

Psychometric Properties of an Australian Supportive Care Needs Assessment Tool for Indigenous Patients With Cancer

Gail Garvey, MEd¹; Vanessa L. Beesley, PhD^{2,3}; Monika Janda, PhD^{3,4}; Peter K. O'Rourke, PhD⁵;
Vincent Y.F. He, BSc (Hons)¹; Anna L. Hawkes, PhD³; Jacinta K. Elston, MPH⁶; Adele C. Green, PhD^{7,8};
Joan Cunningham, ScD¹; and Patricia C. Valery, PhD¹

BACKGROUND: There are significant disparities in cancer outcomes between Indigenous and non-Indigenous Australians. Identifying the unmet supportive care needs of Indigenous Australians with cancer is imperative to improve their cancer care. The purpose of the current study was to test the psychometric properties of a supportive cancer care needs assessment tool for Indigenous people (SCNAT-IP) with cancer. **METHODS:** The SCNAT-IP was administered to 248 Indigenous Australians diagnosed with a range of cancer types and stages, and who received treatment in 1 of 4 Queensland hospitals. All 39 items were assessed for ceiling and floor effects and were analyzed using exploratory factor analysis to determine construct validity. Identified factors were assessed for internal consistency and convergent validity to validated psychosocial tools. **RESULTS:** Exploratory factor analysis revealed a 4-factor structure (physical and psychological, hospital care, information and communication, and practical and cultural needs) explaining 51% of the variance. Internal consistency of the 4 subscales was good, with Cronbach alpha reliability coefficients ranging from .70 to .89. Convergent validity was supported by significant correlations between the SCNAT-IP with the National Comprehensive Cancer Network Distress Thermometer (correlation coefficient [r] = 0.60; $P < .001$) and the Cancer Worry Chart (r = 0.58; $P < .001$) and a moderately strong negative correlation with the Assessment of Quality of Life questionnaire (r = -0.56; $P < .001$). **CONCLUSIONS:** These data provide initial support for the SCNAT-IP, a measure of multiple supportive care needs domains specific to Indigenous Australian patients with cancer undergoing treatment. *Cancer* 2015;121:3018-26. © 2015 American Cancer Society.

KEYWORDS: Indigenous, cancer, supportive care, needs assessment, instrument validation.

INTRODUCTION

A growing body of research has highlighted significant disparities in cancer outcomes (including incidence and mortality) between and within countries, ethnicities, and Indigenous status.¹⁻⁵ A complex interplay of patient, health system, socioeconomic, and cultural factors contribute to these disparities.^{2,3,6,7} The identification of high-risk groups will allow for the development of targeted strategies to improve outcomes.^{3,5,8}

Australia's Indigenous peoples represent approximately 2.5% of the population and comparatively are more likely to live in remote or very remote areas, are less likely to be employed, and are less likely to have post-school qualifications.⁹ Indigenous Australians experience worse health status and lower life expectancy compared with other Australians.⁹

Cancer places a significant burden on Indigenous Australians. They have higher cancer mortality rates, are diagnosed at a more advanced cancer stage, and have poorer survival rates.^{7,10,11} Indigenous patients commonly have fatalistic views of cancer, which may lead to lower treatment compliance, and a lack of access to information and cancer treatment.^{12,13}

Support needs may differ across cultures and to our knowledge to date there is limited information regarding the needs of Indigenous Australians with cancer. Accurate measurement is important to improve care for Indigenous patients with cancer. Therefore, we developed what to our knowledge is the first supportive cancer care needs assessment tool for Indigenous people (SCNAT-IP) with cancer.¹⁴ Details regarding its development have been published elsewhere.¹⁴ In brief, a

Corresponding author: Gail Garvey, MEd, Epidemiology and Health Systems Division, Menzies School of Health Research, 147 Wharf St, Spring Hill, Queensland 4000 Australia; Fax: (011) 61 8 89468464; Gail.Garvey@menzies.edu.au

¹Epidemiology and Health Systems Division, Menzies School of Health Research, Spring Hill, Queensland, Australia; ²Gynaecological Cancers Group, QIMR Berghofer Medical Research Institute, Herston, Queensland, Australia; ³School of Public Health and Social Work, Queensland University of Technology, Brisbane, Queensland, Australia; ⁴Institute of Health and Biomedical Innovation; ⁵Statistics Unit, QIMR Berghofer Medical Research Institute, Herston, Queensland, Australia; ⁶Faculty of Medicine, Health and Molecular Sciences, James Cook University, Brisbane, Queensland, Australia; ⁷Cancer and Population Studies Group, QIMR Berghofer Medical Research Institute, Herston, Queensland, Australia; ⁸Cancer Research UK Manchester Institute and University of Manchester, Manchester Academic Health Sciences Centre, Manchester, United Kingdom

We thank the staff and Indigenous patients of the participating hospitals for their assistance and cooperation in performing the current study, and Christina Bernardes for assistance and project management.

