RESEARCH ARTICLE

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Factors Predictive of Quality of Life among Breast Cancer Patients

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Abstract

Background: Due to progress in medical care, the number of survivors from cancer has increased significantly during recent years and this raises the question of the quality of life (QoL), especially of the many women treated for a breast cancer. This paper focuses on correlations of QoL with anxiety and depression on the one hand and with socio demographic, anatomo-clinical and therapeutic parameters on the other. **Methods:** In this cross-sectional study, seventy patients were enrolled and filled in two auto-questionnaires, both in validated Arabic versions: The SF-36 for assessment of QoL and the Hospital Anxiety and Depression Scale (HAD-S) for evaluation of anxiety and depression. The statistical approaches used to determine predictive factors were bivariate correlations to determine relationships between quantitative variables, and T-tests and one-way Anova to analyze links between qualitative and quantitative variables. **Results:** The QoL of patients was altered with an SF-36 mean total score of 54.0 ± 22.7, and the alteration affects the different aspects. The mean scores for anxiety and depression in patients were 6.91 ± 4.72 and 6.24 ± 3.88, respectively. The results of this study suggested an association between the QoL and chemotherapy (p= 0.014) and its adverse effects (p=0.01), as well as anxiety (p= 0.0001) and depressive symptoms (p= 0.0001). Socio-demographic factors, the stage of the cancer, and surgery, radiotherapy or hormone therapy did not appear to have significant effects. **Conclusion:** The management of breast cancer patients needs a collaborative approach between oncologists, gynecologists, psychologist and psychiatrists.

Keywords: Breast cancer- quality of life- anxiety- depression

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Introduction

Breast cancer is a major public health problem because of its frequency, its cost, its severity and its impact on the physical and psychological health (Jemal et al., 2010). In Tunisia, breast cancer ranks first among women's cancers with a rate of 30%.

Diagnosis and treatment's considerable progress in breast cancer have contributed to a significant increase in the patients' survival. Nowadays, breast cancer is becoming almost a chronic disease controlled by a long-term treatment. Thanks to these progresses, patients' quality of life is becoming more and more important and its evaluation is of increasing interest (Zainal et al., 2013). Despite this, few studies have investigated prospectively the quality of life of patients with breast cancer using standardized and validated instruments.

This paper will focuses on evaluating the quality of life of women with breast cancer and its correlation with anxiety and depression on the one hand, and with socio demographic, anatomo-clinical and therapeutic parameters on the other hand.

Materials and Methods

This was a cross-sectional study carried out between December 2016 and June 2017. Patients were recruited in the medical oncology department at the Fattouma Bourguiba University Hospital of Monastir in Tunisia.

Inclusion criteria were: giving informed consent to participate in the study; histological Evidence of breast tumor malignancy; age between 18 and 70 years; ability to read and understand Arabic language.

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Exclusion criteria were: severe cognitive impairment (such as Alzheimer's disease); serious psychiatric disorders (such as psychosis); and visual, auditory or serious language disturbances that can affect the ability to properly answer the questionnaire. Following these criteria, 70 patients were enrolled in the study.

Data concerning the age; the educational level; the marital status; the psychiatric and organic personal history; the tumor characteristics and the therapeutic data were collected through interviewing the patients and from their medical records. Then, the patients filled two auto-questionnaires:

-The SF-36, in its validated Arabic version, for the assessment of the quality of life. This questionnaire includes 36 items divided into 8 dimensions (physical functioning, physical role functioning, body pain, general health perceptions, vitality [energy/fatigue], social role functioning, emotional role functioning, mental health). Each item is weighted to obtain a score between 0 (worst quality) and 100 (best quality) for each of the 8 dimensions. The scores of the questions that deal with each specific area of the functional health status are calculated on the average to get a final score in each of the 8 dimensions measured. We have used the threshold value of Lean in considering that an overall mean score lower than 66.7 indicated an impaired quality of life (Nicholson and Bigal, 2008).

