



Intervention for Treating Depression in Parents of Children with Intellectual Disability of Down's Syndrome: A Sample of Nigerian Parents

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Abstract

A good number of parents of children with Down syndrome are prone to depressive disorders. The depressive feelings are attributed to negative perceptions of the situation, self, and the future. Given this, we explored the impact of the family health model of rational-emotive behavior therapy on depressive symptoms in parents of children with intellectual disability of Down syndrome in the COVID-19 pandemic era. This is a randomized pretest–posttest control group design that recruited 88 parents of children with intellectual disability of Down syndrome. We measured the depressive symptoms in parents at Time 1, Time 2, and Time 3 using the Beck depressive inventory and Hamilton depression rating scale. We adopted a family health model rational emotive behaviour therapy intervention in treating the depressive symptoms affecting the parents. The analysis of covariate results showed that at initial assessment there was no significant difference between the treatment group and comparison group at baseline evaluation of depressive symptoms in participants. At the posttest, it had a significant effect on the intervention on participants' depressive symptoms. Likewise, a follow-up result still shows that intervention had a significant effect on participants' depressive symptoms of participants. In conclusion, this study suggests that treatment variable accounted for the effect in decreasing depressive symptoms scores of participants.

Keywords REBT · Family health model of REBT · Depression · Parents · Parents of down syndrome children · Outcome research

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Introduction

Parenting a child with a mental developmental disability (e.g., Down syndrome) is a challenging task for parents (Choi & Yoo, 2015; Gallagher & Hannigan, 2014). Down Syndrome (DS) is the most commonly known chromosomal disease and genetic disorder that causes intellectual disability (Ilhan et al., 2019; Wu & Morris, 2013). A study by Arnold (1996) revealed an incidence of DS in 1 out of 865 live births in a Nigerian hospital. Likewise, other past studies have revealed that DS occurs approximately in 1 out of 700 live births and predominantly in 15% of children aged 3–17 (American Psychiatric Association, 2013). Children with this characteristic condition experience deficiency in intellectual capacity (Allahyari & Wolf-Branigin, 2018), limitations in intellectual and adaptive behaviors (Fidler et al., 2009; Schalock et al., 2007), difficulty in problem-solving (Fidler et al., 2011), shortened life spans (Allahyari & Wolf-Branigin, 2018), language expression and motor development impairment (Daunhauer & Fidler, 2011; Mbugua et al., 2011).

Regrettably, a closer observation of the researchers showed that the population with DS is not welcomed by peers, they are teased, dis-associated, and withdrawn. Some parents find it hard to live with them alone in the house while going for daily routine business while some frequently move from one hospital to another and worst of it all, many homes have broken up. Thus, this unfortunate situation was equally regarded among the parents as demanding since some of them could experience a sharp loss of rights, privileges, and respect. Hence, parental psychological wellbeing, growth, and development are negatively affected. Meanwhile, parents are predisposed to negative psychological unrest.

Down syndrome as a particular category of intellectual and developmental disabilities (IDD) was only studied in this study as there seemed substantial studies on autism spectrum disorders (ASDs) and little have been done on DS (Scherer et al., 2019a, 2019b). As of 2019, a systematic and meta-analysis study showed that out of 19 studies, 70% focused on parents of children with autism (Scherer et al., 2019a, 2019b). It was only one study that investigated parents of a child with an intellectual disability, stressing that Down syndrome as a major cause of intellectual disability and has not been fully studied (Scherer et al., 2019a, 2019b). In Nigeria, there are few studies on Down syndrome (Oloyede, 2011). Parents of children with Down syndrome experience a decrease in health and well-being (Schieve et al., 2011), stigmatization (Ngo et al., 2012), a higher financial demand (Parish et al., 2008) thereby increasing parental burden e.g., depression (Raina et al., 2004; Warfield et al., 1999). Similar studies have indicated that parents in the DS population are more inclined to a high risk of depression than parents of those without disabilities (e.g., Şahin, 2010). Other studies noted negative changes in parental private lives, expectations, social environment, and in their family roles (Şahin, 2010; Seltzer et al., 2011). Thus, this could be a result of societal humiliations, vocational requirements, and health-related problems (Riper, 2007; Takataya et al., 2016). In other words, giving adequate attention to the needs of individuals with DS could be considered demanding as well as

energy-sapping for parents (Ilhan et al., 2019). Hence, the parental psychological condition is predisposed to loss of respect, headache, sleepless night adverse psychological pains, and depression.

Depression is a psychological disorder that negatively affects parental disposition, pleasure, decreases energy, and increases low self-worth and poor concentration (Marcus et al., 2012). Evidence has shown that parental depression is harmful to the survival of any family (Cantwell et al., 2015), the growth and development of individual members (Choi & Yoo, 2015). Cantwell et al. (2015) posit that stigma and low self-esteem could be associated with depressive symptomatology. Researchers have revealed that depression affects parental rational, behavioural, and socio-emotional development (e.g., Ahun & Côté, 2019). Kaçan-Softa et al. (2016) reported a decrease in mothers' satisfaction as a result of depression.

On rates of depression, World Health Organization (WHO) (2008) recorded 50% higher depression for females than males. Kim and Swain (2007) reported that 30% of men equally experience depression which occurs between 4 and 26% in the first year of fatherhood. Glidden and Schoolcraft (2003) showed initial high levels of depressive symptoms for both parents of children with an intellectual disability. Related studies equally noted a higher depressive symptom of 14% of mothers and 10% of fathers among parents of young children with multiple disabilities (Paulson et al., 2009).

Apparently, in related studies on depressive symptoms among parents of children with Down syndrome in different countries, the investigations showed that parents in Kenya reported 79% prevalence of depression among the caregivers of children with intellectual disability (Mbugua et al., 2011); in Malawi, 41.2% were recorded among parents of children with intellectual disability (Masulani-Mwale et al., 2018). In Ireland, the result shows that 95% of parents with DS children are more depressed compared to parents of typically developing children (Gallagher & Hannigan, 2014). Azeem et al. (2013) reported 89% of mothers and 77% of fathers experience a high level of depression in Pakistan. Nearly 50% of parents caring for children with intellectual disability experience depression (Bitsika & Sharpley, 2004). In another study, 72% of depression was reported for women and 44% for men (Ahmad et al., 2001).

