# Psychometric Properties of the Spanish Version of the Cancer Survivors' Unmet Needs (CaSUN-S) Measure in Breast Cancer

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## Abstract

**Background:** The Cancer Survivors' Unmet Needs (CaSUN) measure is an assessment tool developed specifically for this population but several issues about its structural properties still remain unresolved. **Method:** The present study tests the theoretical model, the original authors' empirical solution, and a new rational proposal of the CaSUN using Confirmatory Factor Analysis. Reliability and convergent validity are also analysed. 566 Spanish breast cancer survivors completed the CaSUN, the Brief Symptom Inventory-18 (BSI-18) and the Quality of Life in Adult Cancer Survivors questionnaire (QLACS). **Results:** The proposed model of five domains (physical effects, psychological effects, comprehensive care and information, practical issues, and relationships) plus a total score provided better fit than the authors´ theoretical proposal and some advantages over their empirical proposal. Internal consistency (α = .73 - .95; r item-total > .30) and test-retest reliability (r = .74 - 89) were adequate. The CaSUN correlated with high emotional distress (r = .43 - .77) and poor quality of life (r = .18 - .64). **Conclusions:** The CaSUN-S is an effective and complete instrument that can help health professionals to collect data about the impact of the disease beyond the diagnosis and treatment phase that is important for patient care.

*Keywords:* Cancer Survivors' Unmet Needs (CaSUN), psychosocial need, breast cancer, psychometric properties, assessment.

## Resumen

***Propiedades Psicométricas de la Versión Española del Cancer Survivors' Unmet Needs (CaSUN-S) en Cáncer de Mama.*** **Antecedentes:** el Cancer Survivors' Unmet Needs (CaSUN) ha sido desarrollado para esta población, pero varias cuestiones sobre sus propiedades estructurales permanecen inconclusas. **Método:** este estudio prueba el modelo teórico, la solución empírica de los autores originales y una nueva propuesta racional del CaSUN utilizando Análisis Factorial Confirmatorio; también analiza su fiabilidad y validez convergente. 566 supervivientes de cáncer de mama completaron el CaSUN, el Inventario Breve de Síntomas-18 (BSI-18) y el Quality of Life in Adult Cancer Survivors (QLACS). **Resultados:** el modelo propuesto de cinco dominios (efectos físicos, efectos psicológicos, atención integral e información, cuestiones prácticas y relaciones) y una puntuación total proporcionó un mejor ajuste que la propuesta teórica de los autores y algunas ventajas respecto a su propuesta empírica. La consistencia interna (α = .73 - .95; r item-total > .30) y la fiabilidad test-retest (r = .51 - .89) fueron apropiadas. El CaSUN correlacionó con alto distrés emocional (r = .43 - .77) y baja calidad de vida (r = .18 - .64). **Conclusiones:** el CaSUN-S es un instrumento eficaz y completo que ayuda a los profesionales de la salud a obtener información sobre las repercusiones de la enfermedad más allá del diagnóstico y tratamiento para su atención.

*Palabras clave:* Cancer Survivors' Unmet Needs (CaSUN), necesidades psicosociales, cáncer de mama, propiedades psicométricas, evaluación.

The population of cancer survivors has been increasing over the last few decades, owing to improvements in cancer detection and medical treatments, and this trend is expected to continue (Cancer Control Joint Action CanCOn, 2017; De Angelis et al., 2017). Breast cancer, along with prostate and colorectal cancer, is one of the most survivable types of cancer (Ginsburg et al., 2017). From 2010-2014, the 5-year survival rate of women with breast cancer was 85% according to the CONCORD-3 study (Allemani et al., 2018). Cancer survivors frequently experience physical and psychosocial problems related to cancer and its treatment,

but there are also unique challenges related to long-term and late physical effects, as well as persistent psychosocial difficulties: fear of recurrence; heightened sense of vulnerability; changes in body image; difficulties in resuming family, work, and social roles; and issues surrounding employment, finances, and health and life insurance (Admiraal et al., 2020; Burris et al., 2015; González-Fernández et al., 2018; National Cancer Institute NCI, 2017; Wiltink et al., 2020). Therefore, the detection and management of cancer survivors' psychosocial needs is important to achieve a high-quality cancer survivorship care.

