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Research Paper

Beyond Diagnosis: Exploring Anxiety Among Breast Cancer Patients at Benue State University Teaching Hospital, Makurdi.

Onyewuchi AJ[1],Misauno MA[2]Gbaa ZL[3], Ojo BA[4], Eke BA[3], Omolabake BI[3], Ede AN[5], Otene SA[6]

[1.] *Department of Surgery, Federal University of Health Sciences, Otukpo, Nigeria.*
[2.] *Department of surgery, Jos University Teaching Hospital, Jos, Nigeria.*
[3.] *Department of Surgery, College of Health Sciences, Benue State University, Makurdi, Nigeria.*
[4.] *Department of Anatomic Pathology, College of Health Sciences, Benue State University, Makurdi.*
[5.] *Department of Psychiatry, College of Health Sciences, Benue State University, Makurdi, Nigeria.*
[6.] *Radiology Department, Federal University of Health Sciences, Otukpo, Nigeria.*
Corresponding author: Dr. Amina

Abstract
Background: *Anxiety is a common emotional response among patients undergoing diagnostic breast procedures. Fine needle aspiration cytology (FNAC) and core needle biopsy (CNB) are standard techniques, but their psychological impacts differ.*
Objective: *To compare anxiety levels before and after FNAC and CNB among patients presenting with breast lumps.*
Methods: *A total of 100 patients aged 20–80 years (mean 41.8 ± 15.3) were evaluated. Participants completed standardized anxiety assessments before and after undergoing FNAC or CNB. Data were analyzed using chi-square tests, with $p < 0.05$ considered significant.*
Results: *The most frequent age group was 20–29 years (28%). Severe pre-biopsy anxiety was reported by 83% (FNAC) and 50% (CNB) of participants. Post-biopsy, severe anxiety significantly declined to 51% (FNAC) and 37% (CNB), while mild anxiety increased from 4% to 46% (FNAC) and from 36% to 52% (CNB). Statistical analysis showed significant anxiety reduction following both procedures (FNAC: $\chi^2 = 16.813$, $p = 0.002$; CNB: $\chi^2 = 71.264$, $p < 0.001$).*
Conclusion: *Both FNAC and CNB effectively reduce pre-biopsy anxiety among breast lump patients. However, CNB demonstrates a greater psychological benefit, likely due to its higher diagnostic reliability and patient reassurance following the procedure.*

Keywords: *Anxiety, Breast lump, Fine needle aspiration cytology, Core needle biopsy, Diagnostic procedures, Patient psychology*

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I. Introduction

Breast cancer remains the most frequently diagnosed malignancy and the leading cause of cancer-related mortality among women worldwide [1]. Beyond its physical and oncologic implications, a diagnosis of breast cancer exerts profound psychological distress, with anxiety representing one of the most prevalent emotional responses [2-4]. Studies have shown that approximately 25–50% of breast cancer patients experience clinically significant anxiety at some point during their illness trajectory [5-7].

Anxiety among breast cancer patients may arise from fear of death, treatment side effects, body image concerns, financial burden, and uncertainty about prognosis [8-10]. Unmanaged anxiety has been associated with poorer quality of life, treatment non-adherence, delayed recovery, and suboptimal clinical outcomes [11,12].

Globally, numerous systematic reviews and meta-analyses have reported high prevalence of anxiety among breast cancer patients, with varying rates across populations [2,5,6,13]. Factors commonly associated with anxiety include younger age, advanced disease stage, limited social support, and chemotherapy exposure [9,10,14].

In Sub-Saharan Africa, evidence indicates even higher levels of psychological distress due to late presentation, limited access to psychosocial care, stigma, and high treatment costs [15-17]. A recent meta-analysis reported pooled prevalence of anxiety and depression exceeding 45% among cancer patients in region [16]. Nigerian studies have similarly revealed substantial emotional distress and unmet psychosocial needs among women living with breast cancer [18-22]. However, prospective, hospital-based studies evaluating the burden, determinants, and evolution of anxiety among breast cancer patients in North Central Nigeria remain scarce.

