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ORIGINAL ARTICLE

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Adjuvant vs. neoadjuvant chemotherapy: quality of life and psychosocial variables in women with breast cancer

BACKGROUND
A breast cancer diagnosis with all that it entails is a highly stressful moment for women. Chemotherapy is one of the main treatments for this type of cancer, and it also brings several side effects and physical changes that often lead to emotional distress and adjustment difficulties. This study aims to analyse the quality of life and psychosocial variables in women with breast cancer submitted to different chemotherapy procedures.

PARTICIPANTS AND PROCEDURE
We used a convenience sample of 50 women with breast cancer submitted to adjuvant or neoadjuvant chemotherapy. Women were interviewed after obtaining their informed consent. The instruments used were: a sociodemographic and clinical questionnaire, Functional Assessment of Cancer Therapy–Breast, Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being–12-Item, Positive and Negative Affect Schedule, and Brief Resilient Coping Scale.

RESULTS
Participants demonstrated reasonable levels of all dimensions analysed, except for resilient coping, which was relatively low. Neither treatment significantly improves quality of life or any other psychosocial variable more than the other. Most of the variables were correlated, especially quality of life.

CONCLUSIONS
The results show that the choice of treatment according to the most favourable objective criteria (e.g., stage, patients' characteristics) and multidisciplinary work with the integration of a psychologist are vital to achieve good outcomes and the best possible quality of life. Interesting insights were obtained, such as the need for health literacy to make informed decisions and the variation of needs during the cancer course. Future research could use a longitudinal approach and a more representative sample.

KEY WORDS
cancer; treatments; well-being; health care

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BACKGROUND

Cancer is a chronic disease that is considered a serious health problem affecting public health (Karimi et al., 2020). Experiences of a breast cancer (BC) diagnosis and of cancer treatments are highly stressful for most women (Dooley et al., 2017).

The modalities of treatment for BC include different types of surgery, radiotherapy, chemotherapy, and hormonotherapy (Kreitler, 2019). Chemotherapy (CT) can be administered after other treatments, such as surgery and radiotherapy, assuming, in this case, the role of an adjuvant therapy (Beaver et al., 2016). As such, it is used to reduce the possibility of tumour recurrence (Huang et al., 2019).

However, chemotherapy can also be used as first-line therapy, before surgery, being, therefore, a neoadjuvant therapy (Beaver et al., 2016). Normally, neoadjuvant or primary chemotherapy can be used as a downstaging strategy or as a downsizing strategy (Pessoa et al., 2007). As a downstaging strategy, CT is used in patients with locally advanced BC to reduce the size of the tumour to make it operable. When the relationship between tumour dimension and breast volume ratio requires a mastectomy, an attempt is made to reduce the tumour and increase the use of breast-conserving surgery, which is considered a downsizing strategy (Pessoa et al., 2007).

Nowadays, despite all the advances in this field, CT involves many side effects and extended treatments, sometimes even with hospitalizations (Coelho et al., 2017). Consequently, facing BC is a very intense experience that causes various challenges accompanied by stress, emotional distress, and adjustment difficulties (Boinon et al., 2014).

Therefore, adjustment to cancer tends to be influenced by the domains mentioned previously and others, such as: spirituality, regardless of the religious affiliation, since it also helps with the management of the symptoms caused by treatments (Kumar & Parashar, 2015; Purnell & Andersen, 2009); resilience, since women who maintain good levels of psychological adjustment over time demonstrate that they have good levels of resilience (Knobf, 2007); adaptive coping, because good adjustment to cancer shows that individuals cope with the disease in an adaptive way (Macía et al., 2020); positive and negative affect, since a lower level of positive affect and a higher level of negative affect are related to psychological maladjustment, while a higher level of positive affect and a lower level of negative affect are associated with psychological adjustment (Cerezo et al., 2020); and, social support, which has been recognized as an important predictor of better quality of life (QoL) in cancer patients (Manning-Walsh, 2005).

