

Validation of the 34-item Supportive Care Needs Survey and 8-item Breast module French versions (SCNS-SF34-Fr and SCNS-BR8-Fr) in breast cancer patients

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This study aimed to assess the psychometric robustness of the French version of the Supportive Care Needs Survey and breast cancer (BC) module (SCNS-SF34-Fr and SCNS-BR8-Fr). Breast cancer patients were recruited in two hospitals (in Paris, France and Lausanne, Switzerland) either in ambulatory chemotherapy or radiotherapy, or surgery services. They were invited to complete the SCNS-SF34-Fr and SCNS-BR8-Fr as well as quality of life and patient satisfaction questionnaires. Three hundred and eighty-four (73% response rate) BC patients returned completed questionnaires. A five-factor model was confirmed for the SCNS-SF34-Fr with adequate goodness-of-fit indexes, although some items evidenced content redundancy, and a one-factor was identified for the SCNS-BR8-Fr. Internal consistency and test-retest estimates were satisfactory for most scales. The SCNS-SF34-Fr and SCNS-BR8-Fr scales demonstrated conceptual differences with the quality of life and satisfaction with care scales, highlighting the specific relevance of this assessment. Different levels of needs could be differentiated between groups of BC patients in terms of age and level of education ($P < 0.001$). The SCNS-SF34-Fr and SCNS-BR8-Fr present adequate psychometric properties despite some redundant items.

These questionnaires allow for the crucial endeavour to design appropriate care services according to BC patients' characteristics.

Keywords: supportive care, breast cancer, needs assessment, French validation, SCNS-SF34, SCNS-BR8.

INTRODUCTION

The role of supportive care is to help cancer patients to face the physical and psychosocial difficulties they may encounter over the course of the disease and its treatment (Krakowski *et al.* 2004; Ferrell *et al.* 2008). This corresponds to a patient-centred approach and is the basis for optimal care. Treating the patient as a whole and her/his particular needs is especially important in the case of breast cancer (BC), the most common cancer among women. Survival rates of 5 years for 78% of patients across continental Europe (Coleman *et al.* 2003) are made possible by powerful and often very long-term treatments, but may leave patients with side effects and sequelae such as fatigue, pain, early menopause, body image modification, cognitive dysfunctions, anxiety or depression, and emotional distress linked to fears of recurrence (Ganz & Goodwin 2005; Stanton 2006).

Unsatisfied supportive care needs may appear with any type and at any stage of cancer or during its treatments (Harrison *et al.* 2009). Several studies show that supportive care needs after BC are specific to certain subpopulations, such as young women (Avis *et al.* 2005), those with advanced stage of the disease (Girgis *et al.* 2000; Aranda *et al.* 2005), rural compared with urban dwellers (Girgis *et al.* 2000), members of different cultures (Lam *et al.* 2011), at different moments along the course of the illness (Minstrell *et al.* 2008). In order to offer appropriate supportive care adapted tools are required to properly evaluate patients' expectations. Those expectations may differ in regard with the frequency, severity and variety of the specific needs emanating from their clinical status.

Among the instruments available to evaluate supportive care needs as applied to cancer, the Supportive Care Needs Survey (SCNS), developed by Girgis and her Australian-based team (Sansone-Fisher *et al.* 2000; Boyes *et al.* 2009) appears to reach the optimum level of validity and reliability (Richardson *et al.* 2007). It is applicable to all types of cancer and covers a wide range of content. The short version of 34 items was recently validated psychometrically in its original language (Boyes *et al.* 2009), and also in Japanese (Okuyama *et al.* 2009) and Chinese (Au *et al.* 2011). To our knowledge, the 8-item complementary module (SCNS-BR8), which addresses the specific

concerns of BC patients, has not yet been validated psychometrically (Girgis *et al.* 2000; McElduff *et al.* 2004).

