r
Emotional well-being						
Feeling irritable	Sentirse irritado	21	62	.71	.68	.71
Feeling sad or depressed ^b	Sentimientos de tristeza o depresión ^b	32	61	.89	.78	.85
Feeling nervous or afraid ^a	Sentirse nervioso o con temor ^a	28	60	.87	.79	.84
Worrying about the future and what lies ahead ^a	El futuro y lo que se espera ^a	42	73	.63	.73	.80
Feeling lonely or isolated ^b	Sentirse solo o aislado ^b	24	53	.95	.81	.85
Health insurance or money worries	El seguro médico o las preocupaciones por el dinero	47	71	.68	.67	.70
Worrying about family, children and/or friends	La familia, los niños o los amigos	28	57	.85	.75	.74
Finding meaning and purpose in life	Encontrarle un propósito y sentido a la vida	26	48	.89	.78	.81
Symptom burden & impact						
Moving around (walking, climbing stairs, lifting, etc.)	Desplazarse o moverse (caminar, subir escaleras, levantarse, etc.)	23	51	.87	.70	.76
Sleep problems	Problemas para dormir	32	65	.71	.66	.73
Changes or disruptions in work, school or home life	Cambios o alteraciones en el trabajo, la escuela o la vida en el hogar	30	60	.72	.65	.64
Transportation to treatment and appointments	El transporte para llegar a su tratamiento y sus citas	17	37	.60	.63	.66
Pain and/or physical discomfort	Dolor o molestias físicas	37	66	.76	.72	.82
Feeling too tired to do the things you need or want to do	Sentirse demasiado cansado para hacer las cosas que necesita o quiere hacer	39	66	.87	.81	.85
Managing side effects of treatment (nausea, swelling, etc.)	Manejo los efectos secundarios del tratamiento (náuseas, hinchazón, etc.)	29	52	.67	.61	.69
Thinking clearly (e.g., “chemo brain,” “brain fog”)	Pensar con claridad (p. ej., problemas de concentración, memoria, o fatiga mental)	25	51	.84	.73	.75
Body image & healthy lifestyle						
Eating and nutrition	Alimentación y nutrición	30	68	.48	.52	.66
Body image and feelings about how you look	Su imagen física y sus sentimientos respecto a la manera cómo se ve	32	65	.78	.76	.79
Recent weight change (gain or loss)	Cambio de peso reciente (aumento o pérdida de peso)	30	57	.69	.64	.82
Exercising and being physically active	Hacer ejercicio y estar físicamente activo	29	64	.68	.65	.81
Health care team communication						
Communicating with your doctor	La comunicación con su médico	19	45	.69	.64	.88
Making a treatment decision	Toma de decisiones acerca del tratamiento	25	53	.82	.77	.87
Relationships & intimacy						
Intimacy, sexual function, and/or fertility	Intimidad, función sexual o fertilidad	26	47	.49	.51	.89
Problems in your relationship with your spouse/partner	Problemas en su relación con su esposa(o)/ pareja	20	39	.58	.56	.87
Tobacco, alcohol, or substance use						
Tobacco or substance use (by you or someone in your household)	Consumo de tabaco o drogas (por su parte o de alguien en su hogar)	13	21	.45	.48	N/A

Note. IDI = item discrimination index between upper and lower quartiles, based on total distress score. Item-total r = corrected item-total correlation.

^aItem is part of anxiety risk screening subscale.

^bItem is part of depression risk screening subscale.

Individual items have a score range of 0 to 4; the order above, by factor, is not representative of item ordering used during administration.

not load on a factor but is retained due to clinical significance for risk assessment. Importantly, these factors are consistent with previous psychometric analysis on the English version of CSS and demonstrated strong item-factor correlations: Emotional Well-Being ($r_s=0.70-0.85$); Symptom Burden and Impact ($r_s=0.64-0.85$); Body Image and Healthy Lifestyle ($r_s=0.66-0.82$); and both Health Care Team Communication and Relationships and Intimacy with item-factor correlations ≥ 0.87 .

Internal consistency and test-retest reliability. The CSS-Spanish distress screener had high internal consistency ($\alpha = .95$) and test-retest reliability ($r = .92$); individual factor ICCs were $\geq .79$ (see Table 3). Additionally, each factor was strongly correlated with the total distress score ($r_s = .61-.95$; $p < .001$).

