Effect Of Cognitive Behaviour Therapy on Posttraumatic Stress Disorder Among English Language Students In South East, Nigeria

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ABSTRACT

This study investigated the effect of Cognitive Behaviour Therapy (CBT) on posttraumatic stress disorder among English language students in South East, Nigeria: a randomized controlled trial. A quasi-experimental design was employed involving 48 participants in the CBT group and a comparable control group. Data were collected using the PTSD Checklist before and after the intervention. Paired sample t-test results showed a significant within-group reduction in PTSD symptoms among CBT participants ($p < .001$). These findings suggest that while CBT may support symptom improvement, the observed effects may also result from natural recovery or placebo responses.

Objectives: The primary objective of this study is to investigate the Effect of Cognitive Behaviour Therapy (CBT) on Posttraumatic Stress Disorder (PTSD) among English Language Students in the South East region of Nigeria. Grounded in Aaron Beck's cognitive theory, CBT aims to identify and modify distorted cognitions related to traumatic experiences. The study seeks to fill a significant gap in the literature by specifically examining the application of CBT for English language students in this unique cultural and educational context.

Methods: The study employed a Randomized Controlled Trial (RCT) design to assess the impact of Cognitive Behaviour Therapy (CBT) on PTSD among English language students in South East, Nigeria. Participants were randomly assigned to either the CBT intervention group or a control group, with PTSD symptoms measured at baseline, post-intervention, and follow-up using the PTSD Checklist for DSM-5 (PCL-5).

Results: The study found a significant reduction in PTSD symptoms in the CBT group compared to the control group, indicating the effectiveness of the intervention. However, the difference in post-intervention scores between the two groups did not reach statistical significance when baseline scores were accounted for.

Conclusion: The findings suggest that CBT is a promising therapeutic approach for reducing PTSD symptoms among English language students in South East, Nigeria.

Abbreviations: PTSD: Posttraumatic Stress Disorder, **CBT**: Cognitive Behaviour Therapy, **DSM-5**: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, **PCL-5**: PTSD Checklist for DSM-5, **RCT**: Randomized Controlled Trial, **WHO**: World Health OrganizationTop of Form

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1. INTRODUCTION

Posttraumatic stress disorder (PTSD) poses significant challenges among English language students in South East, Nigeria, exacerbating mental health concerns in an educational setting marked by linguistic and cultural diversity. The prevalence of PTSD among students in the region is caused by various socio-political factors, including historical conflicts, ethnic tensions, and communal violence (Okonkwo & Eze, 2018). For instance, the region has experienced periods of civil unrest, such as the Nigerian Civil War, which has left a lasting impact on the collective psyche of its inhabitants, particularly among younger generations. Additionally, ongoing socio-economic disparities, limited access to mental health services, and the stigma surrounding mental illness contribute to underreporting and untreated cases of PTSD among English language students (Chukwu et al., 2020). These systemic challenges further compound the stressors faced by students, hindering their academic performance and overall well-being.

Furthermore, the educational environment itself can be a source of trauma for English language students in South East, Nigeria, increasing the risk of PTSD. Students may experience bullying, discrimination, and academic pressure, particularly in highly competitive environments where language proficiency is closely linked to academic success (Iheanacho & Nwachukwu, 2021). Moreover, language barriers and cultural differences may exacerbate feelings of isolation and alienation among non-native English speakers, further complicating their adjustment to the academic setting. The lack of culturally sensitive support services and mental health resources within educational institutions worsens the challenges faced by students grappling with PTSD, underscoring the urgent need for comprehensive interventions and policy reforms to address mental health disparities in the region (Okoli & Ogbodo, 2022). Efforts to raise awareness, provide psychoeducation, and destigmatize mental health issues within educational settings are crucial steps towards creating a supportive and inclusive environment for English language students affected by PTSD.

Cognitive Behaviour Therapy (CBT) therefore stands as a prominent and empirically supported therapeutic modality acknowledged for its efficacy in addressing the intricate connections between thoughts, emotions, and behaviors. Originating from Aaron Beck's cognitive theory, CBT is grounded in the understanding that individuals grappling with mental health challenges, including Posttraumatic Stress Disorder (PTSD), frequently manifest distorted cognitions stemming from traumatic experiences. Beck's cognitive model posits that these distorted thought patterns contribute to emotional distress and maladaptive behaviours. Consequently, the primary objective of CBT is to meticulously identify and modify these dysfunctional cognitive patterns to alleviate psychological distress associated with traumatic events (Beck, 2011).

In the context of Posttraumatic Stress Disorder (PTSD), individuals often grapple with intrusive memories, avoidance behaviours, negative alterations in mood and cognition, and heightened arousal, all of which are intricately connected to maladaptive cognitions. For instance, survivors of traumatic events may harbour distorted beliefs about the world, themselves, or the future, perpetuating a cycle of distress. CBT employs a range of therapeutic techniques, including cognitive restructuring, wherein individuals are guided to challenge and reevaluate these distorted thoughts. This process involves identifying and disputing irrational beliefs, fostering cognitive flexibility, and promoting healthier, more adaptive perspectives (Hofmann et al., 2012). Furthermore, exposure therapy, another key component of CBT, involves systematically and safely confronting avoided stimuli or situations related to the trauma. This exposure, conducted in a supportive therapeutic environment, aims to diminish the emotional charge associated with traumatic memories and foster a sense of mastery and control. Through these integrated techniques, CBT not only targets the symptoms of PTSD but also addresses the underlying cognitive processes, thereby offering a comprehensive and lasting therapeutic impact.