Several measures have been proposed to explore the unmet care needs of cancer patients (e.g., Supportive Care Needs Survey, SCNS; Need Evaluation Questionnaire, NEQ; Patient Needs Assessment Tool, PNAT), but none of them were directly designed to capture issues related to re-integration and the long-term sequelae of cancer treatment (for a review see Richardson et al., 2007; Waller et al., 2015). Unlike the previous ones, the Cancer

Survivors' Unmet Needs (CaSUN) measure (Hodgkinson et al., 2007a) has been specifically developed to assess the survivorship phase (after the cancer diagnosis and treatment phases). This self-report questionnaire consisting of 35 items about unmet needs related to information and medical care (9 items), quality of life (9 items), emotional and relationship issues (10 items), and life perspective (7 items); 1 open-ended item for additional needs; and 6 items related to positive changes. The exploratory factor analysis (EFA) in mixed cancer survivors, excluding positive changes items, suggested a five-factor solution with only 28 items (Hodgkinson et al., 2007a): existential survivorship (14 items), comprehensive cancer care (6 items), information (3 items), relationships (3 items), and quality of life (2 items). Items 13 (fertility) and 14 (employment) were omitted from the factor analysis, as they failed to meet the distributional assumption. Moreover, items 9 (complimentary and/or alternative therapy), 15 (financial support), 16 (travel/life insurance), 17 (legal service), and 28 (ongoing case manager) did not load on the factor solution. However, these seven items were retained in the final version because of their clinical utility. Cronbach's alpha values for the domains of the 28-item CaSUN ranged between .78 and .93, indicating good internal consistency. The test-retest reliability (Kappa coefficient) (with approximately three weeks apart) was low (.18), and those for three of the five dimensions were significant (range: .22 – .23), providing some degree of reliability across time. Convergent validity study showed that the CaSUN was positively associated with mental and physical Quality of Life, anxiety and depression, age, and number of treatments (Hodgkinson et al., 2007a).

The CaSUN has been adapted to other languages. Fang, et al. (2017) developed and validated the Chinese version (C-CaSUN) in breast cancer. They initially added 11 items to the original 35, although the final model only had 20 items, six of which were new. EFA and confirmatory factor analysis (CFA) suggested a four-factor structure (information, physical/psychological effects, communication needs, and medical care) and the internal consistency ($\alpha = .87$ for total needs; range: .61 – .82 for domains) and the convergent validity (with depression and fear of recurrence) were adequate. Keerman et al. (2018) published a psychometric study on the Dutch version (CaSUN-NL), which adds five new items on return to work and four on lifestyle to the empirical solution obtained by Hodgkinson et al. (2007a). EFA, using data from two samples of primarily breast cancer (a cross-sectional survey and a randomised controlled trial to assess an e-health intervention), revealed two different factor models. Data from the cross-sectional survey, which was the more similar to prior studies in terms of participant characteristics, yielded a four-factor structure only partially comparable with Hodgkinson et al. (2007a) original factor structure: relationship, existential survivorship, information and comprehensive care, and a mixed factor with items from existential survivorship and quality of life. The Cronbach's alpha of the CaSUN-NL was high for total needs (.94) and adequate for all domains (range: .73 - .90) except for lifestyle (.38). Test-retest reliability (Kappa coefficient) after 6 weeks was low (range: .22 – .41). Finally, Martínez-Tyson et al. (2018) carried out a preliminary evaluation of the CaSUN in a small sample ($N = 84$) of Hispanic male cancer survivor. In their version, seven items were added and five from the original were deleted, resulting in a total of 37 items. The response format was also modified, reducing it to four alternatives (0= no need; 1= little; 2= somewhat; 3= a lot). A limited sample size did not allow to test the factorial structure of this version; the study only presented results on the total score: internal consistency and test-retest reliability after approximately two weeks were high (.96 and .78, respectively), and CaSUN correlations with anxiety and depression and quality of life were moderate.

The CaSUN authors made a considerable effort to compile a wide range of needs covering different key areas of possible existing demands on cancer survival. However, the theoretical structure of the CaSUN suffers from some weaknesses. The needs grouped together do not always show a homogeneous content and adjusted to the category; for example, the inclusion of items 26 (changes to my body) and 28 (ongoing case manager) in the 'Emotional & Relationship Issues'. In addition, the category labels respond to different levels of generality and, therefore, they are not always mutually exclusive: domains include specific categories such as 'Information Needs & Medical Care Issues' or 'Emotional & Relationship Issues' along with other much more generic like 'Quality of Life'. These issues are not absolutely improved in the results from the AFE (Hodkinson et al., 2007a). The resulting groupings, besides excluding seven items, are very divergent in size -with three of the four factors including three or fewer items- and not always homogeneous in content. On the other hand, the studies carried out to date not only offer an inconsistent multidimensional model of CaSUN, but also start from initial pools of items that differ in number and even in content, limiting the comparability of the studies' results.