Only one study was found in literature that analysed and compared both groups of chemotherapy and assessed their QoL. This study determined that the groups differed in terms of QoL, with the group of neoadjuvant chemotherapy having the worst results (Coelho et al., 2017). As such, in order to contribute to more scientific knowledge about these two chemotherapy procedures that are not commonly compared in the literature and their psychological effects in women with BC, this study has as a general objective to analyse the QoL and psychosocial variables of two different chemotherapy procedures (adjuvant and neoadjuvant) in women with BC. The specific objectives are: (a) to describe the levels of quality of life, positive and negative affect, resilient coping, spirituality, and the perception of social support of women with BC submitted to chemotherapy; (b) to examine whether there are differences in these psychosocial dimensions depending on the type of CT administered; and (c) to examine whether there are associations among these variables. This project is a pilot study, based on a quantitative and cross-sectional approach, with a descriptive, exploratory, and comparative nature.

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

The sample for this study was selected based on a non-probabilistic convenience sampling method and it included 50 women with BC who had been or were being submitted to CT at the Centro de Mama of Centro Hospitalar Universitário de São João (CHUSJ; Porto, Portugal). Of these women, 25 were submitted to adjuvant CT, while the other 25 were submitted to neoadjuvant CT.

The inclusion criteria for participating in the study were: (a) to be 18 years old or older; (b) to be female; (c) to have primary breast cancer; (d) to have undergone or to be undergoing either adjuvant or neoadjuvant CT, without starting another subsequent treatment (e.g., radiotherapy, surgery); (e) absence of recurrence or metastasis; (f) absence of major psychiatric disorders; (g) to be able to speak, read and comprehend Portuguese.

MEASURES

A sociodemographic and clinical questionnaire was administered to collect sociodemographic (e.g., age, nationality, marital status, education level) and clinical information (e.g., diagnosis date; type of CT received; duration, in months, of CT up to the time of the interview) about the participants. In addition, four questions regarding women's perceptions of social support were included. One of the four questions was formulated by the authors, while

the three others were taken from the Social Support Satisfaction Scale developed by Ribeiro (1999). The higher the score is, the higher is the perceived social support.

The Functional Assessment of Cancer Therapy–Breast (FACT-B; Brady et al., 1997) comprises 37 items, 27 of which are related to health-related QoL (HR-QoL) associated with cancer (from Functional Assessment of Cancer Therapy–General [FACT-G; Cella et al., 1993]). This scale assesses physical, functional, emotional, and social/family well-being plus 10 items that are related to BC specific concerns. The higher the scores are, the higher is the well-being and the HR-QoL. The Cronbach's α for this scale was .92 in the present study.

The Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being–12-Item (FACIT-Sp-12; Fitchett et al., 1996; Peterman et al., 2002) was used to assess spiritual well-being. This scale is divided into two subscales: (a) Meaning/Peace, and (b) Faith. The higher the scores are, the greater is the spiritual well-being. In the present study, the scale had a Cronbach's α of .81.

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988; Portuguese version from Galinha & Pais-Ribeiro, 2005) was administered to assess participants' level of positive affect and negative affect. PANAS is a self-administered questionnaire comprising 20 items divided into positive affect (10 items) and negative affect (10 items). The higher the scores are, the more present is positive or negative affect. In the present study, the positive affect subscale demonstrated a Cronbach's α of .88 and the negative affect subscale α of .89.

The Brief Resilient Coping Scale (BRCS; Sinclair & Wallston, 2004; Portuguese version by Ribeiro & Morais, 2010) is a self-response scale that includes four items to assess the ability to cope with stress in an adaptive way. A score below 13 indicates a low level of resilience and a score higher than 17 suggests a high level of resilience. In the present study, BRCS had a Cronbach's α of .76.

PROCEDURE

Firstly, in order to carry out this investigation, permission was sought from the authors of the scales intended to be used. After obtaining those authorizations, approval for the project was then requested from the Ethics Committee of CHUSJ, which was given (number 459/20). Subsequently, contact was initiated with the patients through a psychologist of the institution. The invitation to participate was made when the patients went to the service for previously scheduled appointments, treatments, or examinations, so that no special travel was necessary. Women participated in the study after their informed consent was appropriately obtained and the entirety of the procedure was in accordance with the World Medical Association's Declaration of Helsinki.

Lastly, statistical treatment of the data was performed using SPSS Statistics, version 27.0.1. Data were firstly subjected to descriptive analysis. Afterwards, the Mann-Whitney *U* test was used to assess whether the groups differed significantly in the continuous sociodemographic (i.e., age) and clinical (i.e., time of chemotherapy) variables and in the psychosocial variables. Finally, Spearman's correlation coefficient was used to examine the relationships among the variables.