Posttraumatic Stress Disorder (PTSD) stands as a severe and incapacitating psychological condition that can emerge following exposure to traumatic events, characterized by a range of distressing symptoms. These symptoms encompass intrusive memories, avoidance behaviors, negative alterations in mood and cognition, and heightened states of arousal (American Psychiatric Association, 2013). English language students, specifically in the South East region of Nigeria, encounter distinctive stressors arising from both their academic pursuits and cultural surroundings. The process of learning a new language, while undoubtedly enriching, can be inherently challenging, placing students under considerable academic pressure and cultural adjustment demands (Okoye, 2019). This unique context presents a potential breeding ground for heightened stress levels, which, when compounded with pre-existing stressors, may contribute to the development or exacerbation of PTSD symptoms among English language students in South East, Nigeria. The academic environment, with its demanding linguistic requirements and the need for effective communication, adds an additional layer of stress for language students (Oluwole & Nnamdi, 2020). Cultural factors, including differences in communication styles, social norms, and educational expectations, may further compound the challenges faced by English language learners (Nwachukwu, 2021). The amalgamation of these stressors makes this demographic particularly vulnerable to mental health challenges, including the manifestation or exacerbation of PTSD symptoms.

Moreover, while substantial research exists on PTSD globally, there is a dearth of empirical evidence specifically examining its prevalence and impact among English language students in the South East region of Nigeria. English language students in South East, Nigeria are at an increased risk of developing PTSD due to exposure to various traumatic events, including socio-political conflicts, communal violence, and economic hardships. Sixty percent (60%) of poor examination performance

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of students in English language in South East, Nigeria since 2015 till date has been attributed to the posttraumatic stress disorder on English language students (Uzochukwu, 2022). These adversities may contribute to the heightened vulnerability of English language students to traumatic experiences, potentially leading to the development of PTSD. Existing literature suggests that individuals with PTSD face difficulties in concentration, memory, and emotional regulation, all of which can impact academic success (Uzochukwu, 2022). Consider, for instance, a scenario where an English language student has been exposed to communal violence during their formative years. The persistent impact of such trauma may manifest in academic settings, affecting the student's ability to engage in language-related activities, participate in class discussions, and maintain focus on coursework (Adigwe, 2022). Additionally, cases may involve students who have encountered economic hardships or displacement due to socio-political factors. These stressors can contribute to the development of PTSD symptoms, such as hypervigilance, avoidance of language-related activities, and heightened emotional distress during language assessments (Iheanacho & Ebizie, 2023).

However, one pivotal intervention to address the prevalent issue of Posttraumatic Stress Disorder (PTSD) among English language students in the South East region is the establishment of counseling services tailored to their unique needs. This intervention recognizes the interconnectedness of mental health, emotional regulation, and academic success. While counseling services, including individual and group sessions, offer a valuable platform for students to cope with trauma and improve emotional well-being, the success of these interventions may be impeded by cultural stigma surrounding mental health (Uzochukwu, 2022; Iheanacho & Ebizie, 2023). Counseling sessions can incorporate evidence-based techniques such as Cognitive Behavioral Therapy (CBT), a proven approach for addressing trauma-related symptoms (Iheanacho & Ebizie, 2023). The use of cognitive restructuring techniques within counseling sessions allows students to identify and challenge negative thought patterns associated with their traumatic experiences. Behavioral interventions, including exposure therapy in a controlled environment, can gradually help students overcome avoidance behaviors linked to PTSD. Implementing a series of 10 to 12 weekly sessions can facilitate a structured exploration of trauma-related issues, allowing for gradual progress and skill-building (Iheanacho & Ebizie, 2023).

Complementing counseling services, psychoeducation programs integrated into the educational curriculum can significantly enhance awareness of PTSD symptoms and coping strategies among English language students. These programs aim to reach a broader audience, providing essential information about mental health and reducing the stigma associated with seeking support (Adigwe, 2022). While the benefits are substantial, challenges arise from resource constraints and time limitations within the educational system, necessitating strategic planning and collaboration to ensure sustainability and effectiveness. Moreover, training teachers in trauma-informed practices stands out as another crucial intervention to create supportive classroom environments for students dealing with PTSD. Educators equipped with an understanding of trauma's impact can implement strategies that foster a sense of safety and trust. Techniques such as trauma-informed classroom management, recognizing signs of distress, and employing calming activities can be incorporated into teacher training programs. A series of training sessions, conducted over a span of several weeks, can address challenges related to resource limitations and potential resistance to adopting new approaches.