In Nigeria, a result of the study conducted among older adults on depression, functional disability, and quality of life indicated that 45.5% of participants had depression, while 30% experienced a particular disability (Akosile et al., 2018). Ochigbo et al. (2018) reported 70.3% depression among parents of Human Immunodeficiency Virus (HIV) positive children. Yusuf and Nuhu (2011) reported 79.84% emotional distress among caregivers.

Notably, evidence from prior studies has indicated that depression is associated with poor physical health (Moussavi et al., 2007). Poor physical health is undeniably related to depression found among parents caring for individuals with disabilities (Resch et al., 2012). Thus, pains, emotional distress, and depression are common among parents of children with varied disabilities (Ayers, 2012; Bonis, 2016; Hodapp & Dykens, 1997).

Given the health and psychosocial challenges, high prevalence of negative thinking revolving around families of children with intellectual disability, It is time to see if cognitive-behavioral therapy can help parents better understand their children with DS and reduce their risk of depression. In essence, parents with irrational beliefs could be predisposed to depression. Hence, scholars recommended cognitive-behavioural driven strategies to dispute and challenge the irrational beliefs among caregivers of children with disabilities (Ede et al., 2020; Weiss et al., 2015). Researchers have equally noted that irrational beliefs about social situations, could be altered in order to achieve a self-goal-oriented life if a cognitive intervention approach is adopted (e.g., Ezegbe et al. 2019). Supporting this claim, we argued that there exists limited literature designed to help parents of children with DS manage and decrease the severe rate of depression experienced to enable the parents to achieve an optimum life goal. Therefore, we hypothesized that the family health model of REBT developed by Ede et al. (2020) be employed in addressing and mitigating the adverse psychosocial experiences of parents of children with Down syndrome.

The family health model of rational-emotive behavior therapy (REBT) can also be called rational emotive family health therapy (REFHT) as in Ede et al. (2020), an extension of rational-emotive behavior therapy (REBT) by Ellis (1994). We argue that the REBT perspective of family may not be a new dimension but shifting it to family health and how it relates to children with disabilities and their families could be described as a new approach. It is in view of this argument that we extend the philosophies of the family health model of REBT to parental depressive disorders attributed to Down syndrome in children. The philosophies of REBT and REFHT guided the application of the family health model of REBT in treating parental depression symptoms in this study. In the context of the present study, the assumptions of the family health model include (a) living a healthy family life is not totally dependent on family income but the way family members think about it, (b) some families are dysfunctional due to core expectations about their children's development, (c) attributing children's malfunctioning and disabilities to witches is a root cause of poor quality of family wellbeing, (d) thinking about what the society will say, medical, psychological, and physiological conditions of a child lead to psychological disturbances. (e) it equally assumes that parental cognitive interpretation regarding their children with disabilities and their families will always influence their behavioural and emotional responses. This study assumed that parents that share automatic thoughts and feelings about the physical, psychological, and medical conditions of the children living with them could exhibit unhealthy behaviour. The family health model of REBT for depression differs from REBT as it is a psycho-educational program designed to help parents/caregivers of children with Down syndrome to adjust and reduce depressive symptoms they are experiencing as a result of cognitive errors and teach an alternative way of reducing rates of depression. REFHT is a cognitive-driven approach focused on altering negative psychological thoughts related to depression in parents of children with disabilities and their families. Parenting children with intellectual disability calls for additional demands for parents. Children with developmental difficulties may also have one or more serious medical issues that necessitate long-term treatment. The behavioural characteristics of the children intensify the stressful experiences in parenting

children with disabilities (Ede et al., 2020). Parental depression symptoms and a child's intellectual disability are likely to be linked. Hence, parental stress and vulnerability or risk for depression, in relation to parenting a child with an intellectual disability is also clearly in past studies (e.g., Ede et al., 2020; Turnbull et al., 2006). Most children with disabilities and their families experience stress that looms them to high blood pressure, increased heart rate, and abnormal hormonal rise (Ede et al., 2020; Turnbull et al., 2006). Due to increased blood pressure and heart rate, the children with disabilities and their families become susceptible depressive symptoms. Children with disabilities could cause parental stress (Lecavalier et al., 2006), increased depression among family members (Benderix et al., 2006). This approach is considered very necessary because not less than 31% of families of children with intellectual disability are clinically diagnosed with moderate depression compared to typically developing children (Scherer et al., 2019a, 2019b). Given that parental depression is a common condition when parenting a child with intellectual disability, severe depression should be prevented. Severe depression symptoms can make it difficult for a parent to respond to the needs of a young child, placing them at risk for physical and emotional health problems as well as poor social skills later in life. This emphasizes the importance of assessing and supporting parents' mental health needs as well as those of their children with intellectual disability (Scherer et al., 2019a, 2019b). It is worrisome that despite high rates of parental depression in relation to parenting child with intellectual disability, parental depression remains generally undiagnosed and untreated, and counselling services for parents of children with intellectual disability remain limited (Jackson, 2018).

Thus, the family health model of REBT focused at decreasing symptoms, improving the functionality of individuals, changing and challenging the irrational beliefs that generate misinterpretations of realities. Hence, the client is assisted by REFHTs in discovering such negative and unrealistic thoughts capable of generating depressive symptoms and the best practicing strategies to address the findings (Ede et al., 2020; Schacter et al., 2010). The consequences of unrealistic thought could be distressful, painful, traumatic, and depressive (Ede et al., 2020). Unrealistic thought could arise when parents of children with intellectual disability presume that all family hope is lost and when the parents conclude that the child is indeed a curse to the family progress. It can also occur when parents assess and realize that they are unable to deal and stand by their child's circumstances. Parents face irritation, frustration, self-downing heart attacks, and depression as a result of this (Ede et al., 2020; Joyce, 1995). As a result, proper interpretation and portrayal of reality are required (Sommer et al., 2018).

