

Spirituality and pain in patients with metastatic breast cancer

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Abstract

This observational, cross-sectional and quantitative study, by means of the assessment instruments Brief Pain Inventory, Functional Assessment of Chronic Illness Therapy Spiritual Well-Being and Beck Depression Inventory – Short Form, evaluated the influence of spirituality and depression in the pain perception of patients with metastatic breast cancer. Mean age was 57.3 years. Of the 30 participants, 24 (80%) were treated in a public service, 17 (57%) had been diagnosed with breast cancer for more than 5 years, and 27 (90%) were religious or spiritual. Patients with spiritual well-being scores above the median had lower depressive symptom scores (3 vs. 6; $p=0.021$). The median total score of spiritual well-being showed no significant difference when stratified by median pain perception (31.5% vs. 28.5%; $p=0.405$). Greater spiritual well-being may be related to lower rates of depression.

Keywords: Breast neoplasms. Neoplasm metastasis. Spirituality. Pain perception. Depression. Hospice care.

Resumo

Espiritualidade e dor em pacientes com câncer de mama metastático

Mediante estudo observacional, transversal e quantitativo que utilizou os instrumentos de avaliação Brief Pain Inventory (dor), Functional Assessment of Chronic Illness Therapy Spiritual Well-Being (bem-estar espiritual) e Beck Depression Inventory – Short Form (depressão), busca-se avaliar a influência da espiritualidade e da depressão na percepção de dor de pacientes acometidas por neoplasia de mama metastática. A idade média foi 57,3 anos e, das 30 participantes, 24 (80%) tratavam-se em serviço público; 17 (57%) tinham diagnóstico de câncer de mama há mais de cinco anos; e 27 (90%) realizavam alguma prática religiosa/espiritual. Pacientes com escore de bem-estar espiritual acima da mediana apresentaram menor escore dos sintomas depressivos (3 vs. 6; $p=0,021$). Não houve diferença significativa em relação à mediana do escore total do bem-estar espiritual quando estratificado pela mediana da percepção de dor (31,5% vs. 28,5%; $p=0,405$). Maior manifestação de bem-estar espiritual pode estar relacionada a menores índices de depressão.

Palavras-chave: Neoplasias da mama. Metástase neoplásica. Espiritualidade. Percepção da dor. Depressão. Cuidados paliativos na terminalidade da vida.

Resumen

Espiritualidad y dolor en pacientes con cáncer de mama metastático

Este estudio observacional, transversal y cuantitativo utilizó los instrumentos Brief Pain Inventory (dolor), Functional Assessment of Chronic Illness Therapy Spiritual Well-Being (bienestar espiritual) y Beck Depression Inventory – Short Form (depresión), para evaluar si la espiritualidad y la depresión influyen en la percepción del dolor en pacientes con cáncer de mama metastático. La edad promedio fue de 57,3 años; de las 30 participantes, 24 (80%) recibían atención pública; 17 (57%) tenían diagnóstico de cáncer de mama hace más de cinco años; y 27 (90%) solían tener alguna práctica religiosa/espiritual. Aquellas con puntuación de bienestar espiritual superior a la mediana tuvieron una puntuación más baja de síntomas depresivos (3 vs. 6; $p=0,021$). No hubo diferencias significativas en la mediana de la puntuación total de bienestar espiritual cuando se estratificó por la percepción mediana del dolor (31,5% vs. 28,5%; $p=0,405$). Una mayor sensación de bienestar espiritual se relacionó a bajas tasas de depresión.

Palabras clave: Neoplasias de la mama. Metástasis de la neoplasia. Espiritualidad. Percepción del dolor. Depresión. Cuidados paliativos al final de la vida.

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Breast cancer is the most prevalent neoplasm in women worldwide¹. Despite advances in early detection and understanding of the molecular bases of the disease, 10% of breast cancer patients present distant metastasis at diagnosis², with pain as a significant factor³. Although many studies assess the influence of religiosity and/or spirituality (R/S) on quality of life, little is known about their association with the perception of pain of these patients.

According to data from the Global Cancer Observatory (GCO), in 2020, about 2.3 million women had a breast cancer diagnosis, and 685,000 patients died from the disease worldwide⁴. In the same year, there were 7.8 million women diagnosed with breast cancer who had been under treatment for the previous five years⁴. At the time of diagnosis, approximately 64% of patients had breast cancer at local stage, 27% at regional stage, and 6% at distant stage (metastatic)^{5,6}. Between 20% and 50% of patients with breast cancer complain of pain, a number that increases to 90% in metastatic patients³.