This study aimed at assessing the factor structure, convergent and discriminant validity, construct validity, internal consistency and reproducibility of the SCNS-SF34 and SCNS-BR8 French versions, SCNS-SF34-Fr and SCNS-BR8-Fr respectively. Discriminant validity of the SCNS-SF34 has been evidenced in previous studies compared with a quality of life (QoL) tool (Boyes *et al.* 2009; Okuyama *et al.* 2009; Au *et al.* 2011); however, as it has not yet been shown relative to a patient satisfaction instrument, this study will assess the relationship between the SCNS-SF34-FR and SCNS-BR8-Fr and a cancer patient satisfaction with care questionnaire hypothesising conceptual difference.

PATIENTS AND METHODS

This study was undertaken at Institut Curie in Paris (France) and at the University Hospital CHUV in Lausanne (Switzerland). Informed consent and local or national ethical committee approval were obtained.

Patients and data collection

Patients had to be diagnosed with BC, be aged 18 years or older, have sufficient knowledge of French and be mentally fit to complete a questionnaire.

They were consecutively contacted either in the chemotherapy day hospital, the ambulatory radiotherapy service, or (in Switzerland) in the surgery service before their discharge from hospital. All questionnaires were distributed in hospital, for completion at home within 6 weeks. Completed questionnaires were to be mailed back to the participating centre coordinator with a pre-addressed pre-stamped envelope. One telephone call reminder was made if the questionnaire was not returned on time.

Questionnaires

Patients were asked to complete the French versions of the EORTC core QoL questionnaire, the QLQ-C30 (version 3.0) (Aaronson *et al.* 1993), the cancer inpatient or outpatient satisfaction questionnaire, the EORTC

IN-PATSAT32 (Brédart *et al.* 2005) or OUT-PATSAT35 (Poinsot *et al.* 2006), the supportive care needs survey, the SCNS-SF34 (Boyes *et al.* 2009) and the BC module, the SCNS-BR8 (Girgis *et al.* 2000).

The *EORTC QLQ-C30* contains scales and items addressing functional aspects of QoL and symptoms that commonly occur in patients with cancer. The *EORTC IN-PATSAT32* assesses cancer patients' perception of the quality of hospital doctors and nurses, as well as selected aspects of the care organisation and hospital environment that are relevant across country settings. The *OUT-PATSAT35* is an adapted version of the *EORTC IN-PATSAT32* for use in the hospital ambulatory setting.

The *SCNS-SF34* is composed of 34 items addressing psychological needs, health system and information needs, physical and daily living needs, patient care and support needs and sexuality needs. The *SCNS-BR8* contains eight items related to self-image, interpersonal relationships, lymphoedema, prosthesis, and genetic aspects of BC.

These questionnaires were translated into French following the *EORTC* translation procedures (Dewolf *et al.* 2009). Forward-backward translations were performed involving four persons, three native French-speaking (one Swiss and two French) and one native English-speaking, all fluent in both languages. Translations were pilot-tested using cognitive debriefing interviews (Willis 2005) with 20 BC patients.

All items were found clear and easy to understand and no missing issues were systematically highlighted (Zimmers 2010). However, the Likert scale response formulation and format of the French version of the *SCNS-SF34* and *SCNS-BR8* had to be slightly adapted in order to simplify the two-level scale comprising the dichotomic scale of no need and satisfied need (score 1 and 2) and the scale of three degrees of residual needs (score 3–5), by removing the headings 'no need' and 'some need'.

Statistical analyses

Data were analysed using the Statistical Package for the Social Sciences version software for Windows (SPSS 18.0.0 version), except for confirmatory factor analysis which employed LISREL 8.8 (Jöreskog & Sörbom 2006). For all analyses, where less than half of the items within a scale were missing, a value was imputed for the missing data that is equal to the mean of the other scores in that scale.

Defining the SCNS-SF34-Fr and SNCS-BR8-Fr scales

The *SCNS-SF34* has evidenced a structure in five multi-item scales (Boyes *et al.* 2009; Okuyama *et al.* 2009).

These include the psychological needs (items 6 to 14 and 17), health system and information needs (items 23 to 30 and 32 to 34), care and support needs (items 18 to 22), physical and daily living needs (items 1 to 5) and sexual needs items (items 15, 16, 31).

