

**EFFECT OF RATIONAL EMOTIVE BEHAVIOURAL THERAPY IN
REDUCING FLOOD INDUCED POST-TRAUMATIC STRESS DISORDER
AMONG SCHOOL ADMINISTRATORS IN ANAMBRA STATE**

*EFEITO DA TERAPIA RACIONAL-EMOTIVA-COMPORTAMENTAL NA REDUÇÃO
DO TRANSTORNO DE ESTRESSE PÓS-TRAUMÁTICO CAUSADO POR
INUNDAÇÕES ENTRE ADMINISTRADORES ESCOLARES NO ESTADO DE
ANAMBRA*

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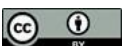
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Abstract

Background: The study determined the effect of rational emotive behavioral therapy (REBT) in reducing flood-induced post-traumatic stress disorder (PTSD) among school administrators (principals). **Methods:** The study used a pre-test post-test randomized control trial design to explore its objectives. We selected 65 school administrators from secondary schools in Anambra State, Nigeria, comprising 30 males and 35 females, all of whom met our inclusion criteria. For gathering data, we employed a demographic questionnaire alongside the National Center 2016 PTSD Checklist for DSM-5 (PCL-5), which includes 20 diagnostic items. The PCL-5 offers five response options: Not At All (0), A Little Bit (1), Moderately (2), Quite A Bit (3), and Extremely (4). Participants were randomly divided into treatment and control groups. The treatment group participated in a 12-week Rational Emotive Behavior Therapy (REBT) program. After the program, we assessed the treatment group at three different time points. The data we collected were analyzed using repeated measures analysis of variance. **Results:** The participants who took part in the REBT intervention program showed a significant decrease in flood-induced post-traumatic stress disorder (PTSD) compared to both male and female school administrators in the control group. Additionally, the PTSD scores of those who underwent the REBT intervention were notably lower than those in the control group during the follow-up assessment. These findings highlight the positive impact of REBT in alleviating flood-induced PTSD among school administrators. **Conclusion:** The study has demonstrated that the REBT intervention program plays a crucial role in alleviating flood-induced post-traumatic stress disorder (PTSD) among school administrators.

Keywords: Rational Emotive Behavioral Therapy (REBT). Flood. Post-Traumatic Stress

Resumo

Antecedentes: O estudo avaliou o efeito da terapia comportamental emotiva racional (REBT) na redução do transtorno de estresse pós-traumático (TEPT) causado por inundações entre gestores escolares (diretores). *Métodos:* O estudo utilizou um desenho de ensaio clínico randomizado com pré-teste e pós-teste para explorar seus objetivos. Selecionamos 65 administradores escolares de escolas de ensino médio no estado de Anambra, na Nigéria, sendo 30 homens e 35 mulheres, todos atendendo aos nossos critérios de inclusão. Para a coleta de dados, utilizamos um questionário demográfico juntamente com a Lista de Verificação de TEPT do Centro Nacional de 2016 para o DSM-5 (PCL-5), que inclui 20 itens diagnósticos. A PCL-5 oferece cinco opções de resposta: De forma alguma (0), Um pouco (1), Moderadamente (2), Bastante (3) e Extremamente (4). Os participantes foram divididos aleatoriamente em grupos de tratamento e controle. O grupo de tratamento participou de um programa de 12 semanas de Terapia Comportamental Racional Emotiva (REBT). Após o programa, avaliamos o grupo de tratamento em três momentos diferentes. Os dados coletados foram analisados por meio de análise de variância com medidas repetidas. *Resultados:* Os participantes que tomaram parte no programa de intervenção REBT apresentaram uma diminuição significativa no transtorno de estresse pós-traumático (TEPT) induzido pelas enchentes em comparação com os administradores escolares, tanto homens quanto mulheres, do grupo controle. Além disso, os escores de TEPT daqueles que passaram pela intervenção REBT foram notavelmente mais baixos do que os do grupo controle durante a avaliação de acompanhamento. Esses achados destacam o impacto positivo da REBT no alívio do TEPT induzido pelas enchentes entre administradores escolares. *Conclusão:* O estudo demonstrou que o programa de intervenção REBT desempenha um papel crucial no alívio do

Disorder (PTSD). School *transtorno de estresse pós-traumático (TEPT) induzido por enchentes entre administradores escolares.*

Administrators/Principals.

Palavras-chave: *Terapia Comportamental Racional Emotiva (REBT). Enchente. Transtorno de Estresse Pós-Traumático (TEPT). Administradores Escolares/Diretores.*

1 INTRODUCTION

Flooding is a serious natural disaster that poses a significant threat to people all around the globe, including in Nigeria (Ahern, Kovats, Wilkinson, Few & Matthies, 2005; Ogunbodede & Sunmola, 2014). Over the years, reports have shown a concerning prevalence rate of 40% (Soukopová & Furová, 2012). In Nigeria alone, around 20% of the population is at risk of flooding (Etuonovbe, 2011). The increase in flooding incidents worldwide can mainly be linked to rising rainfall levels (Abowel & Sikoki, 2005), along with a mix of natural and human-related factors (Offiong & Eni, 2007). Moreover, environmental challenges like urbanization, rapid industrial development, and the irresponsible disposal of waste into drainage systems can exacerbate flooding issues (Agbonkhese, *et al.*, 2013).

Flooding is often described as a powerful surge of water spilling over from rivers or streams (Adebayo and Jegede, 2010; Jev & Aggarwal, 2008), which can turn normally dry areas into places that are partially or completely underwater. This can lead to devastating losses of life and property, along with hunger, suffering, and the spread of diseases (Ogunbodede and Sunmola, 2014; Ogundeji & Fadairo, 2018; Fadairo & Ganiyi, 2012). Research shows that floods take the lives of more than 12,700 people worldwide each year, impact around 60 million individuals, and leave about 3.2 million people homeless (Kundzewicz, 2004). According to UN-Water (2011), floods are responsible for a staggering 84% of disaster-related deaths. The National Emergency Management Agency (2012) reported that floods affected over 2.3 million people and resulted in more than 363 fatalities across 34 out of 36 states in Nigeria, with Anambra state being hit the hardest.