This study aims to determine the prevalence, severity, and predictors of anxiety among newly diagnosed breast cancer patients at Benue State University Teaching Hospital, Makurdi. It also seeks to assess how anxiety levels change during the course of diagnosis and treatment to inform tailored psychosocial interventions.

II. Materials and Methods.

This descriptive cross-sectional study was conducted in the General Surgery Unit in collaboration with the Departments of Psychiatry and Oncology, Benue State University Teaching Hospital, Makurdi. Inclusion criteria were adult female patients (≥18 years) newly diagnosed with breast cancer, patients who provided informed written consent to participate, and patients capable of understanding and completing the anxiety assessment questionnaire. Exclusion criteria were patients with prior psychiatric disorders or ongoing psychiatric treatment, patients with recurrent breast cancer or metastasis at initial presentation, and patients unwilling to participate or unable to complete follow-up evaluations. Questionnaires were administered in English or translated into Tiv/Idoma/Hausa as appropriate, following back-translation for consistency.

The Beck Anxiety Inventory (BAI) was utilized to objectively assess participants' anxiety levels before and after each diagnostic procedure (FNAC and CNB). The BAI is a validated 21-item self-report instrument designed to measure the severity of anxiety symptoms, encompassing both psychological and somatic domains such as nervousness, fear of the worst happening, and physiological arousal. Each item is scored on a 4-point Likert scale ranging from *0 (not at all)* to *3 (severely—it bothered me a lot)*, giving a total score range of 0–63. Based on the total score, anxiety was classified as mild (0–21), moderate (22–35), or severe (>35) (Appendix)

Participants were guided to complete the inventory independently under the supervision of a trained psychiatric nurse before undergoing FNAC and CNB, and again within 24 hours after each procedure. The resulting scores were analyzed to determine the difference in anxiety levels between the pre- and post-procedure phases. Data were recorded in a predesigned proforma, and statistical analyses were performed using the paired t-test, with a p-value of <0.05 considered statistically significant**.**

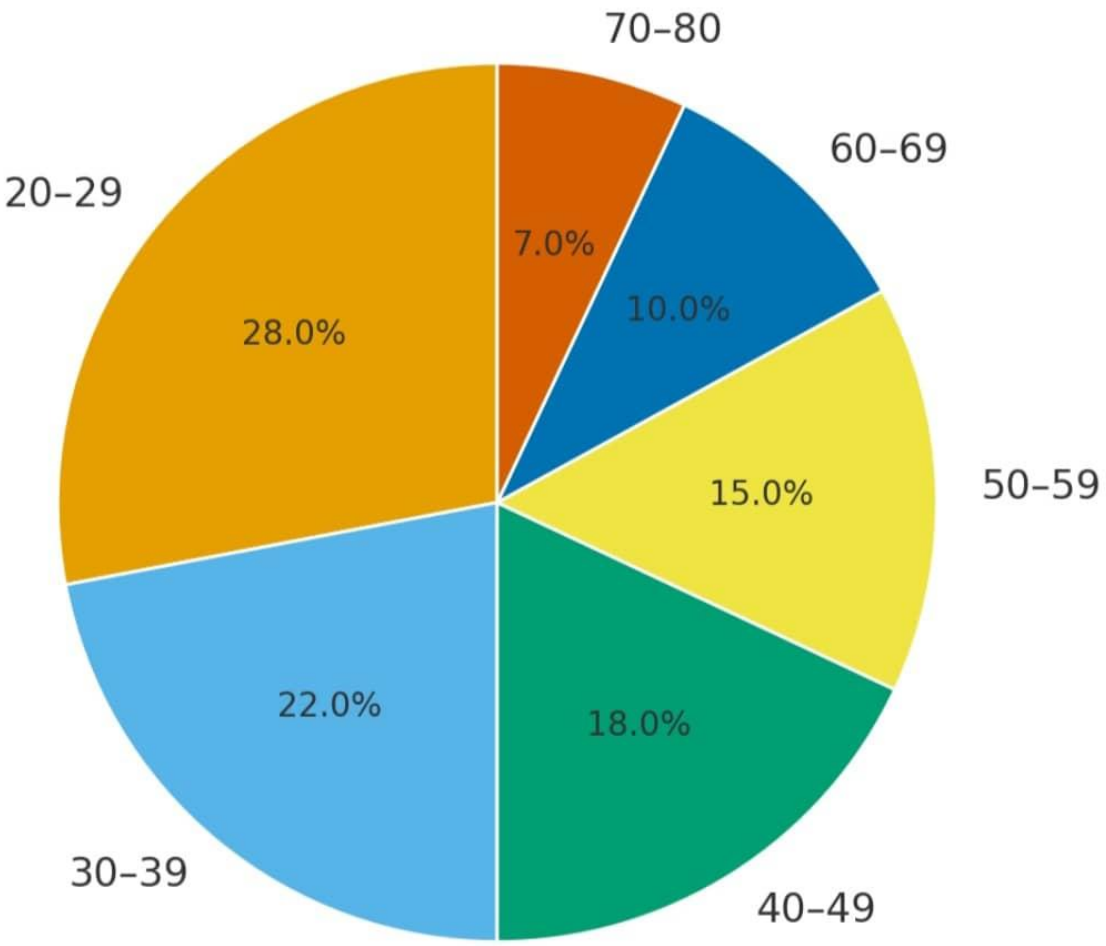
III. Results:

