ORIGINAL ARTICLE

Developing a needs assessment questionnaire for women of reproductive age following breast cancer treatment: a cross-sectional pilot study in a Romanian sample

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Summary

Purpose: *Studies addressing the needs of cancer patients highlight the necessity to identify what types of informational and support needs are specific to women of reproductive age after primary treatment for breast cancer. We developed a questionnaire for evaluating informational and treatment decision, psychological and socio-familial needs in young breast cancer patients following treatment.*

Methods: *101 patients of reproductive age, treated for breast cancer at the Oncology Institute "Prof. Dr. Ion Chiricuta", Cluj-Napoca between 2006 and 2013 were included. They all had completed surgery, chemo-radiotherapy, and were receiving hormone therapy. The questionnaire named Breast Cancer following Treatment Needs Assessment Scale (BCTNAS) consisted of 21 6-point Likert items. The validation procedures used were: construct validity performed by exploratory factor analysis (EFA), reliability and internal consistency analysis using ordinal Cronbach's alpha (a) and ordinal Omega (ω) correlation coefficients.*

Results: *According to EFA, the questionnaire evidenced four factors: needs concerning medical information and treatment decisions (PA1), needs for psycho-spiritual support (PA2), needs for socio-familial support (PA3), needs concerning medical support/assistance (PA4). The items of BCTNAS reported factor loadings (λ_i) greater than 0.40 for PA1 factor, $\lambda_i \geq 0.31$ for PA2, $\lambda_i \geq 0.53$ for PA3 and $\lambda_i \geq 0.33$ for PA4, respectively. Reliability analysis demonstrated that BCTNAS is reliable: ordinal Cronbach's alpha of 0.81 (95% IC: 0.75-0.86) and ordinal omega of 0.85 (95% IC: 0.68-0.82) for the total scale score, with very good internal consistency.*

Conclusions: *The BCTNAS questionnaire provides a potential instrument to identify and assess the needs of breast cancer patients in the post-treatment period, having a positive impact on the quality of patient care.*

Key words: *breast cancer, exploratory factor analysis, informational needs, psychological needs*

Introduction

Cancer alters the order and nature of health-related needs [1]. The transition from treatment to survival has been described as a conflictual experience in which patients try to balance their satisfaction with completing breast cancer treatment and the challenge of persistent physical symptoms, uncertainty, anxiety, mood changes and fear of recurrence [2]. Moreover, living with a breast cancer diagnosis can lead, in addition to physical body reactions, to undesired psychological reactions, which have a major influence on the patients' physical and psychosocial needs [3,4]. Conceptual-

izing a health-related need can mean that "needs exist when there is a gap between a person's actual state and their goals" [5,6].

Relatively recent studies [5,6] support the fact that in oncology, need is a central concept and among breast cancer survivors there is a need when a difference between a person's actual state (physical and psychosocial consequences of breast cancer) and their optimal state (reduction or absence of adverse effects) are identified.

At the same time, information regarding the needs of breast cancer survivors is required in order to help breast cancer patients to have a good quality of life [5,6].The main psychosocial needs felt by breast cancer survivors include fear of recurrence, frequent mood changes (anxiety, sadness, frustration), vulnerability, existential concerns, uncertainty, body image concerns, emotional distress in relation to adjustments of the role played in the family and its response to the new situation, as well as financial and workplace concerns [7-13].

There is evidence that psychosocial needs perceived by breast cancer patients and support provided by the medical staff are different [14-17]. Furthermore, physical, emotional, social, financial and psychological needs are unmet needs, particularly in the post-treatment stage [18-21].

Identifying the needs allows to directly assess the discrepancy between the patients' experiences and expectations and their perception about the need for help [22]. If a need has been identified, action should be taken in this respect. Assessing the needs helps clinicians to focus at an early stage on those problems that are considered the most important by the patient [23].

Identification of needs in oncology should include a direct and comprehensive evaluation of the multidimensional impact of cancer on the patients' lives and should address the important areas of physical, emotional, social, spiritual functionality, as well as practical needs [22,24]. There are studies showing that psychological and social needs, followed by informational needs and supportive care needs are reported as unmet needs [19,24-27].

