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The Effect of Rational Emotive Behaviour Therapy on Post-Traumatic Depression in Flood Victims

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Abstract

Posttraumatic depression is often observed among flood victims all over the world including Nigeria. People who survived the experience of flood tend to suffer long-term psychosocial effects such as distress, anxiety, pain, learned helplessness, social dysfunctions that eventually lead to depression. These negative consequences engender irrational beliefs that are part of psychopathologies among flood victims. Exposing flood victims in Nigeria to rational emotive approaches that would enable them to manage their posttraumatic depression could be an important opportunity to make them feel less depressed and become more functional and successful in their life and the word of work. This study examines the effect of rational emotive behavior therapy (REBT) intervention on posttraumatic depressed flood victims in Nigeria. A total number of 98 participants (parents) were randomly assigned to treatment (n = 49) and the waitlisted control (n = 49) groups. REBT Depression Manual was used for the delivery of the intervention while depression was evaluated using Hamilton Depression Rating Scale (HDRS) and Goldberg Depression Scale. The data of the pretest, posttest and follow-up were subjected to statistical analysis using SPSS version 22. Specifically, Analysis of covariance (ANCOVA) was used for method of data analysis. Result indicated that REBT program led to the significant reduction in posttraumatic depressed flood victims in Nigeria, the implication is that posttraumatic thoughts and beliefs of flood victims that led to depressive state was addressed, thereby placing the victims under good mental health through the application of REBT evidence-based techniques.

Keywords Posttraumatic depression · Nigeria · Rational emotive behavior therapy · Flood victims · Albert Ellis · REBT

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Introduction

Posttraumatic Depression

Flooding is one of the natural disasters experienced all over the world (Fatima & Maqbool, 2017). Floods are among the most disruptive and costly form of natural disaster (Alliance Development Works, 2012). Flooding occur as an overflow of a river resulting from a prolonged seasonal rainfall, rainstorm, snowmelt, dam-breaks, accumulation of rainwater in low-lying areas with a high water table, or inadequate storm drainage (Akukwe, 2014). It can also be caused as a result of intrusion of sea water onto coast lands during cyclonic/tidal surges (Handmer et al., 1999; Stoltman et al., 2004).

The alarming rate of flooding within Nigeria has been generally attributed to climate change and poor urban planning (Nkwunonwo, 2016). From the year 1985 to 2014, flooding in Nigeria has affected more than 11 million lives with a total of 1,100 deaths and property damage worth of US$17 billion (Nkwunonwo, 2016). Recent study in Nigeria reported that flooding has caused the displacement of more than 600,000 people and at least 100 deaths (National Emergency Management Agency, 2018). It has also, forced thousands of people away from their homes, destroyed businesses, polluted most drinkable water resources and increased the risk of diseases (Etuonovbe, 2011; Jeb & Aggarwal, 2008; Olorunfemi, 2011). Within 2000 to 2019 flood has been reported the highest occurrences among other types of disaster with 44%, affecting 41% of people; with 22% of economic losses and about 9% of human death across the world (United Nation Disaster Risk Reduction, 2020). Nigerian evidence showed that from 2012 to 2019 reports showed that about 90% of farmers are severely affected by flood (International Federation of Red Cross and Red Crescent Societies, IFRCR's 2019; Nigeria Hydrological Services Agency (NIHSA, 2019). Flooding in Nigeria has been said to be fluvial that resulted from rivers overtopping their natural and manmade defenses; coastal which affected mainly the coastal regions and pluvial that are flash arriving suddenly following a heavy storm in nature that have been a major cause of concern for rural and urban dwellers within the country (Bashir et al., 2012; Douglas et al., 2008; Houston et al., 2011; Jelkovic, 2001). Other scholars have shown that floods in Nigeria occur in three main forms, which are coastal flooding, river flooding and urban flooding (Folorunsho & Awosika, 2001; Okoduwa, 1999; Ologunorisa, 2004; Oriola, 1994; Orok, 2011).

Regrettably, such flood victims could be exposed to psychological problems. People who survived the experience of flood tend to suffer long-term psychosocial effects such as distress, anxiety, pain, learned helplessness, social dysfunctions that eventually lead to depression (Watts et al., 2015). Severe distresses in the worst cases may lead to mental disorders or so-called psychopathologies (Watts et al., 2015). Traumatic event like flood can influence the neurochemistry of one's body and brain thereby, causing high blood pressure, muscle tension and overall arousal level of one's body system (Ugwu & Ugwu, 2013). Thus, flood victims have been observed to be manifesting behaviours like change in mood

swing, change in sleeping patterns, change in weight, and inability to experience pressure.

Experiences of flooding among victims have been documented by past studies. Evidence of most psychological imbalance after any natural disaster like flood is traumatic (APA, 2000). Possibly, the stress tends to be depression in some individual who cannot manage the experience. Studies by Otto et al (2006) indicated that there is a relationship among posttraumatic stress and depression. Also, Fatima and Maqbool (2017) indicated that people affected from posttraumatic stress disorder severely suffered from depression. Such an individual's sudden shock experienced as a result of an event that involves actual or threatened death on one's life is referred to as trauma (APA, 2000).

