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Original Research Article

Anxiety and depression among newly diagnosed breast cancer patients in a referral hospital in Lagos, Nigeria

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ABSTRACT

Background: Breast cancer, as a prevalent cancer type, often introduces substantial psychological stress, manifesting frequently as anxiety and depression. Globally, depression and anxiety affect many cancer patients, worsening their prognosis and quality of life. This study addresses this gap by assessing anxiety and depression prevalence among newly diagnosed breast cancer patients.
Methods: This cross-sectional study included 150 newly diagnosed breast cancer patients at Lagos State University Teaching Hospital (LASUTH). Participants completed a structured questionnaire covering socio-demographic information and psychological assessments using a validated depression, anxiety, stress, scale (DASS 21-questionnaire) measuring anxiety, depression and stress. Statistical analyses were conducted using SPSS version 27.0, with associations between mental health outcomes and patient characteristics assessed using chi-square tests. Key relationships were considered statistically significant at $p \leq 0.05$.
Results: The majority were females (82%) and over the age of 40 (86.7%). Anxiety was more prevalent than depression, with 81.6% of breast cancer patients experiencing anxiety compared to 5.7% with depression. Anxiety was significantly higher among patients self-funding their treatment, as 84.2% of these participants displayed symptoms, suggesting that financial burden influences mental health outcomes ($p=0.018$).
Conclusions: The study highlights a substantial prevalence of anxiety among newly diagnosed breast cancer patients in Lagos.

Keywords: Anxiety, Depression, Prevalence, Breast cancers

INTRODUCTION

Depression is the most common mental illness that can substantially affect the quality of personal and social life, resulting in a major public health problem. According to the world health organization (WHO), approximately 264 million people worldwide suffer from depression.[1] Many patients with cancer experience mental health problems that represent clinically significant issues. Anxiety and depression have been shown to be underdiagnosed and under-recognized in clinical practice, owing to the complex nature and interrelationship between cancer and

mental illness in patients.[2-4] Findings highlight the importance of early identification and management of psychological distress among cancer patients, as mental health issues can exacerbate physical challenges associated with the disease. In resource-constrained oncology settings like Nigeria, implementing systematic screening for psychological effects is crucial to ensure comprehensive cancer care.

In the recognition that a cancer diagnosis can have a profound impact on mental health, with a high prevalence of depression and anxiety among individuals with cancer.[1,5] For those without a previous psychiatric history, a cancer diagnosis is associated with an increased risk of common mental disorders, which can adversely affect cancer treatment, recovery, quality of life, and survival.[6] Despite the fact that depression and anxiety are among the most frequent complications experienced by cancer patients, they are often overlooked.[7] Moreover, the psychosocial needs of cancer patients, regardless of their mental health history, are frequently neglected during cancer treatment, which primarily focuses on addressing somatic symptoms and side effects. Advancements in early detection and improved cancer treatment have led to longer survival rates.[8] However, to the best of our knowledge, there is a paucity of explicit data demonstrating evidence in the Nigerian context, particularly in the study area, regarding the mental health challenges faced by individuals living with breast cancer. Therefore, the objective of this study is to assess the prevalence of depression and anxiety symptoms in Nigerian breast cancer patients, as well as to identify various influencing factors for these psychological conditions.

METHODS

Study site

The study site was the LASUTH.

Study design

A cross sectional study was done among newly diagnosed patients with histologically confirmed breast cancer.

Study period

This study was conducted from January 2024 to December 2024.

Inclusion criteria

Participants of 18 years or older and who provided informed consent, only those with a confirmed histological diagnosis of breast cancer were recruited and participants included in the study had not received any prior treatment for breast cancer, such as surgery, chemotherapy, or radiotherapy, to ensure that baseline levels of anxiety and depression would be accurately assessed were included.

Selection criteria

Previous treatment

Individuals who have undergone any form of treatment for breast cancer, including surgery, chemotherapy, or radiotherapy, prior to the study were excluded.

Severe illnesses

Patients with severe medical conditions that could interfere with the assessment of anxiety and depression, such as advanced heart disease or uncontrolled diabetes, were excluded.

