

Research Article

Effectiveness of Cognitive Behavioral Therapy in the Management of Depression among Patients with Advanced Breast Cancer in South-Eastern Nigeria

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Abstract

Depression is common among patients diagnosed with advanced or metastatic breast cancer (BC), with the diagnosis often associated with severe emotional and psychological decline that may result from the disease or from treatment-related toxicity. Cognitive Behavioral Therapy (CBT) has emerged as one of the most evidence-based and effective psychotherapeutic approaches for the management of depression and anxiety in cancer populations but its implementation, use and role in the management of depression among advanced BC patients in low resource settings remains limited. Therefore, this study aimed to evaluate the effectiveness of CBT in reducing depressive symptoms among patients with advanced breast cancer patients receiving treatment at the University of Nigeria Teaching Hospital, Enugu. This study investigated the role of a six (6) week group CBT on depression among advanced BC patients. The study adopted randomized controlled Pre-test Post-test design. Forty two (42) advanced breast cancer patients were randomly divided into two groups: CBT group (n= 20) and control group (n= 22). The CBT group received a 6 week, 90 minutes CBT sessions once a week and the control group only received their cancer treatment and patient navigation assistance. Assessment was carried out for both groups at baseline (Pre-test) and the intervention. A total of BC patients were accessed for depression of which 42 patients recruited and 27 patients completed the study. Baseline assessment of participants showed mean depression scores of 12.05 ± 1.61 for CBT group and 12.77 ± 1.95 for the control groups ($p=0.20$). Post intervention assessment result showed that participants in the CBT group reported a significantly greater decrease in depression (3.50 ± 0.94) compared to participants in the control group (13.23 ± 1.78) ($p<0.001$). Cognitive behavioral therapy has been shown as an effective treatment for clinical depression. Implementing CBT into practice may appear challenging at first, but efforts to help these patients in achieving better all-around health are efforts well spent.

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Keywords

Breast Cancer, Cognitive Behavioral Therapy, Depression

1. Introduction

Breast cancer remains the most frequently diagnosed malignancy among women worldwide and continues to be a major cause of cancer-related morbidity and mortality particularly in low- and middle-income countries such as Nigeria. Recent global cancer statistics estimated more than 2.3 million new breast cancer cases and over 680,000 deaths annually [1]. Advances in diagnosis and treatment have improved survival outcomes but many patients with advanced breast cancer continue to experience psychological distress throughout the disease and treatment trajectory [2].

Depression is one of the most common psychological condition among patients with advanced or metastatic breast cancer with the diagnosis frequently associated with fear, uncertainty, pain, altered body image, financial strain, treatment toxicity, and concerns about mortality, all of which contribute to emotional suffering [3, 4]. Studies conducted across different cancer populations have shown that depressive symptoms affect between 25% and 50% of breast cancer patients, while clinically significant depression remains considerably higher than in the general population [5, 6]. Depression in breast cancer patients has been associated with poor treatment adherence, prolonged hospitalization, reduced quality of life, impaired social functioning, increased symptom burden, and poorer survival outcomes [8, 9]. Psychological distress may also influence patients' coping abilities and interfere with decision-making regarding treatment options [7]. It may manifest as anxiety, hopelessness, fatigue, insomnia, and social withdrawal, especially in patients with advanced disease which may worsen during clinical interventions [8]. In sub-Saharan Africa, psychosocial distress among breast cancer patients is often under-recognized and undertreated because oncology services primarily focus on biomedical management rather than psychosocial care [9].

Cognitive Behavioral Therapy (CBT) has emerged as one of the most evidence-based and effective psychotherapeutic approaches for the management of depression and anxiety in cancer populations [10]. This is based on the principle that maladaptive thoughts, beliefs, emotions, and behaviors are interconnected, and that modifying negative cognitive patterns can improve emotional well-being and adaptive coping [11]. CBT employs techniques such as cognitive restructuring, behavioral activation, problem-solving, relaxation training, and coping skills development to reduce depressive symptoms and improve psychological resilience [12]. CBT interventions have also been associated with improved quality of life, better

adjustment to illness, enhanced treatment adherence, and improved coping with treatment-related side effects [13]. In patients with advanced breast cancer, group-based CBT has shown particular benefits by providing emotional support, promoting social connectedness, and reducing feelings of isolation [14]. Despite these documented benefits, access to structured psycho-oncology services and evidence-based psychological interventions remains limited in many low-resource settings, including Nigeria. In Nigeria, breast cancer patients frequently present with advanced-stage disease due to delayed diagnosis, poor health-seeking behavior, financial limitations, and inadequate screening programs [15]. This late presentation often exposes patients to prolonged physical suffering, aggressive treatment modalities, uncertainty about prognosis, financial burden, and social disruption, all of which may significantly increase psychosocial distress and predispose patients to depressive symptoms.