In addition to contemplating an unpleasant sensory experience associated with actual or potential tissue damage, pain is also a negative emotional experience⁷. The frequency and intensity of pain may increase as cancer progresses, causing physical, emotional, spiritual and functional discomfort⁸, making it more complex than just a physical sensation⁹.

Studies on women with breast cancer say that support through R/S can provide care, acting as a motivating force to deal with difficulties and move forward with their ideals of life and coping with the disease⁹⁻¹². However, little is known about the influence of R/S on pain perception.

Understanding pain and spirituality in women with advanced breast cancer can provide information on how to optimize the complex symptom of pain and provide comprehensive care for these women⁹. This study aims to assess the association between spiritual well-being and pain perception in patients affected by metastatic breast cancer.

Method

Study design and location

This is a cross-sectional, observational, analytical study, with a quantitative approach,

conducted through validated questionnaires related to spirituality and pain, applied between October 2020 and March 2021. The sample consisted of women with metastatic breast cancer in outpatient follow-up in the city of Joinville/SC, Brazil. The patients were selected in the two main outpatient clinics of the city, one public clinic—Oncology Outpatient Clinic of São José Municipal Hospital—and one private clinic—Oncology Outpatient Center of Unimed. Both outpatient clinics serve the entire region of Joinville/SC, with about 600,000 inhabitants. All participants signed an informed consent form, as approved.

Sampling, inclusion criteria, and exclusion criteria

The sample size was obtained based on survey of medical records of both outpatient clinics. All female patients aged 18 years or older, literate, without recognized cognitive impairment and with international disease code C50.9 (malignant breast neoplasm, unspecified) at stage IV under regular medical follow-up in the last six months were invited to participate in the study by telephone contact. The patients who agreed to participate answered the proposed instruments in an online form on Google's Form platform, due to the isolation imposed by the COVID-19 pandemic.

Variables collected and instruments used

Sociodemographic variables such as age, education and marital status were collected. Time since diagnosis, places and numbers of metastatic sites, and use of medication for pain control were also evaluated.

To evaluate signs of depression, we used the Beck Depression Inventory – Short Form (BDI-SF)¹³, a depression self-assessment measurement consisting of 13 items related to depression symptoms that has been validated in the Brazilian population and in cancer patients¹⁴. The sum of BDI-SF score above four is suggestive for mild symptoms of depression.

The Brief Pain Inventory (BPI) was also used to assess the level and repercussion of pain in patients¹⁵. We used items 3 to 9, with items 3 to 8 to assess pain intensity and the seven sub-items of item 9 to assess pain interference in

aspects of life (activities in general, mood, ability to walk, sleep, work, interpersonal relationships, and enjoyment of life).

Pain intensity is assessed by patients with reference to the last 24 hours, on a numerical scale from 0 (absence of pain) to 10 (as strong as can be imagined), where the total average score is calculated based on items 3-6. Pain interference in aspects of life is also assessed on a numerical scale from 0 (non-interference) to 10 (complete interference), where the average score is calculated based on the seven sub-items¹⁶.

R/S was assessed through questions formulated by the researchers to better understand the involvement in religious activities and through the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being questionnaire (Facit-Sp-12)¹⁷. Facit-Sp-12 is a scale that assesses spiritual well-being, centered on the existential aspects of spirituality and faith, not limited as to the possibility of being answered by agnostics or atheists. The instrument is subdivided into two scales: the first (“meaning/peace”) with eight items; and the second (“faith”) with four items. The total score is obtained by summing up the scores of the 12 items. The higher the score, the greater the spiritual well-being¹⁷.

Statistical analysis

Numerical variables were presented as average and standard deviation or median and minimum and maximum variation, according to distribution. The exposure studied, R/S, was assessed by stratifying the sample by the median of the total Facit-Sp-12 score (≤ 33 or > 33). The outcome considered, pain perception, was evaluated in a binary manner using the median of the total BPI score (≤ 26.5 or > 26.5). Other variables of interest were considered in relation to the exposure and outcome variable through the chi-square test for

categorical variables and Mann Whitney test for numerical variables.

Facit-Sp-12 scores were correlated with BPI scores by simple linear regression. The odds ratio between spiritual well-being (median for Facit-Sp-12) and pain perception (median for BPI score) was evaluated in a crude manner and adjusted for potential confounders by the Mantel-Haenszel method. Statistical significance was considered when $p < 0.05$ and the analyses were performed in the STATA statistical program version 15.

