Needs assessment tools for post-treatment cancer survivors – A review of the literature to guide clinical practice

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A rapid review of needs assessment tools for post-treatment cancer survivors

ABSTRACT

Relevant, comprehensive and psychometrically rigorous needs assessment tools are needed to ensure appropriate care is delivered to cancer survivors who have completed treatment. The aim of this rapid review was to identify and describe needs assessment tools that are used in cancer survivors post-treatment, assess their psychometric properties and describe their use in clinical care.

The electronic databases Medline, Cochrane Library, CINAHL and PsycINFO were searched. Six studies were identified that described five needs assessment tools used in cancer survivors post-treatment. None of these tools covered all domains of unmet need, nor demonstrated adequate evidence of all recommended criteria of validity and reliability. Few had been evaluated for use in a clinical environment. Out of the five tools, the Survivor Unmet Needs Survey (SUNS) showed the strongest psychometric properties.

There is little empirical evidence available to guide recommendations on the most appropriate process of conducting needs assessment with cancer survivors once they have completed treatment.

Keywords: Cancer Survivors, Long-Term Cancer Survivors, Unmet Needs, Screening, Needs Assessment Tool

INTRODUCTION

The number of people surviving cancer is increasing worldwide. This is a consequence of the ageing of the population, increased cancer diagnosis and improved cancer treatments and follow up care. The American Cancer Society and the National Cancer Institute estimated that approximately 15.5 million Americans were alive on January 1, 2016 with a prior diagnosis of cancer, and that this figure would increase to 20 million cancer survivors by January 1, 2026 (Miller et al., 2016). As a consequence of people living longer after a cancer diagnosis the focus of care has extended well beyond treatment.

To ensure that optimal patient-centred care is delivered to cancer survivors once treatment has completed it is imperative that care and services are relevant and appropriate to the specific concerns of this population. Needs experienced by cancer survivors are likely to differ to cancer patients currently receiving treatment (Merluzzi, Philip, Yang, & Heitzmann, 2016).

Quality of life (QoL) assessment is commonly used to identify patients' concerns. However, QoL measures only assess the presence and severity of a concern, they do not assess whether a patient wants additional help to address their concerns. Comparatively, unmet needs assessment identifies the range of concerns experienced by patients for which they require additional assistance (Fitch, 2008). As assessment tools focus on the specific assistance cancer survivors require, the information collected from such tools allow for relevant and appropriate care to be delivered to patients in a timely manner.

Cancer survivors have specific needs and issues that are often not addressed or identified (Knobf et al., 2012). Specific needs assessment tools that cover these unique issues are needed to ensure that survivors' concerns are adequately addressed and appropriate care is provided. There is currently limited guidance regarding the most appropriate needs assessment tool for use within a cancer survivor population.

AIMS

The aims of this rapid review were to:

(1) identify and describe needs assessment tools for cancer survivors in the post-treatment phase
(2) assess the psychometric properties of identified needs assessment tools
(3) review the use of needs assessments tools for cancer survivors in the clinical setting

METHOD

This rapid review was conducted according to the rigorous methodological approach developed by Khangura et al. (Khangura, Konnyu, Cushman, Grimshaw, & Moher, 2012). The review questions were devised and refined by a multidisciplinary team in response to a known area of clinical need.

Eligibility criteria and definitions

Inclusion criteria: Papers were considered eligible if 1) they reported on the psychometric properties or implementation of a needs assessment tool; 2) included adult (aged 18 years and over) cancer survivors post-treatment; 3) were appropriate for use in survivors of any cancer type (i.e. not limited to a single or specific type(s) of cancer); and 4) were published in English.

Exclusion criteria: Papers that reported on needs assessment tools for cancer survivors currently receiving treatment or end of life care, needs assessment for carers or family members, and assessment for specific issues such as fatigue or depression, were excluded.

Definitions: For the purposes of this rapid review, a needs assessment tool was defined as a tool that identifies and measures the level of unmet needs in a patient. An unmet need is defined as a concern that a patient wants additional assistance to address (Campbell et al., 2010; Sanson-Fisher et al., 2000). Initially, the Distress Thermometer and Problem List (DT/PL) was included in the literature search as it is commonly used in clinical practice to assess needs. However, as it did not meet the stated definition of a needs assessment tool, it was excluded from the final analysis.

Search strategy

An extensive search strategy was developed by an information scientist, which combined subject headings and keywords for the concepts ‘cancer survivor’ and ‘needs assessment tools’ (Table 1). The electronic databases MEDLINE, Cochrane Library, CINAHL and PsycINFO were searched. The following grey literature sources were also screened for relevant articles: forums, guidelines and recommendations from international cancer groups. This included

Macmillan Cancer Support, National Comprehensive Cancer Network, Canadian Partnership Against Cancer Corporation and American Society of Clinical Oncology. The search was first conducted in March 2015 and updated in March 2017, with no date limits applied.

Study selection

The titles and abstracts of all articles identified from the database and grey literature searches were assessed for eligibility according to the pre-specified inclusion/exclusion criteria by one reviewer. Screening of full texts was performed independently by two reviewers; where eligibility for inclusion was unclear, inclusion was discussed and determined with a third reviewer.

Data extraction and analysis

Data were extracted from included studies by one reviewer and checked by a second reviewer. This was entered into a study-specific data extraction template organised according to the review questions. Results were synthesised narratively within the four following domains:

(1) Characteristics of studies and needs assessment tools: Specific characteristics of each needs assessment tool were extracted and compared, including the cancer type/s included in the development of the tool, sample size, stage of survivorship of the study sample, items and domains covered by the tool and the question format of the tool.

(2) *Domains assessed:* The comprehensiveness of each tool was assessed by evaluating whether or not the tool assessed the following seven areas of need: physical, emotional, lifestyle or information, practical, family/relationships, sexual and cognition. The domains were based on the areas of need recommended by Macmillan Cancer Support in the United Kingdom (Young, Smith, Smith, & Wilkinson, Winter 2012) and the Supportive Care Needs Framework (Fitch, 2008).