Trauma is the stressful consequence clients (like flood victims) are being exposed to in an unavoidable occasion that engulfs them as well as affecting all aspects of their live (Quiros & Berger, 2015). In other words such people could put up unrealistic thinking processes as a result of the external events that are seen as dysfunctional beliefs (Eseadi et al., 2019). Relating the negative consequences of floods to trauma and other health problems of the victims, Ahern et al. (2005) reported that diarrhea and other water-borne diseases contribute to the death of flood victims. Jonkman and Kelman (2005) asserted that physical trauma and heart attack are also contributing factors when considering the mental health status of the flood victims.

People who are mostly affected with flood, experience fatigue, feelings of hopelessness, and suicidal thoughts which constitute trauma specific; They tend to manifest feelings of shame, self blame, and powerlessness over issues of life and find it difficult in relating with other people in the society (Counseling Directory 2017; Tran et al., 2016). In addition, Ahern and Kovats (2006) asserted that the mental and emotional trauma of flooding, as the victims were exposed to deaths, injuries and destruction of home and property, can result in severe psychological effects such as anxiety, learned helplessness and depression.

Depression has become an illness that affects 322 million people all over the world, of this number African region shared 9%, Eastern Mediterranean region 16%, European region 12%, Region of the Americans 15%, South East Asia Region 27% and Western Pacific Region 21% (WHO, 2017; eMBeD, 2018) With the use of Center for Epidemiological studies depression scale (CESDS) on the average, 22% of Nigeria respondents- 74% who are household heads,-27% who are female-have depressive symptoms(eMBeD,2018). The symptoms of depressive disorders can be shown by sadness, loss of interest or pleasure, feelings of guilt or low self esteem, disturbed sleep or not having appetite to sleep, feeling or tiredness and general poor concentration (WHO, 2017). Depression whether long lasting or recurrent impairs one's ability to function effectively at work place or school as well as coping well with daily life activities (WHO, 2017). Past studies showed that posttraumatic depression and measures taken in managing it is the most important thing to do in any society (Bryant-Davis et al., 2013; Courtois & Food, 2016; Ferguson et al., 2016; Levitan, & Coco, 2011; Woller, 2010). Studies have indicated that when one begins to experience depression, it is the person's continuous thought over a sad event (posttraumatic) or the negative interpretation of the past event that brings about depression (Hassan et al., 2011). Also, the interpretations given by such flood

victims have both physiological and psychological effects that could make them ineffective and inactive in life endeavours (Ahern et al. 2005; Hunter, 2003; Keith, 2013; Tapsell & Tunstall, 2008).

Previous cognitive therapeutic intervention studies have associated depression with cognitive distortions (Beck, 1967; Ede et al., 2019; Ezegbe et al., 2019). Some of the distorted cognition includes all-or-nothing thinking, catastrophizing, overgeneralization, selective abstraction, negative prediction, personalization, and magnification (Beck, 1967; Ede et al., 2020). In view of that, cognitive theorists assumed that cognitive dysfunctions lead to catastrophizing events and future (Allen, 2003; Beck, 1967; Reed, 1994). Consequently, such individual tends to be at risk of depression (Allen, 2003; Beck, 1967; Reed, 1994). Ellis (1962) proposed that depression normally starts from cognition; dysfunctional thought that often leads to depressive thinking. Thus, Ellis' view of depression made us to understand that irrational thinking and beliefs which involved demandingness, catastrophizing, low frustration intolerance, self-downing, life-downing and other-downing are the major mechanisms of depressive feelings and thinking (David et al., 2004, 2010; Hauck, 1971; Onuigbo et al., 2018). For curbing depressive thinking and beliefs, putting up healthy beliefs and feelings have been encouraged by therapists for clients who are depressed as victims of event (David et al. 2004; Onuigbo et al., 2018). Scholars have indentified cognitive, behavioural, emotional techniques in disputing illogical perception of situation, self, future, and world among depressed patients, for modifying the dysfunctional thinking and the underlying distorted cognitions. Among these techniques are collaborative empiricism and behavioural rehearsal, assertiveness training, disputation of automatic thinking, and verbal intervention strategies (Beck et al. 1979; Birmaher & Brent, 2007; Compton et al., 2004; Weisz et al. 2006; National Institute for Health and Care Excellence 2015).

Rational emotive behavioral therapy (REBT) is a kind of Cognitive Behavioural Therapy developed by Albert Ellis (1994). Like other forms of CBT, REBT is a direct-focused, short-term therapy model, used for people who experience undesirable activating events, about which they have rational beliefs (RBs) and irrational beliefs (IBs). These beliefs then lead to emotional, behavioral, and cognitive consequences. Rational beliefs (i.e., helpful/effective beliefs) lead to functional consequences, while irrational beliefs (i.e., unhelpful/negative beliefs) lead to dysfunctional consequences. Clients who engage in REBT are encouraged to actively dispute their IBs and to assimilate more efficient, adaptive and rational beliefs, with a positive influence on their state of emotional, cognitive, and behavioral responses (DiGiuseppe et al., 2014; Ellis, 1962, 1994). Thus, REBT has been known as a psychological theory and a treatment consisting of a combination of three separate domains of techniques (cognitive, behavioral, and emotive) one can use to help himself feel better physically and emotionally, and to engage in psychological wellbeing devoid of depression.