Mental health history

Those with a history of severe mental health disorders, including schizophrenia or bipolar disorder, that could confound the results related to anxiety and depression, were excluded.

Sampling technique

Participants were recruited consecutively as they agreed to be part of the study.

Sample size calculation

The minimum sample size has been calculated using the Cochrane's formula.[9]

$$n_0 = \frac{Z^2 Pq}{d^2}$$

Where:

n_o=minimum sample size required

Z=standard normal deviation set at 1.96 which corresponds to the 95% confidence level.

P=expected prevalence rate (%)=15.3%.[10]

q=1-p. (1-0.153=0.847)

d=degree of accuracy desired set at 0.05

$$n_o = \frac{1.96^2 \; x \; 0.153 \; x \; 0.847}{0.05^2}$$

$$= \frac{3.8416 \; x \; 0.129591}{0.0025}$$

$=199.1 \approx 199$

The total number of adult new patients diagnosed with breast cancer in oncology clinic of LASUTH on a monthly basis is about sixty (60) as captured in the

oncology clinic register. Hence, the expected number of new breast cancer patients for the study duration (three months) is 180.

However, since this sample size exceeds 5% of the population (199×0.05=9.95), Cochrane's correction formula was used to calculate the final sample size.[9] These calculations are as follows:

$n_0 = \frac{n_0}{(1+\frac{n_0}{N})}$

Where:

n=minimum sample size for a population less than 10,000

N=population size

n_o=199

N=180

$N = \frac{199}{1+\frac{199}{180}}$

n_o= 94.51

$100\%\ attrition = \frac{10\ x\ 94.51}{100} = 9.451$

Total sample size= 94.51+9.451=103.961≈104.

However, a total of 149 participants were recruited to make the study more generalizable.

Data collection

Comprehensive data encompassing sociodemographic factors and clinical characteristics were collected from the enrolled participants, using a well-adapted the DASS-21 questionnaire that evaluates anxiety, depression and stress level of the patients with breast cancer.[10] All questions were scored between 0 to 3 based on the responses provided and scores were summed up for each enrolled participant and categorized on whether they were depression or anxiety question based on the answer provided.

The recommended cut-off scores for conventional severity labels (normal, moderate, severe) are presented in Table 1: Scores on the DASS-21 were multiplied by 2 to calculate the final score for each participant.

Table 1: DASS-21 questionnaire scoring system.

Variables	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

Ethics committee approval

Ethical approval was obtained from the health research and ethics committee of LASUTH with a reference number. LREC/06/10/2634.

Confidentiality

The study utilized hospital registration numbers rather than names of cases. All electronic data were securely pass worded while hard copy were maintained in a secured condition.

Statistical analysis

The data were analyzed using a statistical package for social science (SPSS) version 27. The mean, median, standard deviation and other parameters of statistical relevance were generated as necessary for continuous data. Level of significance was taken to be p≤0.05.

RESULTS

A total of 149 participants were recruited into the study. The majority of participants were female (82%) and aged above 40 (86.7%). The mean age was 49.57±11.78 years, the minimum and maximum years were 20 and 93 years respectively. Most participants were married (81.9%), had secondary education (43.3%), and self-funded treatment (98%). The socio-demographic characteristics of the participants are presented in Table 2.

Table 2: Socio-demographic characteristics of participants, (n=149).

Variables	N	Percentage (%)
Sex		
Male	26	18.0
Female	123	82.0
Age group (in years)		
20-29	7	4.7
30-39	12	8.7
>40	130	86.7
Marital status		
Single	11	7.4
Married	121	81.9
Divorced/widower	17	10.7
Source of referral		
General hospital	30	20.7
Private clinic	69	46.0
Tertiary hospital	50	33.3
Level of education		
Primary	44	30.0
Secondary	65	43.3
Tertiary	40	26.7

Majority (94.7%) of the participants self-funded treatment, the duration of cancer and the family history of cancer are presented in Table 3.

Table 3: Treatment fund source, duration of cancer diagnosis, family history of cancer, (n=149).