(3) Psychometric properties: Adequacy of the psychometric properties of each tool was assessed using an adapted criteria from Smith et al. (2005) and Pearce et al. (2008), as outlined in Table 2. The quality of the psychometric properties reported for each needs assessment tool was assessed by two reviewers and evaluated using Smith et al.'s(2005) criteria. Weak evidence was defined as limited evidence in favour of the tool; adequate evidence was defined as some acceptable evidence in favour of the tool but with some aspects failing to meet the full criteria or was not reported; and good evidence was defined as acceptable evidence in favour of the tool.

(4) Use in clinical settings: Information regarding the use of each needs assessment tool in clinical settings, where available, was extracted from the included papers and summarised narratively.

RESULTS

Search results

As shown in Figure 1., 2434 articles were identified from the database search; of which 1806 abstracts were inspected, 58 full-text were assessed and 6 relevant papers were identified.

Needs assessment tools used with cancer survivors

Five needs assessment tools were identified as having been used with cancer survivors in the post-treatment setting. These included: the Survivor Unmet Needs Survey (SUNS)(Campbell et al., 2010; A. Hall, C. D'Este, F. Tzelepis, R. Sanson-Fisher, & M. Lynagh, 2014), the Short Form Survivor Unmet Needs Survey (SF-SUNS)(Campbell et al., 2014), Cancer Survivors Unmet Needs (CaSUN)(Hodgkinson et al., 2007), Cancer Needs Questionnaire Young People (CNQ-YP)(Clinton-McHarg, Carey, Sanson-Fisher, D'Este, & Shakeshaft, 2012) and the Childhood Cancer Survivors Study Needs Assessment Questionnaire (CCSS-NAQ) (Cox et al., 2013).

1) Characteristics of included studies and needs assessment tools

The characteristics of the included studies and five needs assessment tools are shown in Table 3.The tools varied in their content and the population within which they had been studied. As shown in Table 3, the development and validation of the needs assessment tools analysed were conducted in cross-sectional studies. Recruitment of patients to the studies was poor, with participation rates ranging from 37% (A. Hall, C. D'Este, F. Tzelepis, R. Sanson-Fisher, & M. Lynagh, 2014) to 58% (Hodgkinson et al., 2007). Consequently, these studies run the risk of response bias; the extent of which is difficult to determine as most of the studies did not collect comprehensive demographic data on non-participants. Only one study reported on ethnicity, rural-residing and social economic background of participants.(Cox et al., 2013). In studies where age was reported the average responder was middle aged or above (Campbell et al., 2010; Hodgkinson et al., 2007; Mitcheson & Cowley, 2003). Only 4.2% of study participants were less than 40 years of age in the development of the SUNS (Campbell et al., 2010). Participation samples of these studies may not be representative of a broad cancer survivor population.

2) Domains assessed

As shown in Table 4 none of the five needs assessment tools assessed all seven domains of needs. The CaSUN (Hodgkinson et al., 2007) was the most comprehensive measure, covering six of the seven domains. However, none of the measures assessed cognitive needs, and only the CaSUN assessed sexual needs.

3) Psychometric properties

The psychometric properties of the five needs assessment tools are described in Table 5, and the quality of the evidence supporting the psychometric properties is outlined in Table 6. The SUNS (Campbell et al., 2010) appears to be the tool with the strongest and most extensively assessed psychometric properties (table 6).

4) Use in clinical settings

The literature review did not produce papers that described implementation of needs assessment tools in the clinical setting. The majority of papers described the development and psychometric analysis of the tools in the research but not in the clinical setting; although most of the tools are intended for clinical use. However, the limited literature describing the clinical use of these tools may not be a reflection of lack of clinical use, but instead reflect limited research assessing the clinical use of such tools.

DISCUSSION

Five needs assessment tools specific for the cancer survivor population were identified by this review. None covered all domains of unmet needs, nor demonstrated adequate evidence of all recommended criteria of validity and reliability. The CaSUN (Hodgkinson et al., 2007) was the most comprehensive measure, while the SUNS (Campbell et al., 2010) had the strongest and most extensively assessed psychometric properties. However the disadvantage of this tool is that it is fairly lengthy with 89 items. The short form version of the SUNS (SF-SUNS) (Campbell et al., 2014), which has 30 items, may be the next most suitable alternative. However, it requires further psychometric assessment.

The existence of response bias in the validation studies of these tools is also highly probable, with the patients recruited for a number of the studies lacking a representative group of rural patients, non-English speaking, ethnic, younger cancer survivors and long term survivors.

Consequently, the generalisability of the five identified needs assessment tools to the entire population of cancer survivors who have completed treatment is questionable. Furthermore, one of the tools identified was developed specifically for identifying the unmet needs of young adult and adolescent cancer survivors (Clinton-McHarg et al., 2012; Cox et al., 2013). While younger cancer survivors have been identified as a population who experience a high level of unmet needs (D'Agostino & Edelstein, 2013; Hall et al., 2012; Zebrack, 2009), it does highlight the limited number of generic needs assessment tools available for use with adult cancer survivors.

It is of interest to note that although the Distress Thermometer and Problem List does not meet the definition of needs assessment tool, it is often used in clinical practice to assess patient needs in combination with a clinic review (Wells, Semple, & Lane, 2015).