- The Hospital Anxiety and Depression Scale (HAD-S), in its validated Arabic version, for the evaluation of anxiety and depression. This scale was developed by Zigmond and Snaith in 1983 (Zigmond and Snaith, 1983) and is composed of 14 items assessing the anxiety symptoms (7 items) and depression symptoms (7 items). Each item is rated on a four point scale ranging from 0 to 3. In addition to the two scores of anxiety (HADS-A) and depression (HADS-D), the HAD-S allows a categorical distribution in 3 levels: normal level (absence of depression or anxiety) for scores between 0 and 7; limit level (suspicion of depression or anxiety) for scores between 8 and 10; and pathological level (presence of depression or anxiety) for scores between 11 and 21. We have used a version translated in the Tunisian dialect, according to the recommendations of the European Institute of validation of the instruments of measurement.

Data management and analysis were performed using SPSS 24.0. The statistical tests used were: the bivariate correlation to determine the relationship between the quantitative variables, T-tests to compare between two means and one-way Anova to compare between more than two means (Level of education, marital status, cancer stage nausea and vomiting during last 4 weeks). Significance levels were set at the 0.05 level.

For multivariate analysis, the variables that are statistically associated with the level of 0.2 (Diabetes, chemotherapy, nausea and vomiting post chemotherapy, depression and anxiety symptoms), were introduced in the multiple linear regression model.

Results

The main characteristics of the study population are illustrated in Table 1. The mean age of these patients at the time of diagnosis was 41.13 ± 13.6 years. Ninety per cent of patients were married and 48.6% had a primary educational level. Twenty percent of patients had a personal history of hypertension, 17.1% had a personal history of hypercholesterolemia and 15.7% had a personal history of diabetes. Twenty-seven percent of the patients were classified Stage II and 24.3% were classified stage IV. Fifty-three percent of our patients had a curative treatment, 88.6% had a surgery of the primary tumor, 75.7% had radiotherapy, 94.3% had chemotherapy, 70% had a hormone therapy, and 15.7% had a targeted therapy.

The mean scores of anxiety and depression in patients

Table 1. Characteristics of the Study Population (n=70)

Characteristics of the study population	Number	Percentage (%)
Marital Status		
Single	5	7
Married	63	90
Divorced	2	2.9
Level of Education		
Illiterate	8	11.4
Primary school	34	48.6
Secondary school	22	31.4
Universitary	6	8.6
Stage		
Stage I	17	24.3
Stage II	19	27.1
Stage III	17	24.3
Stage IV	17	24.3
Surgery of the primary tumor		
Yes	62	88.6
No	8	11.4
Radiotherapy		
Yes	53	75.7
No	17	24.3
Chemotherapy		
Yes	66	94.3
No	4	5.7
Hormone Therapy		
Yes	49	70
No	21	30

Table 2. Assessments of the Quality of Life According to SF36

Average score of SF36	Mean ± standard deviation
Physical functioning	61.83 ± 26.57
Physical role functioning	25.71 ± 41,91
Emotional role functioning	51.42 ± 50,34
Vitality: Energy / fatigue	48,14 ± 27,21
Social role functioning	59.3 ± 23.98
Mental health	67,64 ± 34,96
Bodily pain	57,53 ± 26.03
General health perceptions	54,29 ± 25.8
Total Score	53.95 ± 22.66

Table 3. Evaluation of the Quality of Life According to the Various Parameters Studied