Earlier studies have noted that negative emotional thoughts and behaviours like self-doubt about parenting and coping with self-downing as a result of having a child with a cognitive disability could be regarded as erroneous self-beliefs and possibly unleash individuals to emotional pains, trauma, and depression (e.g., Greaves, 1997). Self-doubt could as well be regarded as a disruptive belief and misconception of self, world, and future (Sommer et al., 2018). Notably, self-defeating feelings in parents of children with disabilities like cognitive disability could be more pronounced among them (Ellis et al., 1966; Kaya & Hamamci, 2013). For example, parents may think negatively considering the difficult challenges in parenting a child

with disability, child-rearing and coping strategies (Ellis et al., 1966; Joyce, 2006). Parental irrational belief could be classified according to parental beliefs (Bernard, 1990; Joyce, 2006). For example, (a) Demandingness, (b) Awfulizing, (c) Low frustration tolerance, and (d) Global evaluation of human worth (Bernard, 1990; Joyce, 2006). For instance, parents that have a stiff and core perception about the health of the child, think that the emergence of a child is as a result of witches and wizards from the mothers or fathers-in-law as may be. Holding a belief that why should or must be (i.e., demandingness); negatively interpreting certain situations to appear worse (i.e., awfulizing); believing that a certain situation is unbearable or difficult to resolve (i.e., low frustration tolerance); and individuals as human beings are valued depending on their achievement and skills. Ede et al. (2020) noted that if parents perceive child-rearing in such a manner, they will be vulnerable to frustration and poor quality of family living (Ede et al., 2020).

Past quantitative reports agreed that negative thinking accounts for depressive disorders found in some parents (e.g. Browne et al., 2010). It has been demonstrated that parental irrational beliefs could result in psychological disturbances including depression (Browne et al., 2010; Hyland et al., 2014), excessive nervousness (DiLorenzo et al., 2007), and psychological distress (Cristea et al., 2013). However, parental irrational beliefs do not only hamper their targets, happiness, and survival but increase parental emotional-psychological disorders like depression (Altıntaş, 2006; Küçük et al., 2016), harmful emotion (Ellis, 2000), and unhealthy negative emotions (DiGiuseppe, 2006; Çivitci, 2006). Thus, in view of these points, we recognize that the distorted interpretation of parents about their children with one or two disabilities in the light of their children's health and behaviours they exhibit could lead to a depressive mood.

Positive or rational belief promotes realistic feelings and prosocial behaviours (Ellis et al., 1997) and equally plays key roles in influencing how people act, behave and feel (Abiogu, et al 2021; Abiogu et al 2020a, b; Agah et al 2020; Bernard & Cronan, 1999; Ede et al., 2020). As part of the roles of rational-emotive approaches, parents with dysfunctional cognitive behaviours and emotions, especially those that have children with a disability, could change from their irrational thinking to better ones (e.g., Greaves, 1997; Weiss et al., 2015). To this effect, a lot of well-known advantages and clinical significance of rational-emotive interventions in challenging irrational thinking about children with disabilities by parents have been empirically demonstrated (e.g., Greaves, 1997; Weiss et al., 2015). Emphasizing the impact of the REBT-based approach, Cobham et al. (1998) disclosed that parents with psychological disturbances were improved after having encounters with rational emotive behavior therapists.

Further, a recent intervention has demonstrated that family health model of REBT is a cost-effective method that alters irrational beliefs linked to parents' experiences whose children are living with disabilities such as visual impairment (Ede et al., 2021a). Similarly, the life and perceptions of parents of children with visual impairment were greatly improved after being exposed to rational-emotive approaches (Greaves, 1997; Weiss et al., 2015). The effectiveness REBT techniques were also confirmed using parents of children with disabilities (Cobham et al, 1998). Additional previous interventions that applied REBT principles showed a positive

treatment outcome in parenting children with disability (Ede et al., 2020), and children with psychological problems (Ciff et al., 2015). Regardless of REBT efficacy in improving the healthy living of parents, a good number of past studies addressing the emotional status of parents living with one disability or the other seem to fail to investigate participants' interaction effect of rational-emotive and cognitive-behavioural treatment group(s) and gender (male and female parents) (Ede et al., 2020). Some of the treatments did not tie their studies down to the family health dimension (e.g., Izadi-Mazidi et al., 2015; Riahi et al., 2013).

Therefore, we suggest that rational emotive family health therapy (REFHT) could be helpful for addressing the identified gaps and major parental depressive symptoms experienced by parents of children with DS. Thus, in the current study, the researchers aimed at decreasing the depressive symptoms in parents (fathers and mothers) of children with Down syndrome using a rational-emotive-driven approach combined with family health-based therapy. Specifically, we hypothesized that: (1) parents of children exposed to the family health model of REBT will be treated for depressive disorders compared to those that do not receive treatment, (2) there will be an interaction effect of treatment and gender (father and mother), (3) the treatment of depressive disorder will last overtime.

Methods

Statement of Ethical Considerations

Permission to carry out this study was granted by the authors' Institutional Review Board. Equally, the parents caring for the children population with Down syndrome gave the researchers their consent to participate in the study. The opportunity to withdraw was open should any wish to decline while the treatment was going on, showing that participation was voluntary. We also ensured that the identity of the participants was adequately protected.

Study Design and Participants

The study adopted a pretest–posttest control group design using 88 parents of children with Down Syndrome. The children were formerly enrolled at four special education and rehabilitation centres. These centres were established by the government to provide special education for persons with disabilities in Enugu State, Nigeria. The power of the sample size was determined using GPower 3.1 software (Faul et al., 2007). The power analysis gave a power of 0.84 which showed that the sample size was adequate. The socio-demographic characteristics of the participants were categorized as shown below.