In REBT, therapists are to work with their clients to help them make changes in those aspects of their irrational thinking believed to contribute to emotional and behavioural problems like depression. REBT is differs from other types of cognitive behavioural approaches CBAs in its greater emphasis on: (1) unconditional self-acceptance; (2) reducing secondary problems, such as depression about depression;

and (3) efforts to reduce demanding beliefs (David et al., 2008). The REBT theory of depression explains all kind of depression satisfactorily and it spells out how to work out in precise detail, on how each depressive client should be addressed. The REBT theory of depression states that three factors are accountable for all forms of psychological depression: (1) self blame, (2) self-pity, and (3) other-pity. At any time it is determined that one is depressed, the first thing to do is to tell such an individual about the three ways in which people tend to depress themselves and then solicit the assistance of the client in determining which of the three methods mentioned he/she is using in his specific case. If such individual cannot guess how he/she is depressing self, the therapist should not hesitate to suggest which of the one or perhaps several methods the client is using. When the therapist is reasonably sure as to which technique is being employed, he goes into a traditional REBT approach to rid the client of the irrational ideas behind self-blame, self-pity, or other-pity.

Prior studies conducted by Bridges and Harnish (2010), Taghari, Goodarzi and Kazemi (2006) indicated that there was a direct relationship between irrational beliefs and depression. Other researchers like Rieckert and Moller (2000) found REBT effective in reducing depression among adults. Also Ede et al. (2019) found cognitive approach effective in reducing depression among youths in Nigeria. David et al. (2008) reported that major depressive disorder can be treated using REBT-approach. Like the past studies, Sava et al. (2009) demonstrated that rational-emotive intervention is cost-effective method in reducing depressive symptoms.

Thus, rational emotive behavour therapy (REBT) Ellis (1994) could be exposed to flood victims on how to overcome depression and improve on their daily living as well as reducing the perception of suicide for better life ahead. This is because peoples' core thoughts stand in the way of making the changes that will help them have a better life (Melinda, 2019). To that end, Rational Emotive Behaviour Therapy is one of the therapies that help people change such stressful thoughts that could lure them into depression. REBT is a kind of therapy that looks at the philosophic bases of emotional problems (Ellis & Becker, 1982). REBT can be exposed to people in a group therapy. In the view of REBT responding to life traumatic events like flooding, can activate a set of irrational thoughts and beliefs that can breed the development of posttraumatic depression disorder PTDD (Blayney et al., 2016; Ellis, 2001a, 2001b). It is a therapy used in addressing painful emotions and maladaptive behaviours by learning techniques to solve immediate and future problems as they unfold (Mahfar et al., 2014). REBT theory is of the view that people sometimes are faced with events or situation that will activate Irrational thoughts and Beliefs (ITBs) which could result to unhealthy emotions (e.g., anxiety, depression, guilt) and dysfunctional behaviors; whereas, such events or situation can as well activate Rational Thoughts and Beliefs (RTBs) that could result to healthy emotions and functional behaviors (Maclaren, et al., 2016; Wood et al., 2017). Recent studies have shown the efficacy of REBT in reducing depression (Amini et al., 2014; Ezeudu et al., 2019; Onuigbo, et al., 2018). Another evidence about REBT program is its effectiveness in disputing negative thoughts among clients (Mahfar et al., 2014), including those negative thoughts of flood victims. One important thing about REBT is that it gives opportunity to group members to interact about their problems as well as allowing the members and their leader in giving feedback and possible suggestions (Eseadi,

Ezurike, et al., 2017; Eseadi, Obidoa, et al., 2017; Eseadi, Onwuka, et al., 2017). In so doing, REBT members are encouraged to put off their upsetting experiences that are likely to breed irrational thoughts and beliefs and put on rational thoughts and beliefs that will instigate a healthy emotional, cognitive and behavioural functioning (Corey, 2016; David et al., 2010). The suitability of REBT for group members can also be seen in its opportunities for members to practice novel behaviour involving risk-taking and role-playing activities (Corey, 1991).

All in all, to the best of our knowledge REBT have been used in various areas of human endeavours and have been found to be effective in reducing some negative emotionally generated interpretations, resulting to behavioral dysfunctionality. But, its effectiveness in depressive flood victims in Kogi state is yet to be explored. Therefore, the objective of the present study is to investigate the effect of REBT on the posttraumatic depressed flood victims in Kogi state, Nigeria. The hypothesis for the present study was that REBT would significantly reduce the depressive state experienced by flood victims in the treatment group to their comparable group in Kogi state Nigeria.