Variables	Mean of the SF-36 score ± standard deviation	P value
Level of Education		
Illiterate	40.15 ± 7.5	
Primary school	56.32 ± 3.8	0.328
Secondaryschool	55.64 ± 4.8	
Universitary	52.73 ± 9.5	
Marital Status		
Single	63.69 ± 14.2	
Married	53.79 ± 2.7	0.19
Divorced	34.79 ± 8.8	
Diabetes		
Yes	60.85 ± 7.2	0.2
No	52.37 ± 2.9	
HTA:		
Yes	54.16 ± 6.6	0.936
No	53.61 ± 3	
High cholesterol		
Yes	52.57 ± 7.7	0.849
No	53.96 ± 2.9	
Cancer Stage		
I	50.62 ± 5	
II	58.16 ± 5.4	0.713
III	50.96 ± 5.3	
IV	55.58 ± 6.2	
Treatment		
Curative	53.43 ± 3	0.737
Palliative	55.58 ± 6.2	
Surgery of the primary tumor		
Yes	55.18 ± 2.9	0.208
No	44.4 ± 6.8	
Radiotherapy		
Yes	54.06 ± 2.8	0.953
No	53.61 ± 7	
Chemotherapy		
Yes	27.25 ± 5.1	0.014
No	55.57 ± 2.7	
Nausea Vomiting during last 4 weeks		
No	55.6 ± 3.2	
Slightly	63.28 ± 3	
Moderately	48.78 ± 9.1	0.01
Extremely	34.18 ± 6.1	
Hormonetherapy		
Yes	53.21 ± 3.1	0.68
No	55.68 ± 5.5	

were 6.91 ± 4.72 and 6.24 ± 3.88, respectively. Depression and anxiety symptoms were certain among respectively 12.9% and 21.4% of patients.

Data from Table 2 shows that the quality of life of patients was altered with an SF-36 mean total score of 53.95 ± 22.66, and the alteration affects the different aspects.

Table 4. Anxiety and Depressive Symptoms and Quality of Life

Correlation between HADS score and Quality of Life (SF36 Total)	Number	Correlation of Pearson	P value
HADS-D Score	70	-0.568	0.0001
HADS-A Score	70	-0.587	0.0001

Table 5. Factors Correlated to the Quality of Life in the Multi Regression Analysis

Variables	Magnitude of association (ß)	Degree of significance (p value)
Marital Status	-15.14	0.034
Diabetes	-9.07	0.094
Chemotherapy	-14.35	0.152
Nausea and vomiting post chemotherapy	-2.65	0.242
Depression symptoms	-1.19	0.214
Anxiety symptoms	-1.66	0.032

There was no correlation between the age of the patients and the SF-36 total score (p = 0.568). The results as shown in Table 3, indicate that there was, on the other hand, a significant correlation between the score of SF36 and the treatment by chemotherapy (p= 0.014) as well as the side effects of chemotherapy such as nausea and vomiting (p=0.01). The socio-demographic factors, the stage of the cancer, the treatment by surgery, radiotherapy or hormone therapy did not affect significantly the quality of life. There was a significant negative correlation between the SF-36 score and the HADS-D score (p= 0.0001) on one hand, and between the SF-36 score and the HADS-A score (p= 0.0001) on the other hand (Table 4).

The factors significantly associated with the quality of life in multi regression analysis were the marital status (p=0.034) and anxiety symptoms (p=0.032) (Table 5).

Discussion

Due to the progress of medical care, the number of survivors from cancer has increased significantly during recent years and this increase in survival rates has raised the question of the quality of life of women who had been treated for a breast cancer. This was a cross-sectional study evaluating the quality of life in a sample of 70 women with breast cancer. Taken together, the results of this study suggest that there is an association between the quality of life and chemotherapy and its adverse effects on the one hand, and the anxiety and depressive symptoms on the other hand.

There was no significant correlation between the age of patients and the quality of life in this survey. However, a review of the literature had shown that the early age (< 50 years) was considered in most of studies as a predictive factor of a worse quality of life (Jemal et al., 2010; Zainal et al., 2013).

There was a significant association between marital status and quality of life in the multi regression analysis in this study and the divorced status was associated with a worse quality of life. This view is supported by Kim

et al., (2008) who advocated that marital difficulties are predictive of poor quality of life of patients with breast cancer.