Confirmatory factor analyses were performed to check whether the original five-factor model could be verified in the *SCNS-SF34-Fr*. Conditions were: (1) item's loadings on non-theoretical factors fixed at zero; (2) correlations between residuals fixed at zero; and (3) correlations between factors estimated. Goodness of fit was evaluated using the χ^2 goodness-of-fit statistics and fit indexes: Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index-Non-Normed Fit Index (TLI-NNFI); the higher the probability associated with χ^2 , the closer is the fit between the model and the perfect fit; values ≤ 0.06 for the RMSEA and ≥ 0.95 for the CFI and TLI-NNFI are indicative of a good fit between the hypothesised model and the observed data (Jackson *et al.* 2009).

We did not find psychometric data on the *SCNS-BR8* from original sources (Girgis *et al.* 2000); therefore, we performed exploratory analyses (principal axis analysis with varimax rotation) to examine whether the individual items of the *SCNS-BR8-Fr* could be aggregated into a more limited set of multi-item scales.

Reliability

Cronbach's alpha coefficients were calculated to evaluate internal consistency of the scales; values greater than 0.80 demonstrate satisfactory homogeneity of the instrument.

To assess the test-retest reliability of the *SCNS-SF34-Fr* and *BR8-Fr*, a consecutive sample of 76 patients was recruited from one centre (Institut Curie, France). The second assessment was planned approximately 2 weeks after the first. Test-retest response stability was evaluated using Pearson's correlation coefficient; values above 0.70 have been recommended as acceptable for group comparison (Nunnally 1978).

Convergent-discriminant validity

Convergent-discriminant validity involved examination of the relationship between scales of the *SCNS-SF34-Fr* and *BR8-Fr* and the *EORTC QLQ-C30* and the *EORTC IN-PATSAT32* or *OUT-PATSAT35*, using Pearson's product moment correlations. It was expected that those scales that are conceptually related (e.g. the psychological needs and the *EORTC QLQ-C30* emotional functioning) would correlate substantially with one another (Pearson's

$r > 0.40$). Conversely, those scales with less in common (e.g. the health system and information needs and the EORTC QLQ-C30 symptoms) were expected to exhibit lower correlations (Pearson's $r < 0.40$).

Known-group differences

Construct validity of the SCNS-SF34-Fr and SCNS-BR8-Fr was evaluated by comparing scores of the various scales between groups of patients according to specific hypotheses. Subscale scores were obtained by summing the individual items; a standardised Likert summated score had possible values ranging from 0 to 100. According to the literature, it was postulated that younger patients (Akechi *et al.* 2011; Griesser *et al.* 2011) or patients with a lower level of education (Griesser *et al.* 2011), in charge of child care (Griesser *et al.* 2011), with a more severe BC diagnostic (Akechi *et al.* 2011) would present higher level of need scores. Comparison of scores was performed for categorical variables by analysis of variance with a limit of significance of $P = 0.05$. Effect size is given by η^2 where values of 0.04 indicate 'recommended practically minimum significant effect' for social sciences data, 0.25 moderate and 0.64 strong effect sizes (Ferguson 2009).

RESULTS

Patients' characteristics and compliance

Five hundred twenty-six BC patients were approached to participate in this study. Of these, 127 (24%) refused to participate and 15 (2.8%) did not provide evaluable forms.

Respondents and non-respondents did not differ significantly in terms of marital status, having children or type of BC surgery; however, non-respondents were significantly older, presented more often with a metastatic disease, a longer time since diagnosis, or a breast reconstruction ($P < 0.001$).

Table 1 displays the socio-demographic and clinical characteristics of the sample.

Questionnaire acceptability and item-descriptive statistics

For the SCNS-SF34-Fr, only four items presented 5–7.5% response omission: the three items related to sexuality needs and the item addressing information about whether cancer is under control or diminishing. Response omission was more frequent for the SCNS-BR8-Fr ranging from 7.5% to 12%.

