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### RESEARCH ARTICLE

#### DEPRESSION AND RELATED FACTORS AMONG MOROCCAN BREAST CANCER PATIENTS: RESULTS OF A CROSS-SECTIONAL STUDY

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#### Abstract

**Introduction:** Depression is frequently associated with breast cancer. Although its prevalence and its impact on patients' quality of life are far from negligible, depression is often under-diagnosed and less treated.

**Objectives:** Our study aims to estimate the prevalence of depression in breast cancer patients, to describe their socio-demographic and clinical profile, and to determine the factors associated with this depression.

**Material and Methods:** We carried out a cross-sectional, descriptive and analytical study, conducted from October to December 2021 at the Mohammed IV Cancer Treatment Center. The survey included 100 breast cancer patients. It was conducted using an anonymous questionnaire and the Beck scale to diagnose depression and to assess its severity.

**Results:** Depression in a major form was diagnosed in 52% of breast cancer patients. Age under 40, psychiatric antecedents, metastatic breast cancer, refusal of treatment, heavy treatment regimens and the alteration of the conjugal relationship were the factors most associated with higher prevalence of depression in these patients.

In the light of what has been demonstrated in the analytical study, we note that the occurrence of a major depressive episode is significantly correlated with the following parameters

- Age ranging between 20 and 40 years.
- Metastatic spread of breast cancer.
- Negative attitude of the spouse.
- Relapse of the cancerous disease.

**Discussion and Conclusion:** The high prevalence of depression in breast cancer patients as well as the influence of personal characteristics and treatment in the occurrence of this ailment have been confirmed by several authors. We propose some suggestions to improve the psycho-oncological care of patients with breast cancer, in order to prevent the occurrence of depression in this population.

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**Introduction:-**

Depression is a psychological illness characterized by persistent sadness, loss of interest in activities that normally bring pleasure and an inability to perform daily tasks. Depression is defined as having these symptoms for at least two weeks. [1]

In the current DSM-5 classification, the term "depression" refers to the characterized depressive episode (formerly "major depressive episode").

There is widespread concern in the scientific literature about depressive disorders and their assessment in cancer patients, from diagnosis to palliative care. However, the prevalence rates of depression in this patient population are highly heterogeneous. Recent studies estimate a prevalence ranging from 4% to 16% in the first 5 years after diagnosis [2, 3].

Breast cancer is considered among the cancers associated with a higher prevalence rate of depressive episodes, with a percentage ranging from 1.5 to 46% [4, 5]. The prevalence of depression in women with early breast cancer is twice higher than in the general female population, especially during the first year after diagnosis [6].

In this work, we analyze our own experience in the Radiation oncology department of the Mohammed IV Cancer Treatment Center at the Ibn Rochd UHC. Our study aims to estimate the prevalence of depression in breast cancer patients, to describe their socio-demographic and clinical profile, and to determine the factors associated with this depression.

**Patients and Methods:-****Type of study**

This is a descriptive cross-sectional study with prospective recruitment, in order to estimate the prevalence of depression in breast cancer patients seen in consultation for the follow-up of their disease and to determine the possible factors influencing depression. This study was conducted in a three-month period from October 2021 to December 2021. Our survey took place in the consultation at the oncology department of the University Hospital of Casablanca.

**The study population**

The study population was represented by a sample of 100 patients, all with breast cancer, at different stages of the disease, seen in medical consultations for monitoring their cancer pathology. Were included, women older than 20 years with unilateral breast cancer who have been treated and seen for follow-up within 2 years.

**Ethical considerations**

Patients were randomly selected and informed of the purpose of the study. Only patients with free and informed consent were recruited. Data collection was carried out with respect to the anonymity of the patients and the confidentiality of their information. If the diagnosis of depression was made, a psychiatric consultation was proposed.

**Methods and instruments**

We developed an anonymous questionnaire, divided into four parts, each of which includes several components:

- Part 1: Socio-demographic characteristics of the patients, personal medical, surgical, psychiatric and toxic history, and family history of similar cancer.
- Part 2: Characteristics of the breast cancer, circumstances of discovery, profile (HR and hercept test), presence of metastasis, and clinical course of patients after treatment, and the treatment itself.
- Part 3: Study of the social, physical and psychological impact of breast cancer.
- Part 4: Diagnosis of the characterized depressive episode and evaluation of its severity. For this purpose, we used the Beck Inventory IDB-II, the latest revised version of the IDB which was published in 1996, created to correspond to the updated DSM-IV criteria for depression (210).