According to Harrison et al. [19], spiritual needs and communication have been the least investigated. Furthermore, the prevalence of these needs seems to be the highest and shows the widest variation in the treatment stage. The majority of the studies aiming to identify the presence or absence of a certain informational, psychological, social or practical need only took into consideration the hospitalization stage [1,23,28], without targeting the post-treatment needs of patients. Further examination of the types of these needs in breast cancer patients in the post-treatment stage is required.

The aim of the present study was to establish the factor structure of a new developed questionnaire for evaluating informational and treatment decision, psychological and socio-familial needs in young breast cancer patients following cancer treatment.

Methods

Participants

The study sample consisted of 101 patients of reproductive age, treated for malignant breast lesions at the "Prof. Dr. I. Chiricuta" Oncology Institute in the period 2006-2013. At the time of their signed informed consent, patients had completed surgery, chemotherapy and radiotherapy, and were receiving hormone therapy. The exclusion criteria were age over 45 years, other types of malignant diagnosis, and patients with end-stage disease.

The assessment tool

The questionnaire was composed of 21 6-point Likert items (0-5 points), which describe the frequency of informational, psychological and social needs, with the following response options: never, rarely, sometimes, frequently, most of the time, always. The questions cover a range of different aspects such as medical information issues, decisions regarding treatment or psychosocial issues.

Phase1: Developing the items

The needs questionnaires identified in the literature mainly refer to screening of needs in hospitalized cancer patients, and much less in cancer survivors. The best known questionnaire used for the development of the current questionnaire is the Needs Evaluation Questionnaire [1,29].

In order to review the literature for the current study, PubMed and Cochrane databases were searched between October-January 2014 for relevant articles in English related to cancer patients' needs questionnaire [1,29].

The articles were selected based on the concept of psychosocial needs in cancer patients, present in the title or abstract (key words: psychosocial needs questionnaire for cancer patients). A number of 46 results were found in PubMed, but none of them included a validated psychosocial needs questionnaire, while the same key words yielded 0 results in the Cochrane database. The next search of the literature involved a slightly broader approach (key words: needs questionnaires for cancer survivors), for which 440 results were found, of which 23 articles referred to information needs, 15 articles referred to supportive care needs, 5 articles referred to spiritual needs, 2 articles referred to psychosocial needs, and 2 articles referred to psychological and practical needs. Out of the 47 reviewed results, only one result concerned rehabilitation [30], without involving the assessment method of psychosocial needs, in breast cancer survivors. In the Cochrane database, the search

"needs questionnaire for breast cancer patients" yielded 5 results, but all 5 articles were related to psychosocial interventions and end of life care pathways for improving outcomes in caring for the dying, while the search "needs questionnaire for breast cancer survivors" produced 0 results.

Starting from the 20 results from the PubMed database related to Needs Evaluation Questionnaire, the questionnaire of the current study was developed, which was aimed at encompassing a wider range of needs, i.e., needs concerning medical information and treatment decisions, needs concerning psycho-spiritual support, needs concerning medical assistance and needs for socio-familial support.

Phase 2: Questionnaire testing

The participants for the present study were selected from patients included in the Malignant Cancer Registry, the Oncology Institute "Prof. Dr. Ion Chiricuta", Cluj-Napoca. For the period 2006-2013, 1072 breast cancer patients who were treated at the "Prof. Dr. I. Chiricuta" Oncology Institute were selected. Of these, 186 patients were identified as breast cancer survivors and gave their consent to participate in the current study. Of the 186 patients who were mailed the informed consent along with the assessment tool, 96 returned the completed forms and 5 patients were selected from survivors who came for annual follow-up. The evaluation procedure was a paper-and-pencil procedure.

The responses from each completed questionnaire were introduced into Microsoft Excel for quantitative analysis.

Phase 3: Data analysis and statistics

The item scores were summarized by mean and median and estimation of skewness and kurtosis with 95% associated confidence intervals was used to verify deviation from normal distribution. In order to investigate the factorial structure, a polychoric correlation matrix was generated. Determination of factor structure was based on exploratory factor analysis (EFA) with polychoric correlations, given the ordinal nature of items [31,32].

Exploratory factor analysis was performed with R version 3.3.1.[33]. In the present study, we expected factors to correlate, so we used an EFA with oblimin rotation criteria. The number of factors extracted was established by multiple methods such as parallel analysis (PA) and the Guttman-Kaiser criterion [34,35]. Bartlett's test of sphericity and Kaiser-Meyer-Olkin statistic were also determined in order to ensure factorability of the items.