DOI: 10.1002/cncr.29433, **Received:** August 3, 2014; **Revised:** February 20, 2015; **Accepted:** March 20, 2015, **Published online** May 6, 2015 in Wiley Online Library (wileyonlinelibrary.com)

qualitative study was conducted to assess the face and content validity, cultural acceptability, usefulness, and relevance of the Supportive Care Needs Survey-Short Form 34 (SCNS-SF34)¹⁵ for use with Indigenous Australian patients with cancer. On the basis of the qualitative results, several items were omitted and the remaining items adapted whereas 12 new Indigenous-specific items were added. The design and response format were also modified.¹⁴ Given the extensive modifications, we considered it to be a new tool for psychometric assessment. In its first iteration, the SCNAT-IP accommodated the language, customs, and culture-specific needs of Indigenous Australians and was found to be acceptable and relevant and to demonstrate face validity.¹⁴ The objective of the current study was to assess the SCNAT-IP's internal reliability, construct, and convergent and discriminative validity.

MATERIALS AND METHODS

Item Generation

SCNAT-IP¹⁴ responses were recorded using a 5-point response scale (1 indicates no need; 2 indicates satisfied with the help received; 3 indicates need a little more help; 4 indicates need some more help; and 5 indicates need a lot more help). The initial 39 SCNAT-IP¹⁴ items were assessed for ceiling and floor effects ($\geq 90\%$ of participants selecting the lowest or highest category, respectively). Items with these effects were removed from further analysis (7 items). The final SCNAT-IP items were selected based on a combination of statistical evidence and clinical relevance. To ensure the stability of each domain, a minimum of 3 items per domain was required. Domain scores were calculated by summing the item responses for each domain, respectively. The total score is the summation of the retained items. Because there are unequal numbers of items in each domain, the standardized Likert summated score was calculated for each domain and the total score, using the formula $(\text{domain total score} - m) * 100 / (m * [k - 1])$, in which m is the number of questions in a domain and k is the value of the maximum response for each item.¹⁶ Higher scores represent higher levels of need. Missing values for individual items were imputed using the participant's domain item mean, provided that less than one-half of the items in that domain were missing.¹⁶ Domain total scores were checked to assess whether the data were normally distributed using the Shapiro-Wilk test.

Sample

Participants were recruited from 4 major public hospitals in Queensland, Australia between November 2010 and December 2012. Inclusion criteria included having a cancer di-

agnosis, being Indigenous Australian, being aged ≥ 18 years, having received treatment for their cancer (retrospectively or prospectively), and being able to understand English. Exclusion criteria were cognitive, verbal, and/or physical impairments that impaired an individual's ability to provide informed consent (assessed in consultation with hospital staff from the recruiting site). Hospital staff (cancer care staff or Indigenous hospital liaison officers) approached eligible participants, who were then contacted by a trained interviewer. Detailed information regarding the study was provided, written informed consent was obtained, and interviews were scheduled. Ethics approval was obtained from the Human Research Ethics Committees of the QIMR Berghofer Medical Research Institute and the participating hospitals.

Data Collection

Sociodemographic variables were collected by interview. Clinical information (cancer diagnosis, disease stage, and treatments received) was extracted from medical records. Using the participants residential postcodes, statistical local areas were identified and used to classify remoteness of residence using the Accessibility/Remoteness Index of Australia (ARIA+ classification),¹⁷ and socioeconomic status using the Index of relative socioeconomic advantage and disadvantage (IRSAD).¹⁸ Participants remoteness of residence was categorised into: Major city, Inner/outer regional, and Remote/Very remote and socioeconomic status was also categorised in three groups: Most Advantaged/advantaged, Low to Intermediate advantage, and Most disadvantaged.

Questionnaires

The supportive care needs (using the initial 39-item version of the SCNAT-IP¹⁶), distress (measured by the National Comprehensive Cancer Network Distress Thermometer [DT]¹⁹), worry (measured by the Cancer Worry Chart [CWC]²⁰), and quality of life (as measured by the Assessment of Quality of Life-4D [AQoL-4D] instrument²¹) were delivered verbally by a trained interviewer. Interviewers received standardized training, and interviews were monitored for consistency across study sites. Participants were given a hard copy of response categories and the interviewer recorded the participant's responses.

The DT is the main distress management measure recommended by the National Comprehensive Cancer Network,²² with scores from 0 to 4 indicating low levels and scores of 8 to 10 indicating high levels of distress.¹⁸ The CWC is a validated visual analog 1-item scale assessing breast cancer worry (responses range from 1

[indicating not at all] to 5 [indicating extremely worried]).²⁰ The CWC demonstrated a strong correlation (Pearson correlation coefficient, 0.66; $P < .001$) with the Cancer Worry Scale for measuring worry (seen as the gold-standard measure). The receiver operator curve also identified favorable characteristics (area under the curve, 0.86) of the CWC for identifying cancer worry-related mood or social role dysfunction.²⁰ The AQoL-4D is a reliable and valid utility instrument of health-related QOL (HRQOL) with excellent psychometric properties (the range of reliability estimates is 0.73-0.84). Overall scores range from the worst possible HRQOL state (-0.04 ; worse than death) to death (0.00) to full HRQOL (1.00).²¹ These tools have been extensively validated although not specifically tested within an Indigenous population. However, during the earlier stages of SCNAT-IP development, they were used and preliminary evidence found them to be suitable with respect to content and language.