After reviewing the CaSUN items and considering the above, we propose a restructure of the CaSUN focused on three issues. First, returning to the 35-initial pool of needs, including again fertility and practical issues because of their clinical utility. Second, regrouping items into more homogeneous and differentiated content. Specifically, we maintain the original 'Information Needs and Medical Care Issues' relabelled 'comprehensive care and information' due to the homogeneity and specificity of the needs it groups together (items 1-9), and distribute the rest of the items in four different areas: physical effects (items 11-13, 26), psychological effects (items 10, 19, 20, 24, 29-35), practical issues (items 14-18, 28), and relationships (items 21-23, 25, 27). Lastly, exploring the possibility of a total score based on the strength of needs, in addition to the possibility of determining the total number of unmet needs.

Briefly, this study aims to examine the factor structure of CaSUN using CFA to test the statistical fit to the model and empirical solution obtained by Hogkinson et al. (2007a), and our theoretical proposal among a large sample of Spanish breast cancer survivors. Moreover, we explore the possibility of a total score based on the strength of needs, determine the internal consistency and test-retest reliability of the instrument, and examine its relationship to psychological distress and quality of life.

Method

*Participants*

658 breast cancer survivors were approached in different medical institutions and cancer patient associations. Inclusion criteria were: minimum age of 18 years, breast cancer diagnosis, currently without any signs of recurrence, primary treatment completed at least 1 month before, and without difficulty in understanding or reading. Of approached women, 566 (86%) were eligible and provided their informed consent (sampling error = 4.2%). The mean age was 56 years ($SD = 9.62$). Most participants were living with

a partner (73%) and had completed at least primary studies (96%). All of them had completed their primary treatment for cancer with an average of 52 months (*SD* = 52.12): 33% more than 5 years ago, 28% no more than 12 months ago, and 39% had exceeded 12 months but had not yet reached 5 years. The most frequently received primary treatment strategy was surgery/chemotherapy/radiotherapy (57%), and 61% received hormonotherapy. Table 1 shows the sociodemographic and medical data.

*Procedure*

This cross-sectional study is part of a research project on quality of life and unmet psychosocial needs in adult oncology survivors. It was approved by the Ethic Committee of the participating institutions. Assessment were carried out by the psychologist during the visit of the survivors for their care attention in the centres. Upon completion of the assessment package, the same questionnaires were mailed to the home or electronic address of a selected sample approximately two or three weeks later to be used in the test-retest analyses.

*Instruments*

*Unmet Psychosocial Needs*. The CaSUN assesses cancer-related needs experienced within the preceding month. It includes

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*Table 1*
Sociodemographic, cancer-related and psychological characteristics of sample

| Variable | n | % |
|---|---|---|
| *Age (M = 55.74; SD = 9.62; Range = 29 – 85):* | | |
| Living situation (*n* = 507): | | |
|   Single/divorced/widowed | 136 | 26.8 |
|   Married/living with partner | 371 | 73.2 |
| Education level (*n* = 545): | | |
|   Without education | 23 | 4.2 |
|   Primary studies | 228 | 41.8 |
|   Secondary studies | 133 | 24.4 |
|   Bachelor's degree | 161 | 29.5 |
| Employment status (*n* = 558): | | |
|   Homemaker | 95 | 17.0 |
|   Working outside home | 198 | 35.5 |
|   Retired/on sick leave | 192 | 34.4 |
|   Unemployed | 73 | 13.1 |
| Medical primary treatment (*n* = 503): | | |
|   Surgery (S) | 29 | 5.8 |
|   S + Chemotherapy (CT) | 33 | 6.6 |
|   S + Radiotherapy (RT) | 119 | 23.7 |
|   S + CT + RT | 288 | 57.3 |
|   Other | 34 | 6.8 |
| Hormonotherapy (*n* = 508): | | |
|   Yes | 344 | 60.8 |
|   No | 164 | 29.0 |
| *Time elapsed since the end of primary treatment (n = 535)* | | |
| (*M = 52.01; SD = 52.12*): | | |
|   ≤12 months | 149 | 27.9 |
|   19-59 months | 210 | 39.3 |
|   ≥60 months | 176 | 32.9 |