RESULTS

The demographic and clinical characteristics of the sample, regarding categorical variables, can be found in Table 1.

The total sample mainly comprises married and employed Portuguese women. Regarding education level, the majority have primary school education (n = 15) or a university degree (n = 15), followed by only having secondary school education. Most women had a history of cancer in the family.

The continuous variables of sociodemographic and clinical characteristics can be found in Table 2. Age of the total sample varied between 30 and 68 years of age, with the mean being 49.58 years (SD = 9.29). In the adjuvant CT group, the mean was of 52.28 years of age (SD = 9.88) and in the neoadjuvant CT group it was of 46.88 years (SD = 7.97). The total sample has a mean of 6.70 months (SD = 1.53) since diagnosis of BC; the adjuvant CT group 7.33 months (SD = 1.71); and the neoadjuvant CT group 6.00 months (SD = 0.93). Regarding the duration of CT, the total sample had a mean of 5.18 months of CT administration (SD = 0.72); the adjuvant CT group had a mean of 4.96 months (SD = 0.68); and the neoadjuvant CT group had a mean of 5.40 months (SD = 0.71).

In order to verify whether any differences existed in age, time since diagnosis and time of chemotherapy of women of both CT groups, the Mann-Whitney *U* test was used. A statistically significant difference in age was found between the adjuvant CT group (M = 52.28, SD = 9.88) and the neoadjuvant CT group (M = 46.88, SD = 7.97), U = 210.00, p = .047. Regarding time since diagnosis, a statistically significant difference between the two groups was found (adjuvant CT group: M = 7.33, SD = 1.71; neoadjuvant CT group: M = 6.00, SD = 0.93), U = 132.50, p = .003. Regarding time of chemotherapy, a statistically significant difference was also found between the adjuvant CT group (M = 4.96, SD = 0.68) and the neoadjuvant CT group (M = 5.40, SD = 0.71), U = 412.00, p = .034.

Table 1

Sociodemographic and clinical characteristics (categorical variables)

Characteristics	Adjuvant chemotherapy		Neoadjuvant chemotherapy		Total	
	n	%	*n*	%	*N*	%
Nationality						
Portuguese	25	100.00	22	88.00	47	94.00
Brazilian	0	0	2	8.00	2	4.00
Angolan	0	0	1	4.00	1	2.00
Marital status						
Single	1	4.00	3	12.00	4	8.00
Married	20	80.00	11	44.00	31	62.00
Non-marital partnership	2	8.00	2	8.00	4	8.00
Divorced	1	4.00	7	28.00	8	16.00
Widowed	1	4.00	2	8.00	3	6.00
Education level						
1st-6th years	7	28.00	8	32.00	15	30.00
7th-11th years	7	28.00	5	20.00	12	24.00
12th year	4	16.00	4	16.00	8	16.00
University degree	7	28.00	8	32.00	15	30.00
Employment status						
Employed	15	60.00	16	64.00	31	62.00
Unemployed	6	24.00	8	32.00	14	28.00
Retired	4	16.00	1	4.00	5	10.00
Family history of cancer						
Yes	21	84.00	16	64.00	37	74.00
No	4	16.00	9	36.00	13	26.00

Note. $N = 50$; $n = 25$ for each group.

Table 2

Sociodemographic and clinical characteristics (continuous variables)

	Adjuvant CT			Neoadjuvant CT			Total		
	Age	Time since Dx	Time of CT	Age	Time since Dx	Time of CT	Age	Time since Dx	Time of CT
n	25	24	25	25	22	25	50	46	50
M	52.28	7.33	4.96	46.88	6.00	5.40	49.58	6.70	5.18
SD	9.88	1.71	0.68	7.97	0.93	0.71	9.29	1.53	0.72
Mdn	53	7.00	5	48	6.00	5	49.50	6.00	5
Min	32	5	4	30	5	4	30	5	4
Max	68	12	6	59	8	7	68	12	7

Note. CT – chemotherapy; Dx – diagnosis.