For both questionnaires, older patients or patients with a lower education level omitted responses significantly

Table 1. Socio-demographic and clinical characteristics ($n = 526$)

	Respondents ($n = 384$)	Non-respondents ($n = 142$)
	n (%)	n (%)
Age (years)*		
Mean (SD)	54.0 (11.3)	57.7 (12.7)
Missing data	–	2
Married/with a partner	237 (61.7)	89 (65.9)
Missing data	–	7
Education		
Up to superior	197 (51.7)	–
Superior or above	184 (48.3)	–
Missing data	3	–
Stage of breast cancer*		
Local/regional	310 (80.7)	89 (63.1)
Metastatic	74 (19.3)	52 (36.9)
Missing data	–	1
Hospital service* (France)		
Chemotherapy day hospital	145 (37.8)	104 (73.2)
Ambulatory radiotherapy (Switzerland)	103 (26.8)	23 (16.2)
Chemotherapy day hospital	34 (8.9)	3 (2.1)
Ambulatory radiotherapy	55 (14.3)	7 (4.9)
Surgery	47 (12.2)	5 (3.5)
Type of surgery		
Mastectomy	121 (31.5)	48 (34.0)
Breast conserving	206 (53.7)	81 (57.4)
No surgery	57 (14.8)	12 (8.5)
Missing data	–	1
Breast reconstruction (yes) (patients with surgery only) ($n = 41$)*	22 (6.7)	19 (15.0)
Missing data	1	2
Axillary dissection (yes) (patients with surgery only) ($n = 279$)	190 (58.1)	87 (68.0)
Missing data	–	2

Significant difference between respondents and non-respondents: * $P < 0.01$ (two-tailed).

more often ($P < 0.001$). Most item responses demonstrated low mean scores (satisfied or low need) (Table 2), and with a floor effect ranging from 10% to 69.6%.

Factor analyses

Indicators of fit from confirmatory factor analysis on the SCNS-SF34-Fr five-factor model were fairly acceptable [$\chi^2(517) = 1616.7$, $P < 0.001$; RMSEA = 0.076; CFI = 0.96; TLI-NNFI = 0.96] but can be improved. Examination of residuals evidenced pairs of items within the same factor with higher observed correlations than reproduced correlations. These pairs appeared semantically redundant [e.g. items 7 and 8 ($r_{\text{observed}} = 0.83$; $r_{\text{reproduced}} = 0.69$) or 18 and 19 ($r_{\text{observed}} = 0.60$; $r_{\text{reproduced}} = 0.27$)].

Table 2. SCNS-SF34-Fr items mean (standard deviation, SD) and factor loadings in confirmatory factor analysis ($n = 384$)

SCNS-SF34 items	Mean	SD	Loadings
Physical and daily living needs			
1. Pain	2.10	0.99	0.64
2. Lack of energy/tiredness	2.61	1.15	0.75
3. Feeling unwell a lot of the time	2.21	1.16	0.80
4. Work around the home	2.39	1.20	0.69
5. Not being able to do things you used to do	2.60	1.23	0.77
Psychological needs			
6. Anxiety	2.52	1.15	0.76
7. Feeling down or depressed	2.40	1.17	0.77
8. Feelings of sadness	2.41	1.23	0.76
9. Fears about the cancer spreading	2.84	1.37	0.73
10. Worry that the results of the treatment are beyond your control	2.66	1.21	0.76
11. Uncertainty about the future	2.84	1.31	0.84
12. Learning to feel in control of your situation	2.54	1.20	0.78
13. Keeping a positive outlook	2.18	1.09	0.77
14. Feelings about death and dying	2.45	1.31	0.70
17. Concerns about the worries of those close to you	2.49	1.23	0.52
Sexual needs			
15. Changes in sexual feelings	2.29	1.44	0.89
16. Changes in sexual relationships	2.16	1.40	0.94
31. To be given information about sexual relationships	2.17	1.39	0.79
Care and support needs			
18. More choice about cancer specialists you see	2.03	1.16	0.60
19. More choice about which hospital you attend	1.71	0.87	0.36
20. Reassurance by medical staff that the way you feel is normal	2.22	0.92	0.77
21. Hospital staff attending promptly to your physical needs	2.06	0.74	0.74
22. Hospital staff acknowledging and showing sensitivity to your feelings and emotional needs	2.21	0.91	0.80
Health system and information needs			
23. Being given written information about the important aspects of your care	2.31	0.95	0.62
24. Being given information (written, diagrams, drawings) about aspects of managing your illness and side effects at home	2.45	1.09	0.71
25. Being given explanations of those tests for which you would like explanations	2.42	1.03	0.70
26. Being adequately informed about the benefits and side effects of treatments before you choose to have them	2.49	1.06	0.72
27. Being informed about your test results as soon as feasible	2.34	0.99	0.68
28. Being informed about cancer which is under control or diminishing (that is, remission)	2.38	1.25	0.61
29. Being informed about things you can do to help yourself to get well	2.85	1.23	0.72
30. Having access to professional counselling (e.g. psychologist, social worker, counsellor, nurse specialist) if you, family or friends need it	2.10	1.14	0.60
32. Being treated like a person not just another case	1.99	1.12	0.62
33. Being treated in a hospital or clinic that is as physically pleasant as possible	1.91	0.78	0.61
34. Having one member of hospital staff with whom you can talk to about all aspects of your condition, treatment and follow-up	2.46	1.14	0.75