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35 items rated as follow: not need/not applicable (NN), met need (MN), or unmet need as weak (WUN), moderate (MUN) or strong (SUN). According to the CaSUN manual (Hodgkinson et al., 2007b), items can be differently scored in terms of met needs (0= NN, WUN, MUN or SUN; 1=MN), unmet needs (0= NN or MN; 1= WUN, MUN or SUN), strength of need (0= NN or MN; 1= WUN; 2= MUN; 3= SUN) and total needs (0= NN; 1= MN, WUN, MUN or SUN). Total needs score consists of the sum of all items, and higher scores indicate greater needs (range 0-35). Domains are scored by summing all items in that domain; as domains contain different numbers of items, the average number of needs in that domain is reported. The CaSUN also includes 6 positive change items and an open-ended question that are considered qualitatively. The Spanish version (CaSUN-S) was obtained using standard translation procedures: CaSUN was independently translated from English into Spanish by three team members who then compared their translations, and collaborated to develop a common final version; this final version was translated back into English and reviewed for equivalence to the original version, and needed changes were incorporated into the final text. Feedback from a pilot study among thirty-three cancer survivors (64% women; 53% breast cancer) led to a definitive version of the CaSUN-S that keep the 35 original items with the same format, response categories, and scoring system than in the original English version, and adds a new total score based on the strength of needs (range 0-105) (Martínez et al., 2016).

*Emotional Distress*. The Brief Symptom Inventory-18 (BSI-18; Derogatis, 2013) is a self-report symptom checklist comprising 18 items rated on a 5-point Likert scale. The respondents are asked to rate how they have felt during the previous week. The scale provides three symptom scores (anxiety, depression, and somatization) and an overall measure of psychological distress (Global Severity Index [GSI]). The Spanish version of the BSI-18 has shown adequate psychometric properties in cancer setting (Galdón et al., 2008; Martínez et al., 2019). For the present study, the GSI showed satisfactory internal consistency of .94.

*Quality of Life*. The Quality of Life in Adult Cancer Survivors questionnaire (QLACS; Avis et al., 2005; Escobar et al., 2015) comprises 47 items rated on a 7-point Likert scale. The items measure 12 domains of health-related quality of life (HRQoL) of cancer survivors in the past four weeks. There are seven generic domains (negative feelings, positive feelings, cognitive problems, sexual problems, pain, fatigue, and social avoidance) and four cancer-specific (appearance concerns, financial problems, distress over recurrence, and family-related distress). Moreover, there is a domain about the benefits of cancer. Domain scores range from 4 to 28, with higher scores indicating lower HRQoL. For this study, all showed satisfactory Cronbach's α (range = .76 - .90).

*Data Analysis*

All statistical analyses were performed using SPSS (version 21) and EQS 6.0 (Bentler, 1995). Three competitive pentafactorial models of the CaSUN were tested using robust maximum likelihood estimation procedures: the theoretical model with 35 items (model A), the authors' 28-item empirical solution (model B), and our hierarchical proposal with the original 35 items grouped into more homogeneous and differentiated categories plus a total score (strength of need) (model C). This second–order structure provides a more parsimonious theory–based account for the

correlations among first–order factors (range = .48 - .81). To assess the goodness-of-fit for the models, we considered the Satorra-Bentler $\chi^2$, and several goodness-of-fit indexes (acceptability criteria in parentheses): comparative fit index (CFI > 0.90), non-normed fit index (NNFI > 0.90), incremental fit index (IFI > 0.90), root mean square error of approximation (RMSEA < 0.08), and the Akaike Information Criterion (AIC) (higher values indicate worse model fit) (Hu & Bentler, 1999). Furthermore, the CASUN items (descriptive data), internal consistency (Cronbach's alpha and Item-total correlation) and convergent validity (Pearson's correlation) were also examined.

## Results

### Factor Structure

As shown in Table 2, Model A obtained the poorest fit to the data. Model B (model B$_{Improved}$) achieved a good fit after the inclusion of one error covariance (between items 31-32), whereas Model C (model C$_{Improved}$) reached similar goodness of fit indices after adding three error covariances (between items 31-32, 1-2, and 4-5). Cross–validation procedures were used to validate the inclusion of these modifications in two randomly selected subsamples with similar goodness of fit indexes (RCFI = 0.92, IFI = 0.92, NNFI = 0.91, RMSEA = 0.050 [0.045 – 0.056]). Model C$_{Improved}$, was significantly better than model B$_{Improved}$ according to the scaled diff. $X^2$ ($\Delta$df = 212, $N$ = 566) = 654.31 and the AIC. On the contrary, the RCFI index proved that both models fitted similarly ($\Delta$RCFI ~ 0.01) (Cheung & Rensvold, 2002).

Thus, quantitative analysis does not offer compelling evidence of one model exhibiting the best goodness of fit. However, Model C$_{Improved}$ presents some advantages: minimal loss of information about specific needs, five balanced factors, and the possibility of a new total score. Therefore, the improved hierarchical model C illustrated in Fig. 1 was retained as the best factor structure. Estimated coefficients were statistically significant as regards to first–order factors: physical effects (range = .20 - .86), psychological effects (range = .48 - .88), comprehensive care & information (range = .38 - .86), practical issues (range = .40 -.75) and relationships (range = .63 -.77). Similar significant coefficients were obtained for the higher–order factor (range = .60 - .94).