Pre- and post-procedure anxiety scores for FNAC and CNB were compared. A total of 130 women undergoing evaluation and treatment for breast cancer were recruited but only 100 participants were used for the study after applying the inclusion/exclusion criteria.

Statistical significance was set at $p < 0.05$.A total of 100 patients were analyzed. The mean age was 41.8 ± 15.3 years, with an age range of 20–80 years. The most common age group was 20–29 years.A total of 100 patients were studied, with a mean age of 41.8 ± 15.3 years (range 20–80 years). The 20–29-year age group constituted the largest proportion (28%), indicating that breast lumps and related diagnostic anxiety are common even among young adults.The datasetrevealed a gradual decline in frequency with increasing age, reflecting higher health-seeking behavior or benign breast lump occurrence among younger women.Before biopsy, severe anxiety was predominant for both procedures, affecting 83% of FNAC and 50% of CNB participants. Post-biopsy, there was a marked decline in severe anxiety to 51% (FNAC) and 37% (CNB), with a corresponding rise in mild anxiety (FNAC: 4% → 46%; CNB: 36% → 52%). This indicates that diagnostic clarification significantly reduced anxiety levels, more notably after core needle biopsy (CNB) compared to fine needle aspiration cytology (FNAC).

Statistical Findings revealed that FNAC: $\chi^2 = 16.813$, $df = 4$, $p = 0.002$ while CNB: $\chi^2 = 71.264$, $df = 4$, $p < 0.001$. These values demonstrate statistically significant reductions in anxiety levels after both procedures, with CNB showing stronger significance and greater post-procedure relief.The dataset revealed the predominance of younger adults (20–29 years) among participants (Figure1).There wasa major reduction in severe anxiety after FNAC, confirming that diagnosis mitigates uncertainty-related stress (Figure 2). There was even greater anxiety reduction post-CNB, underscoring its reassurance and perceived diagnostic accuracy (Figure 3).

Figure 1: Age Distribution of Participants.



Pie chart, showing that most breast cancer patients were aged 20–29 years.