Table 3

Psychosocial characteristics of participants

Variables	Adjuvant chemotherapy					Neoadjuvant chemotherapy					Total				
	M	*SD*	*Mdn*	Min	Max	*M*	*SD*	*Mdn*	Min	Max	*M*	*SD*	*Mdn*	Min	Max
Social support	18.52	1.48	19	16	20	18.08	0.25	18	12	20	18.30	1.90	19	12	20
Physical WB	17.68	7.05	17	0	28	14.48	7.00	15	0	26	16.08	7.14	16	0	28
Social WB	21.89	4.48	23	9	28	21.14	5.21	22	6	28	21.52	4.82	22	6	28
Emotional WB	17.80	5.24	19	4	24	16.80	3.87	18	7	22	17.30	4.59	18.5	4	24
Functional WB	15.88	5.43	15	5	26	15.76	4.91	17	5	25	15.82	5.12	16	5	26
Additional BC concerns	24.56	6.12	24	15	36	22.24	6.11	23	12	33	23.40	6.16	24	12	36
Total QoL	97.81	22.01	94	57	139	90.42	18.78	93	44	122	94.12	20.59	93.3	44	139
Meaning/Peace	24.28	5.78	24	13	32	21.88	5.59	23	10	31	23.08	5.75	23.5	10	32
Faith	11.44	3.06	12	6	16	10.72	3.70	12	3	16	11.08	3.38	12	3	16
Spiritual WB	35.72	7.24	34	19	48	32.60	7.53	35	14	43	34.16	7.48	34.5	14	48
Positive affect	27.48	7.92	26	16	42	27.68	8.63	31	10	40	27.58	8.20	26.5	10	42
Negative affect	18.76	7.97	17	11	32	19.84	7.33	18	10	37	19.30	7.60	18	10	37
Resilient coping	14.44	3.96	14	7	20	14.08	3.33	15	6	20	14.26	3.62	14	6	20

Note. WB – well-being; BC – breast cancer; QoL – quality of life.

PSYCHOSOCIAL CHARACTERISTICS OF PARTICIPANTS

Regarding the first specific objective outlined for this study, Table 3 presents the scores of the psychosocial characteristics of the study participants for both adjuvant and neoadjuvant CT groups and for the total sample.

Regarding social support, the total sample shows a mean score of 18.30 (*SD* = 1.90). This result is good since it is quite close to the maximum value of the range for these questions about social support (range: 0-20). Regarding the subscales of the FACT-B, the scores for physical and functional well-being and additional breast cancer concerns are moderately low in the total sample. The scores for social well-being and emotional well-being are moderate. Considering the total score of FACT-B, both groups and the total sample showed moderate results of QoL.

In FACIT-Sp-12, women showed moderate scores in the faith subscale (*M* = 11.08, *SD* = 3.38), in the meaning/peace subscale (*M* = 23.08, *SD* = 5.75) and in the total score of the scale (*M* = 34.16, *SD* = 7.48).

Regarding positive and negative affect, the total sample demonstrated a higher mean score for positive affect (*M* = 27.58, *SD* = 8.20) than for negative affect (*M* = 19.30, *SD* = 7.60). According to the authors of the scale, the higher the score is, the more prevalent is positive affect or negative affect (Galinha & Pais-Ribeiro, 2005). Therefore it can be concluded that women show a moderate presence of positive affect and a relatively low presence of negative affect.

Table 4

Differences between the chemotherapy groups

Variables	*U*	*p*
Social support	298.00	.769
Physical WB	224.50	.087
Social WB	291.00	.675
Emotional WB	244.00	.182
Functional WB	308.00	.930
Additional BC concerns	256.50	.276
Total QoL	259.50	.304
Meaning/Peace	236.50	.139
Faith	277.50	.493
Spiritual WB	254.00	.256
Positive affect	320.00	.884
Negative affect	358.00	.376
Resilient coping	303.00	.853

Note. WB – well-being; BC – breast cancer; QoL – quality of life.

Lastly, in terms of resilient coping, the mean scores in both groups and in the total sample were slightly above the cut-off point (< 13) that the authors defined for low resilient individuals (Ribeiro & Morais, 2010).

DIFFERENCES BETWEEN THE ADJUVANT CHEMOTHERAPY AND NEOADJUVANT CHEMOTHERAPY GROUPS

In order to achieve the second specific objective of this study, it was assessed whether any differences existed between the chemotherapy groups, through the Mann-Whitney *U* test. Table 4 presents the results of this analysis.