### Reliability

The CaSUN-S demonstrated satisfactory Cronbach's $\alpha$ values of .95 for total score, and ranged from .73 to .94 for five domains (Table 3). Moreover, it was administered to 40 out of 566 participants approximately 2 or 3 weeks after completing the baseline questionnaire (a retention rate of 80.0%). The test-retest reliability for the total score was .82. Comprehensive care & information subscale obtained the lowest reliability value ($r$ = .51; $p \leq 0.001$). The rest ranged from .74 to .89, indicating a high level of agreement in scores over time (Table 3). Data on item test-retest reliability are presented in Table 4. Item–total score correlations were greater than .30 for all items, except for item 13 (fertility) which exhibit a highly disperse and skewed distribution. However, since infertility is one of the main effects of cancer treatment for women of reproductive age, its inclusion in the CaSUN-S was considered essential.

### Convergent Validity

The BSI-18 and QLACS descriptive data as well as their correlation with the CaSUN are shown in the second part of Table 3. The total and domain CaSUN scores were significantly associated with BSI-18 ($r$ = .43 – .77; $p \leq 0.001$) and with each of the generic and cancer-specific domains of the QLACS in expected direction. In both cases, the correlation pattern was similar: psychological needs had the highest correlation with distress and HRQoL, and comprehensive care & information needs showed the lowest.

## Discussion

The present study tested the factor structure of the Spanish CaSUN using CFA in a sample of 566 breast cancer survivors. Results show that, from a quantitative approach, the original authors' empirical solution (model B) and our theoretical proposal (model C) exhibit similar goodness of fit. However, against that the solution of Hodkinson et al. (2017a), four arguments support our hierarchical pentafactorial structure (i.e., physical effects, psychological effects, comprehensive care & information, practical issues, and relationships) with an underlying second-order factor (total score as a strength of need): (i) it is more comprehensive because retains the original set of 35 items; (ii) it is based on more

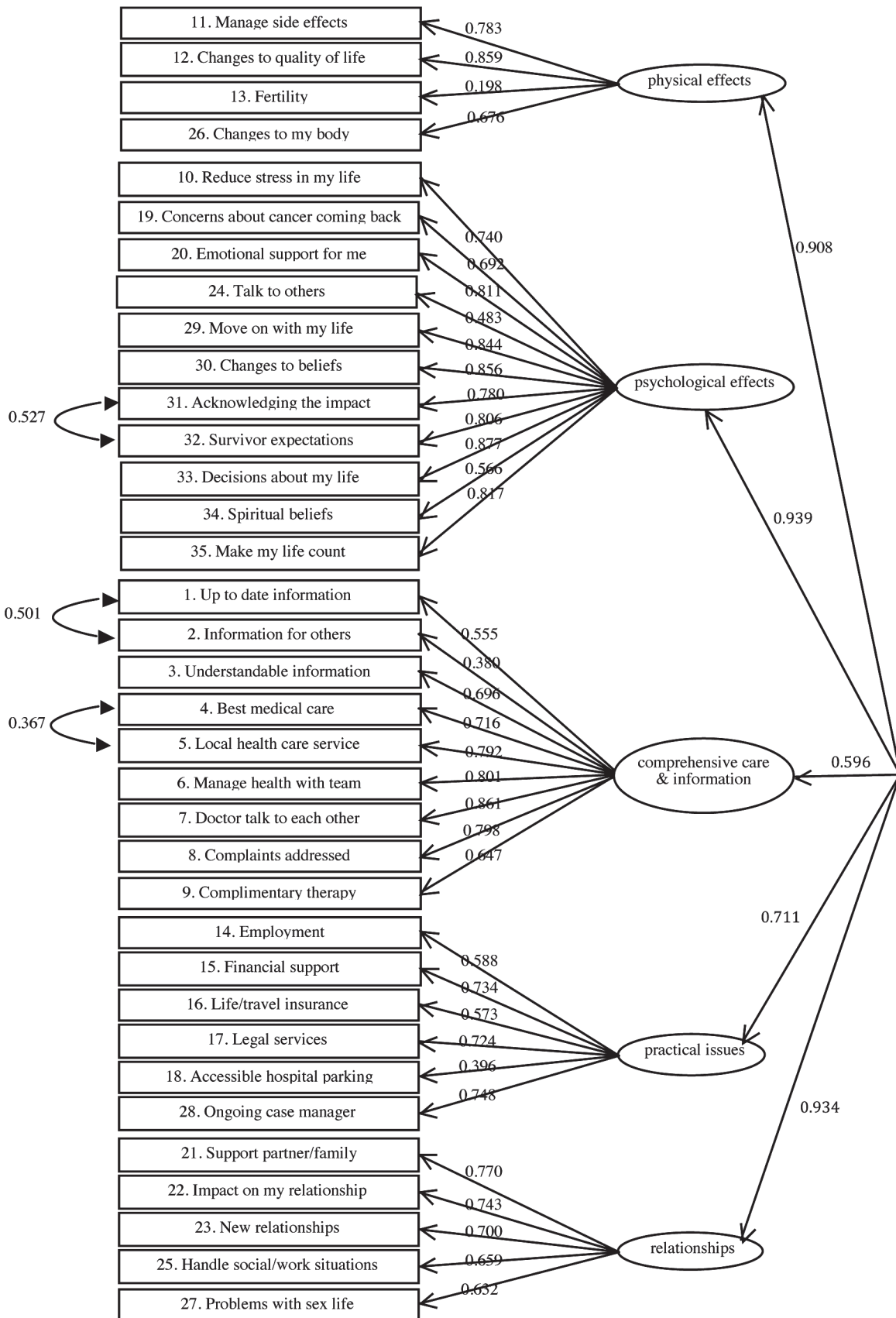| | S-B$\chi^2$ | df | S-B$\chi^2$/df | RCFI | IFI | NNFI | RMSEA [90% CI] | AIC |
|---|---|---|---|---|---|---|---|---|
| Model A | 1674.82*** | 554 | 3.02 | .88 | .88 | .87 | 0.060 [0.057 - 0.063] | 566.82 |
| Model B | 921.64*** | 340 | 2.71 | .93 | .93 | .92 | 0.055 [0.051 - 0.059] | 241.64 |
| Model B$_{Improved}$ | 827.28 | 339 | 2.44 | .94 | .94 | .93 | 0.051 [0.051 - 0.059] | 149.28 |
| Model C | 1513.13*** | 554 | 2.73 | .90 | .90 | .90 | 0.056 [0.052 - 0.059] | 405.13 |
| Model C$_{Improved}$. | 1239.50*** | 551 | 2.25 | .93 | .93 | .92 | 0.047 [0.044 - 0.051] | 137.50 |