Although the effectiveness of CBT in management of depression in BC patients has been widely investigated in high-income countries, there remains limited local evidence regarding its role in the management of depression among advanced breast cancer patients in low resource settings. Therefore, this study aimed to evaluate the effectiveness of Cognitive Behavioral Therapy in reducing depressive symptoms among patients with advanced breast cancer receiving treatment at the University of Nigeria Teaching Hospital, Enugu.

2. Method

2.1. Study Design

This study was a pilot randomized controlled pretest-post test interventional study conducted among advanced breast cancer patients with depressive symptoms attending the oncology clinic of the University of Nigeria Teaching Hospital (UNTH), Enugu.

2.2. Study Population

From the month interval, a total of 120 advanced breast cancer patients were recruited into the study after assessment for depression. All patients with advanced breast cancer managed at the hospital between 1st March and 30th August 2018 were considered for the study. During the study period, a total of

120 advanced breast cancer patients were assessed for depression, 42 who met the eligibility criteria and screened positive for depression were subsequently recruited into the study.

2.3. Study Area

The study was conducted at the patient navigation unit in oncology centre University of Nigeria Teaching Hospital (UNTH) Enugu. The navigation unit is the first point of care for the cancer patients where they are provided with the following information on cancer: health information, coping strategies, psycho-education, nutritional needs, anticipated challenges in cancer care journey as well as the possible side effects of treatment and the need for regular follow up. The hospital is a referral centre for secondary health facilities in the south-eastern region of the country. It is at the forefront in cancer treatment and management in the country.

2.4. Inclusion and Exclusion

Female patients aged 18 years and above with histologically confirmed stage III or IV breast cancer who were receiving treatment at the University of Nigeria Teaching Hospital (UNTH), Enugu, and had a HADS depression score of ≥ 8 were eligible for inclusion in the study. Participants were also required to be able to communicate effectively in either English or Igbo language and provide written informed consent before enrolment into the study. Patients with severe cognitive impairment, current psychosis or bipolar disorder, those already receiving concurrent psychotherapy, and critically ill patients who were unable to complete the intervention sessions were excluded from the study.

2.5. Data Collection

Those who consented to take part in the study were initially screened for depression using a self-evaluation assessment tool, Hospital Anxiety and Depression Scale (HADS). A total of 120 advanced breast cancer patients were assessed for depression, 42 participants were recruited. Participants were stratified according to depression severity (mild, moderate or severe depression) and randomized into intervention or control groups using a simple concealed allocation technique involving opaque sealed papers marked T or C. At the end of the blind randomization, 20 patients were allocated into the treatment group and 22 patients into the control group. Participants in the control group received routine oncology and patient navigation care without structured psychological intervention during the study period.

2.6. Instruments

The Hospital Anxiety and Depression Scale (HADS) developed by Zigmond and Snaith [16] was used to assess depression and anxiety in patients with illness and in the general population. It is a self-rating patient-reported outcome measure

(PROM) for both hospital and community settings. It consists of fourteen items which are equally divided into two subscales: anxiety (HADS-A) and depression (HADS-D). The depression subscale questions are 1, 3, 5, 7, 9, 10, and 13. Responses on HADS are rated on a 4-point Likert scale and range from 0 to 3, with higher scores indicating higher severity. The HADS was validated and has the ability of both diagnosis and grading psychological states but has limited usage among advanced breast cancer patients population in Nigeria. The reliability of HADS has been shown to perform well in assessing the symptom severity of depression in patients with chronic diseases like cancer, psychiatric and primary care patients as well as in the general population.

2.7. Procedure

Patients were consented and enrolled into the intervention and control groups of the study in a ratio of 10:11, respectively. Demographic and clinical information was obtained from the patients using a self-administered questionnaire at pre-test. The CBT intervention was delivered face-to-face by a trained psycho-oncologist using a structured CBT manual adapted for cancer patients.

Each session began with 10-15 minutes relaxation exercise to help patients ease tension and be more relaxed for the activities, followed by a 15-20 minute psycho-educative lecture covering several different topics and participants questions were addressed afterward. The participants were given take home assignment after each session and were asked at the end of every session to briefly summarize their feelings in regards to the discussed topic.