The rapid review did not produce papers on the implementation of needs assessment tool in cancer survivors. Despite the limited evidence a number of organisations provide broad recommendations regarding the general process that should be carried out. In summary, these organisations recommend that: holistic needs assessment should be conducted at the end of cancer treatment and at times of need (e.g. health and social need changes) (Canadian Partnership Against Cancer Corporation, 2015; Macmillan Cancer Support, 2015) and should be offered to all cancer survivors (Macmillan Cancer Support, 2015). The results of needs assessment should be used to inform the delivery of survivorship care and support offered to patients (American Society of Clinical Oncology, 2015; Macmillan Cancer Support, 2015). Frequency of follow up and surveillance should involve a discussion between patient and provider and may vary between individual needs (Canadian Partnership Against Cancer Corporation, 2015; National Comprehensive Cancer Network, 2014). Follow up may also be affected by the wishes and needs of the patient. A number of the groups emphasise the importance of communicating patient needs between specialist and primary care providers to ensure continuity of care (Canadian Partnership Against Cancer Corporation, 2015; National Comprehensive Cancer Network, 2014). However, it must be noted that there is also a lack of evidence regarding effective interventions to address the identified needs of cancer patients (Calaminus & Barr, 2008; Carey et al., 2012). This further emphasises the need for caution when trying to standardise the process of needs assessment in cancer survivors and the need for future research in this area.

In light of the limited availability of appropriate tools it is recommended that when choosing a needs assessment tool, health care providers should select a tool that contains items most relevant to their patient population. They should be aware of the limitations of the tool and compensate for these wherever possible. Thought should also be given to the feasibility of the tool for that clinical practice, with consideration given to the length of the tool and format.

Furthermore, any needs assessment tool should be accompanied by a patient conversation during which concerns can be elicited and clarified. To improve the evidence in this area large longitudinal studies carried out in clinical practice should be conducted. Such studies would allow for a more in-depth assessment of the psychometric properties of these measures, allow for a broad selection of patients and include data on implementation, patient outcomes over time and cost analysis.

Limitations of the current review

When interpreting the results of this study a number of limitations should be considered. First, this was not a systematic review and we did not screen for tools used in cancer patients on treatment. As a result, it is possible that a number of relevant studies were omitted. Only one reviewer screened all search results. Although a second reviewer screened selected papers for possible inclusion, there is a risk of review error and bias.

CONCLUSION

This is the first review to be conducted to assess the quality and implementation of needs assessment tools in cancer survivors who have completed treatment. The study highlights the lack of high quality, comprehensive tools to assess the needs of survivors. It also highlights the lack of guidance regarding implementation of needs assessment in the real world care of survivors. Methodologically rigorous research is needed to inform the most effective methods of conducting needs assessment for cancer survivors. Until then, health care providers should carefully consider the most relevant and psychometrically rigorous needs assessment tool for use with their patient group. A tailored process to needs assessment and follow-up should also be used to ensure that needs are identified and optimal patient-centred care is delivered.

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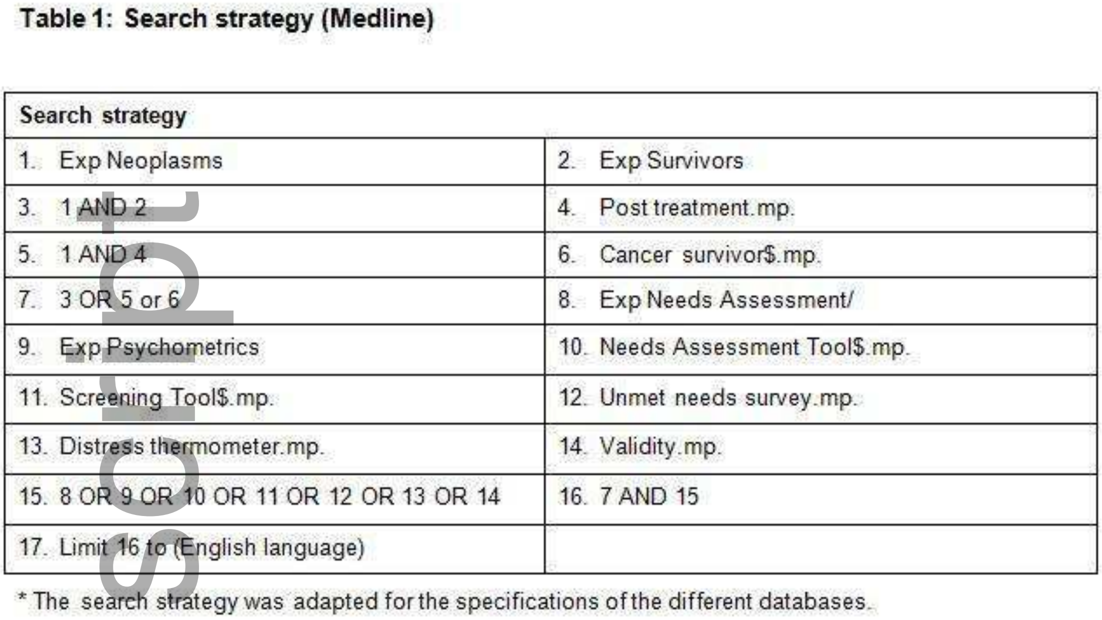
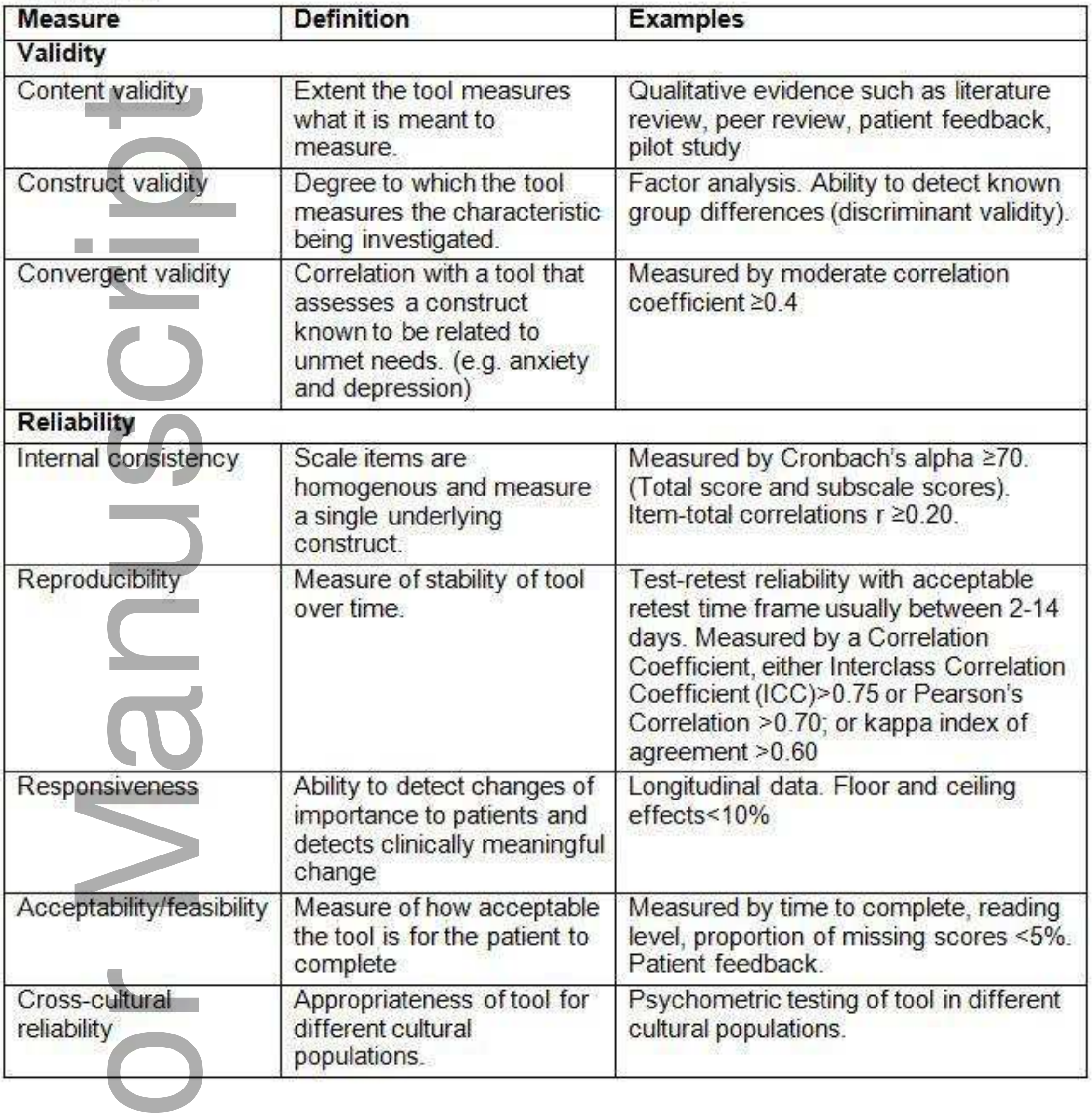


