

CancerSupportSource®-15: Development and Evaluation of a Short Form of a Distress Screening Program for Cancer Survivors

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Background

- CancerSupportSource® (CSS) is a distress screening and referral program implemented at community-based cancer support organizations and hospitals nationwide
- CSS assesses distress over five key domains, and includes validated depression and anxiety risk screening subscales
- Availability of an abbreviated version of CSS may enhance opportunities for distress screening in care settings where time and patient burden considerations are significant

Aims

- The goals of this study were to develop and examine the psychometric properties of a shortened version of CSS

Methods

- 2379 cancer survivors enrolled in the Cancer Support Community's Cancer Experience Registry®. Participants provided demographic and clinical background, and completed the 25-item version of CSS and PROMIS-29, a measure of health-related quality of life
- Item reduction was conducted with a sub-sample of 1435 survivors with reference to recommended quality indices to support item retention decisions, including external item quality (correlations between items and PROMIS-29 scales), internal item quality (inter-item and inter-factor correlations, factor loadings and structure, and item communalities from an exploratory factor analysis of CSS-25), and professional judgment (ranking/prioritization of items by CSS-25 developers, accounting for theoretical and practical implications)
- Pearson correlations and confirmatory factor analysis were conducted on a separate sub-sample of 944 survivors to corroborate psychometric properties and dimensionality of the shortened scale

Participants

	N = 1,435		N = 944	
	Mean / n	SD / %	Mean / n	SD / %
Age (years)	58.4	11.1	58.4	12.2
	Range: 19 - 87		Range: 18 - 88	
White	1291	90%	783	83%
Female	1035	72%	651	69%
Diagnosis				
Breast	504	35%	292	31%
Multiple Myeloma	281	20%	18	2%
Chronic Lymphocytic Leukemia	127	9%	10	1%
Lung	65	5%	84	9%
Prostate	54	4%	141	15%
Ovarian	50	3%	38	4%
Time since diagnosis (years)	4.6	5.3	4.4	6.1
	Range: <1 - 52		Range: <1 - 49	
Ever metastatic	302	26%	245	26%
Ever experienced recurrence/relapse	261	22%	189	20%
Currently receiving treatment	770	54%	481	51%

Results

Item	Factor Loadings					IDI	Factor #	Action
	F1	F2	F3	F4	F5			
EMOTIONAL WELL-BEING								
Feeling nervous or afraid [†]	.82					.72	1	Retained
Feeling sad or depressed [‡]	.77					.73	1	Retained
Worrying about the future and what lies ahead [†]	.77					.73	1	Retained
Feeling lonely or isolated [‡]	.71					.70	1	Retained
Finding meaning and purpose in life	.56					.69	1	Dropped
Worrying about family, children and/or friends	.43					.66	1	Dropped
Health insurance or money worries	.39					.60	1	Retained
Feeling irritable	.34					.65	1	Dropped
SYMPTOM BURDEN & IMPACT								
Pain and/or physical discomfort	.77					.63	2	Retained
Moving around (walking, climbing stairs, lifting, etc.)	.74					.58	2	Dropped
Feeling too tired to do the things that you need or want to do	.69					.74	2	Retained
Managing side effects of treatment (nausea, swelling, etc.)	.55					.63	2	Dropped
Changes or disruptions in work, school, or home life	.45					.70	2	Retained
Thinking clearly (e.g., "chemo brain," "brain fog")	.39					.59	2	Retained
Sleep problems	.30					.58	2	Dropped
Transportation to treatment and appointments	.30					.49	2	Dropped
BODY IMAGE & HEALTHY LIFESTYLE								
Exercising and being physically active	.61					.64	3	Retained
Recent weight change (gain or loss)	.60					.57	3	Dropped
Body image and feelings about how you look	.53					.62	3	Retained
Eating and nutrition	.49					.45	3	Dropped
HEALTH CARE TEAM COMMUNICATION								
Communicating with your doctor	.48					.52	4	Retained
Making a treatment decision	.43					.62	4	Dropped
RELATIONSHIPS & INTIMACY								
Intimacy, sexual function, and/or fertility	.54					.70	5	Retained
Problems in your relationship with your spouse/partner	.82					.36	5	Retained
ADDITIONAL ITEMS								
Tobacco or substance use – by you or someone in your household						.28	N/A	Retained