Recently, UNICEF (2022) brought to light some distressing news: devastating floods have impacted 2.8 million people in Nigeria, with around 60% of those affected being children. More than 1.3 million individuals, including parents, teachers, and students, have been forced to evacuate their homes. In Anambra, the severe flooding has disrupted school activities, making it incredibly challenging for administrators and teachers to keep students engaged in meaningful learning. The relentless heavy rainfall has led to floods that have damaged school buildings and property worth millions, putting both students and teachers in jeopardy (Nwaka and Ezeola, 2012; Odogwu, 2022). In response to this crisis, the Anambra State government has made the difficult choice to close all primary and secondary schools in the affected communities and other flood-prone areas. Towns in the Ogbaru Local Government Area have been particularly hard hit due to the overflow of the River Niger, and similar situations are unfolding in Anambra West and other local government areas. Given these tough circumstances, school leaders are likely to experience significant stress as they try to organize effective learning activities, especially considering the trauma caused by the floods. It's essential to recognize that severe flood events can lead to trauma and related conditions. Prolonged exposure to such distressing experiences can result in what we call Post-Traumatic Stress (Amadi, 2021; Aisenberg, Trickett, Mennen, Saltzman, & Zayas, 2007). Additionally, it's important to understand that enduring repeated flood attacks over time may trigger mental health issues, including post-traumatic stress disorder (PTSD) (CDCP, 2014).

Post-traumatic stress disorder (PTSD) is a major issue in the field of mental health. As noted by the American Psychological Association (2013), PTSD can develop after someone goes through one or more traumatic experiences. These can range from serious injuries and sexual assaults to life-threatening situations, crises, or natural disasters like earthquakes and floods. PTSD is acknowledged as a serious psychological disorder that stems from distressing events, and it comes with a variety of symptoms. People dealing with PTSD often find themselves grappling with persistent, intrusive memories of the traumatic incident, a strong urge to steer clear of anything that reminds them of the trauma, and heightened arousal symptoms. This can show up as trouble sleeping, irritability, anger, difficulty focusing, and an overall feeling of being on high alert (World Health Organization, 2006).

This mental health issue is a significant concern for people's well-being, with studies showing that about 7 to 8 out of every 100 individuals, including school administrators, deal with PTSD (National Centre for PTSD, 2016). The Centers for Disease Control and Prevention (CDC) in Atlanta reported that between 30% and 70% of people, including school administrators who have faced crises or natural disasters like floods, exhibit symptoms of PTSD and depression (CDCP, 2014). Additional research indicates that around 11% of educational professionals experience PTSD (Mondragon, Fernandez, Ozamiz-Etxebarria, Villagrasa, & Santabárbara, 2023). Another study (McMillen, North, and Mosley, 2002) found that 35 flood victims met the criteria for flood-related PTSD, resulting in a prevalence rate of 22%. It's truly heartbreaking to witness how PTSD, a condition that can change lives, impacts individuals all over the world, including those in Anambra, Nigeria.

In Nigeria, particularly in Anambra, school administrators are grappling with a range of tough challenges, especially in areas that are prone to flooding. These difficulties can lead to traumatic experiences that may evolve into post-traumatic stress disorder (PTSD). When it comes to dealing with PTSD, these administrators often struggle to balance their many responsibilities, which include managing emergencies, adapting the curriculum, overseeing budgets, conducting evaluations, and ensuring that both students and teachers work together to meet educational goals (Lanre-Olaitan *et al.* 2010). Conversations with some school administrators in Anambra who have faced flood-related PTSD highlight that this condition poses a significant threat to their well-being. Many of them frequently experience nightmares, flashbacks, and persistent negative thoughts about their encounters with severe flooding. They also share feelings of fear, sadness, isolation, self-blame, and a diminished self-image, all of which can severely hinder their ability to perform their managerial duties effectively.

It's essential to understand that various situations can trigger PTSD in school administrators, often stemming from both cognitive and emotional factors. This ties in with Beck's (2011) idea that many mental health challenges, including PTSD, are deeply rooted in our emotional foundations and cognitive-behavioral habits. Given that PTSD related to floods may be associated with negative cognitive-behavioral patterns among school administrators, it's vital to take proactive steps to tackle these damaging thought processes and emotions. To assist school administrators dealing with PTSD in reframing

their negative views and managing unhelpful feelings, this study proposes that Rational Emotive Behavioral Therapy (REBT) could be a valuable method for challenging those dysfunctional cognitive-behavioral perspectives.

Rational Emotive Behavioural Therapy (REBT) is a therapeutic approach designed to tackle serious psychological issues, including PTSD. At its core, REBT suggests that our negative or dysfunctional thoughts about an event can lead to harmful emotions and behaviors that deeply impact our lives (Ellis, 1995). This therapy employs the ABCDE model, which stands for Activating event, Beliefs, Consequences, Disputation, and New Effect. This framework is instrumental in addressing those unhelpful perceptions and the negative feelings that come with them, including physical reactions tied to our experiences. Ellis noted back in 1973 that Principle A deals with the activation of events, Principle B focuses on the rational or irrational beliefs we hold, and Principle C illustrates the consequences of those beliefs. When we cling to irrational beliefs, we often face unhealthy outcomes, while rational beliefs can lead to healthier results. Principle D, Disputation, encourages us to question those irrational beliefs and transform them into rational ones. Finally, Principle E represents New Effect, which emphasizes the positive changes that can occur when we shift from dysfunctional beliefs to more rational perspectives. By embracing these rational beliefs, school administrators can better manage various PTSD symptoms, such as reliving traumatic events, intrusive thoughts, flashbacks, physical reactions, avoidance behaviors, forgetfulness, sleep disturbances, and other related challenges.