Statistical Analysis

Statistical analyses were conducted using SPSS statistical software (version 20; IBM Corporation, Armonk, NY). Demographic and clinical characteristics and the prevalence of supportive care needs were summarized using descriptive statistics. The Bartlett test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy were used to test the appropriateness of the sample size for conducting exploratory factor analysis (EFA). Factors with Eigenvalues > 1 were identified using principal components analysis and the scree plots were used to determine at which point the decrease in Eigenvalues became negligible. Three-factor, 4-factor, or 5-factor models were examined and the 4-factor model was selected because it resulted in the clinically most meaningful model. A further EFA was then conducted, forcing a 4-factor solution with varimax rotation. The conventional primary factor loading cutoff value of ≥ 0.55 was used to identify items for retention,²³ which were then attributed to the factor with the highest loading. Items within identified factors were assessed for their internal consistency using Cronbach alpha reliability coefficients. Items for which participants reported $\geq 15\%$ moderate-to-high-level needs but had loadings less than the cutoff were retained due to clinical significance. Convergent validity of the total needs score was tested against the DT and CWC using the Spearman rank order correlations and the AQoL-4D using the Pearson correlation coefficient. We expected the SCNAT-IP scores to correlate at least moderately highly (> 0.50) with the DT, CWC, and AQoL-4D. Discriminant validity²⁴ was

assessed by comparing the median supportive care needs scores using Mann-Whitney or Kruskal-Wallis tests.

RESULTS

Participant Characteristics

Of the 396 eligible patients identified, 295 (74.5%) were approached. Of these, 43 declined to participate and 252 (85.4%) were interviewed. Some eligible patients were not approached due to early discharge or they were discharged before contact was possible or they missed their planned outpatient appointments. Four participants were subsequently deemed ineligible because they were not receiving treatment, leaving a final study sample of 248 individuals.

The demographic and clinical characteristics of the final sample are shown in Table 1. The majority of participants were aged 40 to 59 years (55%), were female (57%), had an educational level of high school or higher (45%), and resided in inner/outer regional areas (45%) (Table 1). Most participants were recruited from outpatient cancer clinics (69%), 45% had been diagnosed within the last 3 months, 29% had distant metastases, and 79% had recently received adjuvant therapy. Breast cancer (24%), cancer of the respiratory and intrathoracic organs (14%), leukemia/lymphoma (13%), and digestive cancers (13%) accounted for the majority of cases.

Missing Data

The SCNAT-IP completion rate was high (92% of participants answering all items) and the rate of missing data was low (0.4%-1.6% for each item).

Item Reduction

Seven items had floor effects and were removed; these items primarily addressed sexuality, health care choices (eg, choice about the sex of the physician) and provisions (eg, wound dressings), and cultural considerations (eg, access to traditional healers). No items had ceiling effects. The remaining 32 items were assessed using factor analysis.

Construct Validity

The Bartlett test was significant (chi-square, 309; $P < .001$), indicating that factor analysis is appropriate. Sampling adequacy was confirmed by the Kaiser-Meyer-Olkin statistic of 0.53. Using EFA, 8 factors with Eigenvalues > 1 were identified. The scree plot indicated a flattening after 3 or 4 factors. A 4-factor model was identified to be most clinically significant and therefore EFA was repeated forcing a 4-factor solution with varimax rotation. Overall, 24 items achieved a factor loading of ≥ 0.55 .

TABLE 1. Demographic and Clinical Characteristics of the Indigenous Australian Participants Who Completed the SCNAT-IP (n=248)

	No.	%
Age, y		
20-39	39	15.7
40-59	136	54.8
≥60	73	29.4
Sex		
Male	107	43.1
Female	141	56.9
Education level ^a		
Primary school or less	80	32.5
High school	111	45.1
Postsecondary school	55	22.4
Indigenous status		
Aboriginal	189	76.2
Torres Strait Islander	47	19.0
Both Aboriginal and Torres Strait Islander	12	4.8
Marital status		
Married	115	46.4
Single	83	33.5
Separated/divorced	31	12.5
Widowed	19	7.7
Socioeconomic advantage/disadvantage (SEIFA)		
Most advantaged/advantaged	44	17.7
Low to intermediate advantage	132	53.2
Most disadvantaged	72	29.0
Rurality of residence (ARIA)		
Major city	80	32.3
Outer/inner regional	112	45.2
Remote/very remote	56.0	22.6
Patient admission status		
Inpatient	76	30.6
Outpatient	172	69.4
Treatment		
Surgery	26	10.5
Surgery and adjunct therapy	26	10.5
Adjunct therapy	196	79.0
Time since diagnosis, mo ^a		
≤3 mo	138	55.6
>3 mo	110	44.4
Cancer groups ^b		
Breast	60	24.2
Respiratory and intrathoracic organs	34	13.7
Lymphoid, hematopoietic, and related tissue	32	12.9
Digestive organs	31	12.5
Malignant neoplasm of lip, oral cavity, and pharynx	22	8.9
Male genital organs	18	7.3
Female genital organs	18	7.3
Eye, brain, and other parts of CNS	12	4.8
Other cancers ^a	16	6.5
Unknown cancer primary site	5	2.0
Cancer stage ^c		
Local	61	26.1
Regional	73	31.2
Distant	65	27.8
Not applicable	35	15.0

Abbreviations: ARIA, Accessibility/Remoteness Index of Australia; CNS, central nervous system; SCNAT-IP, supportive cancer care needs assessment tool for Indigenous people; SEIFA, Australian Bureau of Statistics Socio-Economic Indexes for Areas.