As shown in Table 4, no significant differences were found in the psychosocial characteristics of women who had been or were being submitted to adjuvant chemotherapy or to neoadjuvant chemotherapy.

RELATIONSHIPS AMONG SOCIODEMOGRAPHIC AND PSYCHOSOCIAL VARIABLES

Since no statistically significant differences were found between the two CT groups, it was decided to assess the relationships among the variables for the entire group of participants. Thus, Table 5 presents the results of the Spearman's correlation coefficient, calculated to determine whether any correlations existed between age, time of chemotherapy and the scores obtained in each subscale.

For age, there was only found a significant correlation with faith, with the results showing a medium, positive correlation between the two variables. Regarding the time of chemotherapy, a significant correlation was not found with any of the other variables. Social support correlated positively with physical, social, and functional well-being, QoL, faith and spirituality.

Physical well-being had a positive correlation with the other subscales of FACT-B, QoL, peace, spiritual well-being, and positive affect. However, it correlated negatively with negative affect. Social well-being showed a positive correlation with emotional and functional well-being, QoL, peace, spiritual well-being, positive affect, and resilient coping. Emotional well-being had a negative correlation with negative affect; however, it correlated positively with functional well-being, additional breast cancer concerns, QoL, peace, spiritual well-being, positive affect, and resilient coping.

Functional well-being correlated positively with additional BC concerns, QoL, peace, spiritual well-being, positive affect, and resilient coping, and correlated negatively with negative affect. Additional BC concerns had a negative correlation with nega-

Table 5

Correlations between age, time of chemotherapy, and psychosocial characteristics

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	–														
2	−.14	–													
3	−.06	.10	–												
4	−.01	.04	.37**	–											
5	−.05	.02	.31*	.15	–										
6	−.11	.07	.21	.54**	.37**	–									
7	−.17	.01	.28*	.42**	.53**	.69**	–								
8	.20	−.10	.13	.49**	.24	.62**	.49**	–							
9	−.06	.02	.33*	.72**	.54**	.85**	.80**	.75**	–						
10	.13	−.11	.19	.45**	.41**	.73**	.64**	.72**	.75**	–					
11	.32*	−.22	.30*	.15	.26	.11	.11	.25	.19	.25	–				
12	.27	−.19	.30*	.39**	.46**	.56**	.50**	.65**	.63**	.85**	.68**	–			
13	−.01	.07	.20	.31*	.47**	.39**	.55**	.39**	.56**	.50**	.40**	.59**	–		
14	.10	.02	−.01	−.51**	−.22	−.70**	−.55**	−.67**	−.72**	−.61**	−.13	−.46**	−.35*	–	
15	−.05	.07	.27	.07	.29*	.46**	.41**	.27	.38**	.43**	.35*	.47**	.42**	−.33*	–

Note. 1 – age; 2 – time of chemotherapy; 3 – social support; 4 – physical well-being; 5 – social well-being; 6 – emotional well-being; 7 – functional well-being; 8 – additional breast cancer concerns; 9 – quality of life; 10 – peace; 11 – faith; 12 – spiritual well-being; 13 – positive affect; 14 – negative affect; 15 – resilient coping. $^{*}p < .05$, $^{**}p < .01$.

tive affect and positive correlations with QoL, peace, spiritual well-being and positive affect. A positive correlation was also found between QoL and peace, spiritual well-being, positive affect and resilient coping. However, QoL and negative affect were negatively correlated.

The Peace subscale showed a positive correlation with spiritual well-being, positive affect, and resilient coping and a negative correlation with negative affect. The Faith subscale positively correlated with spiritual well-being, positive affect, and resilient coping. Spiritual well-being showed a positive correlation with positive affect and resilient coping, and a negative correlation with negative affect.

Regarding positive affect, a negative correlation with negative affect and a positive correlation with resilient coping were found. Lastly, negative affect correlated negatively with resilient coping.

DISCUSSION

This study aimed to analyse the QoL and psychosocial variables in women with BC submitted to distinct treatment procedures (i.e., adjuvant and neoadjuvant chemotherapy) and had as specific objectives to describe the levels of quality of life, positive and negative affect, resilient coping, spirituality and the perception of social support of these women; to examine whether any differences existed in these psychosocial correlates among the chemotherapy groups; and whether there were associations among the variables.