Table 2: The anxiety level associated with FNAC as compared to CNB

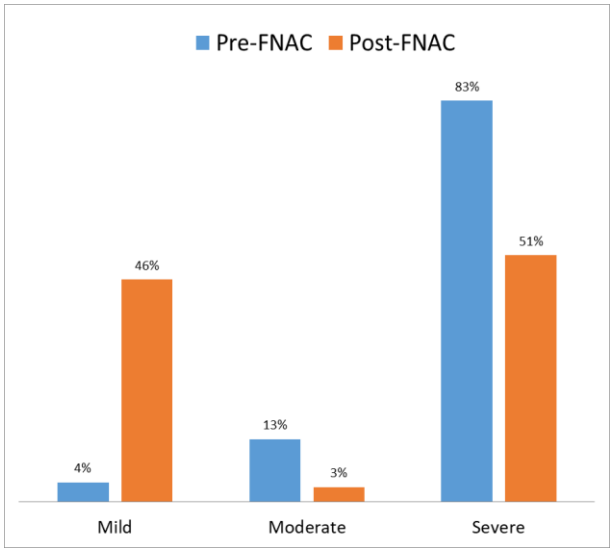
Anxiety Score	Pre-Biopsy		Post-Biopsy	
	FNAC –Frequency (%)	CNB – Frequency (%)	FNAC Frequency (%)	CNB – Frequency (%)
Severe	83 (83.0)	50 (50.0)	51 (51.0)	37(37.0)
Moderate	13 (13.0)	14 (14.0)	3 (3.0)	11 (11.0)
Mild /low	4 (4.0)	36 (36.0)	46 (46.0)	52 (52.0)
Total	**100 (100.0)**	**100(100.0)**	**100 (100.0)**	**100 (100.0)**

X^2= 16.813 **x^2 = 71.264**

df = 4 **df = 4**

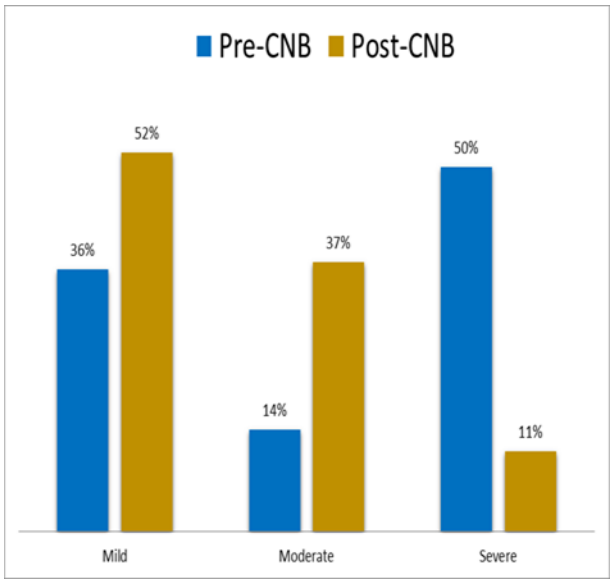
P-value = 0.002 **p-value = 0.000**

Figure 2:Comparison of Anxiety Levels Among Patients Before and After Fine Needle Aspiration Cytology (FNAC)



The figure illustrates the change in anxiety severity before and after FNAC among breast lump patients, showing a substantial reduction in severe anxiety (from 83% to 51%) and a corresponding increase in mild anxiety (from 4% to 46%) following diagnostic clarification.

Figure 3: Comparison of Anxiety Levels Among Patients Before and After Core Needle Biopsy (CNB)



The figure shows the distribution of mild, moderate, and severe anxiety levels pre- and post-core needle biopsy among breast lump patients, demonstrating a marked reduction in severe anxiety and an increase in mild anxiety following diagnosis disclosure.

IV. Discussion:

This study assessed the level of anxiety among women undergoing diagnostic procedures for breast cancer using the Beck Anxiety Inventory (BAI). The findings revealed a high prevalence of anxiety among participants, with the majority demonstrating mild to moderate anxiety levels prior to procedures and a significant proportion showing reduced anxiety scores post-biopsy. This suggests that uncertainty before diagnosis, fear of malignancy, and procedural anticipation are major contributors to emotional distress.

The pre-procedure BAI scores indicated that most patients experienced anticipatory anxiety, consistent with global reports where newly diagnosed or suspected cancer patients display elevated anxiety prior to

diagnostic confirmation. Studies from the United States and Europe reported similar patterns, with up to 70–80% of women showing heightened anxiety prior to biopsy, largely due to fear of a cancer diagnosis and potential treatment outcomes[23-25].