^aInformation was missing for 2 participants.

^bOther cancers indicates thyroid and other endocrine glands (C73-C75), bone and articular cartilage (C40-C41), urinary tract (C64-C68), and skin (C43-C44).

^cInformation was missing for 14 participants.

Two additional items were retained on the basis of their clinical significance and/or high prevalence of unmet need among the sample (items 9 and 34). These 2 additional items did not contribute to the factor analysis. Six items failed to achieve a ≥ 0.55 factor loading and did not report $\geq 15\%$ moderate to high levels of need and therefore were considered not clinically significant and were excluded from the tool.

The 4 factors accounted for 50.9% of the total variance. See Table 2 for detailed item factor loadings.

Internal Reliability

The SCNAT-IP overall and the 4 domains were found to have adequate Cronbach alpha coefficients $\geq .70$ (range, .70-.89) (Table 3). The standardized median domain scores (possible range of 0-100, demonstrating least to greatest need) within the physical and psychological needs domain, hospital care needs domain, information and communication needs domain, and practical and cultural needs domain were 13.6, 0.0, 8.3, and 10.0, respectively (Table 3). The standardized median total needs score was 12.5.

Convergent Validity

The total score for the SCNAT-IP tools correlated moderately with the 3 psychosocial tools, including the DT (Spearman correlation coefficient, 0.60; $P < .001$), CWC (Spearman correlation coefficient, 0.58; $P < .001$), and the AQoL-4D (Pearson correlation coefficient, -0.56 ; $P < .001$).

Discriminant Validity

The SCNAT-IP discriminated between the supportive care needs of important subgroups. Females reported more unmet needs in physical and psychological needs ($P = .04$) and information and communication needs ($P = .019$); inpatients reported more unmet needs in physical and psychological needs ($P < .001$) and practical and cultural needs ($P = .005$) compared with outpatients. The Kruskal-Wallis test indicated that the older age group reported fewer unmet needs for hospital care ($P = .043$); participants with a postsecondary school education level reported higher unmet needs in physical and psychological needs ($P = .024$) and hospital care needs ($P < .001$); participants living in remote and very remote areas reported higher unmet needs in practical and cultural needs ($P = .004$). These known group differences suggest that the SCNAT-IP possesses good discriminant validity.²⁴

Prevalence of Supportive Care Needs Items

The most frequently reported unmet need items were “money worries” (29%), followed by “concerns about the worries of those close to you” (27%), and “worrying about

TABLE 2. All Factor Categories and Loadings, Including Nonspecific Loadings

Factors	Item No.	Item	1	2	3	4
Factor 1: physical and psychological needs (11 items)	1	Physical pain (eg, hurt)	0.58	0.02	0.03	0.04
	2	Feeling tired (eg, sleeping ok)	0.72	0.03	0.07	0.02
	3	Not feeling well (eg, feeling rotten, crook, or sick) a lot of the time	0.73	0.13	0.04	0.01
	4	Work around the home (eg, washing, cooking, raking the yard, sweeping the floor)	0.61	0.14	0.14	0.16
	5	Doing the things you used to do (eg, fishing, walking, seeing family)	0.67	0.05	0.15	0.03
	6	Anxiety (eg, worrying, fear, concern)	0.72	0.32	0.13	0.04
	7	Feeling down or sad	0.72	0.31	0.15	0.08
	8	Worrying about your illness spreading or getting worse	0.67	0.39	0.05	0.06
	9	Worry about the results of the treatment	0.54	0.45	0.06	0.06
	10	Keeping you strong in your spirit (eg, staying positive)	0.65	0.18	0.10	0.22
	11	Concerns about the worries of those close to you (eg, family and friends)	0.60	0.23	0.09	0.22
Factor 2: hospital care needs (4 items)	15	Support by staff that the way you feel is natural (eg, common, typical)	0.15	0.28	0.74	0.17
	16	Having hospital staff attending quickly to your physical needs (eg, if you needed assistance getting out of bed)	0.17	0.12	0.75	0.22
	17	Having hospital staff show sensitivity to and respecting your feelings and emotional needs	0.12	0.11	0.86	0.15
	26	Being treated like a person not just another case or a number	0.14	0.28	0.75	0.04
Factor 3: information and communication needs (6 items)	18	Being shown or given information (eg, written, diagrams) about how to manage your treatment, illness, and side effects in the hospital	0.10	0.58	0.51	0.08
	19	Being shown or given information (eg, written, diagrams) about how to manage your illness and side effects at home	0.10	0.62	0.38	0.03
	20	Explaining what tests are for	0.13	0.59	0.37	0.05
	21	Understanding the good and bad effects of treatments before you chose to have them (eg, having someone explain these to you)	0.12	0.68	0.29	0.23
	24	Being told about things you can do to help yourself get well (eg, safe exercises, what you eat)	0.19	0.58	0.07	0.13
	33	Having an Indigenous person to interpret and help with communication with health professionals	0.02	0.57	0.23	0.26
Factor 4: practical and cultural needs (5 items)	28	Finding a place to stop or stay while receiving treatment	0.03	0.04	0.24	0.68
	29	Money worries (eg, cost of accommodation, travel)	0.36	0.06	0.15	0.63
	30	Having an Indigenous person to talk to and support you, someone who understands your culture	0.13	0.41	0.11	0.56
	34	Ensuring family members were able to be present when talking or seeing health professionals	0.01	0.29	0.05	0.52
	35	Directions to get to and around the hospital	0.02	0.20	0.02	0.67
Nonspecific factor loadings ^a	22	Being told about your test results as soon as possible	0.08	0.49	0.27	0.26
	23	Being told about whether your cancer is in remission (eg, fading or finishing)	0.14	0.44	0.07	0.09
	25	Having access to professional counselling (eg, psychologist, social worker, Aboriginal liaison officer) if you or family and friends need it	0.17	0.39	0.29	0.13
	27	Having one hospital person you can talk to about your condition, treatment, and follow-up	0.08	0.38	0.47	0.47
	38	Getting information about your illness for your family and friends	0.04	0.49	0.12	0.39
	39	Being treated in a hospital or clinic that is culturally supportive	0.18	0.28	0.34	0.39