Variables	N	Percentage (%)
Treatment fund source		
Government	1	0.7
NGO	2	1.3
Self	146	98.0
Duration of cancer diagnosis		
≤2 years	125	83.8
3-4	9	6.1
≥5	15	10.1
Family history of cancer		
None	141	94.7
≥1	8	5.3

Breast cancer patients show a high prevalence of anxiety (81.6%), and low level of depression (5.4%) (Figure 1). The correlation of socio-demographic factors with depression and anxiety levels among breast cancer patients is presented in Table 4. Education and funding source show some statistically significant associations with depression in particular to the self-funded patients.

Duration since diagnosis also correlates with mental health, with longer diagnoses associated with greater depression and anxiety prevalence.

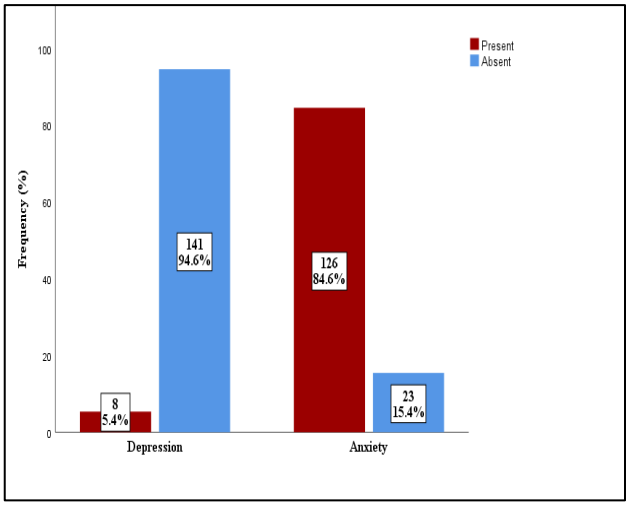

Figure 1: Prevalence of depression and anxiety among participants.

Table 4: Association between depression, anxiety and selected characteristics.

Variables	Depression, N (%)			Anxiety, N (%)		
	Yes	No	P value	Yes	No	P value
Sex						
Male	1 (3.7)	26 (96.3)	0.671	23 (85.2)	4 (14.8)	0.921
Female	7 (5.7)	115 (94.3)		103 (84.4)	19 (15.6)	
Age group (in years)						
20-29	0 (0.0)	7 (100.0)	0.765	7 (100.0)	0 (0.0)	0.510
30-39	1 (7.7)	12 (92.3)		11 (84.6)	2 (15.4)	
>40	7 (5.4)	122 (94.6)		108 (83.7)	21 (16.3)	
Marital status						
Single	1 (9.1)	10 (90.9)	0.830	11 (100.0)	0 (0.0)	0.328
Married	6 (4.9)	116 (95.1)		102 (83.6)	20 (16.4)	
Divorced/widower	1 (6.3)	15 (93.8)		13 (81.3)	3 (18.8)	
Source of referral						
General hospital	0 (0.0)	31 (100.0)	0.281	24 (77.4)	7 (22.6)	0.324
Private clinic	4 (5.8)	64 (94.2)		58 (84.1)	11 (15.9)	
Tertiary hospital	4 (8.2)	45 (91.8)		44 (89.8)	5 (10.2)	
Level of education						
Primary	2 (4.4)	43 (95.6)	0.478	40 (88.9)	5 (11.1)	0.629
Secondary	5 (7.8)	59 (92.2)		53 (82.8)	11 (17.2)	
Tertiary	1 (2.5)	39 (97.5)		33 (82.5)	7 (17.5)	
Treatment fund source						
Government	0 (0.0)	1 (100.0)	0.018	1 (100.0)	0 (0.0)	0.756
NGO	1 (50.0)	1 (50.0)		2 (100.0)	0 (0.0)	
Self	7 (4.8)	13 (95.2)		123 (84.2)	23 (15.8)	
Duration of cancer diagnosis						
≤2	6 (4.8)	119 (95.2)	0.048	112 (89.6)	13 (10.4)	<0.001
3-4	2 (22.2)	7 (77.8)		6 (66.7)	3 (33.3)	
≥5	0 (0.0)	15 (100.0)		8 (53.3)	7 (46.7)	
Family history of cancer						
None	8 (5.7)	133 (94.3)	0.489	120 (85.1)	21 (14.9)	0.442
≥1	0 (0.0)	8 (100.0)		6 (75.0)	2 (25.0)	

DISCUSSION

The study explores the prevalence of depression and anxiety among newly diagnosed breast cancer patients at a referral hospital in Lagos, Nigeria. This research is critical, as breast cancer diagnosis frequently accompanies mental health challenges, which, if unaddressed, can impact treatment adherence, recovery, and overall quality of life.

