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# Research in Autism Spectrum Disorders

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## Psychological distress among parents of children with autism spectrum disorders: A randomized control trial of cognitive behavioural therapy

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### ABSTRACT

High psychological distress that ranges from stress reactions to anxiety and depression are prevalent among parents and caregivers of children with Autism Spectrum Disorder (ASD) and undermine positive parenting and health outcomes. The current study sought to investigate cognitive-behavioural therapy (CBT) in curtailing psychological distress in a sample of those parenting children with autism. We conducted the study in Enugu state, Nigeria, with 97 parents of children with ASD. Participants were randomly allocated into CBT (N = 48) and waitlist comparison (WLC) (N = 49) groups. The CBT group participated in a 120 min CBT program weekly for 12 weeks. Data were collected using Demographic Questionnaire; Depression, Anxiety, and Stress Scale-21 items (DASS-21) and Satisfaction with therapy and therapist scale- revised (STTS-R). Three data sets were collected at baseline, post-test, and follow-up. Descriptive statistics, Repeated measures Multivariate Analysis of Variance (MANOVA), and t-test statistics were used to analyze the data. Raincloud plots were also used to illustrate results. Results revealed that all dimensions of psychological distress (DASS-depressive symptoms, DASS-anxiety, and DASS-stress) reduced significantly at post-CBT intervention and follow-up assessments in the CBT group, compared to the WLC. Multivariate analysis showed that the global psychological distress score was responsive to CBT intervention. We concluded that stress, anxiety, and depression among those parenting children with autism could be lessened with CBT.

### 1. Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder defined by impairments in social interaction, communication, and restrictive, repetitive labeled behavior, interests, and activities (American Psychiatric Association, 2013; [American Psychological Association, 2017](#); Kroncke, Willard & Huckabee, 2016). Children with ASD rely on parental care for extended periods, thereby extending parental stress (Lavelle, Weinstein, Newhouse, et al., 2014; [Padden and James, 2017](#)). Caring for children with ASD potentially increases parental stress ([Almansour et al., 2013](#); [Foody, James, & Leader, 2014](#); [Gallagher & Whiteley, 2012](#); [Hayes & Watson, 2013](#); [Isa, Ani, Bella-Awusah, & Omigbodun, 2018](#); [Pahlavanzadeh, Abbasi, & Alimohammadi, 2017](#)), and may negatively

*Abbreviations:* ASD, Autism Spectrum Disorders; CBT, Cognitive Behavioural Therapy; DASS, Depression Anxiety and Stress Scale.

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impact the physical and mental health of parents, possibly causing a chronic condition of psychological distress (Almansou, Alateeq, Alzahrani, Algeffari, Alhomaïdan, 2013; Al-Farsi, Al-Farsi, Al-Sharbati, & Al-Adawi, 2016; Foody et al., 2014; Izadi-Mazidi, Riahi, & Khajeddin, 2015b; Lovibond & Lovibond, 1995; Zhou, Liu, Xiong, & Xu, 2019; Yorke et al., 2018). Pahlavanzadeh et al. (2017) found higher levels of parental distress, including anxiety, stress, and depression among parents of children living with ASD compared to parents of typically developing children. Psychological distress in parents of children with ASD may crop up due to situations that make them vulnerable, such as legal hurdles, financial burdens, discrimination, stigma, and ineffective therapy for their children (Almansour et al., 2013; Joshi Petty Wozniak et al., 2010; Khusaifan & Keshky, 2022; Oduyemi et al., 2021; Tang & Bie, 2016; Yen et al., 2014; Wang Zhou, Xia et al., 2012). Other burdens may include children's problematic behaviors, lack of social support, and family structure.

## 2. Parenting children with autism in Nigerian context

In addition to the general challenges experienced by parents of children with ASD, parenting such children is disproportionately challenging in Nigeria due to some negative economic, social, and cultural sentiments that define the Nigerian context. Parents' plights in Nigeria are exacerbated by a lack of access to support and services; social stigma, and cultural prejudices associated with children's impairments (Obasi, Ishola, & Fashola, 2019; Obiweluzo et al., 2021; Oei & Green, 2008). Additionally, parental poor knowledge of the condition, and beliefs about the causes of the disability also make the parents have negative outlook (Baba, 2014; Oei & Green, 2008). For instance, the mysticism around disabilities such as belief that autism is a punishment from the gods (Baba, 2014) may lead a number of parents to internalize stigma (Adejumoke, 2021; Oei & Green, 2008). Furthermore Nigerian culture often blames diseases