^aThese items were not been retained in the supportive cancer care needs assessment tool for Indigenous people (SCNAT-IP).

TABLE 3. Cronbach Alpha Reliability Coefficient and Response Distribution for Each Domain (Standardized Likert Summated Score)

Domain	Alpha	Mean Score (0-100)	SD	Median	IQR	% Lowest Score (Floor)	% Highest Score (Ceiling)
Physical and psychological (n=248)	.89	20.9	19.5	13.6	24	8.1	0.4
Hospital care (n=247)	.86	8.3	17.2	0.0	6.3	64.5	0.4
Information and communication (n=247)	.82	13.0	16.7	8.3	17.0	32.7	0.4
Practical and cultural (n=248)	.70	14.6	18.5	10.0	20.0	29.8	0.4

Abbreviations: IQR, interquartile range; SD, standard deviation.

the illness spreading or getting worse” (26%) (Table 4). Most of the commonly reported items were in the physical and psychological needs domain (Table 4). Overall, 175 participants (71%) reported at least 1 unmet need across the 26 items. There was no statistically significant difference noted between the levels of need in the socioeconomically disadvantaged sample and the rest of the sample ($P = .132$).

DISCUSSION

The results of the current study present initial evidence for the psychometric properties of the SCNAT-IP, a measure of the supportive care needs of Indigenous Australians with cancer. To the best of our knowledge, the SCNAT-IP is the first tool with the ability to measure met and unmet needs across a range of domains important to Indigenous Australians. Although previous supportive care needs surveys had a 5-factor structure,^{15,25,26} analysis of the SCNAT-IP supported a 4-factor solution. Similarly, Au et al found 4 factors in the Chinese version of the SCNS (SCNS-SF33-C)²⁷; however, its dimensions varied from those of the SCNAT-IP. The SCNAT-IP is also a more acceptable length, with only 26 items, thereby easing the completion burden for participants.

The SCNAT-IP achieved a high completion rate. As with other studies conducted with underserved and minority patients, we paid particular attention to the length of the tool due to varying literacy levels among participants and used data collection methods suited to this population.^{28,29}

Several items addressing sexuality needs were eliminated due to floor effects. Questions concerning sexuality may be culturally inappropriate, and therefore participants were given a forewarning before being asked these questions, which potentially contributed to the low endorsement of these items and their elimination.¹⁴ Few participants endorsed the item regarding having a choice about which hospital they attended. This may be due to geographical and/or insurance status, because few Indigenous Australians have private health insurance.³⁰

The SCNAT-IP demonstrated adequate construct validity, explaining 51% of the variance. However, this is lower than the explained variance reported for other similar tools.^{15,25-27}

Another measure of the unmet needs of Australian cancer survivors reported a similar total variance (54%) on a much larger sample size (353 participants).³¹ The reduction in explained variance may also be due to cultural differences outweighing clinical factors, as reported by Fielding et al.³² For example, in the development of the SCNAT-IP, the removal of the sexuality factor due to the cultural inappropriateness of the domain for some Indigenous patients may have reduced the explainable variance. Future qualitative research is needed to explore which supportive care needs are not adequately represented by the 26 items, and how additional culturally appropriate questions could capture these needs.