Following FNAC and CNB, the mean anxiety scores decreased significantly, aligning with findings from Sub-Saharan African studies which also reported that anxiety levels tend to lessen after diagnostic clarification[26-28]. This may reflect psychological relief after knowing the nature of the disease, coupled with the initiation of treatment or counseling interventions. However, a subset of participants maintained moderate to severe anxiety levels post-diagnosis, likely due to concerns about disease prognosis, treatment burden, and social implications a trend also observed in Nigerian and other African studies[29-31].

Nigerian studies, including those at Enugu[29] and Ibadan[30], have shown comparable results where up to 60% of breast cancer patients reported moderate anxiety prior to biopsy, with a notable reduction following histologic diagnosis and clinical counseling[32,33]. Cultural beliefs, limited psychosocial support, and poor awareness of breast cancer outcomes are thought to influence the persistence of anxiety in this population[34].

The use of the Beck Anxiety Inventory proved effective in quantifying anxiety severity, with most symptoms relating to somatic manifestations (e.g., palpitations, unsteadiness, or fear of dying) rather than purely cognitive concerns. This pattern supports earlier research suggesting that cancer-related anxiety in African women often manifests through physical symptoms rather than verbal expression of emotional distress[35,36].

The observed decline in anxiety after diagnostic confirmation underscores the importance of pre-procedural counseling, psychological support, and early communication in reducing emotional distress. Integrating psycho-oncology services into cancer care pathways could enhance patient experience and treatment adherence.

V. Conclusion:

Overall, this study demonstrates that anxiety is a prevalent and modifiable psychological burden among breast cancer patients during diagnosis. Systematic screening using validated tools like the BAI, coupled with targeted psychosocial interventions, can significantly improve emotional well-being and treatment readiness in Nigerian cancer patients.

VI. Recommendations:

This study highlights the significant anxiety burden among breast cancer patients during diagnostic and treatment phases. Routine anxiety screening using validated tools such as the Beck Anxiety Inventory should be integrated into breast cancer care at Benue State University Teaching Hospital. Patients with moderate to severe anxiety should receive early psychosocial interventions, including counseling and psychoeducation.A multidisciplinary approach involving surgeons, psychiatrists, nurses, and social workers is essential to provide holistic support. Culturally sensitive communication, family involvement, and targeted patient education can help dispel myths and reduce stigma. Furthermore, addressing financial constraints and promoting community awareness are vital to mitigating anxiety and improving treatment adherence.Finally, the study recommends institutionalizing psycho-oncology services, conducting longitudinal and multicenter research, and incorporating mental health support policies into routine breast cancer management to enhance overall patient wellbeing and treatment outcomes.

Ethical Considerations:

Ethical approval was obtained from the Health Research Ethics Committee of Benue State University Teaching Hospital, Makurdi. Written informed consent was obtained from all participants. Confidentiality was strictly maintained, and participation was entirely voluntary.

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Conflict of Interest and Disclosures:

The authors declare that there are no conflicts of interest related to this study. None of the authors have any financial or personal relationships that could inappropriately influence or bias the findings reported in this work.The authors affirm that the study was conducted independently without influence from any funding agency, commercial entity, or external organization.

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Appendix:

Beck Anxiety Inventory

	Not At All	Mildly but it didn't bother me much.	Moderately - it wasn't pleasant at times	Severely – it bothered me a lot
Numbness or tingling	0	1	2	3
Feeling hot	0	1	2	3
Wobbliness in legs	0	1	2	3
Unable to relax	0	1	2	3
Fear of worst happening	0	1	2	3
Dizzy or lightheaded	0	1	2	3
Heart pounding/racing	0	1	2	3
Unsteady	0	1	2	3
Terrified or afraid	0	1	2	3
Nervous	0	1	2	3
Feeling of choking	0	1	2	3
Hands trembling	0	1	2	3
Shaky / unsteady	0	1	2	3
Fear of losing control	0	1	2	3
Difficulty in breathing	0	1	2	3
Fear of dying	0	1	2	3
Scared	0	1	2	3
Indigestion	0	1	2	3
Faint / lightheaded	0	1	2	3
Face flushed	0	1	2	3
Hot/cold sweats	0	1	2	3
Column Sum				

Scoring **-** Sum each column. Then sum the column totals to achieve a grand score. Write that score here _____ .