Note: Confirmatory factor analysis (maximum likelihood estimation); model with correlated residuals.

This initial model was thus modified allowing correlations between residuals of 12 redundant pairs of items within a same factor. Resulting estimated correlations between residuals varied between 0.06 and 0.38. This modified model provided an improved, more acceptable fit: $\chi^2(505) = 1023.9$, $P < 0.001$; RMSEA = 0.052; CFI = 0.98; TLI-NNFI = 0.98. Table 2 provides factors loadings for this second model.

Correlations between factors ranged from 0.26 to 0.86, with high correlations between the 'health system and information', and 'care and support' needs scales ($r = 0.86$) and between the 'psychological' and 'physical and daily living' needs subscales ($r = 0.77$).

None of the SCNS-BR8-Fr items presented a higher correlation with its theoretically defined SCNS-SF34-Fr scale than with the other scales; therefore, an explor-

Table 3. SCNS-BR8-Fr factor loadings in a one-factor principal factor analysis and item convergent validity ($n = 384$)

Item	Loadings	Item-scale correlation*
35. Coping with what having breast cancer might mean for your daughters or sisters	0.34	0.32
36. Coping with problems with your breast prosthesis (e.g. when gardening, swimming or playing sport)	0.80	0.72
37. Wanting more information about finding a good breast prosthesis	0.76	0.63
38. Coping with lymphoedema	0.46	0.43
39. Coping with changes in your self-image as a result of breast surgery	0.86	0.77
40. Wanting help in coping with the shock of the amount of breast that was removed	0.80	0.73
41. Dealing with your partner's reaction to your breasts	0.71	0.64
42. Coping with fears about the reactions of future partners to your breasts	0.63	0.57

*Item-scale correlation (corrected for overlap).

atory factor analysis was specifically undertaken on the SCNS-BR8-Fr items, highlighting an overall general factor (Table 3).

Reliability

The internal consistency of all SCNS-SF34-Fr and BR8-Fr scales proved excellent, with Cronbach's alpha coefficients ranging from 0.80 to 0.93.

Pearson correlation coefficients between test-retest scores were above 0.70 except for the physical and daily living needs ($r = 0.62$) and the SCNS-BR8-Fr ($r = 0.67$) subscales.

Convergent-discriminant validity

Most of the SCNS-SF34-Fr and BR8-Fr did not correlate highly with the EORTC QLQ-C30 or, EORTC IN-PATSAT32 or OUT-PATSAT35 scales, which indicates that the different questionnaires cover different concepts (Table 4).

The highest observed correlations were between the physical and daily living needs items and the EORTC QLQ-C30 physical functioning, fatigue, pain and global QoL scales, and between the health system and information needs and satisfaction with care scales, especially the doctors' interpersonal skills and information scales, and between the psychological needs and EORTC QLQ-C30 emotional functioning scale ($r > 0.40$).

Known-group differences

Scales of the SCNS-SF34 and BR8-Fr were able to discriminate between BC patients according to the stage of disease and according to socio-demographic characteristics (age, having children or not, level of education) ($P < 0.05$) (Table 5). However, effect size were less than the recommended minimum, except for the sexuality needs and

SCNS-BR8-Fr scales which differentiated between women younger versus older than 40 years old ($\eta^2 = 0.08$ and 0.06), and for the health system and information needs scale which differentiated between women with a superior level of education versus others ($\eta^2 = 0.04$).