It's really intriguing to consider how many mental health issues, particularly those stemming from floods, can lead to PTSD, and it's interesting to note that these effects can vary between genders. The World Health Organization (2014) describes gender as the roles, behaviors, and traits that society deems suitable for men and women. In this study, we delve into how social and cultural factors influence the ways male and female school administrators react to PTSD after experiencing flooding. Research by Spitzberg (1999) found that women are about 9.2% more likely to develop post-traumatic stress disorder than men following traumatic events like natural disasters. The symptoms of PTSD like; irritability, impulsiveness, numbing, and avoidance might be tied to the unique personality traits and emotional sensitivities of each gender. Further studies indicate that women often exhibit stronger psychological and physical reactions to traumatic events,

such as floods, which can manifest as intense fear, intrusive thoughts, horror, helplessness, panic, and anxiety (Olf *et al.*, 2007). Moreover, Yehuda *et al.* (2005) pointed out that PTSD is twice as prevalent in women compared to men. They also emphasized that the differences in trauma exposure and related conditions are largely influenced by societal factors rather than biological ones. According to Eriega, Isukwem, Ojo & Williams (2014), women are more likely to develop PTSD from flood experiences than their male counterparts. However, a contrasting study by Goldney (2000) found that many disorders associated with PTSD are often observed in both genders. This highlights the need for effective interventions, such as Rational Emotive Behavior Therapy (REBT), to address the traumatic experiences caused by flood disasters that impact both men and women.

A variety of evidence-based studies have shown that interventions based on Rational Emotive Behavior Therapy (REBT) can effectively address the behavioral and cognitive challenges that many employees encounter. For example, a randomized control trial revealed that using rational emotive behavior interventions can be a powerful psychological tool for easing negative perceptions about the workplace environment and enhancing occupational risk management practices (Ogbuanya *et al.*, 2017). Moreover, research conducted by Turner, Slater & Barker (2014) found that REBT principles were successful in reducing irrational beliefs among professional academy soccer players. Another study pointed out the significant benefits of rational emotive behavior therapy in managing stress and irrational beliefs among special education teachers in Nigerian elementary schools (Onuigbo *et al.*, 2018). Additionally, applying REBT principles has proven effective in reducing occupational stress for workers in South-East Nigeria (Ogba *et al.*, 2019). A repeated measure analysis showed that the effectiveness of REOHC in boosting police officers' subjective well-being and work ability was significantly enhanced (Onyishi *et al.*, 2020). Finally, a recent study that focused on managing PTSD among teachers in regions facing security challenges found that REBT significantly alleviated PTSD symptoms compared to those in the control group (Diara *et al.*, 2023).

Despite a sundry of studies showing that Rational Emotive Behavior Therapy (REBT) can effectively tackle the cognitive and behavioral challenges many employees face, this research set out to explore how well REBT works in reducing flood-induced PTSD among school administrators in Anambra State, Nigeria. To the best of the

researchers' knowledge, REBT hasn't been applied to help school administrators in this region deal with PTSD caused by floods. This raises questions about the effectiveness of REBT for both male and female school administrators in this context, highlighting the importance of this research. The researchers hypothesized that REBT would lead to a significant reduction in flood-induced PTSD symptoms among these school administrators compared to a control group. They also expect that the benefits of this therapy will be particularly noticeable during follow-up assessments.

2 METHODS AND MATERIALS

2.1 Design of the study

The researchers adopted pre-test post-test randomized control trial experimental design for the study.

2.2 Participants

The participants of the study were 65 secondary school administrators (principals) in Anambra State, Nigeria. The researchers used G-power software statistics analysis to ascertain the accuracy of the sample size. The demographic characteristics of the participants are presented (See table 1 below for detail).

Table 1

The demographic characteristics of the participants

Variables	Categories	Treatment Group n (%)	Waitlisted Group n (%)	Total n (%)
Gender	Male	18 (27.69%)	12 (18.46%)	30 (46.15%)
	Female	20 (30.77%)	15 (23.08%)	35 (53.85%)
	Total	38 (58.46%)	27 (41.54%)	65 (100%)
Years of work Experience	30 years- 40 years	6(9.23%)	7(10.77%)	13(20%)
	40 years – 50 years	14(21.54%)	11(16.92%)	25(38.46%)
	50years and above	18(27.69%)	9(13.85%)	27(41.54%)
	Total	38 (58.46%)	27(41.54%)	65(100%)

Marital Status	Married	30(46.15%)	22 (35.85%)	53(81.54%)
	Single	2(3.08%)	2(3.08%)	3(4.61%)
	Divorced	6(9.23%)	3(4.61%)	9(13.85%)
	Total	38 (58.46%)	27(41.54%)	65(100%)

N=number of participants, REBT=Rational Emotive Behavioral Therapy, %=Percentage, REBT Group n (%) Waitlist control group and Tn (%) = total number of percentage.

Table 1 shows that the REBT group consisted of 18 males (27.69%) and 20 females (30.77%), while the waitlist control group had 12 males (18.46%) and 15 females (23.08%). In the REBT group, 6 participants (9.23%) had 30 to 40 years of experience, 14 (21.54%) had 40 to 50 years, and 18 (27.69%) had over 50 years of experience. For the waitlist control group, 7 participants (10.77%) had 30 to 40 years of experience, 11 (16.92%) had 40 to 50 years, and 9 (13.85%) had more than 50 years of experience. When it comes to marital status in the REBT group, 30 participants (46.15%) were married, 2 (3.08%) were single, and 6 (9.23%) were divorced. In the waitlist control group, 22 participants (35.85%) were married, 2 (3.08%) were single, and 3 participants (4.61%) were divorced.