Methods

Ethical approval

The approval for undertaking the present study was granted by Research Ethics committee, Faculty of Education, at the University of Nigeria, Nsukka. Participants' written informed consent was obtained giving a detail explanation of the purpose of the research to them. The authors adhered to the guidelines for research with human participants by the American Psychological Association (2013). The paper was registered retrospectively in UMIN clinical trial registry with Unique ID issued by UMIN: UMIN000043019.

Study design

The study used a pretest- posttest control group design.

Participants

Out of 106 flood victims (parents who are farmers) approached in September 2019 within Kogi state Nigeria, 98 were identified as those who met the criterion for inclusion. A total of 98 people were eligible for the study. The details of the demographic characteristics of the participants are presented in Table 1.

Table 1 shows that the REBT group comprised 23 males (46.9%) and 26 (53.1%) females; the waitlist control group comprised 21 males (42.9%) and 28 (57.1%) females. From the analyses of result, it can be seen that no significant gender difference was observed among the study participants ($\chi^2 = 0.165$, $p = 0.685$). In the REBT group, 15 participants (30.6%) were within the age of 30 years and below,

Table 1 Demographic characteristics of the participants

Characteristics	REBT Group n (%)	Waitlist control group n (%)	Statistic	Sig
			χ^2	
Gender				
Male	23(46.9)	21(42.9)	0.165	0. 685
Female	26(53.1)	28(57.1)		
Age				
30yrs & Below	15(30.6)	20(40.8)	1.116	0.527
31-40yrs	22(44.9)	19(38.8)		
41yrs and above	12(24.5)	10(20.4)		
Religious affiliation				
Christianity	28(57.1)	27(55.1)	2.905	0.234
Islam	14(28.6)	9(18.4)		
Others	7(14.3)	13(26.5)		
Tribes				
Igala	14(28.6)	18(36.7)	2.667	0.446
Ebira	12(24.5)	15(30.6)		
Bassa	13(22.4)	11(20.4)		
Others	10(16.5)	5(10.2)		
Education				
Primary	9(16.3)	7(14.3)	1.418	0.701
Secondary	12(26.5)	15(30.6)		
Tertiary	28(57.1)	27(55.1)		
Family size				
5 & below	8(16.3)	9(18.4)	4.877	0.181
6–10	16(32.7)	21(42.9)		
11–15	13(26.5)	15(30.6)		
16 & above	12(24.5)	4(8.2)		

n = number of participant, REBT = Rational Emotion Behaovioural Therapy, % = Percentage, χ^2 = Chi-square, sig = Associated probability

22 (44.9%) were within the age of 31-40 years, 12 (24.5%) were within the age of 41 years and above. In the waitlist control group, 20 participants (40.8%) were within the age of 30 years and below, 19 (38.8%) were within the age of 31-40 years, 10 (20.4%) were within the age of 41 years and above. No significant age difference was observed among the participants ($\chi^2 = 1.116$, P = 0.572). Regarding religious affiliation, in the REBT group, 28 participants (57.1%) were of Christianity religion, 14 (28.6%) were of Islamic religion, 7 (14.3%) were of other religion. In the waitlist control group, 27 participants (55.1%) were of Christianity religion, 9 (18.4%) were of Islamic religion, 13 (26.5%) were of other religion. No significant religious affiliation difference was observed among the participants ($\chi^2 = 2.905$, $p = 0.234$). Regarding ethnicity, in the treatment (REBT) group, 14 participants (28.6%) were from Igala, 12 (24.5%) were from Ebira, 13(22.4%) were from Bassa

Nge and Bassa Komo, while finally, 10 (16.5%) were from other ethnic background; In the waitlist control group, 18 participants (36.7%) were from Igala, 15 (30.6%) were from Ebira, 11(20.4%) were from Bassa, while 5 (10.2%) were from other ethnic background. No significant ethnicity difference was observed among the study participants ($\chi^2 = 2.667$, $p = 0.446$). In the case of participants level of education, in the treatment (REBT) group, 8 participants (16.3%) were with primary education, 13(26.5%) were with secondary education, and 28(57.1%) were with tertiary education. In the waitlist control group, 7 participants (14.3%) were with primary education, 15 (30.6%) were with secondary education, and 27(55.1%) were with tertiary education. No significant level of education difference was observed among the participants ($\chi^2 = 1.418$, $p = 0.701$). In the REBT group, 8 participants (16.3%) were from family size of 5 and below, 16 (32.7%) were from family size of 6–10, 13 (26.5%) were from family size of 11–15 and 12 (24.5%) were from family size of 16 & above. In the waitlist control group, 9 participants (18.4%) were from family size of 5 and below, 21 (42.9%) were from family size of 6–10, 15 (30.6%) were from family size of 11–15 and 4 (8.2%) were from family size of 16 & above. No significant family size difference was observed among the participants ($\chi^2 = 4.877$, $p = 0.181$).