DISCUSSION

This study evidenced appropriate psychometric properties of the SCNS-SF34-Fr and SCNS-BR8-Fr in BC patients approached in a French cancer centre and a Swiss academic hospital. This questionnaire proved acceptable to patients, with a high response rate and mostly low item missing responses. The original factorial structure of the SCNS-SF34 was confirmed and a one-factor SCNS-BR8-Fr was identified. Scales of both questionnaires demonstrated satisfactory to excellent reliability estimates.

Higher missing item response was observed for some SCNS-BR8-Fr items with lower relevance for these mostly married or partnered BC patients (e.g. concerns about future partner) or for women at the beginning of the treatment trajectory (e.g. concerns about breast prosthesis).

Although the original factorial structure was confirmed as in Okuyama *et al.* (2009), the 'health and information' and 'care and support' needs scales were highly correlated as in Au *et al.* (2011). In addition, several items within factors were redundant in content suggesting that by removing these items, a new questionnaire with a more balanced and differentiated item content within factors could be created and tested. Recently, Girgis *et al.* (2011) selected nine items from the SCNS-SF34 based on psychometric and clinimetric criteria in order to design a brief screening needs tool, as the use of shorter patient-reported outcome tools in clinical practice is advised.

Convergent-discriminant validity was assessed comparing the SCNS-SF34-Fr and SCNS-BR8-Fr with the EORTC QoL and patient satisfaction questionnaires, as these three questionnaires are expected to address different concepts.

Table 4. Correlation between SCNS-SF34-Fr and SCNS-BR8-Fr with EORTC QLQ-C30 and EORTC IN-PATSAT32 or OUT-PATSAT35 (*n* = 384)

	SCNS-SF34-Fr scales					SCNS-BR8-Fr scale
	Psychological	Health system and information	Physical and daily living	Sexuality	Care and support	
EORTC QLQ-C30						
Physical functioning	-0.36	-0.28	-0.56	-0.21	-0.23	-0.24
Role functioning	-0.28	-0.22	-0.46	-0.15	-0.20	-0.16
Emotional functioning	-0.64	-0.38	-0.46	-0.22	-0.32	-0.21
Cognitive functioning	-0.33	-0.27	-0.42	-0.27	-0.27	-0.22
Social functioning	-0.37	-0.29	-0.49	-0.25	-0.21	-0.35
Global QoL/health	-0.37	-0.27	-0.51	-0.14	-0.23	-0.21
Fatigue	0.40	0.33	0.57	0.22	0.30	0.27
Nausea	0.20	0.16	0.33	0.15	0.16	0.17
Pain	0.32	0.26	0.53	0.19	0.24	0.22
Dyspnoea	0.25	0.23	0.42	0.10	0.21	0.14
Sleep/insomnia	0.33	0.26	0.32	0.19	0.28	0.20
Appetite loss	0.23	0.19	0.38	0.18	0.18	0.13
Constipation	0.25	0.19	0.31	0.11	0.18	0.18
Diarrhoea	0.10	0.14	0.11	-0.01	0.09	0.06
Financial difficulties	0.28	0.24	0.36	0.22	0.19	0.24
IN-PATSAT32/OUT-PATSAT35						
Doctors' technical competence	-0.26	-0.42	-0.27	-0.15	-0.36	-0.24
Doctors' interpersonal skills	-0.29	-0.57	-0.26	-0.13	-0.40	-0.25
Doctors' information provision	-0.35	-0.60	-0.27	-0.18	-0.40	-0.27
Doctors' availability	-0.20	-0.47	-0.22	-0.13	-0.32	-0.20
Nurses' technical competence	-0.25	-0.36	-0.24	-0.10	-0.36	-0.18
Nurses' interpersonal skills	-0.27	-0.37	-0.22	-0.08	-0.36	-0.19
Nurses' information provision	-0.26	-0.43	-0.17	-0.07	-0.37	-0.19
Nurses' availability	-0.24	-0.38	-0.20	-0.12	-0.33	-0.18
Other personnel information	-0.25	-0.48	-0.23	-0.19	-0.34	-0.29
Information exchange	-0.26	-0.49	-0.23	-0.17	-0.39	-0.29
Waiting time	-0.30	-0.39	-0.28	-0.16	-0.29	-0.25
Access	-0.27	-0.36	-0.12	-0.23	-0.21	-0.26
Physical environment	-0.21	-0.34	-0.21	-0.22	-0.28	-0.17
Overall satisfaction	-0.30	-0.43	-0.27	-0.18	-0.39	-0.29

Note: <|0.40| = weak correlation, |0.40|–|0.60| = moderate, >|0.60| = high; correlations higher than |0.40| are in bold. QoL, quality of life.