[†] indicates item is part of anxiety risk screening subscale; [‡] indicates item is part of depression risk screening subscale

- Scale refinement resulted in a 15-item short form of CSS (CSS-15)
- At least one item from each of the five CSS-25 domains was retained to preserve multidimensionality, including anxiety and depression risk screening subscale items
- Additionally, one item about tobacco/substance use was kept due to clinical significance for risk assessment

Confirmatory Factor Analysis

	RMSEA (90%CI)	SRMR	CFI	TLI
CSS-15	.068 (.061-.075)	.033	.959	.945

- In confirmatory factor analysis, the model explained 59% of the variance and demonstrated good fit (RMSEA=0.068, 90% CI=0.061–0.075; SRMR=0.033; CFI=0.959; $\chi^2(68)=334.75$, $p<.001$)

CSS Correlations with PROMIS Subscales

	PROMIS Subscales						
	Dep	Anx	Soc	Phys	Fat	Sleep	Pain
Total distress score (CSS-15)	.75	.72	-.65	-.52	.66	.55	.63
F1: Emotional well-being	.79	.76	-.56	-.42	.60	.52	.52
F2: Symptom burden and impact	.66	.66	-.72	-.61	.73	.54	.73
F3: Body image and healthy lifestyle	.54	.51	-.52	-.44	.53	.45	.52
F4: Health care team communication	.34	.34	-.31	-.30	.25	.26	.31
F5: Relationships & intimacy	.48	.45	-.31	-.21	.36	.32	.35

Values reported are Pearson correlation coefficients (r); * denotes $p<.001$
(1) Depression; (2) Anxiety; (3) Social Function; (4) Physical Function; (5) Fatigue; (6) Sleep Disturbance; (7) Pain Interference

- CSS-15 and CSS-25 total scores were strongly correlated ($r=.986$; $p<.001$)
- Total distress was associated with all PROMIS subscales ($r_s=-.65-.75$, $p_s<.001$)

Scale and Factor Inter-Correlations and Internal Consistency Reliability

	# items	M/SD [†]	Intercorrelations				
			F1	F2	F3	F4	F5
Total distress score (CSS-15)	15	18.81/13.10	.93*	.90*	.81*	.54*	.68*
F1: Emotional well-being	5	1.38/1.08	---	.78*	.69*	.43*	.55*
F2: Symptom burden and impact	4	1.45/1.09	---	.70*	.45*	.50*	
F3: Body image and healthy lifestyle	2	1.56/1.14	---	.39*	.51*		
F4: Health care team communication	1	0.74/1.13	---			.25*	
F5: Relationship & intimacy	2	1.06/1.13	---				---

* denotes $p<.001$; [†] Mean/SD based on averaged factor scores, except for the total distress score, which is summed

- The five factors demonstrated medium to large inter-correlations, but were not redundant
- Internal consistency reliability (measured via Cronbach's alpha) for the full 15-item scale was excellent ($\alpha = .94$)

Conclusions

- CSS-15 is a brief, reliable, and valid multidimensional measure of distress
- The reduced measure retained excellent internal consistency and a stable factor structure, while correlating well with CSS-25 and PROMIS-29
- CSS-15 can serve as a practical tool to efficiently screen for distress among cancer patients and survivors, particularly those in community-based settings

Acknowledgments

This work is made possible thanks to generous support from Genentech, Inc., Novartis, Pfizer Oncology, Eli Lilly and Company Foundation, and Bristol-Myers Squibb

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