Procedure

The pretest was conducted before the exposure of REBT in order to acquire the base line data using Hamilton Depression Rating Scale and Goldberg's Depression Scale. To be included in the study, the participants met the following conditions: (1) participants must be suffering from either severe or mild depression, (2) those that have been confirmed by clinical psychiatrist/psychologist to be clinically depressed, and (3) must be readily available for the study. We also took account of criteria slated in Diagnostic and Statistical Manual of Mental Disorders-V during the recruitment exercise. Participants who met the inclusion characteristics mentioned above were enrolled for the study; those who were not associated with the characteristics mentioned above were not part of the study. As part of exclusion criteria, we also excluded participants whose scores on HDRS and GDS were low. Finally, those that had other forms of medical diseases, perhaps presently receiving medications or pharmaceutical treatment from other experts were excluded. All the 98 eligible participants were randomly assigned to the REBT group and the Waitlist control group. A simple randomization procedure was conducted in which the participants were asked to deep their hands inside a plastic bucket full of wrap white papers, in each of these papers contained a write up First Group (FG) for treatment group or Second Group (SG) for waitlist control group. The random assignment produced a total of 49 participants for REBT and 49 participants for the waitlist control condition. Kindly see Fig. 1 for randomization details.

The treatment process was based on the REBT intervention package developed by the researchers. Participants in the REBT group were exposed to 20 sessions, each lasting for 50 min. Sessions were held twice in a week for weeks 1–8 and sessions were held once for weeks 9–12. At the end of the intervention, a posttest was

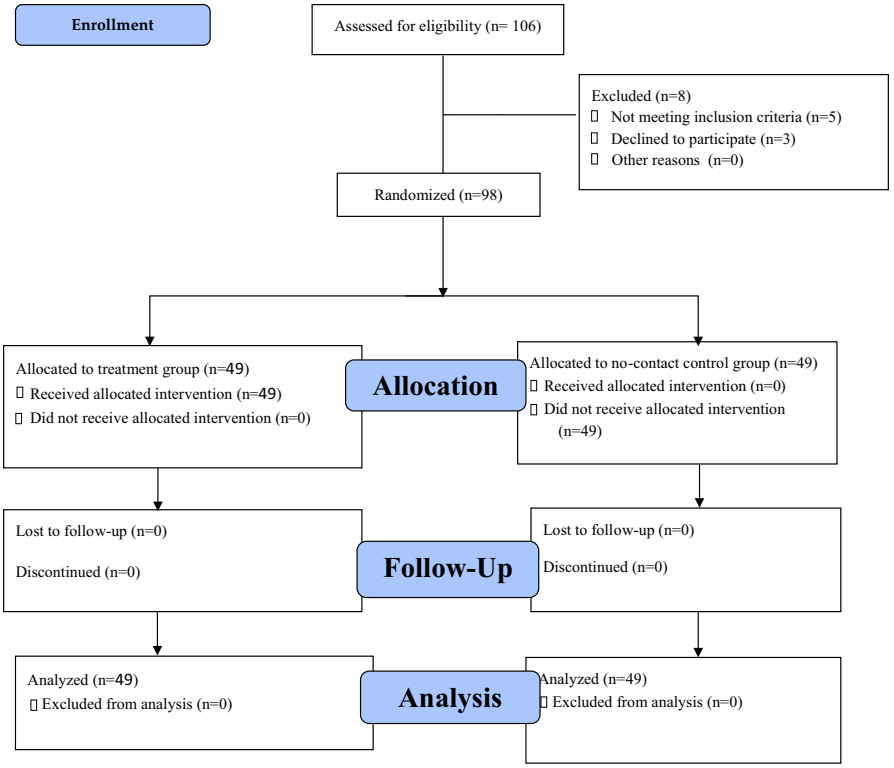

Fig. 1 Participants flow diagram

administered to both groups (time2). The basic rules of the therapy were explained to the participants and the rationale behind the use of REBT and its ADCDE model. Thereafter, the major goals of REBT were discussed with the participants.

From weeks 1–4, the therapists introduced the treatment by adopting the conceptualization of depression incorporating stress-related issues that cut across physiological, psychological, and socio-cultural basis based on the information gathered from the participants during the therapists' field work, which served as their assessment. Secondly, the therapists built a therapeutic relationship with the participants by empathizing with them, making sure that the group members interact with each other as they share their past experiences together. Also, the therapists made sure that all the participants are treated equally. The therapists educated the participants about the REBT model as well as eliciting their expectations for the therapy and finally, made the participants to understand the nature of their disorders and the necessary steps to take for total recovery of wellbeing throughout the psychotherapy process. In sessions 2–8 each problem from the list was approached based on the ABC (DEF) model of REBT.

From weeks 5–8, the therapists use the REBT techniques in decreasing the participants' irrational thoughts and beliefs that has the symptoms of depression

and encouraged their irrational thoughts and beliefs that will bring about well being, as well as encouraged the participants by guiding the participants' perception on how to relate problems that have similar features of irrational thoughts and beliefs.