Convergent validity. Pearson correlations of CSS-Spanish factors with validation measures confirmed strong convergent validity. Specifically, strong and statistically significant correlations (absolute value of $r \geq 0.50$; $p < .05$) were observed between total CSS-Spanish distress and the following cross-validation measures: PROMIS-29+2 depression, anxiety, social function, physical function, sleep disturbance, fatigue, pain interference, as well as PHQ-2, GAD-2, and DT. Overall, greater total distress, as captured by CSS-Spanish, was associated with poorer health-related quality of life captured by PROMIS-29+2 (absolute values of $r_s = .49-.72$), and greater distress as measured by the DT ($r = .57$). Correlations between total distress on CSS-Spanish and PROMIS-29+2 sleep disturbance, PROMIS-29+2 cognitive functioning, CAHPS, PEPPI, DAS-DC, and DAS-AE were statistically significant ($p < .05$) though the absolute values were less than 0.50. Correlations between the CSS-Spanish factors and cross-validation measures were as expected, with more robust correlations observed between thematically similar factors and measures (e.g., CAHPS and PEPPI with Health Care Team Communication; DAS-DC and DAS-AE with Relationships and Intimacy).

Known-groups validity. Consistent with hypotheses, younger age was significantly correlated with greater total distress ($r = -.19$, $p < .01$, $n = 210$). Cancer recurrence ($r = .24$; $p < .001$), less time since diagnosis ($r = -.17$; $p < .05$), metastatic status ($n = 158$ never metastatic; $n = 44$ metastatic; $t = 4.150$; $p < .001$; $d = .71$), and current treatment ($n = 136$ currently on treatment vs. $n = 74$ not currently on treatment; $t = 3.151$; $p < .001$; $d = .46$) were also significantly related to higher distress scores. On the other hand, differences were observed by gender and income in the opposite direction as hypothesized. Distress scores on CSS-Spanish were significantly higher among men ($n = 60$) than women ($n = 150$; $t = 4.559$; $p < .001$; $d = .70$) and among individuals with higher reported annual income ($\$40k+$; $n = 85$) as compared to those with lower incomes ($< \$40k$; $n = 98$; $t = 2.027$; $p < .05$, $d = .30$). Importantly, analyses confirmed that the men in our analytic sample were significantly younger than women, more recently diagnosed, more likely to currently be in treatment, and more likely to ever be metastatic. Thus, sociodemographic and

Table 3. CancerSupportSource-Spanish Distress Screener Factors, Internal Consistency, and Test-Retest Reliability, Intercorrelations, and Convergent Validity (N = 210).

	Cross-validation measures																							
	Factor intercorrelations				PROMIS-29+2																			
# items	M (SD)	α	ICC	F1	F2	F3	F4	F5	Dep	Anx	Soc Func	Phys Func	Fat	Sleep Dist	Pain Int	Cog Func	PHQ-2	GAD-2	DT	CAHPS	PEPPI	DAS-DC	DAS-AE	
Total	25	42.7 (20.6)	.95	.92	.95	.94	.84	.80	.61	.71	.72	-.66	-.53	.66	.49	.62	-.20	.64	.60	.57	-.22	-.15	-.16	-.22
Factor 1	8	1.9 (1.0)	.91	.91	-.85	.76	.72	.52	.74	.75	-.64	-.49	.65	.47	.55	-.19	.66	.62	.53	-.20	-.15	-.18	-.25	
Factor 2	8	1.7 (0.9)	.88	.87	-.72	.76	.45	.65	.68	-.68	-.60	-.60	.71	.54	.71	-.23	.59	.56	.60	-.24	-.16	-.13 ^a	-.18	
Factor 3	4	1.9 (0.9)	.77	.86	-.60	.48	.59	.56	-.51	-.41	-.41	-.41	.54	.41	.44	-.14	.50	.49	.44	-.13 ^a	-.11 ^a	-.11 ^a	-.13 ^a	
Factor 4	2	1.5 (1.1)	.69	.79	-.40	.49	.54	-.46	-.41	-.41	-.41	-.41	.49	.30	.49	-.10 ^a	.47	.42	.45	-.27	-.21	-.09 ^a	-.08 ^a	
Factor 5	2	1.4 (1.1)	.71	.86	-.36	.34	-.38	-.21	-.21	-.21	-.21	-.21	.25	.22	.29	-.13 ^a	.35	.30	.24	-.07 ^a	-.01 ^a	-.17	-.30	