Results

Metastatic breast cancer was found in 26 (12%) of the 221 patients in regular follow-up at the private outpatient clinic and in 117 (10%) of the 1,153 patients in regular follow-up at the public outpatient clinic. Of the total sample of 143 patients, considering both services, 30 (21%) answered the online questionnaire (20% from the private service and 80% from the public service). The mean age was 57 years; 28 (93.3%) were white; 18 (60%) were married or cohabiting; 17 (57%) had time since diagnosis above five years, and the main metastasis site was bone (43%).

Use of some type of analgesic was found in 19 (63%) women. Pain perception evaluated in the total sample, through BPI (minimum 0, maximum 10), resulted in medians of 2 and 2.2, respectively, for pain intensity and pain interference in aspects of life (total score of 2.6). The percentage for pain relief within the last 24 hours was 80%.

As for depression symptoms, the median found in BDI-SF was 4.5, with 12 (40%) participants with mild symptoms and 3 (10%) participants with moderate symptoms of depression. Other characteristics are presented in Table 1.

Table 1. General characteristics of the sample (n=30)

Variables	Absolute number or mean	% or SD
Age	57.3	17.1
Hospital of service	8	53
Private	6	20.0
Public	24	80.0

continues...

Table 1. Continuation

Variables	Absolute number or mean	% or SD
White skin color, yes	28	93.3
Married or cohabiting, yes	18	60.0
Time of marriage or cohabitation, years	24.9	13.1
Years of education	9.6	4.8
Time since neoplasm diagnosis, years	-	-
1-5 years	13	43.0
>5 years	17	57.0
Number of metastasis sites	1.9	0.8
Metastasis sites *	-	-
Bone	24	42.9
Lung	8	14.3
Liver	11	19.6
Other	13	23.2
Beck Depression Inventory - Short Form [median; IQR]	4.5	3.0/9.0
Use of analgesics, yes	19	63.3
Simple analgesics	11	36.7
Weak opioid ¹	7	23.3
Strong opioid ²	7	23.3
Brief Pain Inventory	11	40.7
Pain intensity [median; IQR]	2.0	1.2/4.4
Pain interference [median; IQR]	2.2	0.6/6.3
Pain relief in the last 24h by % [median; IQR]	80	20/100
Total BPI score ³ [median; IQR]	2.6	1.0/5.4

*patient could mark more than one site; 1-codeine, tramadol; 2-morphine, methadone

SD: standard deviation; BPI: Brief Pain Inventory; IQR: interquartile range (25/75 percentile)

The Catholic religion was the most prevalent (43%) among the 28 patients who reported having some type of religion (93%). Regarding religious or spiritual activity, 27 (90%) patients had some regular R/S activity, which was performed three or more times a week in 41% and in a group in 63% of the sample. Religiosity/Spirituality was considered very important by 27 (90%) participants.

As for spiritual well-being assessed by the Facit-Sp-12 instrument, the average total score was 33 (minimum 0, maximum 48); with regard to the meaning/peace domain, the average was 19.5 (minimum 0, maximum 32 points); in the faith domain, 14 (minimum 0, maximum 16 points).

Evaluation of the main variables and pain perception stratified by the median of the total Facit-Sp-12 score (Table 2) found a trend for lower education in patients with lower R/S-related quality of life (7.4 vs. 10.8 years of education, $p=0.077$). Patients in the group with Facit-Sp-12 score above the median showed lower depression symptom score (BDI-SF 3.0 vs. 6.0; $p=0.021$).

Although not significant, it was observed that women with a spiritual well-being score above the median had longer time of cohabitation, shorter time since neoplasm diagnosis, lower use of pain medications, and lower median for pain intensity and pain interference.

Table 2. Analysis of the variables by the Facit-Sp-12 median (n=30)

Variable	Facit-Sp-12 median ≤33		Facit-Sp-12 median >33		p-value
	Absolute number or mean	% or SD	Absolute number or mean	% or SD	
Age	57.4	19.1	57.0	13.7	0.611
Married/cohabiting, yes	10	52.6	8	72.7	0.442
Time married/cohabiting, years	21.4	10.4	28.7	15.4	0.167
Time of education, years	10.8	4.1	7.4	5.4	0.077
Time since diagnosis					0.132
1-5 years	6	31.6	7	63.6	
>5 years	13	68.4	4	36.4	
Hospital					1.000
Private	4	21.1	2	18.2	
Public	15	78.9	9	81.8	
R/S activity, yes	16	84.2	11	100.0	0.279
Number of metastasis sites	1.7	0.8	2.1	0.7	0.250
Beck Depression Inventory – Short Form [median; IQR]	6.0	4.0/10.0	3.0	2.0/4.0	0.021
Use of medication to control pain, yes	14	73.7	5	45.5	0.238
Simple analgesics	6	31.6	5	45.5	-
Weak opioid analgesics	4	21.1	3	27.3	-
Strong opioid analgesics	7	36.8	0	0	-
BPI pain intensity [median; minimum/maximum]	3.5	1.0/5.2	1.75	1.2/3.0	0.388
BPI pain interference [median; interquartile range]	4.3	0/6.9	2.0	0.9/5.1	0.681
Total BPI score3 [median; IQR]	3.9	1.0/6.1	2.1	0.9/4.6	0.518
Pain relief in the last 24h in % [median; interquartile range]	80	20/90	80	70/100	0.672