The IDB-II scoring:

- 0 to 13 is considered absent or minimal depression,
- 14 to 19 Mild depression,
- 20 to 28 Moderate depression,

- 26 to 63 Severe depression.

We completed this questionnaire after interviewing the patients, all of whom spoke Arabic dialect, in the oncology-radiotherapy department of the University Hospital of Casablanca.

### **Statistical analysis**

All data were entered into Excel 2016 and analyzed using Statistical Package for the Social Sciences (SPSS) 16.0. In the descriptive part, the qualitative variables were described in numbers and percentages (%). In the statistical analysis part, after consultation with the bio-statistical service of clinical research and epidemiology of the Faculty of Medicine and Pharmacy of Casablanca, the correlations were made using the Chi-2 test. A difference is considered statistically significant only when the p-value is strictly less than 0.05 ( $p < 0.05$ ).

### **Results:-**

#### **Subjects**

All interviews were conducted in the consultation department at the Mohammed IV Cancer Treatment Center of the University Hospital of Casablanca. We have 100 patients for our survey. The mean age was  $52 \pm 9$  years, with extremes ranging from 33 to 75 years. More than half of the patients in our sample were married with a percentage of 61%. The majority of them had children with a percentage of 80%. In our sample, 65% of the patients lived in urban areas, while 35% were from rural areas. The majority of patients had never attended school, with a percentage of 79%, while only 5% had a high school education, and 75% were housewives. Almost all patients (96%) had no psychiatric history (Table 1).

#### **Breast cancer-related data**

Two-thirds of the patients in our sample (62%) were free of metastases, while one-third (38%) were in the metastatic phase. Three groups of patients in our survey were individualized according to the presence of HR and hercept test. The first group (HR + and hercept test -) represented two thirds of the study population with a percentage of 66%, while the second group (HR- and hercept test -) and the third group (HR+ and hercept test +) represented successively 16% and 18%. The majority of patients in our survey, 83%, were in remission, while only 17% had a relapse of the disease. All patients in our sample received chemotherapy, radiotherapy and surgery, 84% received hormonal therapy. 38% of them received conservative surgical treatment.

#### **Prevalence of depression**

According to the Beck Depression Inventory, latest revised version (BDI-II), 52% of breast cancer patients had a characterized depressive episode at the time of the study. Among the 52 depressed patients, 44.2% had mild depression, 42.3% had moderate depression and 13.4% had a severe one (Table 2).

#### **Risk factors of depression**

The study of the different socio-demographic factors, likely to be predictive of the occurrence of depression in breast cancer patients, found that age ranging from 20 to 40 years was significantly correlated with the development of depressive disorders ( $p < 0.05$ ). Indeed, the majority of women aged between 40 and 60 years were not depressed, while only 4 patients aged over 60 years did not present depressive disorders. This association between age over 60 years and absence of depression was also statistically significant ( $p < 0.05$ ). The profile (HR and hercept test) and the circumstances of discovery do not seem to predict particularly the occurrence of depression. However, the metastatic location and the relapse of the cancer disease were found to be directly correlated with the risk of depression with a high level of significance ( $p < 0.05$ ). The study of the different parameters related to the therapeutic management shows that they are not significantly correlated to the characterized depressive episode. The discomfort on the social level was significantly correlated to the occurrence of depression, in particular the negative attitude of the spouse ( $p < 0.05$ ) (Table 3)

### **Discussion:-**

During the evolution of the cancer's disease and after depending on the received treatments, depression's prevalence rate changes. Within the first 6 months after breast surgery, Dunn and al. identified four distinct depressive symptom trajectories: Low Decelerating (38.9%), Intermediate (45.2%), Late Accelerating (11.3%), and Parabolic (4.5%) [7]. In a study conducted by Ramirez and al., 41% of patients had mood disorders before surgery Vs 29% and 25% at three months and twelve months after surgery [8].