Table 1: Search strategy (Medline)

Search strategy	
1. Exp Neoplasms	2. Exp Survivors
3. 1 AND 2	4. Post treatment.mp.
5. 1 AND 4	6. Cancer survivor$.mp.
7. 3 OR 5 or 6	8. Exp Needs Assessment/
9. Exp Psychometrics	10. Needs Assessment Tool$.mp.
11. Screening Tool$.mp.	12. Unmet needs survey.mp.
13. Distress thermometer.mp.	14. Validity.mp.
15. 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14	16. 7 AND 15
17. Limit 16 to (English language)	

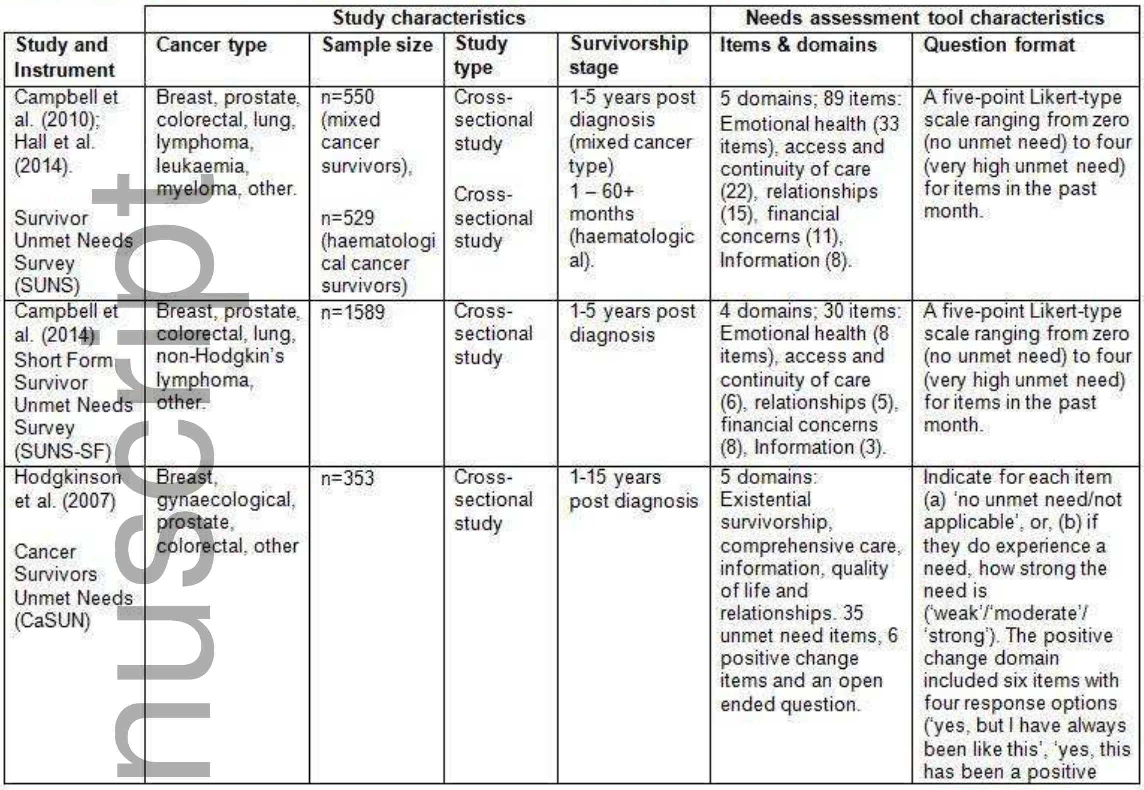
* The search strategy was adapted for the specifications of the different databases.