The final solution was chosen based on two conditions: a) items were considered relevant for a factor if their factor loadings were superior to 0.30; b) minimum 3 items per factor [36]. We also examined cross-loading items.

After factor analysis was performed, the internal consistency of each factor was calculated using ordinal reliability alpha [37].

Table 1. Descriptive statistics of questionnaire items

Items	Mean±SD	Median	Range (max-min)	Estimated skewness (95% CI)	Estimated kurtosis (95% CI)
Item1	3.46±1.55	4	5	-0.50 (-0.99; -0.05)	-0.96 (-1.84; 0.03)
Item2	4.31±1.18	5	5	-1.54 (-2.10; -1.10)	1.40 (0.69; 2.56)
Item3	4.6±0.91	5	5	-2.66 (-3.20; -2.30)	8.44 (7.50; 9.40)
Item4	3.55±1.40	4	5	-0.52 (-1.01; -0.06)	-0.90 (-1.77; 0.10)
Item5	4.05±1.42	5	5	-1.55 (-2.10; -1.10)	1.54 (0.84; 2.71)
Item6	2.5±1.63	2	5	0.11 (-0.36; 0.58)	-1.09 (-1.98; -0.11)
Item7	1.65±1.45	2	5	0.77 (0.32; 1.26)	-0.09 (-0.91; 0.96)
Item8	1.7±1.53	1	5	0.67 (0.22; 1.16)	-0.56 (-1.41; 0.46)
Item9	1.81±1.57	2	5	0.57 (0.11; 1.06)	-0.76 (-1.62; 0.25)
Item10	2.67±1.81	3	5	-0.11 (-0.58; 0.36)	-1.34 (-2.25; -0.38)
Item11	3.15±1.81	3	5	-0.46 (-0.94; -0.001)	-1.25 (-2.14; -0.28)
Item12	1.56±1.56	1	5	0.70 (0.25;1.20)	-0.58 (-1.43; 0.43)
Item13	0.18±0.65	0	4	4.05 (3.7; 4.6)	16.69 (17; 19)
Item14	3.73±1.46	4	5	-0.73 (-1.23; -0.29)	-0.84 (-1.71; 0.16)
Item15	3.68±1.62	4	5	-1.15 (-1.66; -0.71)	0.05 (-0.75; 1.12)
Item16	4.00±1.31	4	5	-1.50 (-2.0; -1.1)	1.71 (1.00; 2.90)
Item17	2.53±1.50	2	5	0.39 (-0.07; 0.87)	-0.83 (-1.70; 0.17)
Item18	0.43±0.77	0	3	1.77 (1.30; 2.30)	2.32 (1.70; 3.50)
Item19	2.45±1.43	2	5	0.17 (-0.30; 0.65)	-0.59 (-1.52; 0.35)
Item20	3.81±1.49	4	5	-1.12 (-1.63; -0.69)	0.09 (-0.71; 1.15)
Item21	4.33±1.16	5	4	-1.38 (-1.89; -0.95)	0.39 (-0.39; 1.47)

CI:confidence interval: lower limit-upper limit

The accessibility of subscales was determined by the presence of floor and ceiling effects. We determined the percentage of subjects reporting the lowest and highest possible scores for each subscale. Subscales having more than 15% of respondents with the lowest or highest possible score were considered suggestive of the studied issues.

For the sample size, we used a patient to item ratio of 5:1, which was considered as a rule of thumb in the majority of the studies [36]. An estimated significance level $p < 0.05$ were considered statistically significant in all bilateral tests.