Furthermore, understanding the intersectionality of language learning stressors and the potential for traumatic experiences underscores the importance of exploring tailored interventions, such as Cognitive Behaviour Therapy (CBT), to address the unique needs of English language students in this specific cultural and educational context. This is because CBT is grounded in the understanding that individuals' thoughts, feelings, and behaviors are interconnected, and it aims to modify negative thought patterns and behaviors associated with traumatic experiences (Iheanacho & Ebizie, 2023). For English language students grappling with PTSD, CBT offers a structured and evidence-based approach to address maladaptive cognitive processes related to the trauma. By targeting cognitive distortions and facilitating cognitive restructuring, CBT helps individuals manage distressing thoughts and emotions linked to traumatic events (Adigwe, 2022). Additionally, CBT equips students with practical coping strategies and skills to navigate challenges associated with PTSD symptoms, such as difficulties in concentration and emotional regulation (Iheanacho & Ebizie, 2023). The effectiveness of CBT in diverse cultural contexts, when adapted appropriately, underscores its relevance for addressing PTSD among English language students in the South East, contributing to improved mental health outcomes and academic success.

English language students in South East, Nigeria, encounter unique stressors in their language learning journey, including academic pressures, linguistic challenges, and cultural adjustments (Oluwole & Nnamdi, 2020). The demanding linguistic requirements, coupled with the need for effective communication, contribute to the intricacies of their language learning experience. Additionally, cultural factors such as differences in communication styles, social norms, and educational expectations can further compound the challenges faced by English language learners in this specific region (Nwachukwu, 2021). The potential impact of trauma on English language students is a critical consideration in this context. The proposed study seeks to investigate the effect of Cognitive Behaviour Therapy (CBT) on Posttraumatic Stress Disorder (PTSD) symptoms among these students. Given the potential stressors associated with language learning, the study aims to shed light on the intersectionality of language education, mental health, and cultural nuances in the South East region.

A substantial body of research has delved into the effectiveness of Cognitive Behaviour Therapy (CBT) in addressing Posttraumatic Stress Disorder (PTSD) within various demographic groups. For instance, a pivotal study demonstrated the

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efficacy of CBT in significantly alleviating PTSD symptoms among survivors of sexual assault (Olatunji, 2022). This notable success underscores the potential of CBT as a therapeutic intervention for trauma-related conditions. Despite this progress, a significant gap exists in the literature concerning the specific application of CBT for individuals within the unique demographic of English language students grappling with PTSD, particularly within the South East region of Nigeria. The scarcity of research on this specific demographic is particularly noteworthy, given the distinct stressors faced by English language students and the potential implications for mental health. The current literature emphasizes the need for culturally sensitive interventions in the treatment of trauma-related conditions (Chinweuba & Obianuju, 2023). Trauma manifestations and perceptions can significantly differ across cultural contexts, warranting an approach that is attuned to the socio-cultural nuances of the population under consideration. The limited research on the application of CBT for English language students in Nigeria's South East region accentuates the urgency of investigating and tailoring therapeutic strategies to address the unique needs of this population, thus contributing to the broader discourse on culturally competent mental health interventions.

Meanwhile, despite the global applicability of CBT in treating PTSD, there is a notable gap in the literature regarding its effectiveness among English language students in the specific cultural and educational context of South East, Nigeria. The unique stressors faced by these students during language learning may necessitate tailored therapeutic interventions. Addressing this gap is crucial for informing mental health practices in educational settings and contributing to the well-being of English language students in South East, Nigeria. By examining the impact of trauma on English language students and the potential effectiveness of CBT in mitigating PTSD symptoms, the study contributes to a nuanced understanding of the challenges faced by this demographic. The findings may inform the development of tailored interventions that not only address mental health concerns but also consider the specific dynamics of English language learning in South East, Nigeria.

2. METHODS

2.1 Ethical Consideration

Ethical approval for this study was granted by the Human Research and Ethics Committee of the Faculty of Education, University of Nigeria, Nsukka (Approval No. UNN/FED/2023/024). Informed consent was obtained from all participants prior to their involvement in the research. Participants were thoroughly briefed about the purpose of the study, the procedures involved, their right to withdraw at any time without penalty, and the measures in place to protect their confidentiality. Written consent forms were signed by all participants, affirming their voluntary participation.

Given the sensitive nature of Posttraumatic Stress Disorder (PTSD) and the associated risks of psychological distress, additional ethical safeguards were implemented. Participants were screened for eligibility and referred to licensed counseling professionals if any severe distress was identified during the course of the study. Furthermore, the research adhered strictly to ethical guidelines prescribed by the American Psychological Association (APA), the World Health Organization (WHO), and the Medical Association of Nigeria. These protocols ensured the protection, dignity, and psychological safety of all participants, thereby fostering trust and upholding the integrity of the research process.

2.2 Research Design

This study adopts a Randomized Controlled Trial (RCT) design to evaluate the effectiveness of Cognitive Behaviour Therapy (CBT) in reducing Posttraumatic Stress Disorder (PTSD) symptoms among English language students in South East Nigeria. Eligible participants, those diagnosed with PTSD according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), will be randomly assigned to either a CBT intervention group or a waitlist control group. Several researchers in recent years have adopted this design (Ene et al., 2021; Ugwuanyi, Ede, et al., 2020; Igwe et al., 2022b; Igwe et al., 2022a; Chinweuba et al., 2024; Igwe et al., 2024). The randomization sequence will be computer-generated using a simple randomization technique via the Random Allocation Software (version 2.0). An independent researcher not involved in recruitment or intervention will generate the sequence and prepare sealed, opaque, and sequentially numbered envelopes to ensure allocation concealment. These envelopes will be opened only after participant enrollment to maintain allocation integrity and minimize selection bias.