Table 1 shows that the FH-REBT group comprised 15 males (34.1%) and 29 (65.9%) females; and the control group comprised 10 males (22.7%) and 34 (77.3%) females. No significant gender difference as was observed ($\chi^2 = 1.397$, $p = 0.237$). The FH-REBT participants within the age range of 18–25 were 17 (15.9%), 26–32

Table 1 Socio-demographic characteristics of the participants

Characteristics	FH-REBT group n (%)	Waitlist control group n (%)	Statistic	Sig
		T	χ^2	
<i>Gender</i>				
Male	15 (34.1)	10 (22.7)	1.397	0.237
Female	29 (65.9)	34 (77.3)		
<i>Age</i>				
18–25	7 (15.9)	8 (18.2)	1.200	0.753
26–32	6 (13.6)	9 (20.5)		
33–40	17 (38.6)	13 (29.5)		
41 years and above	14 (31.8)	14 (31.8)		
<i>Marital status</i>				
Single	6 (13.6)	4 (9.1)	6.088	0.048
Married	32 (72.7)	24 (54.5)		
Divorce	6 (13.6)	16 (36.4)		
<i>Family size</i>				
Small	5 (11.4)	8 (18.2)	0.856	0.652
Moderate	10 (22.7)	10 (22.7)		
Large	29 (65.9)	26 (59.1)		
<i>Educational qualifications</i>				
First school leaving certificate	9 (20.5)	4 (9.1)	3.194	0.363
West African examination council/ National examination council	19 (43.2)	29 (59.1)		
B.Ed/Sc	12 (27.3)	10 (22.7)		
M.Ed	4 (9.1)	4 (9.1)		
<i>Working status</i>				
Civil servant	12 (27.3)	13 (29.5)	0.723	0.697
Self-employed	23 (52.3)	25 (56.8)		
Unemployed	9 (20.5)	6 (13.6)		
<i>Income level</i>				
Low income	14 (31.8)	11 (25.0)	0.566	0.753
Moderate	20 (45.5)	21 (47.7)		
High	10 (22.7)	12 (27.3)		

n number of participant, *FH-REBT* family health model of rational emotive behaviour therapy, *B.Ed/Sc* bachelor of education/science, % percentage, χ^2 chi-square, *sig* associated probability

were 6 (13.6%), 33–40 were 17 (38.6%), 41 years and above were 14 (31.8%). Those in the control group 18–25 were 8 (18.2%), 26–32 were 9 (20.5%), 33–40 were 13 (29.5%), and 41 years and above were 14 (31%). Regarding marital status, in the FH-REBT group, 6 participants (13.6%) were single, 32 (72.7%) were married, 6 (13.6%) have divorced. In the comparable group (waitlist control group), 4 participants (9.1%) were single, 24 (54.5%) were married, 16 (36.4%) had divorced their spouses. A significant difference in marital status was observed among the

participants ($\chi^2=6.088$, $p=0.048$). For the family size of those in the treatment group, 5 participants (11.4%) were from small family size, 10 (22.7%) were from moderate family, and 29 (65.9%) came from large family size. In the control condition, 8 (18.2%) participants were from small family sizes, 10 (22.7%) participants were from moderate family sizes, and 26 (59.1%) participants were from large family sizes. No significant difference in terms of family size was observed among the participants ($\chi^2=0.856$, $p=0.652$). Regarding educational qualification, in the FH-REBT group, 9 participants (20.5%) had the First school leaving certificate, 19 (43.2%) had West African examination council /National examination council, 12 (27.3%) had B.Ed/Sc and 4 (9.1%) participants had Masters degrees. In the comparable group (waitlist control group), 4 participants (9.1%) had the First school leaving certificate, 29 (59.1%) had West African examination council /National examination council, 10 (22.7%) had B.Ed/Sc and 4 (9.1%) participants had Masters degrees. No significant difference in educational qualification was observed among the participants ($\chi^2=3.194$, $p=0.363$). For the working status of those in the treatment group, 12 participants (27.3%) were civil servants, 23 (52.3%) were self-employed, and 9 (20.5%) participants were unemployed. On the other hand, 13 (29.5) participants in the control group were civil servants, 25 (56.8%) were self-employed, and 6 (13.6) were not employed. No significant difference in terms of family size was observed among the participants ($\chi^2=0.723$, $p=0.697$). For the income level of those in the treatment group, 14 participants (31.8%) receive low incomes, 20 (45.5%) receive moderate incomes, and 10 (22.7%) participants receive high incomes. On the other hand, 11 (25.0) participants in the control group received low incomes, 21 (47.7%) received moderate incomes, and 12 (27.3) received high incomes. No significant difference in terms of family size was observed among the participants ($\chi^2=0.566$, $p=0.753$).

The participants' socio-demographic information is presented in Table 1.

Measures

Beck Depression Inventory (BDI)

The Beck Depressive Inventory (Beck et al., 1961) is a 21-item, self-reported measure that assesses depression's major symptoms. It has 21 symptom categories, each with four options. The items are designed to find out how the responder felt in the previous week, including the day the inventory was administered. BDI is rated on the Four-Point Likert Scale options e.g., 1=0–9=minimal; 2=10–16=mild; 3=17–29=moderate; 4=30–63=severe. The highest score indicates a high level of depression or severity and spans from 0 to 63. (Beck et al., 1961; Hisli, 1989). In the context the current study, we found an alpha co-efficient value was 0.89 of the scale in Nigeria.

The Hamilton Depression Rating Scale (HDRS)

This is a 21-item self-report scale that assesses depressive symptoms. This instrument was developed by Hamilton (1960). The instrument seeks to ascertain the degree of depressive disorders before treatment and after treatment (O'Sullivan et al., 1997; Williams, 2001). HDRS is rated on five-point scale e.g., 0 = none; 1 = mild; 2 = moderate; 3 = severe and 4 = grossly disabling. The score could range from 0 to 4, which is generally accepted to be within the normal range. The reliability of the scale has been confirmed in Nigeria in past studies (Ede et al., 2019; Ezegbe et al., 2019) but in the parents' population in our study, we found an internal consistency (0.86) for the measure.