Internal consistencies of the 4 domains were good, with reported Cronbach alpha coefficients of .70 to .89, demonstrating good structural reliability, and a coherent summed factor score. As reported for the SCNS-SF34, there was also good indication of validity when comparing the SCNAT-IP with similar patient-reported instruments (the DT and AQoL-4D).¹⁵

We also report what to our knowledge is the first prevalence of supportive care needs among Indigenous Australians. Overall, the results of the current study are consistent with previous research conducted with non-Indigenous participants because the current study sample also reported most unmet needs as being in the psychological and practical domains.³³⁻³⁵ Similar items included “concerns about the worries of those close to you,” “worrying about the illness spreading or getting worse,” “feeling down or sad,” and “feeling tired” and were among the 10 most common needs identified by patients with cancer.

Sanson-Fisher et al³³ reported that 19% of patients with cancer reported moderate to high unmet needs for monetary allowance for travel, treatment, and equipment expenses, a finding that was similar to the participants in the current study, with 22% reporting a moderate to high

TABLE 4. Percentage of Sample Stratified by Unmet Supportive Care Needs and Level of Help Needed (n=248)

	Item No. and the Item	% With No Need	% Satisfied With Help Received	% Needing a Little More Help	% Needing Some/Much More Help
1	Physical pain (eg, hurt) ^a	48.0	33.5	8.5	9.7
2	Feeling tired (eg, sleeping OK) ^a	50.8	26.2	13.3	9.3
3	Not feeling well (eg, feeling rotten, crook, or sick) a lot of the time ^b	53.2	27.8	9.7	8.1
4	Work around the home (eg, washing, cooking, raking the yard, sweeping the floor) ^b	49.2	30.6	7.7	11.3
5	Doing the things you used to do (eg, fishing, walking, seeing family) ^c	62.9	20.6	6.0	9.7
6	Anxiety (eg, worrying, fear, concern) ^a	53.6	23.0	11.3	11.7
7	Feeling down or sad	54.4	22.6	10.5	12.5
8	Worrying about your illness spreading or getting worse	49.2	24.6	12.1	14.1
9	Worry about the results of your treatment ^d	52.4	23.8	10.5	11.7
10	Keeping you strong in your spirit (eg, staying positive) ^a	64.9	22.2	6.0	6.5
11	Concerns about the worries of those close to you (eg, family and friends) ^a	47.2	25.8	11.7	14.9
15	Support by staff that the way you feel is natural (eg, common, typical) ^a	78.2	12.9	4.4	4.0
16	Having hospital staff attending quickly to your physical needs (eg, if you needed assistance getting out of bed) ^a	77.0	16.1	4.0	2.4
17	Having hospital staff show sensitivity to and respecting your feelings and emotional needs ^a	79.0	13.7	2.4	4.4
18	Being shown or given information (eg, written, diagrams) about how to manage your treatment, illness, and side effects in the hospital ^a	66.5	25.4	2.4	5.2
19	Being shown or given information (eg, written, diagrams) about how to manage your illness and side effects at home ^a	62.5	25.8	4.8	6.5
20	Explaining what tests are for ^c	63.3	27.8	4.0	4.0
21	Understanding the good and bad effects of treatments before you chose to have them (eg, having someone explain them to you) ^a	55.2	29.8	6.5	7.3
24	Being told about the things you can do to help yourself get well (eg, safe exercises, what you eat)	63.7	23.8	5.6	6.9
26	Being treated like a person not just another case or a number ^a	86.7	5.2	3.6	4.0
28	Finding a place to stop or stay while receiving treatment	78.2	12.1	2.0	7.7
29	Money worries (eg, cost of accommodation, travel) ^b	54.4	15.3	7.3	21.8
30	Having an Indigenous person to talk to and support you, someone who understands your culture ^a	66.1	22.2	2.4	8.9
33	Having an Indigenous person to interpret and help you with communication with health professionals	85.5	9.3	1.2	4.0
34	Ensuring family members were able to be present when talking or seeing health professionals	75.4	15.7	3.6	5.2
35	Directions to get to and around the hospital	76.2	17.3	2.4	4.0

^aInformation was missing for 1 participant.^bInformation was missing for 3 participants.^cInformation was missing for 2 participants.^dInformation was missing for 4 participants.

level of unmet need for money worries. Given that Indigenous Australians experience disadvantage across a range of socioeconomic indicators and have a higher prevalence of psychological distress (anxiety and depression), these results are not surprising.³⁶

The participant characteristics in the current study reflect those of the Indigenous population with regard to geographical location⁹ and tumor groups (breast and respiratory cancers, respectively).¹⁰ As evidenced in the current study, the SCNAT-IP has applicability to a broad range of tumor groups and to patients at various stages of their cancer journey.

The current study had several limitations. First, a sample size of 248 is at the lower end recommended for factor analysis.²³ However, although it can be very difficult to recruit Indigenous patients with cancer, to our knowledge the current study is the largest cross-sectional, Indigenous-specific cancer study conducted in Australia to date. Second, we assessed internal reliability but we did not conduct test-retest studies for reproducibility and this is still required. Third, the majority of participants were recruited through cancer outpatient clinics and further testing of inpatients is needed. Fourth, although interviewer administration has the advantage of overcoming

literacy-related participation restrictions, this administration may have inadvertently influenced responses or restricted choices in extreme response categories. Interviewer administration accommodated for potential literacy problems. Future studies could compare self-administered and interviewer-administered response patterns to determine the potential bias caused by each mode. Last, the lower SCNAT-IP variance is largely unexplained but as stated above may be due to exclusion of the sexuality needs that were not included due to their being culturally inappropriate for some Indigenous patients¹⁴ as well as the fact that the measure contained only 4 factors whereas other need tools consist mainly of 5 factors.