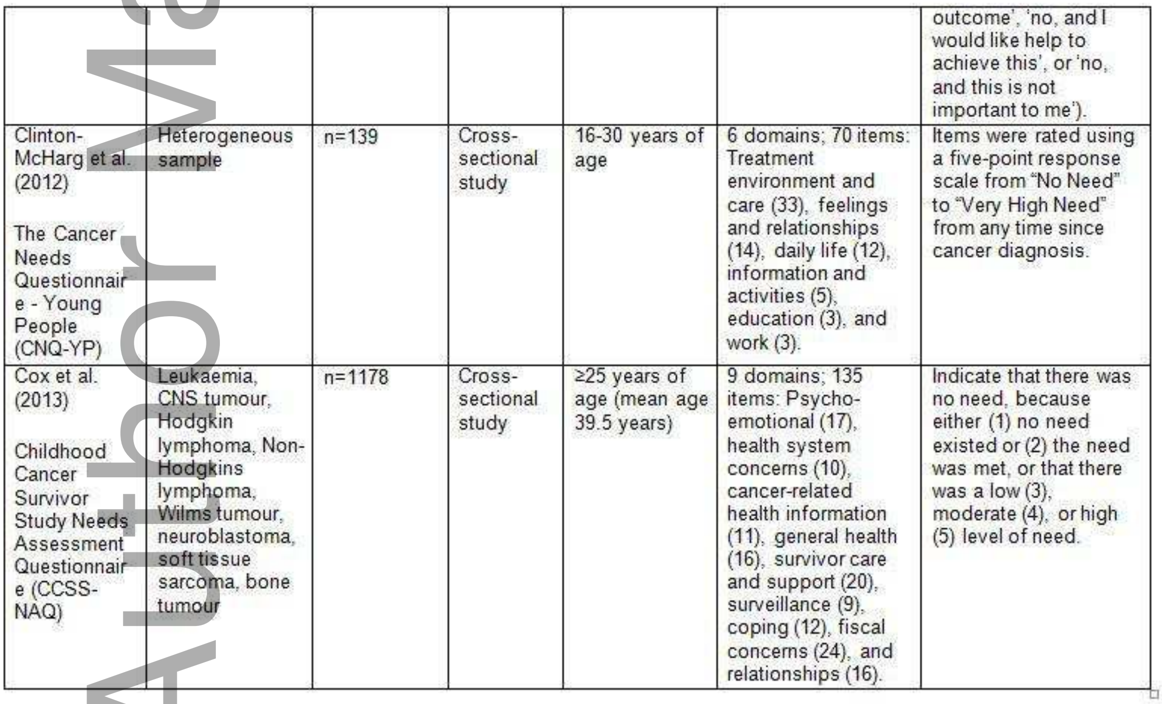
Table 2: Criteria used to assess the psychometric properties of the identified needs assessment tools adapted from criteria recommended by Smith et al, (2005) and Pearce et al, (2008).



Measure	Definition	Examples
Validity		
Content validity	Extent the tool measures what it is meant to measure.	Qualitative evidence such as literature review, peer review, patient feedback, pilot study
Construct validity	Degree to which the tool measures the characteristic being investigated.	Factor analysis. Ability to detect known group differences (discriminant validity).
Convergent validity	Correlation with a tool that assesses a construct known to be related to unmet needs. (e.g. anxiety and depression)	Measured by moderate correlation coefficient ≥0.4
Reliability		
Internal consistency	Scale items are homogenous and measure a single underlying construct.	Measured by Cronbach's alpha ≥70. (Total score and subscale scores). Item-total correlations r ≥0.20.
Reproducibility	Measure of stability of tool over time.	Test-retest reliability with acceptable retest time frame usually between 2-14 days. Measured by a Correlation Coefficient, either Interclass Correlation Coefficient (ICC)>0.75 or Pearson's Correlation >0.70; or kappa index of agreement >0.60
Responsiveness	Ability to detect changes of importance to patients and detects clinically meaningful change	Longitudinal data. Floor and ceiling effects<10%
Acceptability/feasibility	Measure of how acceptable the tool is for the patient to complete	Measured by time to complete, reading level, proportion of missing scores <5%. Patient feedback.
Cross-cultural reliability	Appropriateness of tool for different cultural populations.	Psychometric testing of tool in different cultural populations.