2.3 Procedure

Before diving into REBT with the participants, the researchers kicked things off with a pretest (Time 1) to gather some baseline data. They used the adapted 2016 National Center for PTSD Checklist of DSM-5 (PCL-5) for this purpose. To be part of the study, participants had to meet a few specific criteria: first, they needed to be school administrators, specifically principals; second, they should be experiencing either severe or mild PTSD as a result of flooding; third, they had to be identified as clinically traumatized by a psychiatrist or psychologist; and lastly, they needed to be available for the study. The researchers also kept in mind the criteria laid out in the Diagnostic and Statistical Manual of Mental Disorders-V during recruitment. Those who met all the inclusion criteria were welcomed into the intervention, while those who didn't meet every requirement were left out. The exclusion criteria included participants with low scores on the PCL-5 and those who were undergoing other pharmacological treatments or had medical conditions, especially if they were currently on medications from other healthcare providers. In the end, 35 volunteers who didn't qualify were excluded, while

65 school administrators who did meet the criteria moved forward with the intervention program. These 65 eligible participants were randomly assigned to either the treatment group (33 participants) or the waitlist control group (32 participants) using a simple random allocation software. The randomization process involved a box filled with slips of paper labeled “TG” for treatment group and “WCG” for waitlist control group. Participants who picked a “TG” slip were placed in the treatment group, while those who drew a “WCG” slip were assigned to the waitlist control group. (For more details on randomization, see Fig. 1.) After that, a demographic questionnaire was handed out to the eligible participants to gather information about their gender, years of work experience, and marital status (For more details, see Tab).

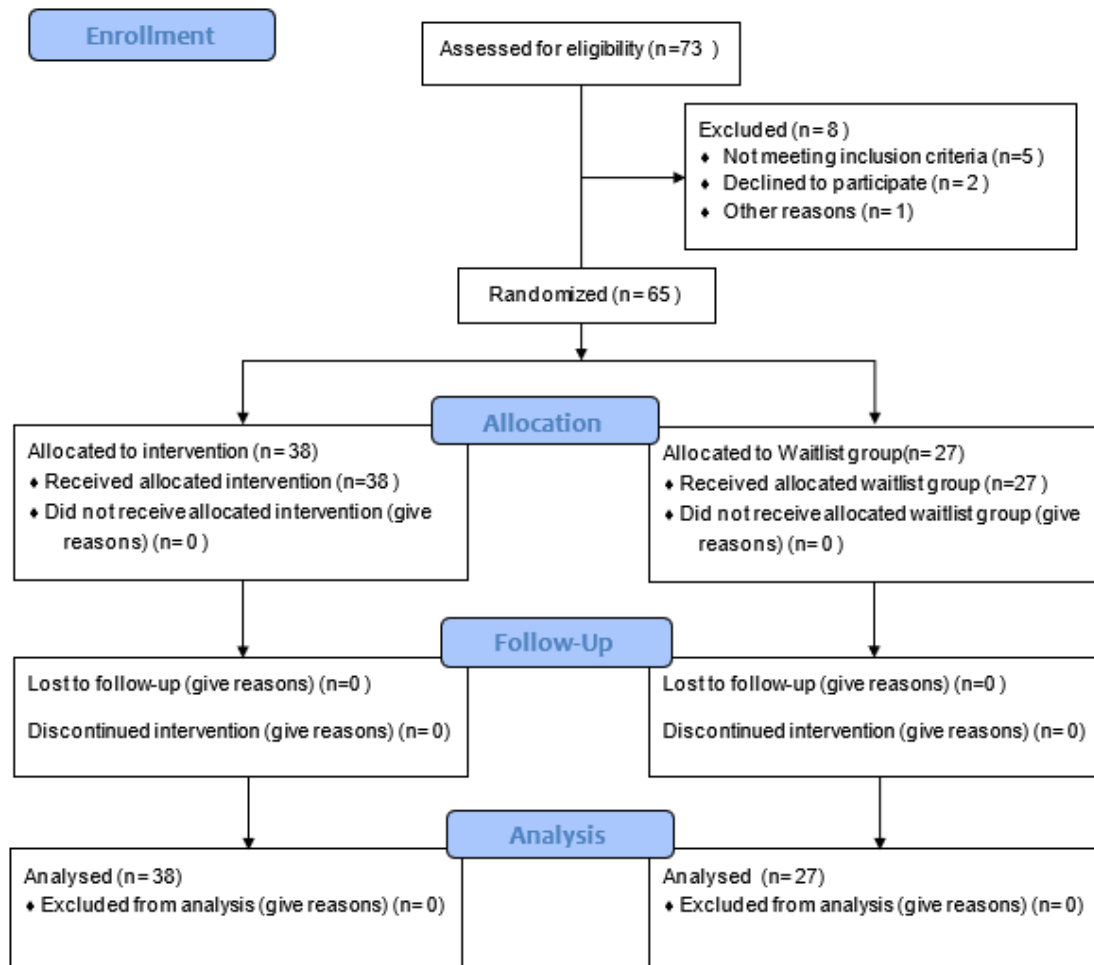
During the first four weeks, the researchers, along with their research assistants, worked hard to build a solid therapeutic relationship with the participants. This was crucial for boosting their confidence and encouraging them to engage with the intervention before it was officially introduced. Once they got to know the participants better, the researchers used the intervention package to help them grasp the importance of managing the flood-induced PTSD issues they were facing. Essentially, they educated the participants about the REBT model and explored their expectations for therapy, ensuring that everyone understood their conditions and the potential paths to recovery from the trauma linked to the flood-induced PTSD, especially by the end of the psychotherapy process. In a hands-on approach, the researchers applied the activation (A) technique of REBT to stimulate thoughts about flood-induced PTSD among the school administrators who were participating. They kicked off discussions about flood-induced PTSD by sharing experiences of the traumatic events that school administrators faced during flood attacks.