From weeks 9–12, at this point, the therapists prepared the participants for the task of becoming their own future therapist by exposing them to the various techniques (Cognitive, Behavioural and Emotive) responsible for changing their thoughts and belief patterns as well as discussing personal problems and relapse strategy the participants will adopt and how it will decrease their depressive symptoms. After the active engagement sessions and post assessment, the researchers and the participants met for third time for follow-up assessment. The assessment took place after three months of posttest and lasted for three months, that is between September to November 2019.

Measures

Hamilton Depression Rating Scale (HDRS) (Hamilton, 1960) the main purpose of the scale is to assess the severity of depression. It was meant to help identify those victims of flood disaster who after their experiences developed some symptoms of depression unknowingly, in other words it was used to ascertain the base line data. The scale contains 17 items addressing the symptoms of depression for the past week of experiencing an event that was threatening. The items which the participants responded to are: *depression mode, feelings of quietness, suicide, insomnia early in the night, insomnia middle in the night, insomnia early hours of the morning, work and activities, retardation, agitation, anxiety psychic, anxiety somatic, somatic symptoms gastro intestinal, general somatic symptoms, genital symptoms, hypochondriacs, loss of weight and insight.* Each of the item sub-scales mentioned has its different rating score of 0–4, 0–3 and 0–2, depending on the choices the participant made that characterized the way he or she feels. The response option differs as well. For example item 1,2,3,7,8,9,10 and 15 have five options each, while items 4,5,6,12,13,14 and 17 have three options each, while item 16 alone has 4 options. Consistently, the internal reliabilities of HDRS have been reported by numerous authors across nations. Examples of the nations are Madison: $\alpha = 0.92$ (Reynolds & Kobak, 1995), Pennsylvania: = 0.73 (Riskind et al., 1987), USA = 0.82 (Potts et al., 1990), Hillered Denmark = 0.86 (Fuglum, et al., 1996). While in this study found a reliability coefficient of 0.84.

Goldberg's Depression Scale (Goldberg, 1993) aimed at identifying patients with the signs of depression. The scale has 18 items with 5 Likert answers of 0–5, where 0 = Not at all, 1 = Just a little, 2 = Somewhat, 3 = Moderately, 4 = Quite a lot and 5 = Very much. The scale scoring pattern include depressed (0–9 scores), possible symptoms as a result of other medical problems (10–21 scores), mild to moderate (22–35 scores), moderate to severe (36–53 scores) and severely depressed (54 and above). This implies that the greater the participant numbers the severe the participant depression state is likely to be. The items were written in English, because all the participants understand English, as the general language spoken by people found

within the areas of study. Consistently, the internal reliabilities of Goldberg Depression Scale have been reported by numerous authors across nations. For examples, Aminpoor et al. (2012) found internal consistency of scale using different Iranian populations, high school degrees = 0.901, and, higher education degrees = 0.861. Likewise in Nigeria context the studies have previous study has showed that the scale is valid and reliable (Ede et al., 2019; Ezegbe, 2019).

Psychotherapists

The psychotherapists served as research assistants and also treated the participants in the experimental group. They are qualified male and female counsellors, between the age range of 41 and 52 years, trained in the use of rational emotive behavioural therapy programme. They have Ph.D in career counselling and mental health rehabilitation counselling. The research assistants have extensively engaged in cognitive and behavioural therapy practice so much for over fifteen years. The therapists received copies of the REBT-programme of study from the researchers. Thereafter, dates and time for the researchers and the therapists were fixed and discussions were made on how the manual programme should be used, especially as it concerns the ABCD steps and strategy involved and possible ways to ensure optimal implementation of the manual. The discussion lasted for five days, one hour per day.

Treatment Integrity

Prior the delivery of the treatment by the therapists, the researchers delegated three assignees (who are part of the research team) to keep records of the treatment programme. During the briefing, each therapists were assigned to external observers, whose roles were to monitor, supervise, and record how the REBT-programme of activities on depression happened. As part of the roles, the observers checkmated the treatment integrity, commencement hour and time of dismissal. The assignees monitored if the therapists systematically delivered the intervention as planned. They supervise the time treatment started, date, closing time, and techniques used. The activities of the participants were also checkmated by keeping their attendance records.

REBT Treatment Intervention

Rational emotive behavioural therapy for depression is a treatment manual developed by David et al., (2004) to assist individuals in minimizing the severity of symptoms associated with depression. This manual is a 14-week clinical programme that lasted for 20 sessions. The first 12 weeks focused on treatment whereas 2 weeks were meant for follow-up meetings, one meeting per week. Each session lasted for 50 min with maximum group of 20 participants. The treatment was based on the techniques and descriptions as explained in the REBT manuals for depression. The REBT treatment was basically focused on the irrational thoughts and beliefs mediating depressive features which are demandingness (DEM), self-downing (SD),

awfulizing (AWF) and low frustration tolerance (LFT). Cognitive (i.e., disputation), behavioral and emotive techniques was used to change the thoughts and irrational beliefs of the identified participants. Also, the REBT strategies were essentially focused on reducing secondary problems, promoting unconditional self worth, and focusing on the identification and changing of DEM as the major source of irrational thoughts and belief involved in depression. The treatment was done in weeks as earlier mentioned. The manual was categorized into three steps namely initial stage (first to four weeks), middle stage (five to eight weeks), and last stage (nine to twelve weeks). Two sessions per week beginning from weeks 1–8 and the last stage was only one session per week (i. e. 9–12 weeks).