Results

Participants' characteristics

In the patient sample, mean age distribution was 37.80 ± 4.61 years, with a minimum value equal to 26 years. Socioeconomic data were represented by average income per household member (1018 ± 757.7 RON) and educational level (1= primary school education, 2= high school education, 3= post-high school education, 4= higher education, 5= postgraduate education). The education level distribution was 15.8% postgraduate education, 30.7% higher education, 17.8% post-high school education and 27.7% high school education, a small proportion of patients having only primary school education (7.9%). The most frequently found professions were teacher (11.7%), nurse (10.9%), while there were also housewives or medically retired patients (10.9%). Mean age at diagnosis was equal to 34.8 ± 3.9 years. Approximately one third of patients had an age at diagnosis between 24 and 33 years (31.7%), with a median time since diagnosis of 36 months (25th percentile= 24 months, 75th percentile= 60 months). For 4.95% of patients, age at diagnosis was unknown; this was approximated through the median time since diagnosis.
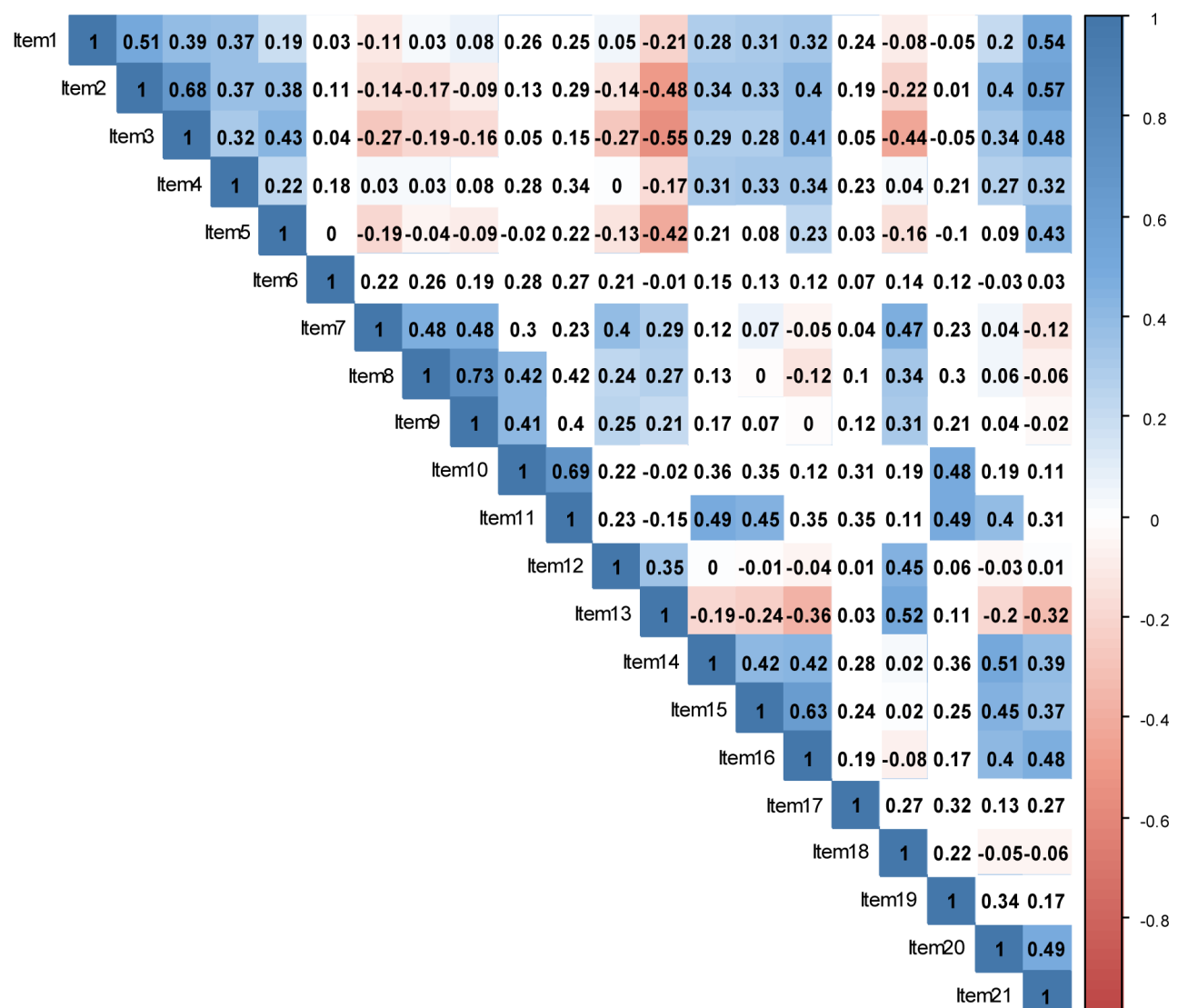

Figure 1. Polychoric correlation matrix and estimated significance levels. The values marked in colors indicate the intensity and significance of polychoric correlations between the items.