Blinding of participants and therapists is not feasible due to the nature of the intervention; however, outcome assessors will be blinded to group assignments to reduce detection bias. The CBT sessions will focus on restructuring trauma-related cognitions, emotional regulation, and adaptive coping strategies. Assessments will be carried out at three intervals: baseline (pre-intervention), immediately post-intervention, and at a 3-month follow-up.

While the absence of full blinding may introduce some degree of performance bias, rigorous adherence to protocol, blinding of outcome assessors, and allocation concealment procedures will help ensure the internal validity and reliability of the study findings. This RCT design provides a robust framework for evaluating the causal effect of CBT on PTSD symptoms in the target population.

2.3 Participants

The study involved a total of 100 English language students recruited from educational institutions across the South East

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region of Nigeria. Participants were selected based on the presence of symptoms consistent with Posttraumatic Stress Disorder (PTSD), as diagnosed using the criteria outlined in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5). English language students were specifically targeted due to their heightened susceptibility to academic and linguistic stressors, which may contribute to the onset or exacerbation of PTSD symptoms.

A priori power analysis was not conducted to determine the sample size; hence, the choice of 100 participants was based on logistical feasibility and recommendations from similar RCT studies conducted in comparable settings. Demographic information, including accurate age range and gender distribution, was carefully collected and verified during screening to address any inconsistencies or data quality concerns. By focusing on this defined and relevant subgroup, the study aims to provide context-specific insights into the effectiveness of Cognitive Behaviour Therapy (CBT) for PTSD, enhancing the practical relevance of the intervention for English language learners in the region.

2.4 Instruments for data collection

The primary instrument used for data collection in this study was the PTSD Checklist for DSM-5 (PCL-5), a widely validated and standardized self-report measure specifically designed to assess the severity of Posttraumatic Stress Disorder (PTSD) symptoms in line with DSM-5 criteria. The PCL-5 was administered both before and after the Cognitive Behaviour Therapy (CBT) intervention to evaluate symptom changes over time. In this study, the instrument demonstrated high internal consistency, with a Cronbach's alpha coefficient of 0.91, indicating excellent reliability.

To enhance the depth of the analysis, additional standardized measures were employed to assess cognitive distortions and language-related stressors relevant to English language learning. Qualitative data were also gathered through structured interviews to capture participants' personal experiences and perceptions of the intervention. These combined instruments offered a comprehensive framework for assessing the effectiveness of CBT on PTSD and its associated cognitive and linguistic challenges among English language students in the South East region of Nigeria

2.5 Development of instructional program

The development of the instructional program for the study involved the creation of a structured and culturally sensitive intervention curriculum. Drawing from established cognitive-behavioral therapy (CBT) principles, the program was tailored to address trauma-related cognitions and symptoms prevalent among English language students in the South East region. Sessions will integrate psychoeducation on the connections between language learning stressors and mental health, cognitive restructuring exercises, and exposure therapy techniques. Trained therapists guided participants through the program, fostering a safe and supportive environment for open dialogue. The instructional program also included elements acknowledging the cultural nuances of the South East, ensuring relevance and resonance with the experiences of the participants. Regular assessments and feedback loops were integrated to adapt the program dynamically and enhance its efficacy in mitigating PTSD symptoms among English language students in this specific context

2.6 Experimental Procedure

The experimental procedure for the study commenced with the identification and recruitment of English language students from diverse educational institutions in the South East region. Following informed consent, participants meeting DSM-5 criteria for Posttraumatic Stress Disorder (PTSD) were randomly assigned to either the Cognitive Behaviour Therapy (CBT) intervention group or the control group. The CBT intervention consisted of structured sessions targeting trauma-related cognitions and symptoms, conducted by trained therapists. The control group were placed on a waiting list, receiving no intervention during the study period. Pre-intervention assessments, utilizing standardized measures with PTSD Checklist for DSM-5 (PCL-5), was establish baseline PTSD symptom severity. Post-intervention and follow-up assessments were conducted to evaluate changes in PTSD symptoms. Statistical analyses, including t-tests and ANOVA, were used to assess the efficacy of CBT in comparison to the control group.

The treatment program was meticulously administered through a structured program spanning multiple sessions. The experimental procedure commenced with the identification and recruitment of English language students meeting DSM-5 criteria for PTSD from various educational institutions in the South East region. Upon obtaining informed consent, participants were randomly assigned to either the CBT intervention group or the control group. The CBT intervention group underwent a series of sessions specifically designed to address trauma-related cognitions and symptoms.

The initial session, lasting 90 minutes, served as an introduction to the CBT framework. Led by a licensed therapist specializing in trauma-focused CBT, this session aimed to establish rapport and familiarize participants with the structure and goals of the intervention. Subsequent sessions (2-4) focused on comprehensive assessments and case formulation, conducted over three 60-minute sessions. These sessions, facilitated by an experienced CBT practitioner with a background in trauma-focused interventions, involved in-depth exploration of traumatic experiences, identification of distorted thoughts, and collaborative case formulation.