Table 3: The characteristics of included studies and needs assessment tools





	Study characteristics				Needs assessment tool characteristics	
Study and Instrument	**Cancer type**	**Sample size**	**Study type**	**Survivorship stage**	**Items & domains**	**Question format**
Campbell et al. (2010); Hall et al. (2014). Survivor Unmet Needs Survey (SUNS)	Breast, prostate, colorectal, lung, lymphoma, leukaemia, myeloma, other.	n=550 (mixed cancer survivors), n=529 (haematological cancer survivors)	Cross-sectional study Cross-sectional study	1-5 years post diagnosis (mixed cancer type) 1 – 60+ months (haematological).	5 domains; 89 items: Emotional health (33 items), access and continuity of care (22), relationships (15), financial concerns (11), Information (8).	A five-point Likert-type scale ranging from zero (no unmet need) to four (very high unmet need) for items in the past month.
Campbell et al. (2014) Short Form Survivor Unmet Needs Survey (SUNS-SF)	Breast, prostate, colorectal, lung, non-Hodgkin's lymphoma, other.	n=1589	Cross-sectional study	1-5 years post diagnosis	4 domains; 30 items: Emotional health (8 items), access and continuity of care (6), relationships (5), financial concerns (8), Information (3).	A five-point Likert-type scale ranging from zero (no unmet need) to four (very high unmet need) for items in the past month.
Hodgkinson et al. (2007) Cancer Survivors Unmet Needs (CaSUN)	Breast, gynaecological, prostate, colorectal, other	n=353	Cross-sectional study	1-15 years post diagnosis	5 domains: Existential survivorship, comprehensive care, information, quality of life and relationships. 35 unmet need items, 6 positive change items and an open ended question.	Indicate for each item (a) 'no unmet need/not applicable', or, (b) if they do experience a need, how strong the need is ('weak'/'moderate'/ 'strong'). The positive change domain included six items with four response options ('yes, but I have always been like this', 'yes, this has been a positive outcome', 'no, and I would like help to achieve this', or 'no, and this is not important to me').
Clinton-McHarg et al. (2012) The Cancer Needs Questionnaire - Young People (CNQ-YP)	Heterogeneous sample	n=139	Cross-sectional study	16-30 years of age	6 domains; 70 items: Treatment environment and care (33), feelings and relationships (14), daily life (12), information and activities (5), education (3), and work (3).	Items were rated using a five-point response scale from "No Need" to "Very High Need" from any time since cancer diagnosis.
Cox et al. (2013) Childhood Cancer Survivor Study Needs Assessment Questionnaire (CCSS-NAQ)	Leukaemia, CNS tumour, Hodgkin lymphoma, Non-Hodgkins lymphoma, Wilms tumour, neuroblastoma, soft tissue sarcoma, bone tumour	n=1178	Cross-sectional study	≥25 years of age (mean age 39.5 years)	9 domains; 135 items: Psycho-emotional (17), health system concerns (10), cancer-related health information (11), general health (16), survivor care and support (20), surveillance (9), coping (12), fiscal concerns (24), and relationships (16).	Indicate that there was no need, because either (1) no need existed or (2) the need was met, or that there was a low (3), moderate (4), or high (5) level of need.

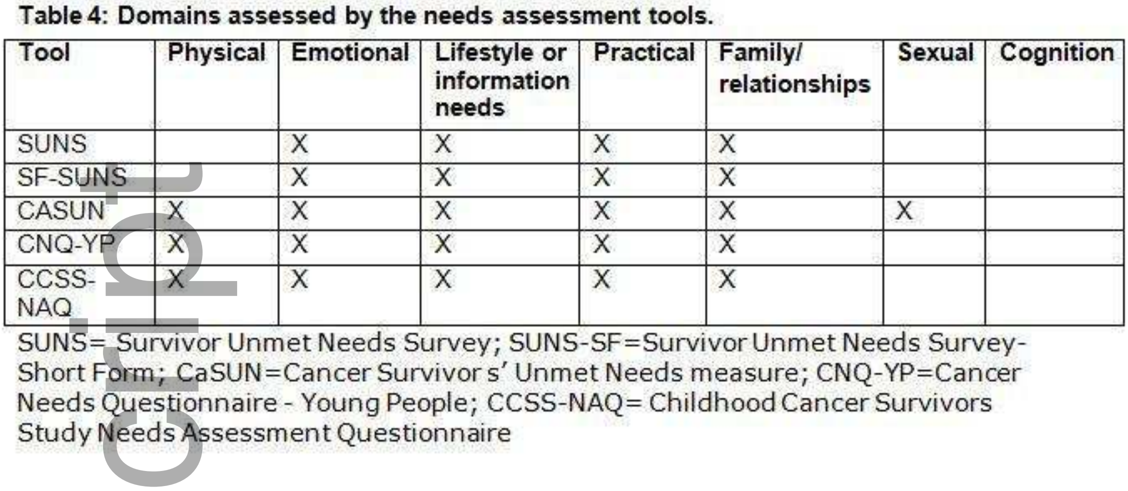


Table 4: Domains assessed by the needs assessment tools.

Tool	Physical	Emotional	Lifestyle or information needs	Practical	Family/ relationships	Sexual	Cognition
SUNS		X	X	X	X		
SF-SUNS		X	X	X	X		
CASUN	X	X	X	X	X	X	
CNQ-YP	X	X	X	X	X		
CCSS-NAQ	X	X	X	X	X		

SUNS= Survivor Unmet Needs Survey; SUNS-SF=Survivor Unmet Needs Survey-Short Form; CaSUN=Cancer Survivor s' Unmet Needs measure; CNQ-YP=Cancer Needs Questionnaire - Young People; CCSS-NAQ= Childhood Cancer Survivors Study Needs Assessment Questionnaire