REBT Treatment

A family health model of REBT for depression was used in this study. This manual was restructured by the present researchers using rational emotive behavioural manual (David et al., 2004) and the family health model of REBT-manual (Ede et al., 2020). The aim of the current version was to address irrational beliefs related to depressive symptoms in families of children with Down syndrome. The manual enhances the parenting practice of parents who live with persons with disabilities. It targeted at reduction of inaccurate cognitive, behavioural, and emotional interpretations of circumstances related to depressive symptoms in parenting children living with disabilities. The manual was designed to run through 12 weeks of 12 sessions (that is, a session per week). The time for each session was slated to 50 min. The sessions were packaged in three phases: (1) the first phase focused on the introduction, group guiding principles, limits of confidentiality, meaning of depression and DS, the relationship between depression and DS, characteristics, and symptoms, teaching how perception of child with DS could cause depression, to relate depression and DS as well as the symptoms; second phase, that is sessions six to nine, focused on identifying DS-related depression, ascertaining the perceptions of the parents about their children with DS; and the third phase deals with reducing inaccurate assumptions and over-evaluation of events, and further, to discover how to recognize accurate beliefs and rational self-statement, help to make life more or less depressive and encourage shame-attacking practice exercise. Session 12 deals with the follow up, that involves revising and reviewing past rational-emotive exercises e and termination.

Control Condition

The participants in waitlisted controlled group did not receive treatment during the study but were treated after the expiration of the study, that is, after a third assessment was conducted. They were exposed to treatment at the end of the study. The control group subjects experienced rational emotive family health

intervention manual just like those in the treatment group. Like those in treatment, the control condition manual lasted for 12 weeks. Each week was designed for a session and lasted for 50 min.

The Therapists

The intervention used in this study was delivered by female counselling psychologists, aged 40 to 55 years. They had their primary training in counselling psychology and cognitive behavioural therapies. The therapists were REBT experts and family therapists with extensive experience using the English language. The therapists were professional (Ph.D.) in counselling psychologists and have been practicing rational-emotive and cognitive behavioural therapy for close to a decade. As the REBT family treatment model has not been introduced as part of their courses, the manual was given to them to study. Upon that, the research team has briefed them about the aim and procedures on how to implement the manual (REBT family treatment model).

Treatment Integrity

As they administer the treatment, few among the researchers were assigned to monitor and supervise the treatment implementation procedure. The aim was to check if the therapists strictly complied with the recommendations of the treatment programme manual provided to them. The evaluators who were also part of the research team monitored the attendance, compliance level, and therapeutic relationship existed between the participants and therapists. This helped the researchers to ensure that there was integrity examination during the delivery of the intervention.

Procedure

The observations made during a parents-teachers association meeting held at the Center for Academic and Vocational Training of Special Needs Children Nsukka, Enugu state, (CAVTSN) following our findings in four special schools surveyed, informed the researchers' desire to carry out this current study. To commence the intervention, we sought approval to conduct this study from the headteachers of special schools and rehabilitation centers in Enugu, Enugu State as well as parents. The parents living with DS children were contacted via phone numbers and e-mail addresses. Through this, 97 parents who responded positively were screened using the Beck Depressive Inventory (BDI) and Hamilton Depression Rating scale (HDRs). Thereafter 88 parents were found to be eligible. Those eligible participants were identified and recruited by the researchers. Thus, the baseline data (Time 1) was conducted prior to the intervention. The eligible participants were parents (N = 88) with (1) high depressive symptom levels; (2) high irrational beliefs related to parental wellness; (3) parenting a child with DS within the 0–18 age range. Other inclusion criteria included: (4) persistent depressive disorder; (5) must be committed to participate fully in the programme, and (6)

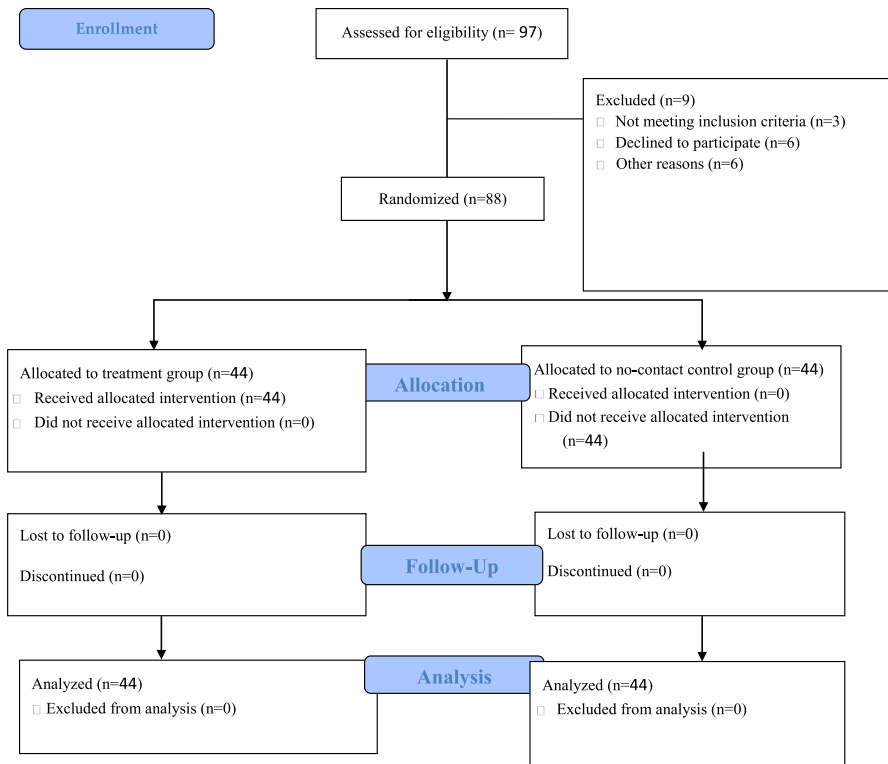


Fig. 1 Consort flow diagram for participants allocation

must have a Whatsapp enabling mobile phone for effective communication. On the other hand, exclusionary measures include (1) parents who were under non-pharmacotherapy and pharmacologists' treatment elsewhere, (2) Parents who have had received interventions at least six weeks ago, (3) Parents who hadn't their ward/child in the special schools where each child must have diagnosed and confirmed. Consequently, parents who were admitted into the study had met the admission conditions as stated above, while parents excluded were based on not meeting inclusion requirements, declined to participate and other reasons not specified by them. By simple randomization, the eligible participants were randomly assigned into two groups; the intervention group ($n=44$) and the control group ($n=44$). Figure 1 demonstrates the allocation process.