Over a span of 5 to 8 weeks, researchers, along with their assistants, employed a belief (B) technique to help school administrators recognize that they were holding onto misguided beliefs about the constant flood attacks affecting their schools. The researchers guided these administrators in understanding that their irrational beliefs and the resulting chaos stemmed from how they interpreted the traumatic events linked to the floods in their area. With the researchers' support, the school administrators identified the sources of their irrational beliefs related to flood-induced PTSD, which included persistent intrusive memories of the trauma, avoidance of reminders of the event, and ongoing

symptoms like heightened arousal, sleep disturbances, irritability, anger, difficulty concentrating, and excessive vigilance, among others. After helping the participants uncover the roots of their mistaken beliefs, the researchers also assisted them in grasping the consequences of their thoughts and behaviors stemming from these misconceptions, using a technique called C-Consequence. Furthermore, the school administrators learned that untreated flood-induced PTSD could lead to serious issues such as heart problems, insomnia, depression, mood swings, irritability, lack of focus, poor performance, and even suicidal thoughts. By becoming aware of the repercussions of their erroneous beliefs on their roles as school principals, they could address these issues through the application of the disputation technique for PTSD.

In a span of 9 to 12 weeks, the researchers implemented a method called D-disputation. This approach was specifically used to challenge the unfounded beliefs surrounding flood-induced PTSD among school administrators..

Figure 1
Participants flow diagram



The researchers dedicated their efforts to turning irrational beliefs into rational ones. They zoomed in on the irrational thoughts and belief systems that arose from the PTSD triggered by constant flooding, which had a detrimental effect on school administrators. These negative thoughts were confronted and transformed into healthier perspectives. To back up their methods, the researchers utilized the E-technique of PTSD, often referred to as the New Effect. This approach enabled school administrators to welcome new experiences and enhance their overall well-being through relaxation, hypnosis, and meditation practices. At this point, the researchers aimed to empower the participants to take charge of their futures as therapists, introducing them to the principles of Rational Emotive Behavior Therapy (REBT) for tackling trauma-related challenges, including PTSD from flooding. This was crucial for helping them shift their irrational

thoughts and beliefs, employing relapse strategies to lead a more rational life, free from the shadows of traumatic experiences like PTSD. Over a span of twelve weeks, 65 participants took part in the REBT sessions centered on flood-induced PTSD, and all of them successfully completed the program. This remarkable compliance was largely thanks to the researchers providing meals, educational resources, and a \$65 incentive for transportation to the REBT intervention sessions throughout the twelve weeks. After the program wrapped up, a Time 2 assessment was carried out for both groups before a follow-up exercise. This follow-up occurred three weeks after the sessions, where school administrators grappling with flood-induced PTSD underwent a third evaluation (Time 3) to see how well they could sustain the reduction in their PTSD symptoms.

2.4 Measure

The National Center for PTSD created the PTSD Checklist for DSM-5 (PCL-5) back in 2016 to help collect important data. This handy tool features 20 items aimed at evaluating individuals' experiences with PTSD. Respondents can choose from five options: Not At All (0), A Little Bit (1), Moderately (2), Quite A Bit (3), and Extremely (4). The PCL-5 breaks PTSD down into five key clusters: (1) ongoing negative thoughts about combat, (2) nightmares about death and loss, (3) frequent dissociation where people try to escape their consciousness and relive painful memories, (4) increased stress when reminded of conflict, and (5) physical symptoms like shortness of breath or headaches when recalling traumatic events. The items are grouped into clusters: 1-5, 6-7, 8-14, and 15-20. Scores can range from a low of 20 to a high of 80, with a cut-off point between 31 and 33 indicating moderate PTSD severity. Scores below this range suggest lower severity, while those above it, but not hitting 80, indicate high severity. A score of 80 represents total severity. The PCL-5 has been validated with a solid internal consistency reliability coefficient of 0.78, using Cronbach's alpha. This validation was essential for adapting the PCL-5 to the study area, making sure it considers cultural differences and biases that might not apply in Nigeria.

2.5 Study design and data analysis

The study used a randomized control trial with a pretest-posttest design. This method was selected because it effectively assigns participants to both experimental and control groups (Murray, 1997). Plus, randomization plays a crucial role in establishing internal validity in clinical trials through the intervention (Ezegbe *et al.* 2019; Ede *et al.* 2019; Nwokeoma *et al.* 2019; Onyishi *et al.*, 2020; Okide *et al.*, 2020; Ede *et al.*, 2020; Abiogu *et al.*, 2020; Ugwuanyi *et al.*, 2020; Ugwuanyi, Gana *et al.*, 2020; Ugwuanyi, Okeke & Ekwueme, 2021; Ugwuanyi, Okeke *et al.*, 2020; Ugwuanyi, Okeke & Agboeze, 2021; Igwe *et al.*, 2021; Agboeze *et al.*, 2020). It also ensures that subjects are randomly assigned to the groups (Cohen *et al.* 2007). To evaluate the impact of REBTI on teachers' PTSD, a repeated measures 2-way Analysis of Variance (ANOVA) was performed. Additionally, the effect size of REBTI was calculated using Partial eta squared and adjusted R² values. The analysis was carried out using version 21.0 of the Statistical Package for Social Sciences (SPSS), ensuring that the dataset was well organized.