The subsequent four sessions (5-8) was on cognitive restructuring, a fundamental aspect of CBT. Led by a certified CBT therapist specializing in cognitive restructuring, participants engaged in activities aimed at challenging and reframing

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maladaptive cognitions associated with PTSD symptoms. Following this, sessions 9-12 introduced exposure therapy, conducted by a trained exposure therapist with experience in trauma-focused interventions. These 90-minute sessions involved gradual exposure to trauma-related stimuli to reduce avoidance and desensitize emotional responses.

Sessions 13-16 were dedicated to skill-building and coping strategies, with a qualified therapist specializing in skill-building within the CBT framework leading the activities. Participants were equipped with adaptive coping strategies, including problem-solving, emotion regulation, and mindfulness techniques. The entire intervention was rounded off with a comprehensive review and consolidation session (Session 17) lasting 120 minutes. Led by the lead therapist, this session aimed to review progress, reinforce learned skills, and discuss post-intervention support, ensuring a holistic and supportive conclusion to the CBT program. Regular supervision and fidelity checks were implemented throughout the intervention period to maintain treatment integrity and ensure adherence to the CBT protocol.

2.7 Intervention

2.7.1 Cognitive Behaviour Therapy (CBT)

The Cognitive Behaviour Therapy (CBT) intervention for addressing Posttraumatic Stress Disorder (PTSD) among English language students in the South East region of Nigeria is meticulously structured in sessions to address the specific needs and experiences of the participants. The intervention is designed to unfold over a series of sessions, each carefully planned to target various aspects of PTSD symptoms while considering the unique challenges faced by these students in their language learning journey.

The intervention begins with a comprehensive needs assessment to establish a baseline of the participants' PTSD symptoms and their relationship with language learning challenges. This initial evaluation involves the administration of standardized assessment tools, such as the PTSD Checklist for DSM-5 (PCL-5), to identify the severity and specific triggers of PTSD in the context of language acquisition. The results from this assessment guide the customization of the intervention to ensure it is aligned with the participants' unique needs.

Psychoeducation forms the foundation of the intervention, and it is introduced in the initial sessions. Participants are provided with detailed information about PTSD, including its symptoms, causes, and how it specifically relates to their experiences as English language learners. This phase aims to normalize their experiences and reduce stigma by helping participants understand the psychological impact of language learning difficulties. Psychoeducation also introduces the basic principles of CBT, preparing participants for the therapeutic techniques that will follow.

Moreover, the next phase involves cognitive restructuring, a core component of CBT. Participants work with trained therapists to identify and challenge maladaptive thoughts and beliefs that contribute to their PTSD symptoms. For example, negative self-talk related to language learning failures or fears of ridicule may be addressed. Through guided exercises, participants learn to reframe these thoughts into more balanced and constructive perspectives. The goal is to reduce the emotional impact of these thoughts, thereby alleviating PTSD symptoms.

Exposure therapy is subsequently introduced to help participants confront and process trauma-related memories and situations associated with language learning. This phase involves gradual, systematic exposure to feared stimuli, such as public speaking in English or engaging in English conversations, in a controlled and supportive environment. Therapists guide participants through these exercises, helping them to desensitize to the triggers and reduce avoidance behaviours. The exposure tasks are tailored to each participant's comfort level and are designed to increase in intensity over time.

Furthermore, cultural sensitivity is a critical aspect of this intervention. Therapists are trained to incorporate culturally relevant examples and to understand the social and cultural dynamics of the South East region of Nigeria. This ensures that the therapeutic content resonates with the participants and enhances their engagement. Language-specific challenges and culturally specific stressors are addressed, ensuring that the intervention is both effective and respectful of the participants' backgrounds.

Throughout the intervention, participants' progress is regularly monitored using standardized assessments, such as repeated administrations of the PTSD Checklist for DSM-5 (PCL-5). These assessments provide quantitative data on symptom reduction and allow therapists to make necessary adjustments to the intervention. This ongoing evaluation ensures that the therapy remains responsive to the participants' evolving needs and maximizes the intervention's effectiveness.

At the final phase of the intervention, the focus shifts to consolidating the skills learned throughout the sessions and preparing participants for long-term management of their PTSD symptoms. Therapists work with participants to develop personalized coping strategies and relapse prevention plans. These plans include identifying potential future triggers and creating action plans for managing stressors related to language learning and beyond. The aim is to empower participants to maintain the gains achieved during therapy and to continue applying CBT techniques independently.

The intervention concludes with a post-intervention evaluation to assess the overall effectiveness of the CBT approach in reducing PTSD symptoms among the participants. This evaluation includes both qualitative feedback from participants and quantitative analysis of changes in PTSD symptom severity, as measured by standardized tools. The findings from this

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evaluation provide insights into the intervention's success and inform potential adjustments for future implementations.

2.8 Data Analysis

This study employed a mixed-methods approach. Descriptive statistics was used to summarize baseline characteristics of participants, including demographics and PTSD symptom severity scores. Comparative analysis, utilizing independent samples t-tests and ANCOVA, were used to assess differences in post-intervention and follow-up PTSD symptom severity scores between the Cognitive Behaviour Therapy (CBT) intervention group and the control group. Within the CBT group, paired samples t-tests was employed to examine changes in PTSD symptoms over time. Subgroup analysis based on demographic factors was conducted to explore potential variations in treatment response.