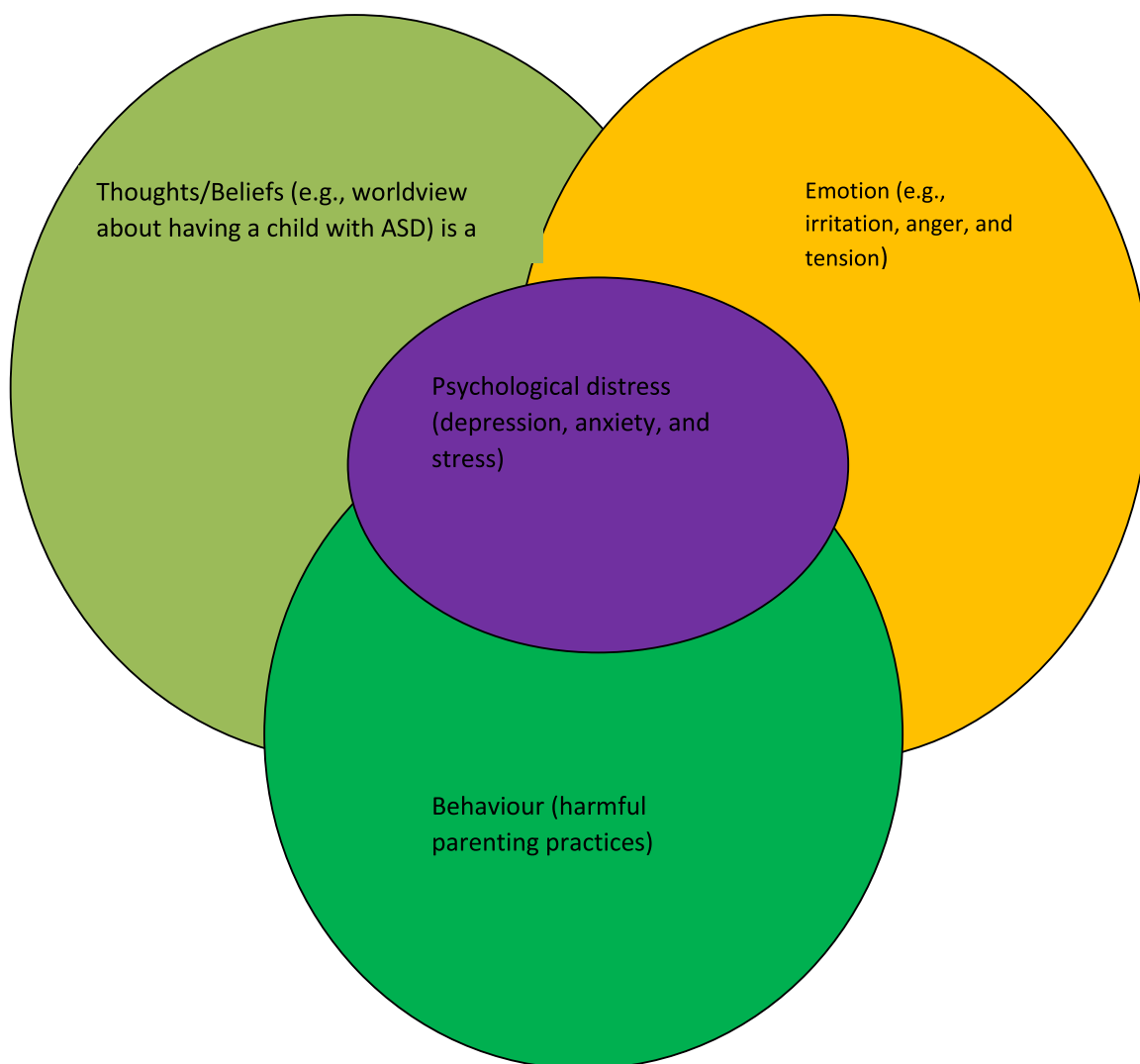


Fig. 1. Diagrammatic representation of CBT model of Psychological Distress associated with parenting children with ASDs.

like ASD on witchcraft spirits, incest, hereditary causes or just simply bad parenting (Onyishi and Sefotho, 2019b; Baba, 2014). In such cases, parents may have a feeling of shame and guilt as they may feel that their child's condition could be their fault. Studies conducted in Nigeria shows that on the average, families who have children with autism are dehumanized due to public poor knowledge and negative attitudes (Oei & Green, 2008; Onyishi and Sefotho, 2019b). The study further showed that 53% of parents of children with autism in Nigeria had negative experiences of enacted stigma, while 83.5% had internalized stigma. All these tend to threaten the mental health of the parents, leaving them in a state of chronic distress.