Quality of life assessment is intended to measure patients' perception of symptoms and difficulties as a result of disease and treatment. Directly assessing patient-perceived care needs and the magnitude of residual needs allows us to gather information not only on health status but also concerning care supply (Bonevski *et al.* 2000). This provides a more complete image of the patient's experience and may contribute to improve the quality of their care. As expected and demonstrated in the study of Okuyama *et al.* (2009), scales of the SCNS-SF34-Fr and SCNS-BR8-Fr evidenced higher, but still moderate, correlations with scales of the corresponding symptoms in the EORTC QLQ-C30 scales.

Other SCNS-SF34 validation studies (Boyes *et al.* 2009; Okuyama *et al.* 2009; Au *et al.* 2011) did not assess the relationship between perceived care needs and satisfaction with care. Evaluating the extent to which patients are satisfied with healthcare services and interventions pro-

vides one indication of the degree to which patients' needs and expectations are met (Linder-Pelz 1982; Oberst 1984); however, satisfaction with care addresses retrospectively patients' viewpoint on their experience of the care provided. Although this question would better evaluated in a longitudinal study, we hypothesised that more important and severe needs would be related to lower satisfaction with care. We observed weak correlations between the SCNS-SF34-Fr 'care and support' needs scale and the satisfaction with care scales and only the 'health system and information' needs scale evidenced moderate correlation with overall satisfaction with care. In fact, the EORTC IN-PATSAT32 or OUT-PATSAT35 and the SCNS-SF34 differ in content. Whereas the SCNS-SF34 addresses choice of specialist or hospital, the satisfaction questionnaires focus on doctors and nurses, evaluating technical competencies and care continuity. Second, overall satisfaction with care was weakly related to unmet

Table 5. Known-group validity ($n = 384$)*

SCNS-SF34-Fr scales	Mean (SD)					P	η^2
	Age						
	<40, <i>n</i> = 48	41–50, <i>n</i> = 98	51–60, <i>n</i> = 103	61–70, <i>n</i> = 91	>70, <i>n</i> = 14		
Psychological	37.4 (20.0)	40.0 (23.8)	43.6 (24.3)	32.4 (25.5)	35.1 (23.8)	0.02	0.03
Health system and information	34.6 (15.7)	32.5 (19.8)	36.8 (20.4)	31.1 (19.5)	27.7 (13.9)	NS	0.02
Physical and daily living	36.0 (20.6)	34.7 (21.2)	38.9 (25.4)	29.0 (22.3)	33.5 (25.8)	NS	0.02
Sexuality	41.3 (28.6)	36.5 (34.6)	33.1 (33.4)	15.8 (25.0)	17.9 (33.1)	<0.001	0.08
Care and support	26.5 (14.9)	26.6 (18.0)	29.2 (18.4)	23.5 (16.4)	20.6 (16.3)	NS	0.02
SCNS-BR8-Fr scale	33.7 (22.7)	23.6 (22.6)	23.0 (21.6)	17.2 (18.3)	13.3 (17.4)	<0.001	0.06
	Level of education						
	Less than compulsory, <i>n</i> = 38		Secondary, <i>n</i> = 56	Technical, <i>n</i> = 80	Superior, <i>n</i> = 177		
Psychological	45.4 (28.3)		37.8 (22.8)	34.2 (21.3)	38.9 (24.6)	NS	0.02
Health system and information	30.5 (17.2)		28.8 (17.1)	29.5 (18.5)	37.5 (20.1)	0.001	0.04
Physical and daily living	43.7 (30.2)		33.2 (23.3)	30.4 (21.6)	34.4 (21.4)	0.02	0.03
Sexuality	37.4 (37.0)		30.0 (29.4)	22.8 (28.4)	32.0 (33.6)	NS	0.02
Care and support	26.4 (17.9)		23.4 (15.4)	23.9 (16.2)	28.2 (18.2)	NS	0.01
SCNS-BR8-Fr scale	28.5 (24.6)		21.6 (19.8)	21.2 (21.2)	22.5 (21.7)	NS	0.01
	Having children						
	Yes, <i>n</i> = 269			No, <i>n</i> = 83			
Psychological	40.2 (23.8)			32.6 (24.5)		0.01	0.02
Health system and information	33.6 (18.9)			32.9 (20.4)		NS	<0.01
Physical and daily living	35.9 (23.2)			30.2 (23.5)		0.04	0.01
Sexuality	33.2 (33.2)			27.9 (20.5)		0.002	0.03
Care and support	26.2 (17.3)			26.4 (17.6)		NS	<0.01
SCNS-BR8-Fr scale	24.0 (21.7)			18.7 (21.1)		0.05	0.01
	Local, <i>n</i> = 302			Metastatic, <i>n</i> = 72			
Psychological	37.0 (23.6)			44.7 (25.9)		0.01	0.02
Health system and information	32.4 (18.1)			37.9 (23.0)		0.03	0.01
Physical and daily living	32.9 (22.6)			41.2 (25.3)		<0.01	0.02
Sexuality	29.7 (31.9)			32.2 (34.8)		NS	<0.01
Care and support	25.5 (16.5)			29.2 (20.4)		NS	0.01
SCNS-BR8-Fr scale	22.5 (20.9)			23.5 (24.5)		NS	<0.01