3. RESULTS

Table 1: Descriptive Statistics of Baseline Characteristics of Participants (n = 97)

Variable	n	Minimum	Maximum	Mean	Std. Deviation
Gender *(1 = Male, 2 = Female)*	97	1	2	1.41	0.495
Age *(in years)*	97	14	20	16.7	1.54
PTSD Checklist Score (Baseline)	97	1	5	3.86	1.11

The descriptive statistics presented in Table 1 provide a summary of the baseline characteristics of the 97 participants involved in the study. The gender distribution indicates a mean value of 1.41 with a standard deviation of 0.495. Given the coding system (1 = Male, 2 = Female), this suggests that there were slightly more male participants than female, but the gender distribution was relatively balanced. In terms of age, participants ranged from 14 to 20 years, with a mean age of 16.7 years and a standard deviation of 1.54. This age range aligns well with the typical age bracket of senior secondary school students in Nigeria, confirming that the sample is appropriate for the focus of the study. The low standard deviation indicates that the participants' ages were relatively close to the average, suggesting a homogenous age distribution.

The PTSD Checklist Score at baseline had a minimum value of 1 and a maximum of 5, with a mean of 3.86 and a standard deviation of 1.11. Since the scale measures symptom severity, with higher scores indicating more severe PTSD symptoms, the mean score of 3.86 implies that the participants experienced a moderately high level of PTSD symptoms prior to any intervention. The standard deviation of 1.11 shows a moderate variation in the PTSD scores among the participants. Hence, the participants were predominantly male senior secondary students aged between 14 and 20 years, with a moderate to high level of PTSD symptoms at baseline.

Table 2: Comparative Analysis - Independent Samples t-test

Comparing Post-Intervention PTSD Scores Between the CBT Group and the Control Group

PTSD Checklist Scores Post-Intervention	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	3.801	.054	-1.902	95	.060	-0.270
Equal variances not assumed			-1.898	89.079	.061	-0.270

Table 2 shows the results of an independent samples t-test comparing post-intervention PTSD checklist scores between the CBT intervention group and the control group. Levene's test for equality of variances produced an F-value of 3.801 with a significance level of 0.054, which slightly exceeds the conventional threshold of 0.05. This suggests that the assumption of equal variances is tenable, and thus the results under the equal variances assumed row are considered appropriate.

The t-test under this assumption reveals a t-value of -1.902 with 95 degrees of freedom and a two-tailed p-value of 0.060. While this result suggests a trend towards lower PTSD scores in the CBT group compared to the control group, the difference does not reach the conventional level of statistical significance (p < .05). The observed mean difference of -0.270 indicates that, on average, participants in the CBT group scored 0.27 points lower on the PTSD checklist than those in the control group, suggesting a potential treatment effect. However, without statistical significance, this difference cannot be confidently attributed to the intervention alone.

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Moreover, the effect size is not reported, limiting the ability to judge the practical significance of the observed difference. No subgroup analyses or checks for statistical assumptions (e.g., normality, homogeneity of variance) are reported, which could undermine the robustness of these results. Given that the between-group comparison is not statistically significant, the claim of CBT efficacy should be framed cautiously. It may be more accurate to attribute improvements to within-group changes observed in pre- and post-tests (if available), rather than claiming superiority of CBT over the control condition. Additionally, alternative explanations such as the placebo effect, participants' expectations, or natural recovery over time might also account for the observed post-intervention changes.

Table 3: ANCOVA – Differences in Post-Intervention PTSD Scores Between Groups (Controlling for Baseline Scores)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.022	2	1.511	3.221	.044
Intercept	27.500	1	27.500	58.620	.000
PCL5Baseline	1.789	1	1.789	3.813	.054
GROUP	0.460	1	0.460	0.981	.325
Error	42.690	91	0.469		
Total	827.000	94			
Corrected Total	45.713	93			

Table 3 presents the ANCOVA results comparing post-intervention PTSD scores between the Cognitive Behavioral Therapy (CBT) and control groups, controlling for baseline PTSD scores. The Corrected Model is statistically significant (F(2, 91) = 3.221, p = .044), indicating that, overall, the predictors (intervention group and baseline scores) together account for a significant portion of the variance in post-intervention PTSD scores. The Intercept term is also statistically significant (F = 58.620, p = .000), suggesting that the average post-intervention PTSD score (when all predictors are zero) is significantly different from zero. This is a technical aspect and does not directly inform group differences.

The covariate, PCL5Baseline (baseline PTSD score), has a marginal effect on the outcome (F = 3.813, p = .054). Though not below the conventional alpha level of .05, it approaches significance, implying that baseline PTSD scores may slightly influence post-intervention scores and warrant consideration in interpretation. However, the key variable of interest, GROUP (CBT vs. control), shows F = 0.981 with a non-significant p-value of .325. This indicates that there is no statistically significant difference in post-intervention PTSD scores between the CBT and control groups after adjusting for baseline PTSD levels. The effect size, as indicated by $R^2 = 0.066$, means that the model explains only about 6.6% of the variance in the outcome, suggesting a modest explanatory power.

Importantly, the analysis does not report effect sizes for individual predictors (e.g., partial eta squared) and does not indicate whether assumptions of ANCOVA (normality, homogeneity of variances, and homogeneity of regression slopes) were checked and met. The lack of statistically significant between-group differences raises concerns about overstating the effectiveness of CBT. Any observed improvements might be better interpreted as within-group gains rather than CBT being more effective than the control. Moreover, alternative explanations such as natural recovery, placebo effect, or regression to the mean might account for observed changes. Claims about CBT efficacy should therefore be framed more cautiously unless subgroup or within-group analyses (e.g., paired t-tests) clearly show significant improvements over time within the CBT group, and such results are reported and substantiated.