Facit-Sp-12: Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being; SD: standard deviation; R/S: religiosity and/or spirituality; BPI: Brief Pain Inventory; IQR: interquartile range (25/75 percentile)

The variables associated with lower pain perception (BPI median ≤2.6) are presented in Table 3. There was no significant difference in relation to the median for the total spiritual well-being score (Facit-Sp-12) when stratified between groups above or below the median for pain perception (BPI). Although not significant,

the group above the BPI median used strong opioids more frequently than the group below the median (40% vs. 6.7%). Linear regression between total Facit-Sp-12 scores and total BPI score values showed no significant correlation (β coefficient = -0.02; 95%CI -0.83 to 0.41; $p=0.492$).

Table 3. Analysis of the variables by the Brief Pain Inventory median

Variable	BPI median ≤ 2.6		BPI median > 2.6		p-value
	Absolute number or mean	% or SD	Absolute number or mean	% or SD	
Age	50.7	11.8	54.22	16.2	0.693
Married/cohabiting, yes	8	53.3	10	66.70	0.709
Time married/cohabiting, years	25.2	13.4	24.6	13.7	0.736
Time of education, years	10.3	5.4	8.9	4.3	0.393
Time since diagnosis	-	-	-	-	0.461
1-5 years	8	53.3	5	33.3	-
>5 years	7	46.7	10	66.7	-
Hospital	-	-	-	-	0.648
Private	4	26.7	2	13.3	-
Public	11	73.3	13	86.7	-
R/S activity, yes	14	93.3	13	86.7	1.000
Number of metastasis sites	2	1/3	2	1/2	0.329
Beck Depression Inventory – Short Form [median; IQR]	3.5	2.2/7.5	5.0	2.0/9.5	0.204
Use of medication to control pain, yes	7	46.7	12	80.0	0.130
Simple analgesics	5	33.3	6	40.0	-
Weak opioid analgesics	4	26.7	3	20.0	-
Strong opioid analgesics	1	6.7	6	40.0	-
Beck Depression Inventory – Total Score [median; interquartile range]	4	3/6	8	3/10	0.217
Facit-12 Peace domain, total score	19.2	14.0/20.0	16.0	16.0/19.0	0.136
Facit-12 Faith domain, total score	12.2	8.0/13.5	11.5	9.0/15.0	0.675
Facit-12 Total Score	31.5	22.0/35.0	28.5	27.0/34.0	0.405

BPI: Brief Pain Inventory; SD: standard deviation; Facit-Sp-12: Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being; IQR: interquartile range (25/75 percentile); R/S: religiosity and/or spirituality

The highest R/S score (group with Facit-Sp-12 median > 33) showed no association with a lower pain score (BPI median ≤ 2.6), crude OR = 0.42 (95%CI 0.08-2.04; $p = 0.264$). After adjusting for potential confounders in a bivariate manner, the highest spiritual well-being score remained not significantly associated with the lower BPI median: adjusted for marital status (OR_{M-H} = 0.35; 95%CI 0.06-1.88; $p = 0.201$), for use of pain medication (OR_{M-H} = 0.59; 95%CI 0.12-2.95; $p = 0.517$), for presence of signs of depression (OR_{M-H} = 0.61; 95%CI 0.10-3.53; $p = 0.577$)

or for time of illness (OR_{M-H} = 0.52; 95%CI 0.11-2.50; $p = 0.411$).

Discussion

This study shows that most patients with breast cancer adopt some R/S activity as a way of coping with the disease. In the sample studied, a higher spiritual well-being level was not significantly related to a lower pain perception, but to lower depression symptom scores.

In this analysis, a higher spiritual well-being score was not related to a lower pain perception, although patients with a spiritual well-being score above the median use fewer strong analgesics than those with a score below the median. Few R/S-focused intervention studies have been conducted in patients with advanced breast cancer^{18,19}.