*Among different scales, sample sizes vary depending on the number of missing data; we provide: n = minimum sample size among the different scales; all scores are on a 0–100 scale; higher scores indicate higher expressed needs; effect size = η^2 : 0.04 = recommended minimum; 0.25 = moderate; 0.64 = strong.

psychological or physical/daily living needs. Not all patients expect that their emotional or daily living difficulties be raised at the initiative of their oncologist (Detmar *et al.* 2000); hence, screening these patients' needs through an instrument such as the SCNS-SF34 may be important for appropriately planning supportive cancer care, which is in essence dedicated to meeting patients' care needs.

The results of this study suggest that the SCNS-SF34-Fr and SCNS-BR8-Fr can discriminate between groups of BC women in terms of age and education level. In line with the literature (Avis *et al.* 2005; Gould *et al.* 2006; Griesser *et al.* 2011), younger BC women showed significantly higher unmet needs concerning sexual difficulties. However, the stage of disease did not clearly differentiate

BC needs; advanced BC patients evidenced statistically higher levels of psychological and, physical and daily living needs, but the effect was of weak size.

This study presents limitations. Although we recruited BC patients in two hospitals from different countries reflecting varying environments and healthcare systems, overall our respondent sample comprise mainly early stage BC patients and is characterised by a higher education level than the general female French population (24%, <http://www.recensement.insee.fr>, retrieved 17 December 2011). Therefore, our results need to be confirmed in other French-speaking cancer settings (e.g. non-academic, suburban or rural hospitals). The strength of this study consists of having expanded the range of psychometric criteria to assess the performance of the

SCNS-SF34-Fr and also in addressing the SCNS-BR8 scale compared with previous studies (Boyes *et al.* 2009; Okuyama *et al.* 2009; Au *et al.* 2011); however, responsiveness to change, i.e. the extent to which interventions actually reduce residual needs, should be addressed in the future. The acceptability and reliability of the SCNS-SF34 and the SCNS-BR8 in French-speaking BC patients proved satisfactory. These French versions may be scored as recommended originally although improvement may target some items' redundancy.

Thanks to adequate psychometric properties, the SCNS-SF34-Fr and SCNS-BR8-Fr questionnaires allow for the crucial endeavour to design appropriate care services according to BC patients' specific characteristics. Compared with QoL and patient satisfaction assessment, perceived care needs prove to be a specific concept

which should be addressed for supportive care intervention planning.

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