No significant association was found between the surgery of the primary tumor and the quality of life in this survey. Weitzner et al., (1997) and Sprangers et al., (1996) noted that, in the short and in the medium term, the mastectomy is associated with a less good body image and so, with a less good quality of life. However, in the long term, much of the current literature (Ganz et al., 2002) found that the type of surgery has no impact on the quality of life.

The radiotherapy is often associated with asthenia and with skin disorders, mainly in the acute phase of radiotherapy, which may affect physical and psychological functioning (So et al., 2010). This could explain the statistically significant association identified between the radiation and the decrease in quality of life in several studies (Broeckel et al., 1998; Yen et al., 2006). In this study, no significant association was found, and it can be due to the fact that the patients of the study were not in the acute phase of radiotherapy.

In this study, the treatment by chemotherapy and the fact of having nausea and vomiting after chemotherapy were significantly associated with a worse quality of life. It may be due to the short term side effects and cardio-respiratory disorders such as congestive heart failure and pulmonary insufficiency which can occur many years after and which can seriously alter the quality of life in the long term. A number of authors Broeckel et al., (1998); Jacobsen et al., (1995) and Weitzner et al., (1997) have reported that treatment by chemotherapy had been identified as a predictive factor of worse quality of life. It affects mainly the body image and the sexual functioning, and this can impair the quality of life in the short, medium and long term. Chemotherapy is also an important risk factor for neuro-psychic dysfunctions, grouped under the term "chemo brain". This is considered as an impairment in the memory, the concentration, the attention and the speed of the verbal expression that we can find several years after the end of the treatment (Ganz et al., 2002).

In this study, there was no significant association between hormone therapy and the quality of life. Similarly, Hopwood et al., (2007) and Dupont et al., (2007) pointed out the absence of impact of hormone therapy on the quality of life. This view is also supported by Couzi et al., (1995) who concluded that there was significantly more vaginal irritation and side effects in patients under hormone therapy than in those without hormone therapy, but the overall quality of life was not impaired at 6 months post-diagnosis.

In this study, there was a significant negative correlation between the scores of HADS-A and the SF36 on the one the hand, and HADS-D and the SF36, on the other hand. This means, that women with depressive or anxious symptoms have a more impaired quality of life.

Similarly, Lueboonthavatchai (2007) had established a linear correlation between the depression score and worse quality of life in the patients with cancer. This point of view is supported by the study of Massie (2004), which identified the depression as a strong determinant of the quality of life. Furthermore, the systematic review of Mols et al., (2005) based on ten studies of patients in remission of their breast cancer, asserted that these women have a higher incidence of moderate symptoms of depression compared to healthy women. In addition, these scores of depression are predictive factors of a worse quality of life in all its dimensions, except the dimension of family functioning.

In view of all that has been mentioned so far, one may suppose that the treatment of patients with breast cancer should encompass the physical, psychological and social aspects. So, the medical team should take into account the quality of life of the patient with cancer throughout the different stages of treatment.

Finally, a number of limitations need to be taken into consideration. First, these findings are limited by the cross sectional design of the study. Secondly, despite the fact that the HADS score has a specificity of 83% and is known as a good tool of screening and following the depression, the opinion of a specialist is always important to diagnose a depression or anxiety disease. In fact, the patients with high HAD-S scores have been referred to psychiatry. Finally, the interpretation of our results still faces a limitation which is the absence of a control group that would allow a better analysis of the found data.

In conclusion, the aim of this study was to assess the quality of life of women with breast cancer and to establish its correlation with anxiety and depression on the one hand, and with socio demographic, anatomo clinic and therapeutic parameters, on the other hand.

One of the most significant findings emerging from this study is that symptoms of anxiety and depression were significantly associated to an impaired quality of life. The second major finding was that chemotherapy and its side effects such as nausea and vomiting have been significantly associated with alteration of the quality of life. From those results we can emphasize that the whole caregivers' team must get involved in the management of psychological and psychiatric issues in breast cancer patients.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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