A study on women with advanced breast cancer undergoing psychotherapeutic intervention with a focus on enhancing inner strength through psychological techniques showed that the patients benefited from this use in situations of anxiety and despair due to the disease, but there was no real benefit with regard to aspects related to R/S¹⁸. On the other hand, when the intervention is guided by a professional with specific training in R/S (chaplain), the findings can be more comprehensive, contributing to the improvement of aspects related to anxiety, inner peace, meaning of life, and acceptance¹⁹.

In this research, most patients belonged to a religion, with predominance of those with a Christian basis. In addition, most were involved with practices related to R/S that they considered very important in the context of the disease. Studies have focused on the relation between spirituality, health and quality of life in chronic patients with advanced disease²⁰⁻²³ and some theorists consider that spirituality can constitute a way to re-signify the meaning of life and death¹¹.

Cancer patients often face emotional and spiritual conflicts, in addition to the fear of death. During the illness process, these patients adopt different ways of dealing with the disease, going through several stages, such as the five stages described by Elisabeth Kübler-Ross²⁴: partial or total denial of the disease, anger/revolt, bargaining, depression and acceptance. The existential and spiritual aspects of cancer patients during the illness process become tools for coping with the disease and may be related to spirituality, depression and quality of life¹¹.

Spirituality meets the need to fill the explanatory void of the disease that is installed or of the death that is approaching. Therefore, it can be understood as a pursuit of completeness, a closure of the "being-in-the-world," mitigating pain and favoring the painful acceptance of mourning by constituting a type of help that transcends oneself¹¹.

It is known that cancer patients need to have their physical discomforts relieved and controlled so that their spiritual needs can be better understood and fulfilled. A person with severe pain will not be able to reflect on the meaning of their existence, as physical suffering becomes a constant threat to the feeling of plenitude desired by dying patients²⁵.

In the study conducted in this work, more than half of the sample reported using analgesics, and most obtained relief in the last 24 hours prior to the analysis, as assessed by the BPI instrument. Thus, lack of adequate control of analgesia does not seem to impact the non-association found between R/S and pain. However, considering that most of the sample that agreed to answer the research practiced some activity involving R/S, one cannot rule out a selection bias of the sample, which decreases the influence of non-practitioners of R/S activities on the outcome of pain.

Another aspect found was the association of R/S with lower presence of depression symptoms. It is known that higher spiritual well-being is associated with less suffering, greater adaptation to the disease and, consequently, better quality of life^{20,25}.

The prevalence of depression in women with breast cancer has been quite variable, being reported by 1.5% to 30% of these patients^{13,26}. The diagnosis of cancer represents an emotional burden, but depression can also be related to characteristics inherent to the patient, in addition to those related to cancer and its treatment²⁶.

On the other hand, it is known that evaluating R/S through a scale can reflect concepts that also permeate psychological or moral aspects²⁷. The questions of the FACIT-Sp-12 instrument related to inner peace can involve meanings and questions very close to those found in the instrument that assesses quality of life and/or depression symptoms²⁷. This association could explain, in part, the relation found between higher R/S scores and individuals with lower depression symptoms.

This study has limitations that need to be considered: 1) due to the isolation imposed by the COVID-19 pandemic, the electronic strategy for answering the questionnaire may have limited the participation of patients with lower education or difficulty in accessing digital media; 2) although age,

time since diagnosis, number and sites of metastases are similar to the recognized profile of other studies carried out in Brazil^{28,29}, it is not possible to rule out a selection bias of the sample.

Although it was not possible to better detail the doses and schedule of analgesics used by the patients, most of them belonged to the same outpatient clinic and were subject to a similar routine of analgesic prescription, which may, in part, minimize measurement errors.

This study presents important information about the greater involvement in R/S practices by advanced-stage breast cancer patients. This finding may reinforce the need for the health care team to better understand the faith beliefs and practices of these patients, constituting a support point for coping with the disease.

Final considerations

The pursuit of involvement with R/S aspects is quite present in patients with metastatic breast cancer. In the sample studied, greater spiritual well-being was not related to lower pain perception; however, it was found that R/S-related aspects may have some influence on depression symptoms in these patients. Such association requires further assessment as to their impact on pain perception.

Future studies may assess interventions that can increase spirituality, such as meditative practices, meaning-centered psychotherapy and music therapy, related to experiences of the disease—specifically pain and depression.

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Participation of the authors

All authors participated in the conception and design of the study, as well as in data collection, analysis and interpretation of results. The article writing and final approval were conducted together.

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