*Table 2*
Models fit indices

*** $p \leq 0.001$

**Figure 1.** Standardized regression coefficients and correlations between errors for the measurement model of the CaSUN

*Table 3*
Internal consistency, test-retest reliability of the CaSUN. Pearson's correlation coefficients between CaSUN and BSI-18, QLACS domains

| | Mean (SD) | Total needs | Physical effects | Psychological effects | Comprehensive care & information | Practical issues | Relationships |
|---|---|---|---|---|---|---|---|
| Cronbach's α | | .95 | .73 | .94 | .90 | .77 | .83 |
| $r_{\text{time 1-time 2}}$ ($n = 40$) | | .82*** | .74*** | .89*** | .51*** | .78*** | .75*** |
| GSI | 14.61 (14.40) | .62*** | .57*** | .67*** | .36*** | .42*** | .56*** |
| Negative feelings | 13.16 (5.30) | .57*** | .51*** | .64*** | .32*** | .40*** | .52*** |
| Positive feelings | 12.00 (5.98) | .51*** | .43*** | .59*** | .30*** | .31*** | .41*** |
| Cognitive problems | 12.16 (5.70) | .52*** | .48*** | .51*** | .35*** | .40*** | .43*** |
| Sexual problems | 12.89 (6.60) | .46*** | .40*** | .46*** | .27*** | .33*** | .55*** |
| Pain | 12.52 (6.45) | .53*** | .55*** | .52*** | .32*** | .41*** | .46*** |
| Fatigue | 13.62 (5.81) | .53*** | .51*** | .52*** | .35*** | .39*** | .43*** |
| Social avoidance | 8.49 (5.53) | .54*** | .48*** | .57*** | .33*** | .34*** | .51*** |
| Appearance concerns | 11.37 (6.61) | .51*** | .50*** | .47*** | .39*** | .35*** | .45*** |
| Financial problems | 7.02 (5.20) | .44*** | .45*** | .37*** | .40*** | .51*** | .27*** |
| Distress over recurrence | 14.87 (6.89) | .45*** | .36*** | .46*** | .34*** | .31*** | .37*** |
| Family-related distress | 18.19 (7.88) | .26*** | .18*** | .24*** | .23*** | .18*** | .20*** |

*** $p \leq 0.001$

homogeneous and mutually exclusive content domains; (iii) all domains have a balanced number of items equal to or greater than four (Fabrigar et al., 1999) resulting in more robust dimensions; and (iv) its hierarchical structure supports the use of an overall measure of strength of the unmet needs. In this regard, as far as we know, this study is the first to examine a hierarchical structure of the CaSUN.