By disguising the assignment's direction during recruiting and randomization, we were able to eliminate selection bias. Furthermore, we used an approach to decrease the risk of potential bias by blinding the data analyst until the analysis was finished and hiding some details in the questionnaires that could reveal the group that received the intervention. The recruitment process of the participants lasted for two months.

Due to the outbreak of the COVID-19 pandemic, we kept treatment on hold but continued at the time the Nigerian government had lifted the ban on the lockdown. The treatment immediately followed the lockdown ease in Nigeria. Parents were duly communicated with respect to the development through phone calls, text messages, and WhatsApp chat. The treatment procedure officially took effect from July 2020 following the Government directives on ease of lockdown, like wearing of face masks and maintenance of social and physical distance. On two different occasions, we sent reminder text messages, online WhatsApp chat as well as phone calls on when the treatment will commence. The participants exposed to the treatment group received the REBT, while those on the waitlist group did not receive any treatment, however, parents on the waitlist group were treated after the third assessment was conducted. The researchers in collaboration with the therapist took several techniques to ease and assist with some barriers that could have affected the participant total commitment like provisions of mobility, phone calls, texts messages, provisions of snacks and soft drinks, and financial incentives.

Data Analysis

Statistical analysis of the data from the three-point assessments (Time 1, 2, and 3) was performed using SPSS version 18. The data was analyzed using multivariate analysis of variance, specifically the analysis of covariate (ANCOVA). Analysis of covariate was used at sub-dependent variable to analyze data at Time 1, Time 2, and Time 3 simultaneously. The effect size observed from the family health model of REBT on depression was reported using the Partial Eta-Square. The effect size was determined using limit number of $\eta_p^2=0.1$ to $\eta_p^2=0.45$ (small effect size), $\eta_p^2=0.46$ to $\eta_p^2=0.67$ (medium effect size) and $\eta_p^2=0.68$ and above (large effect size) (Field et al., 2012). Frequency, percentage, and Chi-square (χ^2) were used to analyze the demographic characteristics of the participants.

Results

Table 2 compares the treatment outcomes of individuals in the REBT family health model to those in the control group (CG) during the three evaluation periods. Table 2 reveals that at the baseline evaluation of depressive symptoms in participants as measured by BDS, there was no significant difference between the treatments and control groups, $F(1, 156)=0.142, p=0.707, \eta_p^2=0.002$. At the post-treatment level (Time 2), intervention had a significant effect on depressive symptoms in participants as measured by BDI, $F(1, 156)=7.354, p=0.008, \eta_p^2=0.081$; and after the post-treatment, a follow-up (Time 3) result still shows that intervention had a significant effect on participants' depressive symptoms of participants as measured by BDI, $F(1, 156)=10.183, p=0.002, \eta_p^2=0.108$. The result further shows that there is no interaction effect of therapy and gender (father and mother) at Time 2, $F(1, 156)=0.173, p=0.678, \eta_p^2=0.002$. The

Table 2 Analysis of covariance (multivariate) for the effect of REBT on depressive symptoms among parents of children with down syndrome

Measures	Time	Group	Mean (SD)	<i>F</i>	<i>P</i>	η_p^2	ΔR^2	95%CI
BDI								
	Time 1	FH-REBT	63.71 (6.34)	0.142	0.707	0.002	0.066	61.781–64.935
		Control	65.04 (7.33)					
	Time 2	FH-REBT	44.01 (8.87)	7.354	0.008	0.081	0.059	44.847–48.565
		Control	48.54 (6.42)					
	Time 3	FH-REBT	44.51 (8.18)	10.183	0.002	0.108	0.118	40.808–43.929
		Control	39.48 (4.24)					
	Time 1	FH-REBT	Male 61.02 Female 65.10	0.095	0.759	0.001	0.066	
		Control	Male 61.13 Female 66.19					
Groups * gender	Time 2	FH-REBT	Male 44.67 Female 43.67	0.173	0.678	0.002	0.059	
		Control	Male 50.52 Female 47.96					
	Time 3	FH-REBT	Male 46.00 Female 43.74	0.072	0.789	0.001	0.118	
		Control	Male 40.58 Female 39.15					
HDRS								
	Time 1	FH-REBT	68.50 (3.57)	0.969	0.328	0.011	0.004	67.154–69.154
		Control	68.36 (4.79)					
	Time 2	FH-REBT	43.89 (2.38)	58.972	0.000	0.412	0.395	45.535–46.762
		Control	47.59 (3.07)					
	Time 3	FH-REBT	44.51 (8.18)	10.183	0.002	0.108	0.118	40.808–43.929
		Control	39.48 (4.24)					
	Time 1	FH-REBT	Male 69.11 Female 68.19	2.984	0.88	0.034	0.004	
		Control	Male 66.38 Female 68.94					
Groups * gender	Time 2	FH-REBT	Male 43.43 Female 44.13	11.114	0.001	0.117	0.395	

Table 2 (continued)

Measures	Time	Group	Mean (SD)	F	P	η_p^2	ΔR^2	95%CI
		Control	Male 50.22					
			Female 46.81					
	Time 3	FH-REBT	Male 46.00	0.072	0.789	0.001	0.118	
			Female 43.74					
		Control	Male 40.58					
			Female 39.15					

BDS Beck’s depression scale, HDRS Hamilton depression rating scale, Mean (SD) mean (standard deviation), p probability value, η_p^2 partial eta square (effect size)

dependent measure (BDS) had an impact size of 0.081 for the independent variable at Time 2. This number suggests that the treatment variable had a significant impact on participants’ depression symptoms ratings. Table 2 further reveals that at Time 1 during the baseline evaluation of participants’ depression symptoms as defined by HDRS, there was no significant difference between the treatment and control groups, $F(1, 156)=0.969, p=0.328, \eta_p^2=0.011$. At the post-treatment level (Time 2), intervention had a significant effect on participants’ depressive symptoms of participants as measured by HDRS, $F(1, 156)=58.972, p=0.001, \eta_p^2=0.412$; and after the post-treatment, a follow-up (Time 3) result still shows that intervention had a significant effect on participants’ depressive symptoms