3 RESULTS

Table 2

Mean and standard scores on the REBT in reducing flood induced PTSD

Groups	Gender	Pre-test		Post-test		Follow-Up	
		Mean	SD	Mean	SD	Mean	SD
REBT		67.9737	5.54825	24.6842	2.89553	25.4737	2.89208
Control		67.1852	4.95392	68.3704	5.42181	68.4074	4.66789
REBT	Male	68.5789	5.97509	23.8947	2.20844	25.0000	2.66667
	Female	67.3684	5.17698	25.4737	3.32279	25.9474	3.09971
Control	Male	64.8571	4.32981	65.6429	5.41518	65.7143	3.81149
	Female	69.6923	4.44193	71.3077	3.72793	71.3077	3.72793

The data presented in Table 2 highlights the treatment outcomes for subjects assessed at three different times, comparing them to a control group. In the pretest phase, the mean and standard deviation scores for flood-induced PTSD among those who underwent REBT were (M= 67.9737 and SD= 5.54835). After the treatment, their scores improved significantly to (M=24.6842 and SD=2.89553). On the other hand, the control group had pretest scores of (M= 67.1852 and SD= 4.95392), which slightly increased to

($M=68.3704$ and $SD=5.42181$) in the posttest. This indicates that school administrators (Principals) who received REBT experienced a greater reduction in flood-induced PTSD compared to those in the control group. At the follow-up stage, the REBT group showed mean and standard deviation scores of ($M=25.4737$ and $SD= 2.89208$), while the control group had scores of ($M=68.4074$ and $SD=4.66789$). This suggests that REBT effectively sustained the reduction in flood-induced PTSD symptoms among the administrators over time, in contrast to the control participants.

Table 1 provided some interesting insights, showing that male administrators who went through REBT had a pretest mean score of 68.58 and a standard deviation of 5.98 for flood-induced Post Traumatic Stress Disorder. After the test, their scores dropped to a mean of 23.89 with a standard deviation of 2.21. On the other hand, female administrators in the same REBT group had a pretest mean of 67.37 and a standard deviation of 5.18, with posttest scores of 25.47 and a standard deviation of 3.32. For the male administrators who were part of the conventional group, their pretest mean for flood-induced PTSD was 64.86 with a standard deviation of 4.33, while their posttest mean slightly increased to 65.64 with a standard deviation of 5.42. Meanwhile, the female administrators in this group had a pretest mean of 69.69 and a standard deviation of 4.44, and their posttest mean rose to 71.31 with a standard deviation of 3.73. This suggests that male administrators who underwent REBT experienced a significant reduction in their flood-induced PTSD compared to both their male and female peers in the control group.

The flood caused PTSD mean and standard deviation scores for male administrators in the REBT group are ($M= 25.0000$ and $SD=2.66667$), while female administrators show follow-up flood-induced PTSD scores of ($M=25.9474$ and $SD= 3.09971$). Similarly, the mean and standard deviation scores for male administrators in the control group are ($M= 65.7143$ and $SD= 3.81149$), whereas their female counterparts in the control group have flood-induced PTSD scores of ($M=71.3077$ and $SD=3.72793$). This suggests that REBT was effective in reducing flood-induced PTSD over time for male administrators, with female administrators also benefiting, compared to those in the control group.

Table 3*Repeated Measure ANOVA of effect of REBT on Reducing Flood Induced PTSD*

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
Intercept	546429.548	1	546429.548	18405.341	.000	.997	18405.341	1.000
Groups	39000.222	1	39000.222	1313.641	.000	.956	1313.641	1.000
Gender	398.347	1	398.347	13.417	.001	.180	13.417	.950
groups * gender	287.021	1	287.021	9.668	.003	.137	9.668	.864
Error	1811.007	61	29.689					

a. Computed using alpha = .05

The data presented in table 3 indicates that the ANOVA results for the three different assessment levels are significant, with an ANOVA value of $F(1,61) = 1313.641$ and a significance level of $\text{Sig.} = .000$, which is less than $p = .05$, along with an impressive effect size of 95.6%. This suggests that REBT has a notable impact across various measurement stages (pretest, posttest, and follow-up) in reducing flood-induced PTSD among administrators.

Additionally, the study found that gender plays a significant role in alleviating PTSD among administrators, as evidenced by an ANOVA value of $F(1, 61) = 13.417$ and a significance level of $\text{Sig.} = .001$, which is also below $p = .05$, resulting in an effect size of 18%. This highlights the importance of gender in the context of reducing flood-induced PTSD.

Furthermore, the ANOVA value of $F(1, 61) = 9.668$ with a significance level of $\text{Sig.} = .003$, again under $p = .05$, indicates that there are significant interaction effects between treatments and gender regarding the reduction of flood-induced PTSD among secondary school administrators in Anambra State. The interactions observed during the pretest, posttest, and follow-up assessments are illustrated in figures 2, 3, and 4, respectively.