Despite these limitations, the results of the current study provide good initial evidence that the SCNAT-IP is a valid instrument with good psychometric properties. To the best of our knowledge, the current study is the first to comprehensively identify the specific unmet needs of Indigenous Australians with cancer and identify those areas in which help is required. These results support the need for greater financial and culturally appropriate psychological support to Indigenous patients with cancer.

Conclusions

Given the growing evidence and significant disparities in cancer outcomes between Indigenous and non-Indigenous individuals, insufficient attention has been given to the psychosocial needs of Indigenous patients with cancer. The newly developed and psychometrically tested SCNAT-IP is culturally relevant and sensitive to the needs of Indigenous individuals and has application in the clinical and research settings. The SCNAT-IP could help cancer clinicians to better detect, monitor, and address the unmet needs of Indigenous patients with cancer to ensure that these patients receive optimal treatment. Cancer researchers could use the SCNAT-IP to quantify needs, identify the most common needs and predictors, and evaluate the effectiveness of interventions among this population.

FUNDING SUPPORT

Supported under the Australian Research Council's Indigenous Discovery Projects funding scheme (ARC DO1989086) and a National Health and Medical Research Council Project grant (grant 552414). This study was undertaken under the auspices of the Centre of Research Excellence in Discovering Indigenous Strategies to Improve Cancer Outcomes Via Engagement, Research Translation and Training (DISCOVER-TT CRE), funded by the NHMRC (#1041111), and the Strategic Research Partnership to Improve Cancer Control for Indigenous Australians (STREP Ca-

CIIndA, funded by Cancer Council NSW with supplementary funding from Cancer Council WA).

CONFLICT OF INTEREST DISCLOSURES

Associate Professor Garvey is supported by the Lowitja Institute. Dr. Beesley is funded by National Health and Medical Research Council (NHMRC) program grant 552429. Dr. Janda is supported by an NHMRC Career Development Fellowship (grant 1045247). Mr He is supported by a Postgraduate Research Scholarship from Charles Darwin University. Professor Cunningham is funded by an NHMRC Research Fellowship (grant 1058244). Dr. Valery is funded by an Australian Research Council Future Fellowship (grant FT100100511).

REFERENCES

1. Kamangar F, Dores GM, Anderson WF. Patterns of cancer incidence, mortality, and prevalence across five continents: defining priorities to reduce cancer disparities in different geographic regions of the world. *J Clin Oncol*. 2006;24:2137-2150.
2. Cunningham J, Rumbold AR, Zhang X, Condon JR. Incidence, aetiology, and outcomes of cancer in Indigenous peoples in Australia. *Lancet Oncol*. 2008;9:585-595.
3. Sanson-Fisher R, Carey M, Mackenzie L, Hill D, Campbell S, Turner D. Reducing inequities in cancer care: the role of cancer registries. *Cancer*. 2009;115:3597-3605.
4. Ahmed NU, Pelletier V, Winter K, Albatineh AN. Factors explaining racial/ethnic disparities in rates of physician recommendation for colorectal cancer screening. *Am J Public Health*. 2013;103:e91-e99.
5. Olopade OI, Schwartzmann G, Saijo N, Thomas CR Jr. Disparities in cancer care: a worldwide perspective and roadmap for change. *J Clin Oncol*. 2006;24:2135-2136.
6. Ahmed S, Shahid RK. Disparity in cancer care: a Canadian perspective. *Curr Oncol*. 2012;19:e376-e382.
7. Condon JR, Garvey G, Whop LJ, et al. Aboriginal and Torres Strait Islander Australians and cancer. *Cancer Forum*. 2013;37:27-30.
8. Garvey G, Cunningham J, Valery PC, et al. Reducing the burden of cancer for Aboriginal and Torres Strait Islander Australians: time for a coordinated, collaborative, priority-driven, Indigenous-led research program. *Med J Aust*. 2011;194:530-531.
9. Australian Institute of Health and Welfare. The Health and Welfare of Australia's Aboriginal and Torres Strait Islander People: An Overview 2011. Canberra, ACT, Australia: Australian Institute of Health and Welfare; 2011.
10. Australian Institute of Health and Welfare. Cancer in Aboriginal and Torres Strait Islander Peoples of Australia: An Overview. Canberra, ACT, Australia: Australian Institute of Health and Welfare; 2013.
11. Cramb SM, Garvey G, Valery PC, Williamson JD, Baade PD. The first year counts: cancer survival among Indigenous and non-Indigenous Queenslanders, 1997-2006. *Med J Aust*. 2012;196:270-274.
12. Shahid S, Finn L, Bessarab D, Thompson SC. Understanding, beliefs and perspectives of Aboriginal people in Western Australia about cancer and its impact on access to cancer services. *BMC Health Serv Res*. 2009;9:132.
13. Shahid S, Finn L, Bessarab D, Thompson SC. 'Nowhere to room...nobody told them': logistical and cultural impediments to Aboriginal peoples' participation in cancer treatment. *Aust Health Rev*. 2011;35:235-241.
14. Garvey G, Beesley VL, Janda M, et al. The development of a supportive care needs assessment tool for Indigenous people with cancer. *BMC Cancer*. 2012;12:300.
15. Boyes A, Giris A, Lecathelinais C. Brief assessment of adult cancer patients' perceived needs: development and validation of the 34-item Supportive Care Needs Survey (SCNS-SF34). *J Eval Clin Pract*. 2009;15:602-606.