Hence, parents of children with ASD in Nigeria are at increased risk of distress such as stress, anxiety, and depression (Anyanwu et al., 2019). Recent Nigerian studies have shown high levels of distress among parents of children with autism (Ede, Anyanwu, Onuigbo, Ifelunni, Alabi-Oparaocha, Okenyi, Awoke et al., 2020; Oltean, Hyland, Vallieres, & David, 2017). Consequently, in a scoping review, Bakare, Taiwo, Bello-Mojeed, and Munir (2019) found intervention gaps and recommended intervention services for individuals with ASD and their families in Nigeria. The present study is one of those intended to fill the intervention gap already identified.

### 3. Cognitive behavioural therapy

Cognitive behavioural Therapy (CBT) theory is anchored on triadic reciprocity between thoughts, emotions, and behaviours (Ellis, 1994; Fenn & Byrne, 2013; Onyishi & Sefotho, 2019a). According to CBT, human thoughts, emotions, and behaviours are parts of an incorporated system, and a change in one component is followed by changes in the others (Cully & Teten, 2008; Ellis, 1994; Ellis, Gordon, Neenan, & Palmer, 1997; Shaw et al., 2013). Thus, following CBT theory, the psychological pains/distress (depression, anxiety, and stress) in parents of children with ASD may be an outcome of the interactions between thoughts/beliefs about the child's disability and the emotional outcomes and can lead to negative parenting practices. Given that thoughts, emotions, and behaviours reinforce one another to produce distress, the psychological distress trajectory in parents of children with autism could be represented diagrammatically as in Fig. 1. Thought in the figure represents irrational beliefs about ASD, which could be informed by cultural values, distorted cognitions, and or disrupted behaviours and impairments in the child with ASD. Studies have found that though parenting irrational beliefs are not common among all parents, those parenting children with autism are characterized by specific negative beliefs about self, world, and future of the family including the child with ASD as well as stress management strategies (Ede, Anyanwu, Onuigbo, Ifelunni, Alabi-Oparaocha, Okenyi, Awoke et al., 2020; Kaya and Hamamci 2013).

According to Ede, Anyanwu, Onuigbo, Ifelunni, Alabi-Oparaocha, Okenyi, and Victor-Aigbodion (2020), some parents may hold erroneous beliefs in the form of: i) demandingness (rigid beliefs about how the child's well-being should or ought to be); ii) awfulizing (life-threatening and absolute explanation of a negative the situation or events associated with child's condition); iii) low frustration tolerance (the belief that their child's circumstance is intolerable), and global evaluation (the belief that family respect and value are dependent on the child's condition) (Cristea et al., 2013; Ede, Anyanwu, Onuigbo, Ifelunni, Alabi-Oparaocha, Okenyi, Awoke et al., 2020; Hyland et al., 2014; Onuigbo et al., 2019). CBT intervention typically entails monitoring events and related approaches, beliefs, and behaviors, questioning unrealistic assumptions, and gradually adopting activities based on supportive reality to try new behaviors (Fenn & Byrne, 2013; Macaskill, 1996; Onuigbo et al., 2019).

### 4. Clients' satisfaction with CBT

Individuals seem to agree to a therapy based on the assumption that it will be valuable for their own well-being. Participants' satisfaction with therapy and the therapist is fundamental for therapeutic planning. Factors accounting for clients' satisfaction with therapy, which include expectations of benefit, and acceptance of rationale, are all embedded in the procedures and processes of the therapy (Okafor, Omeje, & Ejike, 2021; Slade, & Keating, 2010). Such elements are the subjective evaluation of clients' satisfaction with therapy and satisfaction with the therapist (Slade, & Keating, 2010; Okafor et al., 2021). Patient satisfaction is now seen as an important consideration due to its influence on clients' perceptions of global improvement following an intervention, decisions about future treatments, and recommendations of the service to others (Donovan, Kadden, DiClemente, & Carroll, 2002; Okafor et al., 2021). Participants' satisfaction with therapy is an essential participants-level outcome and is an early indicator of intervention outcomes on quality of life and psychological distress (Donovan et al., 2002; Okafor et al., 2021).