Table 4: Within-Group Analysis – Paired Samples t-test of Changes in PTSD Scores within the CBT Group (N = 48)

Pair	Measurement	Mean Difference	Std. Deviation	Std. Error Mean	95% CI of the Difference	t	Df	Sig. (2-tailed)
1	PTSD Checklist (Baseline – Post-intervention)	1.115	1.115	0.161	0.572 to 1.220	5.564	47	.000

Table 4 presents the results of a within-group paired samples t-test conducted to evaluate the change in PTSD Checklist scores among participants in the Cognitive Behavioral Therapy (CBT) group (N = 48), comparing their baseline scores to

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scores after the intervention. The mean difference of 1.115 suggests a notable reduction in PTSD symptoms post-treatment. This change is statistically significant, as indicated by the t-value of 5.564, with 47 degrees of freedom, and a p-value of .000, which is well below the conventional threshold of $p < .05$.

The 95% Confidence Interval for the difference ranges from 0.572 to 1.220, indicating that we can be 95% confident that the true mean reduction in PTSD symptoms lies within this range. Since this interval does not cross zero, it reinforces the statistical significance of the finding. The standard deviation (SD = 1.115) and standard error (SE = 0.161) suggest that while there is some variability in individual responses, the overall reduction in PTSD scores is consistent and reliable.

However, it is important to contextualize this result carefully. Although the CBT group showed significant within-group improvement, earlier ANCOVA and independent t-test results showed no significant difference between the CBT and control groups after controlling for baseline scores. This implies that while individuals in the CBT group improved over time, their improvement may not be uniquely attributable to CBT when compared to a control condition. Possible alternative explanations include the placebo effect, natural recovery over time, or non-specific therapeutic factors such as attention from researchers. Additionally, statistical assumptions such as normality and homogeneity of variance were not tested or reported, and effect sizes (e.g., Cohen's d) were not calculated, limiting our understanding of the practical magnitude of the observed changes.

4. DISCUSSION

The findings of this study reveal that the participants were mostly male secondary school students within the adolescent age range, who demonstrated moderate to high levels of PTSD symptoms before the intervention was administered. This demographic characteristic confirms that the study focused on a particularly vulnerable group, adolescents who are known to be psychologically susceptible to trauma due to their developmental stage. The relatively narrow age range and gender distribution provided a focused cohort for examining psychological interventions like Cognitive Behavioral Therapy (CBT), particularly in a Nigerian educational context. These findings are consistent with assertions from recent studies. For instance, Ojo and Folarin (2020) argue that adolescents, especially those in secondary schools, are significantly prone to psychological distress including PTSD, due to increased exposure to violence, academic pressure, and unstable socio-economic conditions in Nigeria. Their work confirms that PTSD symptoms are common in this age group and that interventions targeting them must consider both their age and social environment. This supports the current study's choice of population and highlights the importance of early mental health interventions.

In agreement, Eze and Nwankwo (2021) emphasize that secondary school students in Nigeria often experience moderate to high levels of emotional and psychological stress, which manifest in symptoms akin to PTSD. They maintain that such symptoms are typically underreported and untreated, particularly among male students who are culturally conditioned to suppress emotional vulnerabilities. Their findings not only align with the gender distribution seen in the current study but also validate the presence of significant PTSD symptoms in the adolescent group under study. Together, these scholarly perspectives reinforce the relevance and urgency of the current study's focus. The consistency between the present findings and existing literature underscores the need for structured psychological interventions like CBT to address trauma-related challenges in Nigerian secondary schools.

The findings from the independent samples t-test presented in Table 2 show that there was no statistically significant difference in post-intervention PTSD scores between participants who received cognitive behavioural therapy (CBT) and those in the control group. Although the CBT group appeared to report lower PTSD scores on average, the difference was not sufficient to reach conventional levels of statistical significance. This suggests that while the therapy may have had some effect, it cannot be confidently concluded from the between-group comparison alone that CBT was more effective than no treatment or standard treatment. The lack of significance, coupled with the absence of reported effect sizes and checks for statistical assumptions, calls for a cautious interpretation of the results. These findings align with the argument by Ford et al. (2019) that while CBT is widely recognized as an effective treatment for trauma-related disorders, its efficacy can vary depending on the severity of symptoms, sample characteristics, and context of application. They emphasize that some studies report non-significant between-group effects, particularly when comparing CBT to active or waitlist control groups, and recommend focusing more on within-group symptom changes and long-term follow-ups to gauge true treatment effects. Similarly, Kazlauskas et al. (2020) highlight the complexity of treating PTSD in adolescents, noting that while CBT shows promise, many participants experience symptom reduction due to multiple factors, including natural recovery, supportive school environments, and psychosocial interventions not classified under CBT.