Weeks 1–4 with sessions 1 to 8 addressed familiarization, building a therapeutic alliance, conceptualizing depression, incorporating the biological, psychological, social and cultural dimensions of depression, REBT perspectives, and identification of problem based on the ABC (DEF) model of REBT. Weeks 5–8 with sessions 9–16 addressed decreasing the participants' irrational thoughts and beliefs and reinforcing the participants' rational thoughts and beliefs and reinforcing the participants' perception towards relating problems that have similar features of irrational thoughts and beliefs. While, weeks 9–12 with sessions 17–20 addressed the techniques that will make the participants a therapist and how to manage personal stress.

Data Analysis

The data of the pretest, posttest and follow-up were subjected to statistical analysis using SPSS version 22. Specifically, Analysis of covariance (ANCOVA) was used for method of data analysis. ANCOVA was used by the researchers because: (1) the participants were completely randomized into treatment and waitlist groups; (2) the independent variable with two levels (rational emotive behavioural therapy and waitlisted control groups) were categorical; (3) the dependent variable-Post Traumatic Depression (measured with HDS = Hamilton's depression scale and GDS = Goldberg's depression scale) data were continuous at pre-test, post-test and follow-up 1 & 2 stages respectively; (4) Hamilton's depression and Goldberg's depression data at pre-test, post-test and follow-up 1 & 2 stages were simultaneously analyzed; (5) Hamilton's depression and Goldberg's depression data at pre-test and post-test stage did not correlate above r = 0.90 (see Table 2) as suggest by Tabachnick and Fidell (2012).

Results

Table 3 reveals the study outcomes for the participants in the treatment group compared to the waitlist control group over the 4 periods. Before the treatment, Table 3 reveals that there was no significant difference between the treatment and waitlist control groups in initial post traumatic depressed flood victims in Nigeria as measured by HDS, $F\ (1,97) = 0.100$, $p = 0.753$, $\eta_{p^2} = 0.001$, $\Delta R^2 = 0.031$; and $F\ (1,97) = 0.078$, $p = 0.781$, $\eta_p^2 = 0.001$, $\Delta R^2 = -0.020$ as measured by GDS.

Table 2 Model Summary of the regression between pre-test and post-test scores of post traumatic depression measured with HDS and GDS

Model	R	R Square	Adjusted R square	Std. error of the estimate	Change statistics					Durbin–Watson
					R square change	F change	*df*1	*df*2	Sig. F change	
HDS	.286	.082	.072	7.73601	.082	8.569	1	96	.004	.482
GDS	.038	.001	− .009	5.18739	.001	.140	1	96	.709	1.013

HDS = Hamilton's depression scale and GDS = Goldberg's depression scale

Table 3 Analysis of Covariance showing the effect of REBT on post traumatic depressed flood victims as measured by HDS, and GDS

Time	Measures	Group	Mean(SD)	F	*p*	η_p^2	ΔR^2	95%CI
Pretest								
	HDS	REBT	53.14(3.10)	0.100	0.753	0.000	0.031	52.61–53.88
		WC	53.35(3.17)					
	GDS	REBT	80.47(3.40)	0.078	0.781	0.001	0.020	79.81–81.32
		WC	80.74(4.01)					
Posttest								
	HDS	REBT	30.53(3.40)	208.935	0.001	0.690	0.691	36.21–38.01
		WC	43.82(5.36)					
	GDS	REBT	35.92(2.39)	34.841	0.001	0.270	0.305	37.64–39.38
		WC	41.33(5.77)					
Follow-up 1								
	HDS	REBT	22.51(3.90)	378.484	0.001	0.801	0.796	29.26–30.82
		WC	37.51(4.10)					
	GDS	REBT	27.41(3.14)	65.653	0.001	0.411	0.471	29.57–30.99
		WC	33.47(4.33)					
Fellow-up 2								
	HDS	REBT	24.90(4.01)	674.220	0.001	0.879	0.874	33.17–34.55
		WC	42.67(3.37)					
	GDS	REBT	24.00(2.27)	185.294	0.001	0.663	0.695	27.86–29.17
		WC	33.33(4.52)					

REBT = Rational Emotive behaviour therapy, WC = Waitlisted control, H = Hamilton's Depression scale, GD = Goldberg's Depression scale, Mean (SD) = Mean (Standard Deviation), *p* = probability value, η_p^2-effect size, ΔR^2 = Adjusted R^2