Factor structure

The item distributions were asymmetric both to the right and left. The estimated mean for all 21 items ranged from 0.10±0.65 to 4.60±0.91 points (Table 1). There was no item with missing values. After determining the distribution of the studied items, the polychoric correlation matrix was estimated and its values are shown in Figure 1, along with the associated significance levels.

The moderate correlations between the items suggested the presence of intercorrelated clusters of items.

A total of four factor structures were examined: the 2-factor model based on the Very Simple Structure (VSS) and Velicer MAP method; the 3 and 5-factor solution based on the scree plot; and the 4-factor model based on parallel analysis. The results of MAP and VSS suggested a two factor-

Table 2. Fit indexes from factor solutions indicated by parallel analysis

Empirical correlations	No. of factors	x^2	df	p value	TLI	RMSEA	RMS	BIC
Polychoric	1	553.97	189	<0.001	0.41	0.148	0.178	-318.29
Polychoric	2	269.17	169	<0.001	0.82	0.087	0.071	-510.78
Polychoric	3	208.19	150	0.001	0.88	0.073	0.059	-484.07
Polychoric	4	159.88	132	0.05	0.93	0.059	0.048	-449.32
Pearson	1	490.50	189	<0.001	0.45	0.136	0.135	-381.76
Pearson	2	335.08	169	<0.001	0.66	0.109	0.087	-444.87
Pearson	3	248.91	150	<0.001	0.77	0.092	0.07	-443.36
Pearson	4	210.62	132	<0.001	0.79	0.088	0.059	-398.57

TLI:Tucker-Lewis Index, RMSEA:Root Mean Square Error of Approximation, RMS:Root mean square residual, BIC:Bayesian Information Criterion; the selected factor model which accomplished the goodness-of-fit criteria.

Table 3. Sorted factor loadings (>0.30) of the 4-factor solution

No.	Item Description	PA1	PA2	PA3	PA4	h^2
1.	I need the doctor to give me as much information as possible about my diagnosis	0.72				0.45
2.	I need to know all investigations that I am undergoing	0.71				0.64
3.	I need the medical staff to be sincere with me	0.55		-0.45		0.67
4.	I need to know as much information as possible about the stage after completion of all medical treatments	0.72				0.60
5.	I need to feel safe		0.48		0.52	0.72
6.	I need my family's support				0.53	0.46
7.	I need to be involved in society				0.59	0.48
8.	I need to be given attention				0.71	0.51
9.	I need my privacy to be respected				0.56	0.41
10.	I need to stop being depressed		0.83			0.70
11.	I need to stop being afraid (anxious)		0.74			0.58
12.	I need to have a good opinion of myself		0.50		0.41	0.55
13.	I need a dietitian's assistance			0.53		0.35
14.	I need home care by a nurse			0.63		0.58
15.	I need support from a social assistant			0.78		0.62
16.	I need the medical staff to be more understanding with me	0.40				0.28
17.	I need to be involved in decisions related to my treatment	0.45				0.29
18.	I need spiritual support (to speak with a priest)	0.31			0.13	
19.	I need emotional counseling (psychological help)	0.41	0.35		0.41	
20.	I need to perform daily activities within the limits of my health	0.37			0.46	0.47
21.	I need to talk to other persons who suffer from the same disease				0.33	0.21

h^2= communalities values

Table 4. Reliability coefficients of subscales

Factors	Median (Q1;Q3)	Range	Ordinal Cronbach's Alpha (95% CI)	Ordinal Omega (95% CI)	No. of items
PA1	25 (22; 28)	0-30	0.81 (0.75; 0.87)	0.86 (0.76; 0.87)	6
PA2	10 (6; 14)	0-25	0.80 (0.73; 0.86)	0.86 (0.75; 0.86)	5
PA3	2 (0; 3)	0-15	0.70 (0.60; 0.80)	0.81 (0.61; 0.81)	3
PA4	20 (16; 24)	0-35	0.84 (0.79; 0.89)	0.90 (0.80; 0.89)	7
Total score	64 (50; 71)	0-105	0.81(0.75; 0.86)	0.85(0.68; 0.82)	21

Q1:25th percentile, Q3:75th percentile, 95% CI: confidence interval: lower limit-upper limit.

solution with the following goodness-of-fit statistics: RMSEA=0.087, SRMR=0.07. Based on the scree plot, the 3-factor solution (RMSEA=0.075, SRMR=0.06) had mixed loadings with both positive and negative values, while the 5-factor solution (RMSEA=0.06, SRMR=0.04) had a factor with only two descriptive items.