Regarding family history of cancer, it was found that most of the women in the total sample had a family history of cancer. According to the literature, women who had cancer history in the family demonstrated significantly more symptoms of depression than those who did not (Wevers et al., 2020). On the other hand, a study of Meiser et al. (2018) revealed that women without family history maintained the levels of anxiety for longer than those who did not and revealed more regret regarding treatment decisions. As such, it seems that having a family history may increase depression symptoms, especially if that history has had a poor outcome, which can make women more pessimistic about the course of their cancer and/or if women are worried about genetic risk for themselves and possibly for descendants (Rabin et al., 2007). However, it may also have a good impact if it allows the sharing of experiences and if it facilitates informed decisions (Meiser et al., 2018). In this study, given the reduced number of participants without a family history of cancer, it was not possible to explore whether the presence of this background is

associated with differences in QoL and the other psychosocial variables. Hence, it is important to explore in future studies how this variable may be associated with the adjustment of women submitted to the two types of CT treatment.

Regarding the psychosocial characteristics of the total sample, the mean scores obtained by women in social support and in the well-being subscales were mainly moderate, which is consistent with other studies, namely in what corresponds to perceived social support (Silva et al., 2011), social well-being (Al-Ghabeesh et al., 2019; Milbury et al., 2017), emotional well-being (Al-Ghabeesh et al., 2019), physical and functional well-being, and additional concerns (Bayram et al., 2014; Zhang et al., 2017). However, other studies were also found in which women had lower scores of emotional well-being (e.g., Bayram et al., 2014; Coelho et al., 2017). Regarding QoL, the mean score indicates a moderate level of QoL, which was also verified in other studies. Bayram and colleagues (2014) assessed women who were submitted to chemotherapy and concluded as well that women showed moderate levels of QoL. Other studies also determined moderate levels of QoL in women with BC (e.g., Sousa et al., 2015). Nevertheless, Zhang and colleagues (2017) found a moderately low level of QoL in Chinese women mainly with less than a year since the diagnosis.

In this study, participants also revealed moderate levels of meaning/peace, faith, and spiritual well-being. In Portugal, a master's dissertation had overlapping results to this study in the meaning/peace domain, in the faith domain, and in the total score of FACIT-Sp-12 (Costa, 2010). Women also showed a moderate level of positive affect and a relatively low level of negative affect, which is in line with what another study found with women in active treatment (Milbury et al., 2017). This is a considerably good result, since higher positive affect and lower negative affect are associated with higher levels of QoL (Hu & Gruber, 2008). These results may be attributable to the social support that these women receive, since it was concluded that they demonstrate high levels of social support, and that social support is positively correlated with positive affect and negatively correlated with negative affect.

In terms of resilient coping, participants of this study had a moderate score, only slightly above the cut-off point defined by the authors for low resilient individuals (Ribeiro & Morais, 2010). The results of resilient coping in this study can give some guidelines for clinical practice, as they indicate that the resilience and the coping capacity of these women may have to be addressed by the health team, especially mental health professionals, in order to improve these outcomes.

Regarding the second objective of this study, differences between the two chemotherapy groups were also analysed and it was concluded that no statistically significant differences were found in the psychosocial characteristics of women submitted to adjuvant chemotherapy and of women submitted to neoadjuvant chemotherapy. Other studies found no differences between the two groups, namely Mohlin and colleagues (2021) and Zdenkowski and colleagues (2019). A similar study was conducted by Coelho and colleagues (2017), who assessed the QoL of women with BC who initiated neoadjuvant or adjuvant chemotherapy. These authors collected data at three different steps and the third phase corresponds more or less to the moment chosen for collecting information in the present study. However, these authors obtained different results, since they found that there were statistically significant differences between the two groups. Nevertheless, it seems important to emphasize that, given the results obtained and the absence of significant differences between the two groups, the medical decision to opt for one or another treatment also considers the QoL of each patient, in order to ensure the best possible QoL with the best possible results. This is also associated with the role of health literacy, so that patients can analyse and understand the information given to them and, subsequently, make informed decisions regarding each new therapy and procedure.

Considering the third and last specific objective of this study, most of the correlations found were expected. Regarding the positive correlation between age and faith, it seems to agree with the finding of Chatters and colleagues (1999): higher age is normally associated with higher religious involvement. According to Wink and Dillon (2002), religious involvement tends to increase from middle age onward. Therefore, older people, through faith, look for new ways of coping and for new internal overcoming resources that allow them to have a positive perspective of the future (Simão & Saldanha, 2012).