At the post-treatment, the effect of REBT was significant on post traumatic depressed flood victims in Nigeria as measured by HDS, F (1, 97) = 208.935, $p = 0.001$, $\eta_p^2 = 0.690$, $\Delta R^2 = 0.691$; and $F(1, 97) = 34.841$, $p = 0.001$, $\eta_p^2 = 0.270$, $\Delta R^2 = -0.305$ as measured by GDS. After the post-treatment, a follow-up 1 result show that the effect of REBT was significant on post traumatic depressed flood victims in Nigeria as measured by HDS, $F(1, 97) = 378.484$, $p = 0.001$, $\eta_p^2 = 0.801$, $\Delta R^2 = 0.796$; and $F(1, 97) = 65.653$, $p = 0.001$, $\eta_p^2 = 0.411$, $\Delta R^2 = -0.471$ as measured by GDS. At follow-up 2, the result show that the effect of REBT was significant on post traumatic depressed flood victims in Nigeria as measured by HDS, $F(1, 97) = 674.220$, $p = 0.001$, $\eta_p^2 = 0.878$, $\Delta R^2 = 0.874$; and $F(1, 97) = 185.294$, $p = 0.001$, $\eta_p^2 = 0.663$, $\Delta R^2 = -0.695$ as measured by GDS. Furthermore, the (partial eta squared) value of 0.801 and 0.411 at posttest level was indicative that REBT accounted for about 80.1% and 41.1% reduction in post traumatic depressed flood victims in Nigeria as measured by HDS and GDS respectively.

Discussion

The study initial outcome showed that there was no significant difference between the treatment and waitlist groups in initial post traumatic depressed flood victims in Nigeria as measured by HDS and GDS. At the post-treatment, follow-up 1, and 2, we found that REBT was significantly effective in decreasing post traumatic depression among flood victims in Kogi state of Nigeria. The findings authenticated our predicted hypothesis on the effect of REBT on posttraumatic depressed flood victims in Kogi state. The psychological imbalance of flood victims in Kogi state that spring from fatigue, feelings of hopelessness, and suicidal thoughts which constitute depression has been significantly reduced after they are being exposed to REBT. This shows that REBT has been able to cushion the effect of the flood victims. In line with this study, Onuigbo et al. (2019) found that REBT program led to the significant reduction in depression among students with blindness. Also, in line with our study is the study carried out by Ezeudu et al. (2019) that rational-emotive behaviour therapy was effective in reducing depression scores among chemistry undergraduate students in Nigeria. Also, REBT have been applied in helping other population like middle aged working woman with depression. The study by Satonkar (2019) indicated that there was a reduction among middle aged working woman with depression. REBT was also found efficient in another population with nonpsychotic major depressive disorder of 170 out patients in Romania (David & Szentagotai, 2008). A significant reduction of depressive symptoms was found among schoolchildren (Anyanwu et al, 2019). In line with this study finding is the study of Ezegbe et al. (2019) intervention that had a significant positive impact on decreasing the level depression symptoms among the study participants. Apart from the studies that are in support of our finding, Previous studies have showed that posttraumatic depression is not the only consequences of natural disasters like flood but also inclusive are posttraumatic stress disorder and anxiety that stems from erroneous belief, self-defeating and self downing syndromes (Hyland & Boduzek, 2012).

Implication for Practitioners

Practitioners of REBT should try to always use its intervention in every other disaster like survivals of earthquake, hurricane wind, fatal road accident victims, fire outbreaks and all other forms of events that are disastrous in nature as the REBT intervention could help in cushioning the symptoms of depression thereby reducing its deteriorating effects on human lives. Also, the findings of this study will sensitize Nigerian scholars to investigate more studies of this nature.

Investigating more on studies of this nature in the Nigerian environment would create a database for world bodies such as the World Health Organization and mental health experts. Knowledge acquired from such databases can be used to intervene in the depressive state that could lead to suicidal behaviours of people with any form of natural disasters in Nigeria.

Limitations

Like other quantitative studies, one of the limitations of this study is the inability of the researchers to organize treatment sessions for the participants in waitlisted control group. In this kind of study, the participants are suppose to receive treatment immediately after the active group participants finished.

Future Direction

Therapists, clinical workers and other counseling psychologists should create centers for rehabilitation where educating people on how to live in such areas their activities could worsen floods becomes necessary. Therefore, workshops and seminars should be organized for those inhabiting in flood-prone environments with a view to impacting the knowledge to them so that they will become informed on how their interactions with environment could make flooding more disastrous. Secondly, the meteorological stations of country or state that are prone to flooding should be equipped with up to date gadgets, which will help meteorologists predict accurately climate conditions that could give raise to flooding. This will enable the government and the public to be informed early, in order to take preventive measures against lost of property, lives and other valuable farm products that if damaged or lost could trigger symptoms of depression.

Conclusion

As seen in the findings of this study, we concluded that this study validated previous studies on the efficacy of rational emotive behavior therapy on depression in general and posttraumatic depression related to flood. Hence, we suggested for replication of this study using population from other cultural orientations and determinism.

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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