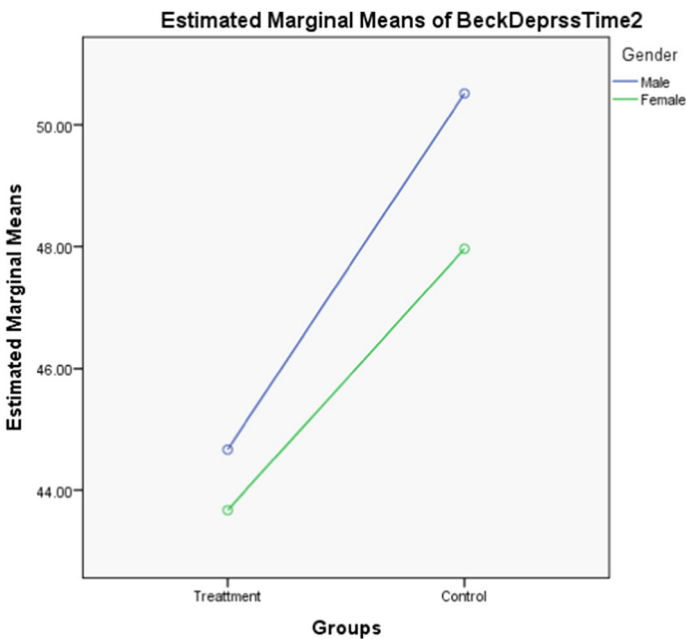


Fig. 2 Interaction effect of therapy and gender according to first dependent measure (BDI)

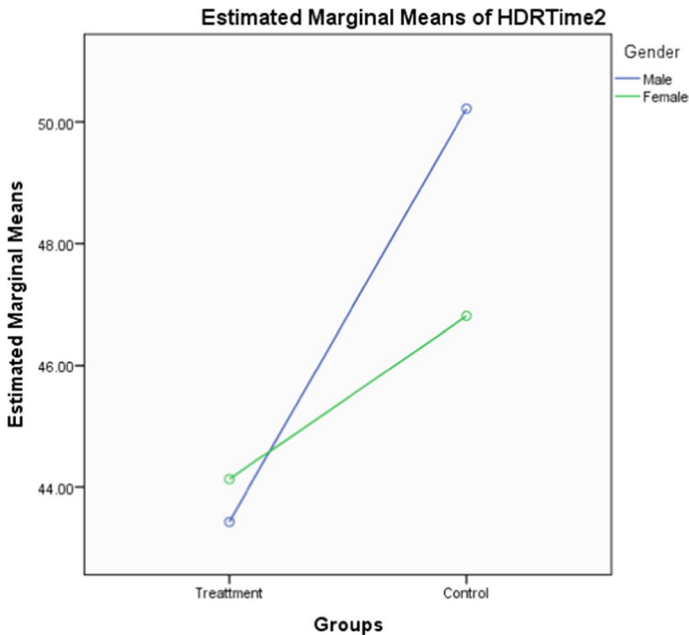


Fig. 3 Interaction effect of therapy and gender according to second dependent measure (HDRS)

of participants as measured by HDRS, $F(1, 156) = 10.183$, $p = 0.002$, $\eta_p^2 = 0.108$. The effect size of the independent variable at Time 2 for the dependent measure (HDRS) was 0.412. The result further shows that there is an interaction effect of therapy and gender (father and mother) at Time 2, $F(1, 156) = 11.114$, $p = 0.001$, $\eta_p^2 = 0.117$. This value indicates that treatment variable accounted for huge effect in decreasing depressive symptoms scores of participants as measured by HDRS.

The result from the BDI showed that there is no interaction effect of therapy and gender (father and mother) (Fig. 2).

The figure demonstrated an interaction effect of treatment and gender according to the second dependent measure (HDRS) (Fig. 3).

Discussion

This study aimed at investigating the effect of family health model of rational emotive behaviour therapy in reducing depressive symptoms in parents of children with Down syndrome. The finding suggests that the family health model of REBT is a powerful therapy in decreasing depressive disorders in parents of children with Down syndrome in Nigeria as measured by BDS and HDRS at different times of measurements. If a child is born, the family members rejoice to celebrate the arrival of the newborn baby. The emotions of some parents may change when the child is diagnosed with any form of disability like Down syndrome. The parents experience more depressive symptoms and lower physical and psychological performance due

to the emergency of a child with the cognitive disorder (Muammer et al., 2011; Veisson, 1999). Thus, in this study, we examined the effectiveness of the family health model of REBT on depressive symptoms in parents of persons with disabilities and their families.

The findings of the current study indicate that REFHT is promising in reducing depressive symptoms among parents of children with DS exposed to CBI when compared to the waitlisted group. It was observed in the study that there was a continuous decline in the depressive mean scores of those in the intervention group over time. The present findings agreed with past studies which indicate that cognitive behavioural intervention has a long-lasting benefit in sustaining decreased depression (e.g., Barrett et al., 2001; Davis et al., 2014). The result of this study equally validated the earlier study which shows that cognitive behavioural intervention was highly effective when applied to assist some populations like the parents of children with Down syndrome (Greaves, 1997). Prior research has noted that psychological intervention is highly effective in reducing the severity of depression among the parents of adolescent with disability (Clarke et al., 2001; Garber et al., 2009). In line with our findings, past study has shown that parents of children with disabilities exposed to a case intervention had the lowest scores of depressions among the disabilities (e.g., Joy, 2018). REBT is a proven intervention technique for helping children with disabilities and their families manage their illogical beliefs (IBs) that cause frustration, despair, and depression by disputing them and replacing them with reasonable beliefs (RBs) in order to overcome their dysfunctional emotions and behaviours. Appropriate logical belief replacements will assist parents of these children in better managing their children's developmental issues (Egbe et al., 2022; Obiweluo et al., 2021; Ugwuanyi et al., 2022; Uzodinma et al., 2022). They may also become their own therapists, allowing them to reinforce children's learning (Joy, 2018).