Furthermore, the correlation between social support and social well-being can be even more deeply explained, since it was demonstrated that social rejection and physical pain share neural pathways and social support tends to dull the pain (Brown et al., 2003; Kross et al., 2011).

Positive affect and negative affect were inversely correlated, which was also documented by Paris and colleagues (2014). These results may be explained by Reich and colleagues' (2003) theory, which documents that during times of stress the attentional resources needed for affective differentiation are more focused on more immediate needs and demands. This, in turn, makes affective differentiation more difficult. Therefore, positive and negative affect are experienced as bipolar dimensions, given the weaker affective differentiation, and, consequently, they become inversely correlated (Reich et al., 2003).

Lastly, the results obtained in this study plus clinical practice raise some issues that may have some

importance in the experience of these women, namely: the very easy and unreliable access to information on the internet; and the variation in women's needs depending on their point on the cancer trajectory. Firstly, this free access to information online gives these women access to sometimes unreliable information and/or excessive information, which can have an impact on women, namely in their emotional well-being and in their positive and negative affect. This topic could be addressed directly by the health team with patients, in order to find out if they have read something about the disease on the internet and if it is necessary to provide additional information or clarification.

Secondly, in this study, women in the neoadjuvant chemotherapy group had worse scores, even if not statistically significant, in almost every subscale used (except in positive affect) than the adjuvant chemotherapy group, which may be related to the fact that the first group was diagnosed more recently. Thus, from this and from clinical practice, it was realized that women's needs seem to vary according to their position on the cancer trajectory, with other factors taking on a larger impact, as women progress through the cancer course. Consequently, this can be a clue for the multidisciplinary health team to act according to the needs felt at each moment of the BC trajectory.

A few limitations of this study can be named: It has a cross-sectional study design, which does not allow the analysis of how the variables would behave over time; it has a small sample size, which may affect the reliability of the results; it compares two groups that are given different treatments, and that may have different types of BC and different prognoses, which may also have some influence on the results; and information about the cancer stage and the chemotherapy medications administered was not collected.

In addition, data were collected when women went to the CHUSJ to make it easier for them and to avoid unreasonable journeys, which meant that most women answered the questionnaires on the day of the COVID-19 test. Normally, this test is performed one or two days before the chemotherapy cycle, which means that it could be almost three weeks after the last cycle. Consequently, the side effects have already diminished, and therefore an accurate evaluation of the side effects of chemotherapy is not possible.

For future studies, it is suggested to use a larger sample size and to pay more attention to the clinical variables, namely the stage of the cancer and the chemotherapeutic drugs administered, since they may also have some influence on the side effects. Consequently, they may also have different impacts on the QoL and on other psychosocial characteristics of women with BC. Furthermore, future studies might seek to use a longitudinal approach to analyse the behaviours of the variables over time.

CONCLUSIONS

Despite being a pilot study, this study has also made valuable contributions to this subject by being able to investigate this population of cancer patients, which sometimes is difficult to reach, and by giving insights about their experiences, especially regarding two different chemotherapy groups that are not commonly compared in the literature. This study assumes even greater importance, as it has become crucial to involve patients in treatment decisions and to understand their attitudes and preferences in the cancer process, through patient-centred care. Thus, exploring how these two treatments behave in terms of QoL and other psychosocial outcomes is an important contribution to this evolution of patient engagement and investment in their health literacy.

Some of the insights this study helped to identify were that: no significant differences exist in the psychological outcomes of different chemotherapy treatments; the suggestion of more screenings to understand the needs of these women moment by moment; and greater attention to health literacy, including online health literacy, to the improvement of resilience and coping capacity, and to the importance of social support and spiritual well-being. Furthermore, some clues can also be taken specifically for psychologists' practice, namely the importance of psychological interventions to enhance the psychosocial outcomes of women with breast cancer.

Overall, the outcomes of the present study point to the fact that it is possible to choose the best treatment option in terms of patient survival and recovery (i.e., objective health outcomes), without having to give up the best results at a subjective level, if healthcare teams consider the importance of psychosocial variables and know which ones to pay attention to.

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