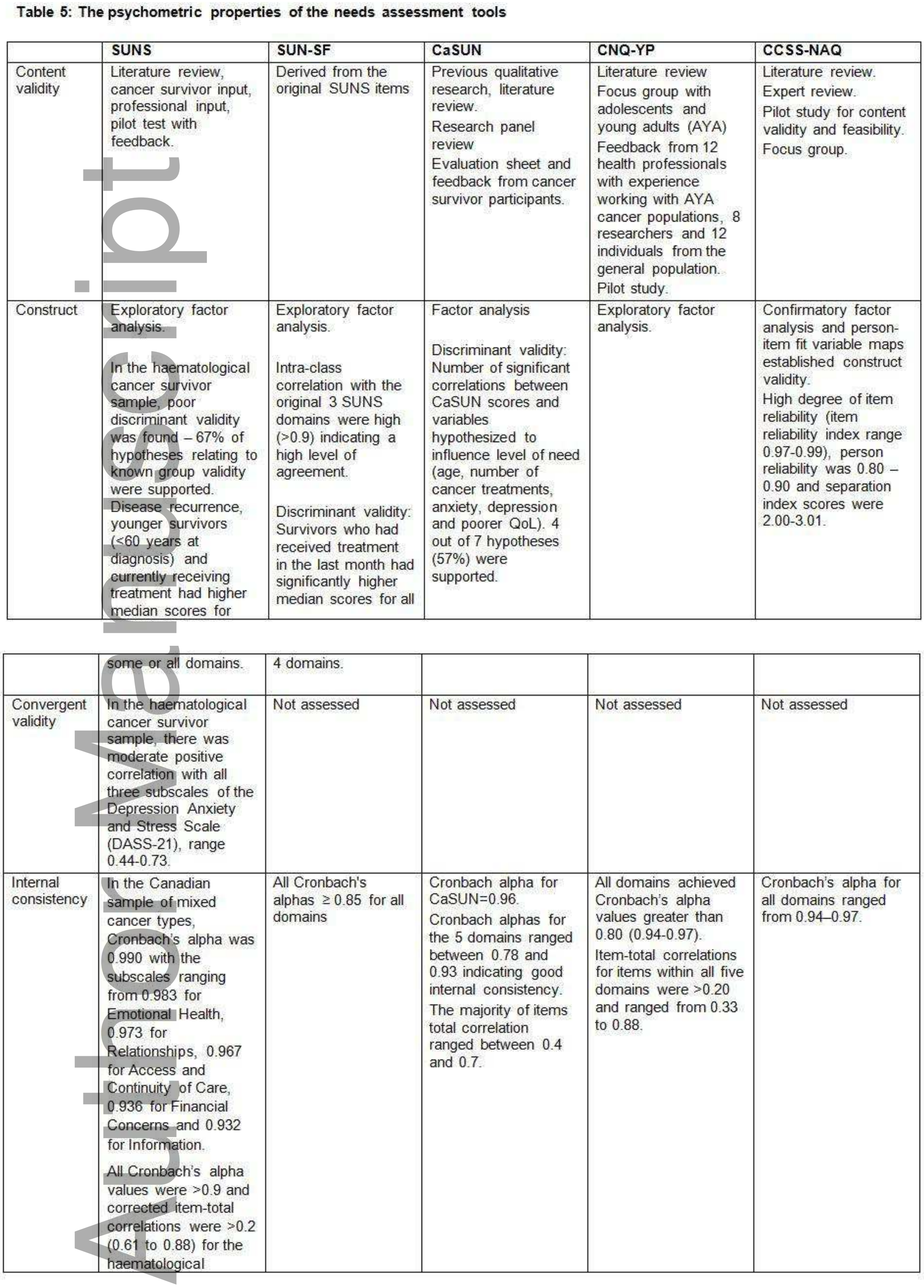


Table 5: The psychometric properties of the needs assessment tools

	SUNS	SUN-SF	CaSUN	CNQ-YP	CCSS-NAQ
Content validity	Literature review, cancer survivor input, professional input, pilot test with feedback.	Derived from the original SUNS items	Previous qualitative research, literature review. Research panel review Evaluation sheet and feedback from cancer survivor participants.	Literature review Focus group with adolescents and young adults (AYA) Feedback from 12 health professionals with experience working with AYA cancer populations, 8 researchers and 12 individuals from the general population. Pilot study.	Literature review. Expert review. Pilot study for content validity and feasibility. Focus group.
Construct	Exploratory factor analysis. In the haematological cancer survivor sample, poor discriminant validity was found – 67% of hypotheses relating to known group validity were supported. Disease recurrence, younger survivors (<60 years at diagnosis) and currently receiving treatment had higher median scores for some or all domains.	Exploratory factor analysis. Intra-class correlation with the original 3 SUNS domains were high (>0.9) indicating a high level of agreement. Discriminant validity: Survivors who had received treatment in the last month had significantly higher median scores for all 4 domains.	Factor analysis Discriminant validity: Number of significant correlations between CaSUN scores and variables hypothesized to influence level of need (age, number of cancer treatments, anxiety, depression and poorer QoL). 4 out of 7 hypotheses (57%) were supported.	Exploratory factor analysis.	Confirmatory factor analysis and person-item fit variable maps established construct validity. High degree of item reliability (item reliability index range 0.97-0.99), person reliability was 0.80 – 0.90 and separation index scores were 2.00-3.01.
Convergent validity	In the haematological cancer survivor sample, there was moderate positive correlation with all three subscales of the Depression Anxiety and Stress Scale (DASS-21), range 0.44-0.73.	Not assessed	Not assessed	Not assessed	Not assessed
Internal consistency	In the Canadian sample of mixed cancer types, Cronbach's alpha was 0.990 with the subscales ranging from 0.983 for Emotional Health, 0.973 for Relationships, 0.967 for Access and Continuity of Care, 0.936 for Financial Concerns and 0.932 for Information. All Cronbach's alpha values were >0.9 and corrected item-total correlations were >0.2 (0.61 to 0.88) for the haematological	All Cronbach's alphas ≥ 0.85 for all domains	Cronbach alpha for CaSUN=0.96. Cronbach alphas for the 5 domains ranged between 0.78 and 0.93 indicating good internal consistency. The majority of items total correlation ranged between 0.4 and 0.7.	All domains achieved Cronbach's alpha values greater than 0.80 (0.94-0.97). Item-total correlations for items within all five domains were >0.20 and ranged from 0.33 to 0.88.	Cronbach's alpha for all domains ranged from 0.94–0.97.