Each weekly session had a pre-defined treatment agenda during which the core components and principles that underpin CBT were discussed and implemented in a group format. The key components of CBT treatment included psycho-education, which focused on the interaction between breast cancer, depression, automatic thoughts, analysis of behavior, cognitive distortion and alternative thoughts, thought evaluation, cognitive restructuring and problem solving. Both quantitative and qualitative data were gathered for the study. The qualitative data were from interactions and interviews with participants that met the inclusion criteria while the quantitative data came from a non-probabilistic approach using HADS questionnaire to assess the severity of depression of the patients. In between the study, 6 participants from the study group and 9 from the control group dropped out of the study. Each session lasted for 90 minutes, once in a week every Monday morning over a period of 6 weeks. The intervention was offered at no cost and was done in a total of six sessions. The intervention was designed structured six-week group CBT programme, with the aim of each 90-minute session being the development of cognitive and behavioural coping skills relevant to depression in advanced breast cancer.

The CBT sessions were facilitated through group check-in discussions, role-play exercises and homework assignments.

The primary outcome was reduction in HADS depression score after 6 weeks. Ethical approval was obtained from the Health Research Ethics Committee of University of Nigeria

Teaching Hospital Enugu. Written informed consent was obtained from all participants prior to enrolment.

Table 1. Structure and Content of the CBT Intervention.

Session	Main focus	Key activities
Session 1	Orientation and introduction	Introduction of the therapist and participants; development of rapport within the group; explanation of programme objectives and group rules; emphasis on confidentiality; and discussed the rules guiding participation. The study and the modules to be covered during the intervention were introduced. Participants were also taught relaxation skills to help reduce tension and prepare them for subsequent therapeutic activities.
Session 2	Psychoeducation and rationale for CBT	Psychoeducation on depression, its manifestations, and its relationship with cancer-related experiences; explanation of the rationale for CBT and the interaction between thoughts, cognitive distortions, coping with stressors, emotions, and behaviours.
Session 3	Introduction to the ABC model	Introduction and explanation of the Albert Ellis ABC model of CBT using cancer-related examples; identification of activating events, belief system, and emotional or behavioural consequences; completion of an ABC worksheet as homework.
Session 4	Review and introduction to disputation	Review of the previous session and ABC homework; clarification of difficulties encountered; introduction to disputation and structured questioning to critically examine maladaptive beliefs.
Session 5	Application of disputation techniques	Guided questioning, group discussion, role-play, and therapeutic exercises to help participants examine the basis, validity, logic, and usefulness of maladaptive beliefs.
Session 6	Consolidation, termination, and post-intervention assessment	Review and consolidation of key CBT concepts and skills; discussion of continued application of learned skills; formal termination of the intervention; post-intervention assessment.

Statistical analysis: Data analysis was conducted using a per-protocol approach, in which only participants who completed the intervention and post-intervention assessment were included in the final analysis. Data were analyzed using IBM SPSS Statistics version 25. Socio-demographic variables were summarized using descriptive statistics, while independent-samples t-tests were used to compare mean depression scores between the CBT and control groups at baseline and post-intervention. Differences in mean depression scores between groups at baseline and post-intervention were assessed using independent-samples t-tests. Statistical significance was set at $p < 0.05$.

3. Results

A total of 120 advanced breast cancer patients were assessed for depression, out of which 42 had depressive symptoms and were recruited in this study. A higher number of advanced breast cancer patients in this study were severely depressed 19 (45.3%), while 9 (21.4%) were mildly depressed (Figure 1). Before the completion of the study 15 patients were

censored while 27 patients completed the study.

The participants were all females. The age range of the patients was 29 years to 58 years with mean age of 48.37 ± 6.2 (Figure 2). A higher proportion were married 21 (77.8%) while 6 (22.2%) were single. The educational status of the participants were; primary 2 (7.4%), secondary 12 (44.5%) and tertiary 13 (48.1%). Majority of the patients were self-employed 13 (48.1%), while 5 (18.6%) were civil servants and 9 (33.3%) were unemployed.

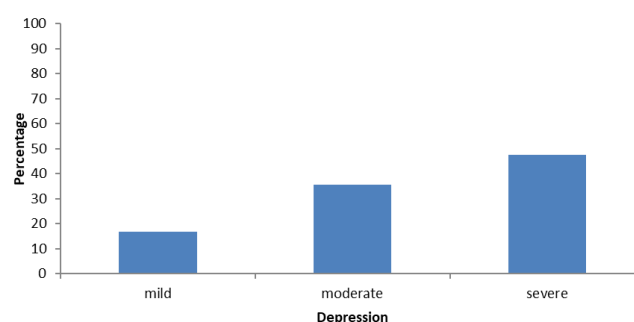


Figure 1. Severity of depression among the participants.

