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Introduction

- The Cancer Support Community (CSC) represents a global network of nonprofit, community-based organizations that provide professionally led support and education to cancer patients and their families.
- The Institute of Medicine (IOM), NCCN and the American College of Surgeons have recognized that screening for psychosocial concerns is critical to ensuring quality cancer care for the whole patient.
- Few tools have been validated in the community where up to 85% of cancer patients are treated.
- CancerSupportSource (CSS)** is an evidence-based, web-based distress screening program.
- Previously, a 25-item version of CSS (CSS-25) has been validated (Buzaglo et al., 2013) and implemented (Gayer et al., 2013) in the community and clinical setting.
- The purpose of this study was to test the psychometric properties of a shorter 13-item version of CSS (CSS-13) among a community-based sample of cancer survivors.

Key Features of Cancer Support Source (CSS):

- CSS is based on the seven key areas of psychosocial need identified by the Institute of Medicine (2008).
- CSS can be completed at home or in the clinic using a computer or touch screen tablet.
- CSS asks the patient to rate 13 concerns and indicate the type of help (print information, online or talk with a staff member) they desire for each concern.
- CSS integrates a valid and reliable self-report measure with automated reports and linkages to vital information and referral for support services (Buzaglo et al., 2013).
- Two summary reports are produced based on the patient's responses to CSS:
 - The **patient summary report** is automatically generated and provides patients with referrals for in-house, online and community support services and resource fact sheets.
 - The **clinician summary report** includes a summary of the patient's results, red flags and actionable clinical alerts and is sent directly to the health care team and incorporated into the electronic medical record.
- CSS takes less than 10 minutes (on average) for a patient to complete.
- To date, over 1,000 cancer patients have completed the distress screening program.

Sample Characteristics (N=251)

Convenience sample of 251 cancer survivors from 10 CSC affiliate sites nationwide:

- Central New Jersey
- Cincinnati/Northern Kentucky
- East Tennessee
- Greater Lehigh Valley, PA
- Miami, FL
- Pasadena, CA
- Philadelphia, PA
- Phoenix, AZ
- Quad Cities, IA
- San Francisco Bay Area, CA

Characteristic	Proportion
Race	
Caucasian	87%
African American	3%
Sex	
Female	90%
Education	
Bachelor's degree and above	76%
Time since diagnosis	
≥ 2 years	68%
Total annual income	
Less than \$40k	15%
	Average
Age (30-83 years)	56
Time since diagnosis	3.5 years

Results

Figure 1. Top five rated concerns in CSS-13

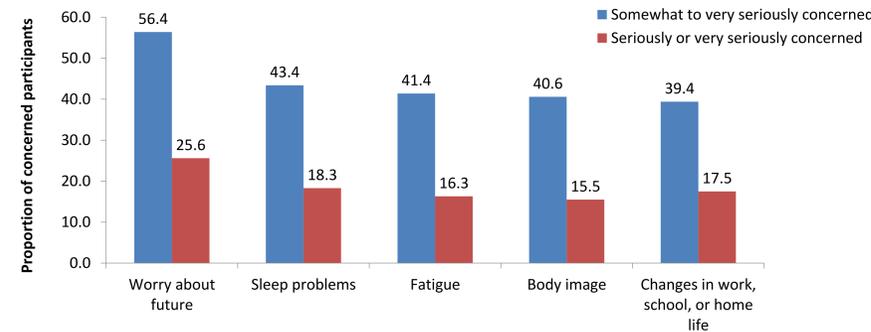


Table 2. Correlations (R²) between CSS and the FACT-G, CES-D and DT in cancer survivors

	FACT-G	CES-D	DT
Summary Scores			
CSS-25 sum of problem ratings	0.49	0.48	0.38
CSS-13 sum of problem ratings	0.50	0.52	0.40
Depression subscale (sad, nervous, lonely, fatigue)	0.55	0.64	0.36

Note: Exact wording of items in depression subscale was as follows: 1. feeling sad or depressed; 2. feeling nervous or afraid; 3. feeling lonely or isolated; 4. feeling too tired to do the things you need or want to do

Additional Results

- CSS-13 demonstrated high internal reliability (Cronbach's alpha = 0.91). Test-retest reliability was strong (ICC ≥ 0.75) for 9 of the items and moderate for 4 (0.65 ≤ ICC < 0.75).
- The median distress score (sum of 13 item ratings) was 14 and correlated well with the FACT-G, CES-D and DT, indicating moderate to strong concurrent validity.
- The correlation with "gold standard" measures was stronger for CSS-13 than for CSS-25.
- The 13-item scale was able to discriminate groups of clinical relevance (active treatment, time since diagnosis). The distress score was not different by stage of cancer at diagnosis.
- The Area Under the Curve (AUC) was 0.92, indicating that CSS had a very good overall accuracy to detect risk for depression relative to the CES-D.

Methods

- Participants completed a web-based survey including CSS-25, the Functional Assessment of Cancer Therapy – General well-being scale (FACT-G), the Center for Epidemiologic Studies Depression Scale (CES-D) and the Distress Thermometer (DT).
- The first 100 respondents completed CSS-25 a second time to measure test-retest reliability.
- Internal reliability was estimated using Cronbach's alpha coefficient and Concurrent validity was determined by correlations with the FACT-G, CES-D and DT. A non-parametric analysis of variance was used to establish discriminant validity.
- Receiver operating characteristic (ROC) curve analysis using the CES-D (≥21) as the criterion was used to explore the effect on sensitivity and specificity if the sum of 4 problem ratings was ≥5 on the CSS-13 depression subscale.

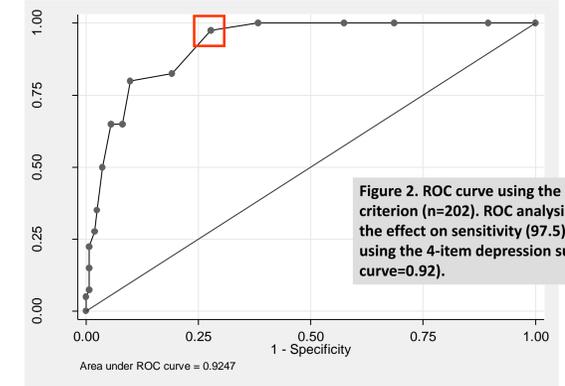


Figure 2. ROC curve using the CES-D (≥21) as the criterion (n=202). ROC analysis was used to explore the effect on sensitivity (97.5) and specificity (72.2) using the 4-item depression subscale (area under curve=0.92).

Table 3. Sensitivity and specificity of CSS-13 and CSS-25

CSS-13 Score	CSS-25 Score		Total
	< 25	≥ 25	
< 14	116	6	122
≥ 14	11	118	129
Total	127	124	251

A score ≥14 on CSS-13 had a true positive rate (sensitivity) of 95% and false positive rate (1-specificity) of 9% compared to a score ≥25 on CSS-25. In other words, 118 of the 124 (95%) who indicated risk of distress on CSS-25 would also be classified as at risk on CSS-13.

Conclusion and Future Directions

- CSS-13 shows strong psychometric properties that can help identify those at high risk for distress and depression for further clinical assessment.
- Addressing the needs of these patients through appropriate screening, referral and follow-up can lead to better patient-reported outcomes.
- The impact of implementing a distress screening program on staff time and clinic efficiency is a major concern for cancer programs (Gayer et al., 2014).
- A shorter tool (CSS-13) is more efficient and can minimize burden on the clinic and hospital setting.

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