Note. Mean/SD based on averaged factor scores, except for the total distress score, which is summed. All correlations use full sample (N = 210) except for ICC (n = 206), DAS-DC (n = 164), and DAS-AE (n = 162). All factor intercorrelations significant at $p < .001$; all Pearson r correlations between factors and validation measures significant at $p < .05$, except where ^a denotes $p =$ not significant. Factor 1: Emotional Well-Being; Factor 2: Symptom Burden & Impact; Factor 3: Body Image & Healthy Lifestyle; Factor 4: Health Care Team Communication; Factor 5: Relationships & Intimacy; $\alpha =$ Cronbach's alpha; ICC = intraclass correlation coefficient (test-retest reliability); PROMIS-29+2 Dep = Depression; Anx = Anxiety; Soc Func = Ability to Participate in Social Roles and Activities; Phys Func = Physical Function; Sleep Dist = Sleep Disturbance; Pain Int = Pain Interference; Cog Func = Cognitive Function; PHQ-2 = Patient Health Questionnaire-2; GAD-2 = Generalized Anxiety Disorder; DT = NCCN Distress Thermometer; CAHPS = Consumer Assessment of Healthcare Providers and Systems (CAHPS) Cancer Care Survey; PEPPI = Perceived Efficacy in Patient-Physician Interactions; DCS-AE = Dyadic Adjustment Scale-Affectional Expression.

Table 4. Calculations of Sensitivity and Specificity for CancerSupportSource-Spanish 2-Item Depression and 2-Item Anxiety Risk Subscales.

CSS-Spanish risk score	Comparison measure (criterion scores)	% \geq		AUC	Cutoff	Sensitivity	Specificity	Negative predictive value	Positive predictive value
		<i>r</i>	comparison criterion score						
2-item Depression Risk Score (CSS-Sp-D2)	PROMIS Depression (T \geq 60)	.71	34.8%	0.840	2	0.973	0.328	0.957	0.436
					3	0.945	0.526	0.947	0.515
					4	0.836	0.620	0.876	0.540
	PHQ-2 (score \geq 3)	.63	30.0%	0.758	2	0.937	0.293	0.915	0.362
					3	0.841	0.449	0.868	0.396
					4	0.762	0.558	0.845	0.425
2-item Anxiety Risk Score (CSS-Sp-A2)	PROMIS Anxiety (T \geq 62)	.68	37.6%	0.852	2	1.000	0.221	1.000	0.436
					3	0.949	0.405	0.930	0.490
					4	0.899	0.603	0.908	0.577
	GAD-2 (score \geq 3)	.55	38.6%	0.770	2	0.963	0.202	0.897	0.431
					3	0.864	0.357	0.807	0.458
					4	0.815	0.558	0.828	0.537
					5	0.691	0.736	0.792	0.622

Note. *r* = Pearson correlation between CSS depression and anxiety risk subscale total scores and comparison measure total scores. AUC = Area under the curve. Recommended cut score (4) shown in bold.

clinical background differences between men and women likely contributed to the higher distress scores observed among men. Still, group comparisons based on total CSS-Spanish distress score supported known-groups validity.

Receiver Operating Characteristic (ROC) curve analysis. Results from our ROC analysis (Table 4) indicate that a score of 4 or higher (out of a maximum possible score of 8) on the 2-item CSS-Spanish depression risk subscale (CSS-Sp-D2) yielded high sensitivity (76.2–83.6%) and adequate specificity (55.8–62.0%). The areas under the curve (AUC) were .840 with PROMIS-29+2 depression and .758 with PHQ-2. Based on the cutoff score of ≥ 4 , 58% of CSS-Spanish participants were at risk for clinically significant levels of depression. Similarly, we found that a score of 4 or higher on the 2-item CSS-Spanish anxiety risk subscale (CSS-Sp-A2) yielded a high sensitivity (81.5–89.9%) and adequate specificity (55.8–60.3%). The AUC were .852 with PROMIS-29+2 anxiety and .770 with GAD-2. Based on the cutoff score of ≥ 4 , 59% of participants were at risk for clinically significant levels of anxiety and 46% of participants were at risk for comorbid depression and anxiety. The ROC analyses, therefore, confirm the utility of the brief subscales for identifying Spanish-speaking cancer patients and survivors at risk for clinically significant depression and anxiety.