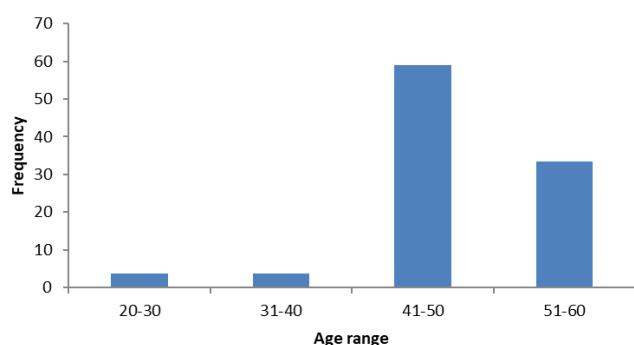


Figure 2. Age distribution of the participants.

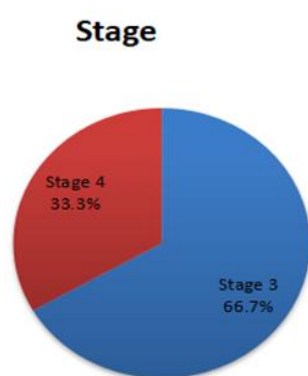


Figure 3. Pie chart depicting the stages of the respondents.

A greater number of the participants 18 (66.7%) were stage 3 patients while 9 (33.3%) were stage 4 patients (Figure 3). All the respondents had taken chemotherapy and 15 (55.6%) of them were taking radiation treatment as at the time of the study (Figure 4).

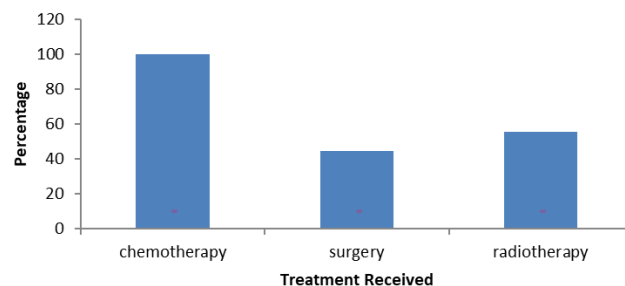


Figure 4. Showing the treatments received by participants.

A higher percentage of the participants (48.3%) with one to five years duration of illness were seen to have severe depression while 46.2% with less than one year duration of illness were severely depressed (Table 2). This association between duration of illness and severity of depression is not statistically significant ($P = 0.47$).

Table 2. Relationship between depression severity and duration of cancer (illness).

Variable	Category	Mild n (%)	Moderate n (%)	Severe n (%)	Total n (%)	P-value
Duration of cancer	Less than 1 year	1	6	6	13	0.47
	1-5 years	6	9	14	29	
Total		7	15	20	42	

Lower proportions of participants (35.7%) with stage 4 disease were seen to have severe depression while 53.7% had severe depression in stage 3 (Table 3). Also this relationship between the stage of the illness and depression severity is not statistically significant ($P = 0.064$).

Prior to the intervention, there was no statistically significant difference in mean depression scores between the CBT (Mean score = 12.05, SD = 1.61, $n = 20$) and control groups (Mean score = 12.77, SD = 1.95, $n = 22$). The mean pre-test depression score was 12.05 ± 1.61 in the CBT group and 12.77 ± 1.95 in the control group ($p = 0.20$). (Table 4).

Table 3. The relationship between participants' stage of the illness and depression severity.

Variable	Category	Mild n (%)	Moderate n (%)	Severe n (%)	Total n (%)	P-value
Stage of cancer	Stage 3	2	11	15	28	0.064
	Stage 4	5	4	5	14	

Variable	Category	Mild n (%)	Moderate n (%)	Severe n (%)	Total n (%)	P-value
Total		7	15	20	42	

Table 4. Independent Sample t-test for Pre-assessment Showing the Difference in Depressive Scores between CBT group and Control Group.

Group	N	Mean	SD	Mean Difference	t-test	df
CBT Group	20	12.05	1.61	-0.72	-1.3	40
Control Group	22	12.77	1.95			

At the end of the intervention, there was a significant difference in the mean depressive scores between the CBT group (Mean score = 3.94, SD = -9.73, n = 14) and the control group (Mean score = 13.23, SD = 1.78, n = 13) with $p = .001$ (Table 5).