Details from the socio-demographic characteristics of the participants, reveal an overwhelming majority of female participants (82%), with 86.7% of patients aged over 40. Unlike this study, the prevalence of breast cancer in females in previous studies varies from 98% to 99%.[11-13] However, these findings are in line with global data on breast cancer prevalence, which is significantly higher in females and tends to rise with age.[12] The mean age of presentation of 49.57±11.78 years obtained in this study is also similar to value obtained by Akinbami et al in 2013.[12]

A high percentage of participants were married (81.9%) and primarily self-funded their treatments (98%), a reflection of the economic and social structure in Nigeria, where healthcare often relies on out-of-pocket expenditures. The predominance of secondary education levels (43.3%) suggests moderate awareness levels of health and self-care practices. This socio-demographic profile is essential in understanding the types of support systems available to these patients, with implications for mental health services.

Some of the patients diagnosed with depression also experience anxiety, underscoring the intertwined nature of these mental health conditions. The prevalence rate of anxiety was particularly high among breast cancer patients (81.6%) in this study, with some also displaying symptoms of depression. This high co-occurrence rate suggests that anxiety often precedes or coincides with depressive symptoms, which may be attributed to the emotional disturbances following a breast cancer diagnosis. The study's findings emphasize the need for regular mental health screening and dual management of anxiety and depression among breast cancer patients to improve their psychological resilience and adherence to treatment protocols.

In this study, breast cancer patients exhibited high anxiety levels (81.6%). In keeping with this study, most studies reported anxiety to be commoner than depression among breast cancer patients.[13-16] However, some studies also reported high rates of depression among breast cancer patients.[17-19]

This indicates that while anxiety may be a common response to a breast cancer diagnosis, depression may also be a common presentation amongst them. There is a need for specialized mental health intervention for breast cancer patients because they face a high burden of mental health challenges.

Among the significant findings, funding sources and duration since diagnosis had notable associations with depression rates. Patients self-funding their treatment had higher rates of depression, with a significant p-value of 0.018, illustrating the financial stress associated with treatment costs. This finding is crucial, as financial burden not only affects treatment adherence but also exacerbates mental health struggles. Moreover, patients diagnosed within the last two years display higher rates of depression and anxiety, with $p=0.048$ and <0.001, respectively. This aligns with literature indicating that mental health symptoms are often most severe shortly after diagnosis, likely due to the initial psychological shock and the immediate financial and lifestyle adjustments required.

Family history also plays a subtle role in mental health outcomes. Although not statistically significant ($p=0.489$), patients with a family history of cancer show a slight increase in depression and anxiety rates. This may be due to anticipatory stress, as individuals with familial cancer history might perceive a greater personal risk, adding to their psychological burden. Educational level, although not a significant factor ($p=0.478$), demonstrates an interesting trend in mental health outcomes. Patients with primary education report slightly higher rates of depression, suggesting that limited health literacy may hinder their ability to cope with the disease.

Patients with higher education levels might access and utilize coping resources more effectively, which can mitigate depression and anxiety symptoms. This observation supports the argument for targeted mental health education programs in hospitals to assist patients with lower educational backgrounds. A major limitation of this study is the reliability on the information provided by the breast cancer participants while filling the DASS-21 questionnaire in the data collection process which could have impacted on the analysis

CONCLUSION

This study highlights the high prevalence of anxiety among newly diagnosed breast cancer patients in Lagos, underscoring the psychological toll of a cancer diagnosis. The analysis of socio-demographic factors, funding sources, and family history underscores the complex interactions between personal circumstances and mental health outcomes.

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Ethical approval: The study was approved by the Institutional Ethics Committee Lagos State University Teaching Hospital with a reference number. LREC/06/10/2634.

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