	cancer survivor sample.				
Cross-cultural	Developed for a Canadian population and psychometric evaluation also conducted in Australian haematological cancer patients, which indicated face and content validity for this population.	Not assessed	Not assessed	Not assessed	Minorities and rural residents were oversampled at a 2:1 ratio.
Reproducibility	The paper by Campbell et al, (2010) reported high test-retest reliability but this data was not shown. Surveys returned <20 days were included in the test-retest reliability analysis. In the haematological cancer survivor sample, weighted Kappa coefficients between item responses from Time 1 and Time 2 ranged from 0.25 to 0.76 (M = 0.58; SD = 0.09). Forty items (45%) met the criteria for acceptable item test-retest reliability. Test-retest reliability was acceptable in only 3 of the 5 domains for haematological cancer survivors. Test-retest time mean of 28 days (SD = 16.1 days)	Test-retest validity was not conducted in the SF-SUNS	Test-retest time was ~3 weeks apart The test– retest correlations for the CaSUN between Time 1 and Time 2 assessment was 0.19, indicating a low level of agreement in total scores over time. The average item Kappa co-efficient was 0.13, and the average percentage agreement between Time 1 and Time 2 assessment was 66%.	Item-to-item test-retest reliability was high, with all but four items reaching weighted kappa values > 0.60, and these four items had weighted kappas > 0.49. Long test-retest time with median of 24 days (9-64 days).	The 4-week test–retest correlations were high (0.52–0.91). This declined with increasing assessment intervals.
Responsiveness	Significant floor effects for all domains. In the haematological cancer survivor sample, high floor effects were observed for all five domains and few ceiling effects were observed. (Information, 37%; Financial concerns, 51%; Access and continuity of care, 42%; Relationships, 47%; Emotional health, 33%).	Over a quarter of participants obtained the lowest possible score on all four domains of the SF-SUNS. (Information 44%; Financial concerns 53%; Access and continuity of care 53%; Relationships and emotional health 36%). There were few ceiling effects.	Not assessed	Large floor effect for all domains. The proportion of participants ranged from 8.3% to 43% for the minimum score, with large proportions of participants having floor effects in the Education and Work factors (42% and 43% respectively). Did not appear to have ceiling effects.	Not assessed
Acceptability	Grade 4-6 reading level. Average time to complete 24 minutes	All items had <5% missing data.	Reading level grade of 5.6. Approx. 10 minutes to complete.	Reading level grade 6. Items answered by ≤10% of respondents	The original 190 item tool took 20-30 minutes to complete. Reading level

	Missing data for the items ranged from 2 to 5.3%. Feedback from the study suggests the survey length and content were acceptable.		Items were excluded if endorsed by <10% of participants and exclusion was clinically and theoretically appropriate.	were excluded from the measure. Acceptability of survey was assessed through feedback on ease of completion.	between grades 4 to 5. Acceptability of survey assessed in pilot study.

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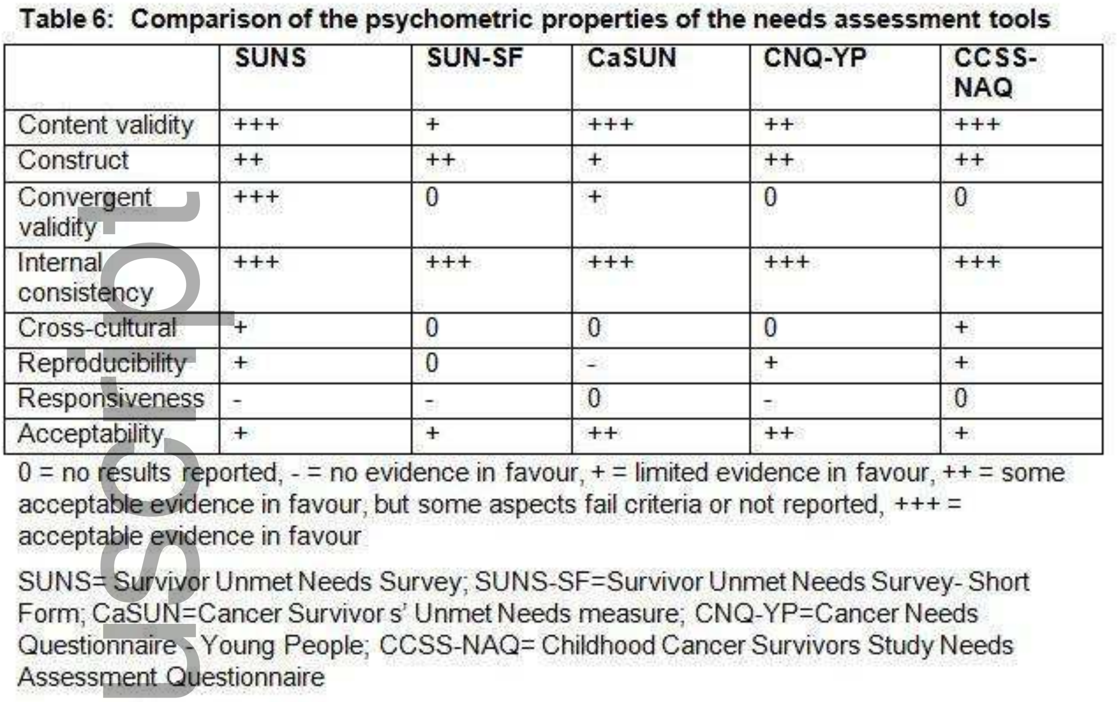

Table 6: Comparison of the psychometric properties of the needs assessment tools

	SUNS	**SUN-SF**	**CaSUN**	**CNQ-YP**	**CCSS-NAQ**
Content validity	+++	+	+++	++	+++
Construct	++	++	+	++	++
Convergent validity	+++	0	+	0	0
Internal consistency	+++	+++	+++	+++	+++
Cross-cultural	+	0	0	0	+
Reproducibility	+	0	-	+	+
Responsiveness	-	-	0	-	0
Acceptability	+	+	++	++	+

0 = no results reported, - = no evidence in favour, + = limited evidence in favour, ++ = some acceptable evidence in favour, but some aspects fail criteria or not reported, +++ = acceptable evidence in favour

SUNS= Survivor Unmet Needs Survey; SUNS-SF=Survivor Unmet Needs Survey- Short Form; CaSUN=Cancer Survivor s' Unmet Needs measure; CNQ-YP=Cancer Needs Questionnaire - Young People; CCSS-NAQ= Childhood Cancer Survivors Study Needs Assessment Questionnaire