Reich and al. described in their meta-analysis that the prevalence of major depressive episodes can go from 4.7% (Menhert and al.) to 38% (Ell and al.) all based on the DSM-IV criteria [9-10]. Meanwhile, Mitchell and al., in a meta-analysis including more than ninety studies, concluded that the prevalence of clinical depression in women treated for breast cancer was 14.1% [2]. Two more recent Asian studies came up with similar results with a prevalence rate of 22% [11, 12].

Higher rates of anxiety and psychological distress had been registered at first recurrence of the disease (>40%) [13], which Burgess and al. confirmed in their work ; 45% of patients had depression symptoms at recurrence Versus 33% at first diagnosis [6].

Based on the cancer evolution, former studies demonstrated that at early stage of the disease only 20 to 30% of patients have a psychological impact, and this rate was clearly higher in advanced and metastatic stages [14][15].

Unfortunately, very rare Moroccan studies leaned over the question, but in our work, 52% of our patients presented a depressive episode, based on the DSM-IV criteria. The Beck scale had been used to judge of the severity of the episode, 44% of patients had depression with low intensity, median severity for 42% and it was a major depression for 13% of patients.

Many factors have been defined as precursors to the depressive troubles for breast cancer survivors. Indeed, depression can be induced by individual and socio-demographic facts. Other studies also suggest psycho-social and familial matters. The cancer disease, as well as the different treatments received and its side effects can be factors too leading to a serious anxiety and depression.

We came by many works which suggested that young patients with breast cancer disease have more anxiety troubles [6, 16, 17]. Bardwell and Ell, in their respective works following patients with breast cancers for the first one and breast and gynecological cancers for the second one, concluded that women aged under 50 years old were more depressed than those aged over 50 [10, 18]. However, other studies didn't catch this age – depression association [2, 19].

Passing through the different stages of cancer leads to, first, the apparition and in a second time the maintenance of the depressive syndrome, making the patients in a state of incapacity on maintaining a normal daily activity. Without forgetting the body decline with disease progression that can obviously also lead to a major depression. Ciaramella and Poli in their study noticed that metastatic patients are more depressed than ones with early stages [20]. Fact that was confirmed in 2016 by Jacob and al. in their work following German women with breast cancer [21]. Anxiety and depression prevalence rate in young women with metastatic breast cancer was 20% in a published more recent American investigation [22]. This can be explained by the fact that pain is major in the metastatic stage especially with bone metastases [23][24].

The treatments and the side effects can alter the self-image, self-confidence and self-esteem, giving rise to a destabilizing sexual insecurity, linked to the fear of losing one's sexuality and/or fertility [25]. Breast surgery affects self-image, indeed breast is an organ with a powerful symbolic of femininity, motherhood and sexuality [26]. Anxiety, depression with a low libido are also increased by chemotherapy's gastric side effects (nausea and vomiting), alopecia or general side effects such as pain, fatigue and neurological and hematological toxicities [26].

However, radiotherapy's side effects such as fatigue, skin sensitivity and a potential thoracic or arm pain can also have a negative impact on sexuality [27]. The hormonal treatment has also an impact caused by the induced menopause or menopausal symptoms such as the hot flashes [28].

Thus, the patient, who will feel less sexual desire or will no longer feel attractive, will avoid sexual intercourse and may feel guilty at the idea of ruining her partner's life. In addition, his partner may also have a change in perception of his wife's body (amputated breast, injured body), followed by a decrease in sexual attraction to her [29].

Furthermore, the success of the couple dealing with cancer disease is often related to the ability to talk about the disease [30]. However, communication within the couple may be affected, as well as sexual relationships [31]. The study by Normand et al. showed that the less frequent the marital communication, the higher the depressive symptomatology for the breast cancer patient and her partner [32].

On the other hand, couples in which the partner is supportive and shows understanding and affection towards his wife are better maintained and their sexual relationships are more likely to last [31].

In our survey, dialogue with patients about marital life and sexuality was not as difficult as might be thought, especially with Moroccan women who do not dare to talk about their sexuality, which is still considered a taboo in our conservative society. Indeed, most of the patients were open and relieved when this subject was discussed. The majority of women who were embarrassed by the alteration of their marital relationship were depressed. This association was statistically significant ( $p < 0.05$ ).