Figure 2

Interaction between groups and gender at the pretest level

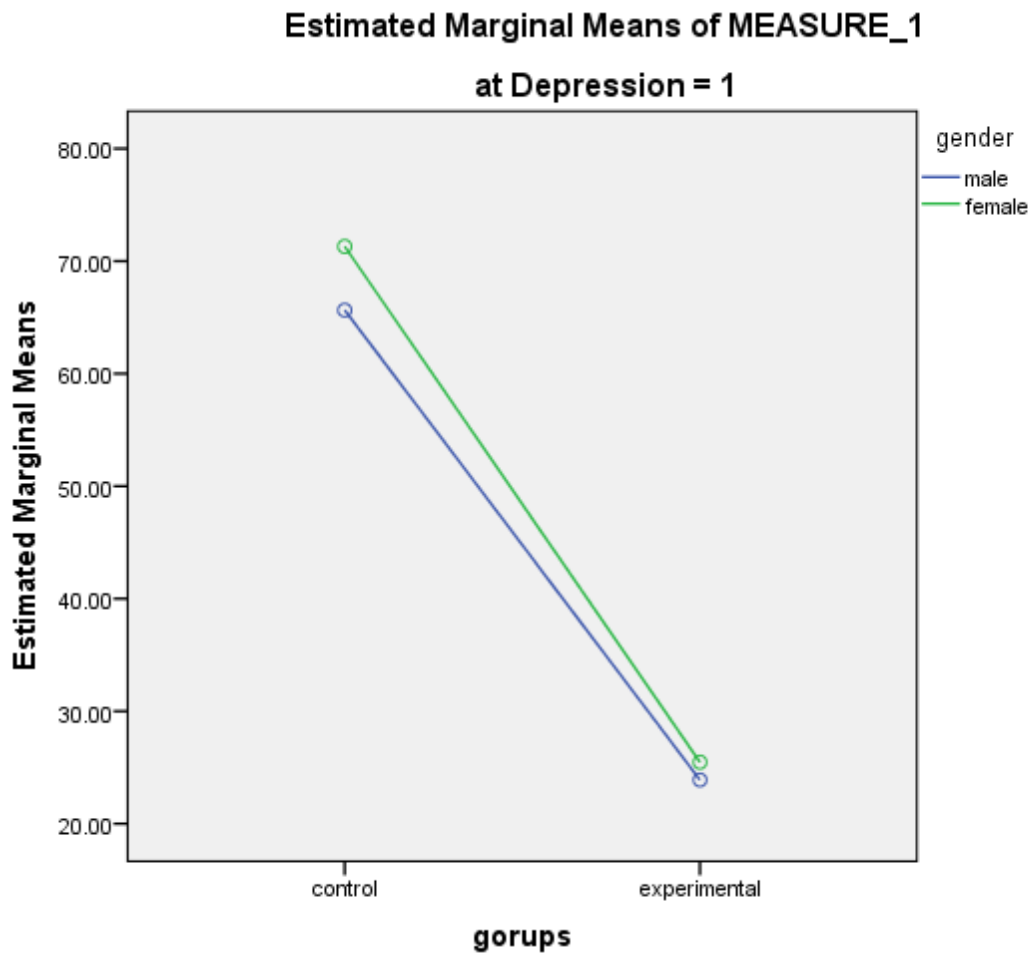


Figure 3

Interaction between groups and gender at the posttest level

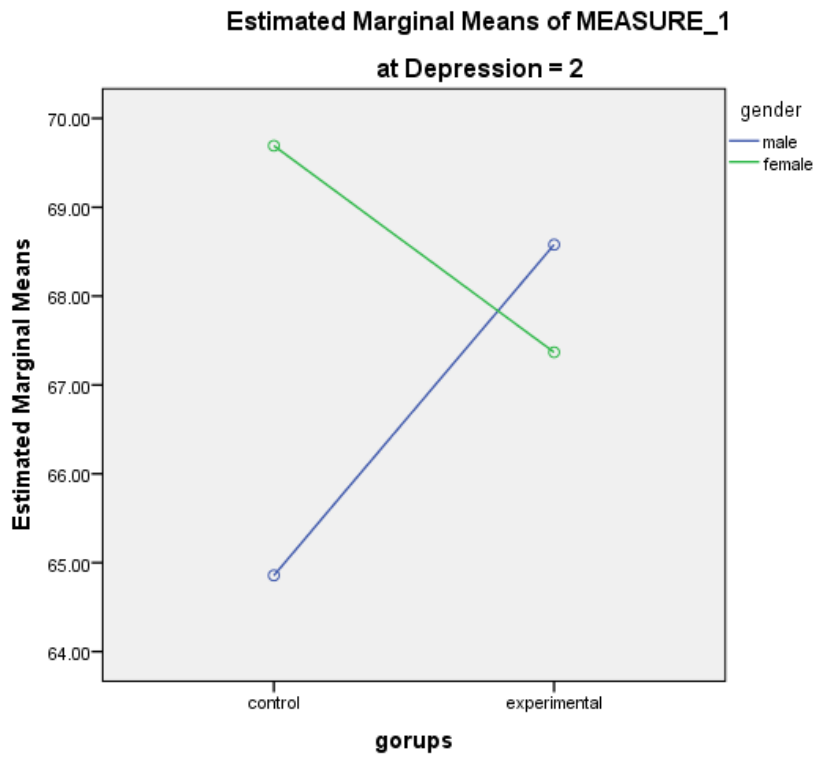
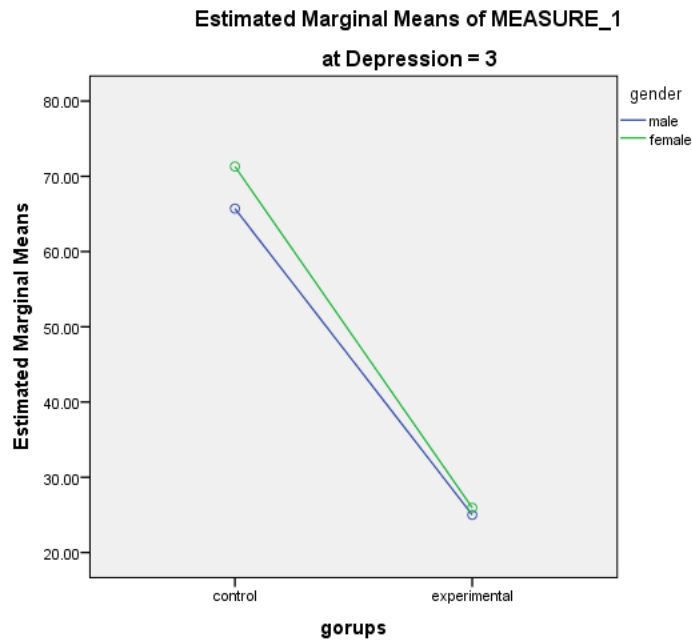