In a related study, researchers have validated the efficacy of rational-emotive approaches in treating the psychological disturbances in parents (e.g., Ede et al., 2020). Ezegbe et al. (2019) and justify the effectiveness of psychological intervention in treating students' depression. Ede et al., (2019) noted that REBT is highly efficacious in decreasing depression of young people that participated in cognitive-behavioural intervention. From the REBT point of view, depression stems from irrational beliefs (Abrams & Ellis, 1994; Ezegbe et al., 2019). Likewise, the domain-specific belief and attitude could be a result of the illogical beliefs of parents with disabilities (Joyce, 2006). To support this, parents of children with DS cannot experience depression without thinking irrationally.

Similarly, following the evidence from the previous studies and the finding of our own studies, we advocate that REFHT could be useful in decreasing the depressive symptoms among parents of children with DS. Family health model is an evidence-based approach in cushioning the depressive symptoms among the parental population with DS. Therefore, if professionals in related fields and with sound knowledge of the rational-emotive intervention target the parental population it will be possible to enhance the healthy living of parents irrespective of their gender.

The present equally showed that there is no interaction effect of therapy and gender (father and mother) when measured by BDI. This indicates that the treatment is

impactful when the parents were assessed using BDI. However, the result further shows that there is an interaction effect of therapy and gender (father and mother) using HDRS. This is in line with a past study that reported gender as a significant moderator if exposed to a rational-emotive health therapy (Ede et al., 2020). The study tested the moderating influence on parents of children with autism spectrum disorders in favour of the fathers (Ede et al., 2020). Similarly, Ahmad et al. (2001) reported 72% of women experiences depressive symptoms compared to men (44%). The reason for variation in the results obtained from the two dependent measures at posttest could be attributed to other characteristics (e. g. knowledge level) of participants that could have influenced their responses at the point of completing the first or second measure.

All in all, we adapted the family health model of REBT to the present study as the perception about the health of family members seemed sensitive. In most cases, once a child is experiencing ill-health, some parents could instantly share the same feeling like the child. That is, what touches a child appeared to have touched the parents. Given this reason, the healthiness of those parents whose children are experiencing language and motor development impairments, and sensory deficiency required a specialized REBT programme (Ede et al., 2021a). This was affirmed in past literature that improvement of family health gives psychosocial support to family members with special needs and possibly leads to life-goal actualization (Ede et al., 2021b, 2021c; Catalano et al., 2018). Nevertheless, it may be difficult to achieve this when there is no family-oriented intervention (Ooi et al., 2016). As some of the problems seem non-clinical, Ede et al. (2020, 2021a) argued that a family health-based intervention that is rooted in REBT should be recommended for such families. According to the authors, a trained rational emotive behavioural therapist with family health experience could provide professional mental health support to parents of children with disabilities.

Limitations to the Study

The current study noted some limitations. Firstly, considering that a depressive parent could experience anxiety and stress, meanwhile, they were not measured as possible moderators/secondary data, we recommend that subsequent studies should consider it when studying depression related to parenting children with disability and their families. Secondly, targeting depression-related emotions in out-of-widows or widowers is recommended among developing countries like Nigeria. Thirdly, we acknowledged that the demographic variables of the children with DS should have been included such as the age of children with Down syndrome, presence of health issues associated with Down syndrome (e. g. cardiac malformations, other disabilities such as sensory), whether children attended a special school with boarding for the week or lived with their parents, severity of the disability. Fourthly, this study did not have an active comparison group, which might lead to an overestimation of the intervention effect. Fifthly, this study also suffered a setback as far as the mechanism of change considering that parental beliefs were not measured. Given

this methodological limitation, we encourage future researchers to do that in subsequent studies.

Strengths of the Study

The findings of this research work justify the family health model of REBT as a promising intervention in altering irrational beliefs which predispose parents of children with DS to depression. This is the first to focus specifically on family health and depressive symptoms of families of children with Down syndrome. In addition, the usefulness of REBT's family health model in alleviating depression in DS parents has been confirmed. As a result, the study's findings support the justification for using the REBT family health model in family life. The cognitive intervention, study design, methodologies, and post-treatment trials all show substantial differences in parental wellness between families with disabilities exposed to the REBT family health model and families on the waitlist.

Similarly, the study sample size did not in any way affect the study, in line with the assumptions that psychological intervention is not affected by a small sample size; rather, what is important is the therapist's sound knowledge and proficiency in the therapeutic relationship (Ezegbe et al., 2018). Furthermore, the parents' complete commitment, engagement, and involvement in this study confirms its strength. The replication of the effects of the family health model of REBT among mothers, fathers, and caregivers boosts the generalizability. Earlier research used solely mothers of children with impairments, overlooking potential moderating functions of the counterpart. Internal validity and bias prevention were strengthened by the researcher's ability to block and double-blinded concealment.

Implications

The findings of the current study have justified the family health model of REBT as an evidence-driven package for altering erroneous thinking among parents of children with disabilities. The family health model of REBT interventionists should consider these factors in subsequent studies. Group cognitive behavior experts, counselors, and other helping relationship professionals need to recognize that parenting children with intellectual disability experience depression and irrational beliefs. They should use assumptions of family health model of REBT to change the erroneous perceptions and reduce parental depression when treating families of children with intellectual disability. More so, since the finding of the current study indicated that REBHT is active in cushioning the depressive symptoms, thus, the applicability of family health interventions (FHI) becomes imperative among practitioners.

Recommendation for the Manual

Given the contributions of the rational emotive family health intervention manual Ede et al. (2020), we found it necessary to encourage future researchers in the field of childhood education, psychology, mental health and rehabilitation, and other professionals to begin to consider the intervention in the course of their practices. We saw it useful during our study and we think it is important to share the information.

Data Availability On reasonable request, the corresponding author will provide the datasets generated and analyzed during the current work.

Declarations

Conflict of interest The authors solemnly declare no conflict of interest in terms of authorship and funding. All the participants in this study gave consent to participate before final recruitment for the study by signing an informed consent form.

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