After parallel analysis with oblique rotation, the four-factor solution was considered the most pertinent because all factors loaded more than 3 items and all loading coefficients of each item were superior to 0.3; the defined subscale was considered theoretically suitable. Using 100 replicated samples, the empirical eigenvalues of the first four factors fell below the 95th percentile of the randomly generated eigenvalues. The performance of the 4-factor solution was also highlighted by goodness-of-fit statistics determined by parallel analysis: $x^2(132)=159.876$, p=0.05, TLI=0.93, RMSEA=0.059, RMS=0.048. Also, more adequate fit indexes could be obtained by using the polychoric correlation matrix compared to Pearson correlations (Table 2).

KMO statistic was greater than the recommended value (KMO=0.79) and Bartlett's test was statistically significant [$x^2(210)=889.54$,p<0.001], indicating an acceptable factorial structure.The eigenvalues of the four-factor solution also met the Guttman-Kaiser criterion (eigenvalue of PA1=3.0; second factor=2.3, third factor=2.0 and fourth factor=2.7). The first factor explained 15% of the common variance, the second factor=11%, the third=10% and the fourth=13%, with an explained cumulative variance equal to 48%. The model of the final 4-factor solution is described in Table 3.

Reliability analysis

Internal reliability estimates were calculated for each domain (factor) based on both ordinal Cronbach's alpha and Omega coefficients; the estimates obtained ranged from 0.70 to 0.84 for ordinal alpha estimates and from 0.81 to 0.90 for ordinal omega estimates (Table 4). Corrected item-total correlations for all items of each factor ranged between a moderate (rho: 0.39 to 0.54) to strong correlation (rho: 0.70 to 0.86).

Floor and ceiling effect

All the defined subscales showed good acceptability and the results of frequency response analysis evidenced a floor effect only for subscale PA3 (33.66% of respondents had the lowest possible score).

Discussion

Identifying the needs allows to directly assess the discrepancy between the patients' experiences and expectations and their perception about the need for help [22]. If a need has been identified, action should be taken in this respect. The lack of action might result in dissatisfaction and persistence of the need [38].

The 21-item questionnaire was named the Breast Cancer following Treatment Needs Assessment Scale (BCTNAS). The 4 factors identified in the present study were labeled: Needs concerning medical information and treatment decisions (Factor PA1), Needs concerning psycho-spiritual support (Factor PA2), Needs concerning medical support (Factor PA3) and Needs concerning socio-familial support (Factor PA4).

The 4 subscales evidence the need to receive more information and medical assistance, psychological, social and spiritual support correlated with diet and nutrition, in a multidimensional approach addressing the important areas of physical, emotional, social, spiritual functionality, as well as practical needs.

Factor 1 (PA1) - needs concerning medical information and treatment decisions

Effective communication between the medical staff and cancer patients is an important objective in oncology worldwide [39]. Also, the need to be informed was identified as being one of the most

important needs of cancer patients; information must be accessible, relevant and comprehensible [40,41]. However, the presence of deficiencies in providing information to cancer patients was demonstrated [42].

Factor 2 (PA2) - needs concerning psycho-spiritual support

Regarding spiritual needs, recent studies [43,44] documented that patients have unmet spiritual needs and wish them to be addressed as part of health care, with the direct involvement of the medical staff. Unmet spiritual needs were also associated with low quality of life [45] and patient dissatisfaction [43].

Schouet al. reported that breast cancer patients have significantly more reduced emotional, cognitive and social function than women in the general population, even more than 1 year after surgery [46]. At the same time, psychological/emotional needs and the prevalence of emotional problems remain even after the completion of medical treatments [13]. Emotional distress conceptualized as fear of recurrence, anxiety and depression appears as a frequently identified need in breast cancer survivors [47].

The most frequent problems, which persisted during follow-up, and also many years after completion of treatment, were psychological problems, detected in 72.4% of survivors [48]. The results of the study revealed the fact that the prevalence of severe emotional distress was significantly higher among cancer survivors compared to patients who were just diagnosed with cancer (5.6% versus 3.0%, p<0.001), psychological needs remaining an important problem.