Figure 4

Interaction between groups and gender at the follow-up level



4 DISCUSSION

At the conclusion of the post-intervention phase in this study, which utilized Rational Emotive Behaviour Therapy (REBT), we observed a notable decrease in flood-induced post-traumatic stress disorder (PTSD) among school administrators when compared to the control group. REBT not only facilitated this reduction but also helped sustain it over time for those administrators affected by flood-related PTSD, unlike their counterparts in the control group. This finding supports our initial hypothesis, which proposed that REBT would significantly impact the reduction of PTSD symptoms in school administrators in Anambra State. Essentially, the results indicate that school principals experiencing symptoms of flood-induced PTSD were introduced to the REBT framework, which includes the principles of activating events, beliefs, consequences, disputation, and new effects (the ABCDE model). This approach helped them manage their dysfunctional perceptions and emotions, as well as the physical reactions tied to their life experiences, including the trauma of flooding. In simpler terms, the psychological distress caused by flood-induced PTSD—manifesting as heart issues, insomnia, depression, mood swings, irritability, poor attitudes, lack of focus, underperformance, fatigue, feelings of hopelessness, and even suicidal thoughts—has seen a significant reduction after these administrators engaged with REBT. Moreover, the effectiveness of REBT in this study aligns with other empirical research, which has shown that REBT serves as a valuable tool for alleviating emotional distress, including depression and PTSD. Supporting this, a randomized controlled trial by Ogbuanya *et al.* (2017) highlighted the benefits of rational emotive behavior therapy in addressing similar emotional challenges.

In a fascinating study, male administrators who underwent Rational Emotive Behavior Therapy (REBT) experienced a noticeable drop in their flood-induced PTSD symptoms. Interestingly, female administrators showed a similar trend, especially when compared to those in the control group. Over time, REBT demonstrated its effectiveness in easing flood-related PTSD for male administrators, while female administrators also saw improvements, albeit to a lesser degree than their male counterparts. The research underscores the significant impact of REBT at various stages—pretest, posttest, and follow-up—on reducing PTSD among administrators affected by floods. Gender appears

to play a vital role in this reduction. There's a clear interaction between treatment and gender when it comes to alleviating flood-induced PTSD among secondary school administrators in Anambra State. The results indicate that while both male and female administrators faced PTSD after being exposed to REBT, the outcomes were more favorable for the males. This finding aligns with earlier research (Spitzberg, 1999), which suggested that women are about 9.2% more likely to develop post-traumatic stress disorder following traumatic experiences from natural disasters and similar environmental challenges. The differences in PTSD symptoms—such as irritability, impulsiveness, numbing, and avoidance—between genders, even after psychological interventions like REBT, may be rooted in inherent personality traits and a heightened sensitivity to emotional responses. Additional evidence backs up this study's conclusions, showing that females tend to be more susceptible than males to both psychological and physical reactions to traumatic events (like floods), which can manifest as intense fear, intrusive thoughts, horror, helplessness, panic, and anxiety (Olf *et al.*, 2007). Supporting this, Yehuda *et al.* (2005) pointed out that post-traumatic stress disorder (PTSD) is twice as common in females compared to males, highlighting how societal factors influence the differences in trauma exposure and the presentation of related conditions.

4.1 Psychotherapists

In this study, the psychotherapists took on dual roles as research assistants while also actively treating participants from the experimental group. These research assistants are experienced male and female counselors and psychotherapists, aged between 40 and 55, who hold advanced degrees in career counseling, psychology, and other related fields of mental health rehabilitation. They also have a solid grasp of the rational emotive behavioral therapy (REBT) program. To put it simply, these professionals come with a wealth of experience, having practiced cognitive and behavioral therapy for over twelve years. As therapists, they received copies of the REBT program specifically for this study from the researchers. Importantly, the schedules for the researchers and therapists were carefully coordinated, and extensive discussions took place on how to effectively implement the manual program, particularly focusing on the ABCD steps and strategies

to ensure everything ran smoothly. These discussions lasted six days, with each session clocking in at an hour.

4.2 Treatment integrity

Before the therapists kicked off the treatment, the researchers brought in two research assistants to help keep tabs on the program. During the briefing, each therapist was paired with external observers, whose role was to watch over, supervise, and document everything happening in the REBT program for this study. The observers had a crucial job: they made sure the treatment stayed on track, noted the techniques being used, and recorded the start time, date, and when participants were dismissed. They also kept an eye on whether the research assistants (therapists) were sticking to the intervention plan. Plus, they tracked the participants' activities by maintaining attendance records.

4.3 Strength of the study

This study took a closer look at how effective REBT is in reducing flood-induced PTSD, specifically among Nigerian School Administrators (Principals). While this research isn't the first of its kind, it stands out for its unique approach in Anambra State, Nigeria. It offers significant benefits in alleviating psychological issues and other mental health challenges, including flood-induced PTSD that school principals' face.

4.4 Limitations

Just like many empirical studies, one of the main drawbacks of this research is the relatively small sample size. This limitation means we can't really extend the findings to a broader context. Future studies could really benefit from a larger sample to more effectively confirm how well REBT works. Plus, REBT could be a valuable intervention for different groups of employees facing similar mental health challenges. It's also important to point out that the study's limitations, particularly in using complex research

methods like blending both quantitative and qualitative approaches, might impact how widely we can apply the results.

5 CONCLUSION

The study highlighted how effective REBT can be in reducing PTSD caused by floods, focusing on a group of school principals in Anambra State, Nigeria. Over a 12-week intervention program, participants showed a notable decrease in their flood-related PTSD symptoms. The researchers concluded that while this study demonstrated the effectiveness of REBT, more research is needed to confirm these findings in different contexts. Future studies could explore how REBT might help with other psychological issues across various populations and locations.

6 RECOMMENDATIONS

Based on the findings of this study, the researchers made the following recommendations:

1. REBT should be applied in the reduction of flood-induced PTSD among school administrators.
2. REBT should also be adopted by psychologists, guidance counselors in the treatment of other irrational thoughts causing psychological problems and other related mental health problems affecting human population.

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DECLARATION

Conflict of Interest: The authors declare that they have no conflict of interest financially or non-financially, directly or indirectly related to the work.

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