Discussion

CancerSupportSource is a distress screening program developed by Cancer Support Community to identify the unmet needs of individuals living with cancer and provide them with desired support. Given the dearth of validated Spanish-language distress screeners and critical disparities in access to psychosocial care among

Hispanic and Latino individuals living with cancer (Sanchez et al., 2014; Yanez et al., 2016), our overarching goal was to translate and adapt CSS to better support Spanish-speaking Hispanic and Latino communities.

First, through rigorous, gold standard translation procedures, cognitive interviews, and engagement of project advisors, we assessed item translations, cultural appropriateness, and breadth of content for the development of a Spanish version of the CSS distress screener (CSS-Spanish). Second, we evaluated the psychometric properties of the finalized CSS-Spanish screener using data from a sample of 210 Hispanic and Latino individuals who had been diagnosed with cancer. We confirmed that CSS-Spanish is a reliable, valid, multidimensional measure to screen for distress among Hispanic and Latino individuals. We also performed ROC analysis to determine scoring cut points for anxiety and depression subscales, which allow clinicians to flag respondents most at risk for clinically significant levels of depression and anxiety.

Clinical Implications

Overall, our results highlight CSS-Spanish as a psychometrically valid and culturally relevant distress screener to identify unmet needs of Hispanic and Latino individuals with cancer. Reduced access and disadvantaged clinical outcomes among Hispanic and Latino individuals, including late-stage diagnosis and larger gap between diagnosis and initiation of treatment, have been linked to heightened psychosocial distress. Suggested mechanisms behind these complex linkages include underinsurance, cultural and linguistic barriers, and practical obstacles (e.g., transportation) (Cha & Cohen, 2020; Syed et al., 2013; Yanez

et al., 2016). The multidimensionality of CSS-Spanish taps into these challenges, allowing clinicians to pinpoint specific needs and provide Hispanic and Latino patients with resources.

Hispanic and Latino communities are not monolithic, however, and heterogeneity in these communities—in terms of socioeconomic status, language, culture and attitudes, and health status—also translates to differences in access to care and healthcare utilization (Vargas Bustamante et al., 2009). Our results support the use of CSS-Spanish among diverse Hispanic and Latino populations. Specifically, our cognitive interview process prioritized not only translation but also cultural relevance and breadth of content. Additionally, we surveyed a diverse group of Hispanic and Latino individuals for the survey validation of CSS-Spanish. More than 10 Hispanic, Latino, or Spanish origins were represented in our sample of 210 with levels of educational attainment and household income varying widely across respondents. Thus, the use of the CSS-Spanish may position cancer care providers to support the unique needs of Hispanic and Latino communities.

Study Limitations

Limitations of our study warrant mention. Though diverse, our respondents for cognitive interviews and psychometric validation were convenience samples and, therefore, are not representative of all Hispanic and Latino communities in the U.S. Future research should continue to account for heterogeneity in these communities. Similarly, though a range of cancer diagnoses and stages are represented in our samples, the clinical experiences and outcomes of our respondents are not necessarily representative. Further study of the implementation of CSS-Spanish across diverse settings should give attention to variability in cancer experiences including, for example, timing since diagnosis, current therapies, and metastatic status.

Conclusion

Given the importance of distress screening for standard of care in oncology and the need to better serve Hispanic and Latino communities, we developed and validated CSS-Spanish, a Spanish language distress screener that identifies unmet needs of Hispanic and Latino individuals living with cancer and allows them to be with desired resources and support.

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Authors' Note

For information about CancerSupportSource-Spanish use and licensing, please contact research@cancersupportcommunity.org. *Data*

Availability: Cancer Support Community retains full control of all primary data.

Declaration of Conflicting Interests

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