Factor 3 (PA3) - needs concerning medical support/assistance

Given that breast cancer diagnosis becomes a chronic condition, due to early diagnostic methods as well as effective medical treatments, breast cancer survivors represent a unique and complex group of patients, who do not only have to fight the long-term effects of cancer treatments, but must also identify and address comorbidities prior to therapy, which most often involve multiple medical support and assistance needs [49].

Factor 4 (PA4) - needs concerning socio-familial support

Close relatives represent the most important source of support for breast cancer patients [50-52]. A number of studies have demonstrated that the patients' perception about their relatives'

emotional involvement and supportive behavior influences adaptation and the recovery process. Patients with stronger social support report a better quality of life, while the absence of support is a risk factor for lower psychological adaptation [53-56].

Other studies [19,24-27] report unmet psychological and daily living needs, followed by unfulfilled information and medical support and assistance needs. In addition, young patients have more needs compared to older patients, i.e., informational needs, more marked symptoms, higher levels of emotional distress, and pragmatic concerns about work and how they will cope with daily life [57]. At the same time, they are more likely to receive systemic adjuvant therapy, which explains the increased symptomatology, and their life development stage seems to contribute to daily life stress, resulting in a lower quality of life [58,59].

An extremely important aspect is the fact that the needs of breast cancer survivors differ in different cultural contexts [6], so that their identification with validated assessment instruments adapted to the target population is required. If it is to expand the discussion and motivation of this research, we mention that even though breast cancer is a more frequent pathology among older women most commonly associated with the aging process, the last years have indicated an increase of number of young women diagnosed with breast cancer. Specialised studies reveal that the mortality rate caused by breast cancer has constantly dropped, with the highest gains among young women, mostly thanks to adjuvant therapies [60]. Therefore, this increasing population of breast cancer survivors deserves our full attention. Breast cancer is the type of cancer most frequently diagnosed in women at reproductive age. Systemic adjuvant therapy is recommended to most women, as it was proved to reduce the risk of recurrence and increase the survival rate. However, there are some less pleasant aspects, and here we refer to the negative impact of systemic adjuvant therapy on fertility, as well as on the further quality of life [61,62]. Specialised literature abounds in studies which attest the fact that many women diagnosed with breast cancer show high levels of distress, anxiety and depression. The clinical response to this heterogeneous disease is very complex [63], and depends on the stage of disease, presence of multifocality [64], type of therapy and subsequently influences the patients phychological response in conjunction with its individual culture [65]. This diagnosis is associated with a significant drop of social, cognitive, emotional and physical performances - a fact

that becomes extremely important when the diagnosis is made at a younger age and it presumes a longer surviving rate. After diagnosing breast cancer, oncology studies suggest that the quality of life is lower among younger women, being at reproductive age [66,67]. According to the specialised literature studies, which have investigated the evaluation of the needs in patients diagnosed with breast cancer, it seems that, among the most claimed needs, are the need of information regarding health [68], the psychological needs [69], the daily, physical and routine needs [70]. Over the last period, due to progress registered in the field of medical treatment and post breast cancer survival rate, the researchers have focused on investigating the needs of breast cancer survivors. According to studies [69,71] there is a disagreement regarding the extent the survivors who continue to experience psychological morbidity after finishing treatment. While most women adapt well to breast cancer, some may have psycho-social needs [72,73].

Exploratory factor analysis used methods appropriate for ordinal items based on the polychoric correlation matrix and a factoring method

robust to skewed item distributions. As a limitation of this study we mention the cross-sectional design and the fact that predictive validity and responsiveness were not assessed. Future studies are necessary to confirm the factor structure of the proposed questionnaire based on longitudinal studies in breast cancer survivors that should determine these psychometric properties of the BCTNAS. Criteria on validity were also not evaluated due to lack of a gold standard needs assessment instrument.

Because there are some items (5 items) with cross-loadings that may be considered questionable, it is recommended to assess whether item revision is feasible and to consider whether more similar items should be added to the scale.

In conclusion, the BCTNAS questionnaire provides a potential instrument to identify and assess the needs of breast cancer patients in the post-treatment period, having a positive impact on the quality of patient care.

Conflict of interests

The authors declare no conflict of interests.

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