16. McElduff P, Boyes A, Zucca A, Girgis A. Supportive Care Needs Survey: A Guide to Administration, Scoring and Analysis. Newcastle, NSW, Australia: Centre for Health Research & Psycho-Oncology; 2004.
17. Australian Institute of Health and Welfare (AIHW) (2004) Rural, regional and remote health: a guide to remoteness classifications. Australian Institute of Health and Welfare AIHW Cat. No. PHE 53, Canberra.
18. Australian Bureau of Statistics (ABS) (2008) Census of population and housing: socio-economic indexes for areas (SEIFA), Australia, 2006. ABS Cat. No. 2033.0.55.001. ABS, Canberra.
19. Roth AJ, Kornblith AB, Batel-Copel L, Peabody E, Scher HI, Holland JC. Rapid screening for psychologic distress in men with prostate carcinoma: a pilot study. *Cancer*. 1998;82:1904-1908.
20. Gramling R, Anthony D, Frierson G, Bowen D. The cancer worry chart: a single-item screening measure of worry about developing breast cancer. *Psychooncology*. 2007;16:593-597.
21. Hawthorne G, Richardson J, Osborne R. The Assessment of Quality of Life (AQoL) instrument: a psychometric measure of health-related quality of life. *Qual Life Res*. 1999;8:209-224.
22. National Comprehensive Cancer Network. Clinical Practice Guidelines in Oncology Distress Management V.1. 2007. Available at: nccn.org/professionals/physician_gls/PDF/distress.pdf. Accessed November 5, 2014.
23. Matsunaga M. How to factor-analyze your data right: Do's, Don't's and How To's. *Int J Psychol Res*. 2010;3(1):97-110.
24. Fayers P, Machin D. Quality of Life: Assessment, Analysis and Interpretation. New York: John Wiley & Sons Inc; 2000.
25. Okuyama T, Akechi T, Yamashita H, et al. Reliability and validity of the Japanese version of the Short-form Supportive Care Needs Survey questionnaire (SCNS-SF34-J). *Psychooncology*. 2009;18:1003-1010.
26. Lehmann C, Koch U, Mehnert A. Psychometric properties of the German version of the Short-Form Supportive Care Needs Survey Questionnaire (SCNS-SF34-G). *Support Care Cancer*. 2012;20:2415-2424.
27. Au A, Lam WW, Kwong A, et al. Validation of the Chinese version of the short-form Supportive Care Needs Survey Questionnaire (SCNS-SF34-C). *Psychooncology*. 2011;20:1292-1300.
28. Moadel AB, Morgan C, Dutcher J. Psychosocial needs assessment among an underserved, ethnically diverse cancer patient population. *Cancer*. 2007;109(2 suppl):446-454.
29. Zubrick SR, Silburn SR, De Maio JA, et al. The Western Australian Aboriginal Child Health Survey: Improving the Educational Experiences of Aboriginal Children and Young People. Perth, WA, Australia: Curtin University of Technology and Telethon Institute for Child Health Research; 2006.
30. Australian Institute of Health and Welfare. Towards Better Indigenous Health Data. Canberra, ACT, Australia: Australian Institute of Health and Welfare; 2013.
31. Hodgkinson K, Butow P, Hunt GE, et al. The development and evaluation of a measure to assess cancer survivors' unmet supportive care needs: the CaSUN (Cancer Survivors' Unmet Needs measure). *Psychooncology*. 2007;16:796-804.
32. Fielding R, Lam WW, Shun SC, et al; for Asia-Pacific Psycho-Oncology Network (APPON). Attributing variance in supportive care needs during cancer: culture-service, and individual differences, before clinical factors. *PLoS One*. 2013;8:e65099.
33. Sanson-Fisher R, Girgis A, Boyes A, Bonevski B, Burton L, Cook P. The unmet supportive care needs of patients with cancer. Supportive Care Review Group. *Cancer*. 2000;88:226-237.
34. Harrison JD, Young JM, Price MA, Butow PN, Solomon MJ. What are the unmet supportive care needs of people with cancer? A systematic review. *Support Care Cancer*. 2009;17:1117-1128.
35. Bonevski B, Sanson-Fisher R, Hershey P, Paul C, Foot G. Assessing the perceived needs of patients attending an outpatient melanoma clinic. *J Psychosoc Oncol*. 1999;17:101-118.
36. Jorm AF, Bourchier SJ, Cvetkovski S, Stewart G. Mental health of Indigenous Australians: a review of findings from community surveys. *Med J Aust*. 2012;196:118-121.