It is therefore time for oncology health care professionals to address the oncologic implications on patients' sex lives early on to help patients address their desire and return to their previous lifestyle, including sexuality [33].

Social support is known to play an important role in psychological and physical adjustment to the disease [34].

As for our study, the majority of patients bothered by the carelessness of their families, were not depressed. This association was not significant. This can be explained by the predominance of mothers and married women in our sample who reported that their main causes of socio-familial discomfort were the alteration of marital life and the difficulties in raising their children. Thus, their depressive state was related more to the impact of cancer on their couples and children than to the carelessness of other family members.

The different treatments for breast cancer, namely: lumpectomy or mastectomy surgery, radiotherapy, chemotherapy and hormone therapy, are likely to alter the quality of life, body image and sexuality in the short or long term, but also the psychological state of the patients [35]. According to the study by Holt et al. published in 2016, approximately one in five women receiving treatment for gynecological cancer suffers from depression [36].

The impact of surgery must be considered at two levels: according to the type of surgery and according to its temporal evolution. Mastectomy affects women not only by the mutilation of a highly socially invested attribute of femininity but also by the disappearance of an organ that has a function in the sexual relationship. Sensations of "phantom breast", often painful, have been described in mastectomized women [37]. It is also known to have major psychological effects, notably the occurrence of depression [38, 39].

Chemotherapy can cause hematological damage, alopecia, digestive disorders, amenorrhea, peripheral neuropathy, sexual disorders and fatigue. In the long term, it can lead to impaired quality of life and depression [40]. Hopwood et al. noted an increase in the prevalence and severity of depression in women undergoing chemotherapy [41]. Similarly, Manzanera et al. found a prevalence of mood disorders of 55.6% in women treated with chemotherapy (with or without radiotherapy) compared to 19.4% in women treated with radiotherapy alone [42].

Radiation therapy may be responsible for pain, edema, fibrosis, telangiectasias, lymphedema, retractions, atrophies and ulcers. All of these adverse effects lead to an alteration in the physical state of the woman and her sexuality [27], thus inducing possible psychological suffering. However, no significant association has been found between radiotherapy treatment and the development of depression [43, 44].

Hormonal therapy may cause flushing, weight gain, gynaecological symptoms, joint pain and even long-term osteoporosis [45]. In addition, a retrospective study of 2943 patients did not show a significant risk of developing depression in patients treated with Tamoxifen [46].

In our study, the majority of patients had received heavier treatment, in particular quadruple therapy, and this correlation was not significant.

The diagnosis of depression in oncology appears complex and difficult because of the ambiguity of a certain number of symptoms. Loss of appetite, insomnia, asthenia, psychomotor slowing, weight loss and concentration problems may in fact be part of a psychological symptomatology as well as being caused by the cancer disease and/or its treatments [47]. It can be concluded that depressed mood is the most reliable criteria for recognizing the depressive syndrome, associated with other psychological symptoms, such as feelings of hopelessness and helplessness, guilt, loss of self-esteem and suicidal or death wish ideas.

The multidisciplinary panel at the National Comprehensive Cancer Center (NCCN) in New York was the first to propose a pragmatic approach to the implementation of systematic screening for distress in the oncology setting. The aim was to extend this approach to the exploration of "psychic pain" and to make it a systematic element of the basic clinical examination. [48]

Recommendations and guidelines have been established in several countries.

Thus, many assessment tools in the form of self- and hetero-questionnaires have been widely developed to help the clinician to confirm the diagnosis of depression and to assess its severity on the various clinical dimensions [49].

Among the scales most commonly used for the evaluation of depression in cancerology and considered as references in the literature, the HADS (Hospital Anxiety and Depression Scale), the CES-D (Center Epidemiological Studies-Depression Scale), the BDI (Beck Depression Inventory or Beck scale) and the Endicott scale [50].

The occurrence of depression in patients with breast cancer may be the cause of a poorer quality of life, a more severe social impact, or an increased risk of non-adherence to treatment; indeed, some studies have shown that depressed patients are 1.7 to 3 times more likely to be non-adherent than non-depressed patients. This phenomena would partly explain the excess mortality of depressed patients in cancerology [51].