Previous adaptations of the CaSUN (Fang et al., 2017; Keeman et al., 2018; Martínez-Tyson et al., 2018) modified the original version (i.e., eliminated items considered less important, added others, simplified the survey format) to ensure cultural appropriateness. However, it is important but not enough to adapt instruments to every culture; instead, it is necessary to achieve a universal model of the CaSUN structure that facilitates cross-cultural comparison with respect to psychosocial needs in the population of cancer survivors and provides better and more global understanding. This is only possible if a common and complete structural model of CaSUN is available. The present study is in line with this idea, and therefore takes up the original version of the instrument in which the main needs of cancer survivors are reflected, and attempts to study its structure in greater depth. On the other hand, this approach is not incompatible with the addition of other complementary needs resulting from cultural differences and/or the variability in survival care plans observed between regions or countries of the world, just like HRQoL assessment instruments which include addenda (in this case for cancer-site) (Pearce et al., 2008). Socio-cultural peculiarities permit a comprehensive assessment of the survivor unmet needs, but these does not justify the important changes presented by several versions in what should constitute a common structure of the CaSUN.

Evidence for the convergent validity of the CaSUN was provided by the high correlations of unmet needs with HRQoL and emotional distress. Additionally, unmet needs, especially those related to psychological and physical effects were associated with poor quality of life, as well as emotional distress. Results are in line with those that found a close relationship between psychosocial needs and wellbeing and/or quality of life (e.g., Hubbeling et al., 2018; Martínez et al., 2019). These data give us an indication of

the potential benefits to be gained by the early detection of and interventions targeted toward cancer-specific unmet needs. On the other hand, despite its lower relationship to distress and quality of life, several specific needs are particularly significant in the studied sample. Comprehensive care and information (i.e., manage health with team, complaint addressed, doctor talk, complimentary therapy, best health care service, understandable information) were the most intense unmet needs. These needs must be addressed in order to achieve an optimal comprehensive, patient-centred care.

The CaSUN-S displays high internal consistency: good item homogeneity (> .30 except to fertility item) and satisfactory Cronbach alphas (.95 for total score, range .73 –.94 for the five domains), like the original and adapted versions of the CaSUN (Hodgkinson et al., 2007a; Fang et al., 2017; Keeman et al., 2018; Martínez-Tyson et al., 2018). Except for the study by Martínez-Tyson et al. (2018), the test-retest reliability has been rather low. Both, the original and Dutch version used the Kappa coefficient in the analysis of test-retest reliability. This methodological approach may be the main reason of the different results, rather than different items or non-comparable samples. On the other hand, one of the validation studies focused only on total score test-retest reliability (Martínez-Tyson et al., 2018), and the other two explored test-retest reliability for each domain (Hodgkinson et al., 2007a; Keeman et al., 2018). In this study, we examined test-retest reliability of the CaSUN for total score, domains, and even items. It was good for total score (.82) and for four out of five domains (.74 - .89), and significant for 86% of items (.33 - .97), providing an adequate degree of stability across time. However, the small subsample size ($n = 40$) means that we should interpret these results with care.

Altogether, this work explores critical issues of the CaSUN's validity and reliability and proposes a new structural model based on a rigorous examination of the items and the available literature. This rational proposal shows evidence of psychometric robustness of the Spanish version since it meets criteria for validity and reliability and adds more data to previous results about the good acceptance by respondents in terms of comprehension of the items,