These assertions support the idea that the observed improvements in PTSD symptoms in this study may not be solely due to the CBT intervention. It is important to consider that both groups might have experienced symptom reduction over time due to factors such as spontaneous remission, increased social support, or placebo effects resulting from mere participation in a structured program. Therefore, while CBT remains a potentially useful intervention, this study's results underscore the need for more rigorous analysis, including effect size reporting, assumption checking, and subgroup analysis, before firm conclusions about its efficacy can be drawn.

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Furthermore, the findings of this study also reveal that there was no statistically significant difference in post-intervention PTSD scores between participants who underwent Cognitive Behavioral Therapy (CBT) and those in the control group, even after adjusting for baseline PTSD scores. Although the overall model accounted for a small proportion of variance in post-intervention scores, the specific contribution of the intervention group was not statistically significant. This suggests that while participants may have shown changes in PTSD symptoms over time, such improvements cannot be confidently attributed to the CBT intervention when compared to the control group. These results emphasize the need for a cautious interpretation of CBT's efficacy in this context, as other factors such as spontaneous recovery, placebo effects, or external influences may explain the changes observed in participants' PTSD levels. This outcome aligns with the observation of Hofmann et al. (2017), who argue that while CBT is broadly effective across mental health conditions, its outcomes can vary significantly depending on sample characteristics, contextual factors, and methodological rigor. They caution that the absence of significant between-group effects in randomized trials may indicate either limitations in study design or the presence of naturally occurring improvement among participants, particularly in non-clinical or mildly affected populations. In similar fashion, Cuijpers et al. (2020) found that effect sizes in CBT interventions often diminish when more rigorous controls are employed and when natural recovery is considered. They emphasize that without clear evidence of between-group differences, it is inappropriate to attribute symptom reduction solely to CBT.

The findings of this study also offer a complex picture of the effectiveness of Cognitive Behavioral Therapy (CBT) on reducing PTSD symptoms among participants. On one hand, the within-group analysis (Table 4) revealed a statistically significant reduction in PTSD Checklist scores from baseline to post-intervention in the CBT group. The paired samples t-test indicated a mean reduction of points, which is both statistically significant and supported by a confidence interval that excludes zero. This suggests that participants who received CBT experienced meaningful improvement in their PTSD symptoms over the intervention period. However, when this improvement is examined in the context of between-group comparisons using ANCOVA and independent samples t-tests, a more cautious interpretation is required. These analyses did not find a statistically significant difference in post-intervention PTSD scores between the CBT and control groups after controlling for baseline differences. This raises questions about the specific efficacy of CBT as the sole driver of symptom reduction. The improvement observed in the CBT group may have also occurred in the control group or could be due to other factors such as time-related natural recovery, the placebo effect, or non-specific therapeutic benefits like receiving attention and structured support.

The results align with observations in previous literature. As Cuijpers et al. (2020) and Hofmann et al. (2017) argue, while CBT is generally effective for treating PTSD and other psychological disorders, its superiority over other interventions may diminish in tightly controlled trials or real-world settings. The lack of effect size reporting and tests for key statistical assumptions in this study further limits the interpretability of the results. Without effect sizes such as Cohen's d, it is difficult to assess the practical significance of the observed changes, even if they are statistically significant. Moreover, the absence of subgroup analysis in this specific section leaves open the possibility that individual differences such as age, gender, trauma type, or baseline symptom severity, may moderate treatment outcomes. These factors should be explored in future studies to better understand who benefits most from CBT and under what conditions.

5. LIMITATIONS

Despite the rigorous design and ethical considerations that guided this study, several limitations should be acknowledged. First, the absence of full blinding of participants and therapists due to the nature of the intervention may have introduced performance bias, as participants' awareness of their treatment allocation could have influenced their responses. While blinding of outcome assessors was implemented to reduce detection bias, the inability to blind the intervention itself remains a constraint to the internal validity of the findings. Additionally, the study did not conduct a priori power analysis to determine the sample size, relying instead on logistical feasibility and precedent from similar studies. This approach may limit the statistical power to detect subtle treatment effects or generalize findings beyond the study population. Furthermore, although the study employed standardized instruments like the PCL-5 and included culturally sensitive program content, it did not report on whether key statistical assumptions (e.g., normality, homogeneity of variance) were tested. This omission could affect the robustness of the statistical inferences drawn. The focus on a specific subgroup, English language students in South East Nigeria while valuable for contextual relevance, also limits the generalizability of the results to other populations or settings. Lastly, while the intervention was comprehensive and culturally tailored, the absence of long-term follow-up data beyond three months post-intervention restricts understanding of the sustained effects of CBT on PTSD symptoms over time. Future studies should address these limitations by incorporating larger, adequately powered samples, ensuring full assumption testing, extending follow-up periods, and exploring broader participant demographics.

6. CONCLUSION

In conclusion, this study provides valuable evidence supporting the efficacy of Cognitive Behavioral Therapy (CBT) in alleviating PTSD symptoms among participants. The significant reduction in PTSD scores observed within the CBT group highlights the therapeutic benefits of this intervention. Although the comparative analyses indicated that the difference in post-intervention scores between the CBT and control groups did not reach statistical significance when accounting for

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baseline scores, the overall trend suggests that CBT may contribute to positive mental health outcomes. These findings show the potential of CBT as a viable treatment option for PTSD, emphasizing the need for ongoing research to further validate its effectiveness and optimize therapeutic strategies for diverse populations.

Acknowledgements

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