Table 5. Independent Sample t-test for Post-assessment Showing the Difference in Depressive Scores between CBT group and Control Group.

Groups	N	Mean	SD	Mean Diff	t-test	df	p
CBT Group	14	3.5	0.94	-9.73	-17.89	25	<0.001
Control Group	13	13.23	1.78				

4. Discussion

The present study assessed the role of Cognitive Behavioral Therapy (CBT) in the management of depression among patients with advanced breast cancer. The findings showed that depression was common among the participants, with severe depression accounting for the highest proportion of depressive symptoms. CBT showed a significant reduction in depressive symptoms among participants in the treatment group when compared with the control group.

The high prevalence of severe depression observed in this study is consistent with previous reports that depression is common among patients with advanced malignancies, particularly breast cancer patients undergoing prolonged treatment and experiencing disease-related distress.

In this study, more than one third of the breast cancer patients assessed were found to have depressive symptoms. This finding is consistent with studies that reported that depression remains one of the most prevalent psychological comorbidities among breast cancer patients [17, 18]. Women with breast cancer experience significantly higher levels of depression and anxiety compared with the general population because of the emotional, physical, and socioeconomic burden associated with cancer diagnosis and treatment [3, 6]. This may be attributable to advanced disease stage, treatment-related toxicities, fear of death, financial burden, altered body image, and

uncertainty regarding prognosis. Advanced breast cancer is frequently associated with persistent pain, physical limitations, social isolation, and emotional exhaustion, all of which contribute significantly to worsening psychological distress [8].

The findings of this study demonstrated that CBT significantly reduced depressive symptoms among advanced breast cancer patients following the six-week intervention. Participants who received CBT had markedly lower post-intervention depression scores compared with the control group. This finding is consistent with recent systematic reviews and meta-analyses identifying CBT as one of the most effective psychosocial interventions for reducing depression, anxiety, emotional distress, and psychological dysfunction among women with breast cancer [10]. This outcome may be attributed to the structured and supportive nature of the CBT sessions used in this study. The intervention addressed several psychological challenges commonly experienced by advanced breast cancer patients, including fear, hopelessness, negative automatic thoughts, anxiety about disease progression, and emotional distress associated with chemotherapy and radiotherapy. Ye et al. [19] has demonstrated that CBT interventions significantly improved quality of life and psychological well-being among breast cancer survivors. The group-based format of the intervention used in this study may also have contributed significantly to the improvement observed among participants. The weekly sessions provided an opportunity for participants to interact with other women facing similar challenges, thereby reducing feelings of isolation and promoting emotional support.

Previous studies have reported that group CBT and supportive group interventions among breast cancer patients improve emotional wellbeing by improving peer support and coping strategies [20-22]. CBT equips patients with coping strategies that improve emotional regulation, cognitive restructuring, problem-solving abilities, and adaptive coping with illness-related stressors [11]. Group-based CBT may additionally provide emotional support and social connectedness, thereby reducing feelings of loneliness and hopelessness commonly experienced by women with breast cancer [14].

Despite the strengths of this study, it also presented with some limitations. The CBT intervention was delivered over a relatively short period of six weeks, with one 90-minute session per week. Although the intervention followed a structured therapeutic protocol, the relatively brief duration may have limited the opportunity for participants to consolidate the therapeutic skills acquired during the intervention. Longer interventions with extended follow-up may provide further evidence regarding the sustainability of the observed benefits. This study was conducted among patients with advanced breast cancer at a single centre, which may limit the generalizability of the findings to patients with breast cancer in other settings or to those with different stages of disease.

5. Conclusion

The findings of this study support the growing body of evidence demonstrating that CBT is an effective non-pharmacological intervention for managing depression among advanced breast cancer patients especially in Nigeria. Implementing CBT into practice may appear challenging at first, but efforts to help these patients in achieving better all-around health are efforts well spent.

Abbreviations

CBT	Cognitive Behavioural Therapy
HADS	Hospital Anxiety and Depression Scale
HADS-A	Hospital Anxiety and Depression Scale - Anxiety Subscale
HADS-D	Hospital Anxiety and Depression Scale - Depression Subscale

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Author Contributions

Vitalis Okwor: Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – original

draft

Chioma Asuzu: Conceptualization, Methodology, Supervision, Validation, Writing – review & editing

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Chika Okwor: Investigation, Validation, Writing – review & editing

Udemba Chijioke: Data curation, Visualization, Writing – original draft, Writing – review & editing

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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