| | M (SD) | Skewness | Kurtosis | r times 1-2 (n = 40) | Item-Total Corr. |
|---|---|---|---|---|---|
| *Table 4* Descriptive statistics and test-retest reliability of the CaSUN items | | | | | |
| 1. Up to date information | 1.00 (1.15) | 0.68 | -1.05 | .45** | .59 |
| 2. Information for others | 0.72 (1.04) | 1.15 | -0.12 | .55*** | .41 |
| 3. Understandable information | 1.28 (1.33) | 0.31 | -1.68 | .09 ns. | .70 |
| 4. Best medical care | 1.33 (1.37) | 0.23 | -1.80 | .27 ns. | .71 |
| 5. Local health care service | 1.42 (1.34) | 0.12 | -1.78 | .11 ns. | .76 |
| 6. Manage health with team | 1.66 (1.31) | -0.20 | -1.71 | .49*** | .72 |
| 7. Doctor talk to each other | 1.59 (1.35) | -0.12 | -1.80 | .52*** | .78 |
| 8. Complaints addressed | 1.59 (1.37) | -0.12 | -1.82 | .33* | .72 |
| 9. Complimentary therapy | 1.43 (1.33) | 0.11 | -1.77 | .30 ns. | .60 |
| 10. Reduce stress in my life | 1.09 (1.18) | 0.60 | -1.18 | .52*** | .70 |
| 11. Manage side effects | 1.03 (1.17) | 0.66 | -1.11 | .52*** | .69 |
| 12. Changes to quality of life | 0.92 (1.14) | 0.83 | -0.85 | .42** | .72 |
| 13. Fertility | 0.10 (0.50) | 5.10 | 25.24 | - | .17 |
| 14. Employment | 0.50 (1.02) | 1.80 | 1.58 | .97*** | .52 |
| 15. Financial support | 1.09 (1.28) | 0.60 | -1.38 | .62*** | .67 |
| 16. Life/travel insurance | 0.47 (0.95) | 1.86 | 1.96 | .51*** | .52 |
| 17. Legal services | 0.51 (1.00) | 1.76 | 1.53 | .59*** | .64 |
| 18. Accessible hospital parking | 0.40 (0.93) | 2.11 | 2.85 | .38** | .33 |
| 19. Concerns about cancer coming back | 0.96 (1.07) | 0.76 | -0.75 | .46** | .67 |
| 20. Emotional support for me | 1.04 (1.19) | 0.64 | -1.16 | .76*** | .79 |
| 21. Support partner/family | 0.70 (1.02) | 1.24 | 0.16 | .71*** | .67 |
| 22. Impact on my relationship | 0.62 (1.05) | 1.43 | 0.50 | .62*** | .70 |
| 23. New relationships | 0.40 (0.86) | 2.07 | 2.94 | .43** | .62 |
| 24. Talk to others | 0.86 (1.07) | 0.91 | -0.55 | .54*** | .46 |
| 25. Handle social/work situations | 0.50 (0.90) | 1.71 | 1.77 | .50*** | .54 |
| 26. Changes to my body | 0.63 (1.01) | 1.42 | 0.64 | .71*** | .55 |
| 27. Problems with sex life | 0.68 (1.07) | 1.28 | 0.10 | .78*** | .60 |
| 28. Ongoing case manager | 1.05 (1.20) | 0.65 | -1.20 | .46** | .62 |
| 29. Move on with my life | 0.67 (1.03) | 1.28 | 0.21 | .83*** | .81 |
| 30. Changes to beliefs | 0.84 (1.09) | 0.98 | -0.48 | .81*** | .83 |
| 31. Acknowledging the impact | 0.63 (1.01) | 1.41 | 0.56 | .63*** | .77 |
| 32. Survivor expectations | 0.67 (1.01) | 1.28 | 0.29 | .56*** | .79 |
| 33. Decisions about my life | 0.75 (1.06) | 1.13 | -0.15 | .57*** | .84 |
| 34. Spiritual beliefs | 0.29 (0.72) | 2.61 | 6.00 | .67*** | .55 |
| 35. Make my life count | 0.63 (1.03) | 1.39 | 0.45 | .83*** | .78 |

ns.: not significant; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$
*Note:* the range of scores coincides in all cases with the range of the scale

length of time to complete, and relevance of the content (Martínez et al., 2016).

The experiences and needs within the cancer survivor group are different from those who are shortly after diagnosis, on active curative treatment, or in the palliative or end-of-life phase. The use of the factor structure of the CaSUN proposed in the present study will allow cancer survivors report the presence of global, domains or/and specific needs for which they feel that they require help, as well as the degree of their needs. Subsequently, these needs could be addressed in an appropriate manner in order to enhance and/or maintain the survivors' quality of life (Waller et al., 2015). However, this is just a first step, and further replication studies are needed to support the initial results; likewise, additional relevant topics need to be addressed in future research to complete the data about the psychometric quality of the instrument, namely, the invariance between groups defined by demographic and/or disease factors (i.e., type of cancer, period of survivorship), its predictive value for future behaviours like the use of health services, and the performance of the positive change items of the CaSUN-S.

As the number of cancer survivors increases, it is crucial to identify and address not only their levels of HRQoL and emotional distress but also the psychosocial unmet needs (Martínez & Andreu, 2019). The Spanish version of the CaSUN, a measure that retains the original 35 items in a rational model, allows five domains and total score, and offers a simple way to identify areas and/or particular unmet needs in cancer survivors using a screening process. The instrument could be valuable in settings where healthcare professionals require a pragmatic method of recognize those who are currently experiencing unmet needs in order to prioritize their attention and achieve cost-effective patient care strategies.

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