Therapeutic management should be adapted to each patient, combining psychotherapeutic and/or pharmacological approaches, within the framework of a multidisciplinary collaboration [52]. Psychotherapy, whatever its modalities, has been considered to be effective on depression and quality of life, but it had no influence on the survival of cancer patients [53]. This fact has been clearly demonstrated by randomized studies with rigorous methodology that have evaluated the effectiveness of psychotherapy in women with breast cancer [54, 55].

### Conclusion:-

The discovery of breast cancer often marks the entry of the woman in a long and complex care process. If her body has to face or deals already with cancer, her mental health is not spared.

Faced to this cancerous disease, the psychological reactions will be diverse, ranging from the absence of emotional distress or its expression to the occurrence of pathological disorders, in particular a depression.

The therapeutic management should be adapted to each patient, combining both psychotherapeutic and/or pharmacological approaches, in the framework of a multidisciplinary collaboration.

We offer some suggestions in order to improve the psycho-oncological management not only of women with breast cancer but of all cancer patients, and to prevent the occurrence of psychiatric pathologies that can compromise the oncological management and prognosis of the cancer disease in this population:

1. The need to assign psychologists to the oncology and radiotherapy departments to listen to any patient reporting psychological distress, and to call on the psychiatrist when necessary.
2. A psychiatric follow-up should be planned from the outset in case of a history of depression or other psychiatric pathology in the cancer patient.
3. The integration of a psycho-oncology module in the training of oncology specialists in oncology.
4. The organization of continuing education in psychopharmacology and psychotherapy for all medical and paramedical staff involved in oncology care.
5. The necessity of the involvement of social workers who plays a role in the orientation and the support of these patients in order to succeed in a good medico-psycho-social care answering the orientations of a modern medicine in the field of psycho-oncology.

**Table 1:-** Summary table of socio-demographic characteristics of the overall sample.

Characteristics of the sample	Study participants (N=100)	
	N	%
	<b>Age</b>	
20-40 years	53	53%
41-60 years	43	43%

> 60 years	4	4%
<b>Marital status</b>		
Bachelor	18	18%
Bride	61	61%
Divorcee	10	10%
Widow	11	11%
<b>Children</b>		
Yes	80	80%
Not	20	20%
<b>Place of habitat</b>		
Urban	65	65%
Rural	36	36%
<b>Education level</b>		
None	76	76%
Primary	18	18%
Secondary	6	6%
<b>Profession</b>		
Without	75	75%
Active	22	22%
Pensioner	3	3%
<b>Socio-economic level</b>		
Less than 200 dollars	40	40%
Between 200 and 500 dollars	58	58%
More 500 dollars	2	2%
<b>Social security coverage</b>		
Yes	100	100%
Not	0	0%

**Table 2:-** Prevalence of depression by breast cancer characteristics.

Features of breast cancer	EDC present		EDC absent		Chi-squared test (p)
	N=26	%	N=74	%	
Metastatic stage					0.031
YES	25	65.8	13	34.2	
NO	27	43.5	35	56.5	
Hormonal profile					0.169
RH+Hecept test+	12	66.7	6	33.3	
RH+Hercept test-	33	50	33	50	
RH-Hercept test-	7	43.8	9	56.2	0.471
Clinical course					0.000
Remission	36	43.4	47	56.6	
Relapse	16	94.1	1	5.9	

**Table 3:-** Prevalence of depression by major risk factors.

CDE: Characterized depressive episode

Characteristics	with CDE	No CDE	P Value
<b>Age</b>			
• 20 - 40 years old			

<ul style="list-style-type: none"> <li>• 41 – 60 years old</li> <li>• &gt; 60 years old</li> </ul>	71.4 % 57.3 % 22.2 %	28.6 % 42.7 % 77.8 %	0.016 0.251 0.025
<b>Metastatic stage</b> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>	65.8 % 43.5 %	34.2 % 56.5 %	0.031
<b>Clinical evolution</b> <ul style="list-style-type: none"> <li>• Remission</li> <li>• relapse</li> </ul>	43.4 % 94.1 %	47 % 1 %	0.000
<b>Social discomfort</b> <ul style="list-style-type: none"> <li>• Positive attitude</li> <li>• Negative attitude</li> </ul>	84 % 43.3 %	16 % 58.7 %	0.000

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