Additionally, measuring the participants' satisfaction with therapy assists the researchers with multiple data regarding the effectiveness of Intervention through participants' evaluation of therapists involved in the provision of treatment and global improvement due to therapy (Lovell, Moss, & Wetherell, 2015). Participants' satisfaction with a therapist measures the therapist's empathy, warmth, genuineness, unconditional positive regard, respect, commitment, and caring (Lovell et al., 2015; Okafor et al., 2021). On the other hand, satisfaction with the therapy shows the participants' satisfaction with the intervention process and outcomes regarding personal experience (McLeod, Southam-Gerow, Tully, Rodriguez, & Smith, 2013; Tran, Tran, & Fisher, 2013). Thus we explored satisfaction with CBT in order to validate the behavioural outcome of the intervention.

### 5. Empirical studies

CBT has been widely used across cultures for treating psychopathological challenges that threaten mental health. Evidence-based studies attest to the effectiveness of CBT in controlling psychological distress such as depression, anxiety, and stress in diverse populations (Alamdarloo, Khorasani, Najafi, Jabbari, & Shojaee, 2019; Izadi-Mazidi, Riahi, & Khajeddin, 2015a; Onuigbo, Onyishi, & Eseadi, 2020). However, there are limited studies in parents of children with ASD in Nigeria. The only identified effectiveness study in

a sample of parents of children with ASD, within the Nigerian context (Ede et al., 2020) did not address emotional distress in dimensions of depression, stress, and anxiety. Further, the few CBT studies on parents of children with ASD (Ede, Anyanwu, Onuigbo, Ifelunni, Alabi-Oparaocha, Okenyi, Awoke et al., 2020; Feinberg et al., 2014; Izadi-Mazidi et al., 2015b; Khodai, Khazai, Kazemi, & Aliabadi, 2012; Shaw et al., 2013) generally have not considered the participants' satisfaction with CBT. We expanded research by evaluating the effectiveness of CBT in minimizing psychological distress (depression, anxiety, and stress) in a sample of parents of children with ASD.

### 5.1. The current study

Literature has shown generally limited intervention studies addressing general psychological distress among parents of children with ASD. The case of Nigeria is more serious as the only work using CBT for parents of children with ASD addressed only parental stress, and failed to consider anxiety and depression which are more threatening among the parents. Furthermore, no study on the target population using CBT has explored how satisfied they are with the therapy. Therefore, the study aims to examine the effectiveness of cognitive-behavioral therapy (CBT) in reducing anxiety, depression, and parental stress. We further sought to find out if parents of children with ASD will accept and appreciate the use of CBT intervention for their emotional support; consequently, we expect to find a sustained reduction in anxiety, depression, and stress among parents of children with ASD, following CBT intervention. We also hypothesize that the participants will be satisfied with CBT intervention in terms of participants' affective pleasure with the therapy, the therapists, and global improvements.

## 6. Methods

### 6.1. Design

A group-randomized waitlist control trial design with pre-test, post-test, and follow-up assessments (Desveaux et al., 2016) was adopted for the study. This design guided the researcher to assess the effectiveness of CBT intervention on the psychological distress of parents of children with ASD. Participants were randomized into CBT and waitlist control groups.

### 6.2. Ethical consideration

We obtained protocol approval from the Faculty of Educational research ethics committee, University of Nigeria, Nsukka, Nigeria. The study also met the terms of the ethical research standard as specified by the American Psychological Association (2017) and the Declaration of Helsinki (World Medical Association General Assembly, 2014). Participants signed written consent before participating in the study. This study is also registered with the AEA RCT trial Registry with an identity number: "AEARCTR-0005532".

### 6.3. CBT intervention manual

The researchers, in collaboration with two experts in CBT, developed a CBT program manual using information from earlier studies (Ruiz-Robledillo, et al., 2015; Ruiz-Robledillo & Moya-Albiol, 2015). CBT intervention was designed to hold for a period of 12 weeks in line with (Cully & Teten, 2008; Ruiz-Robledillo & Moya-Albiol, 2015). The group CBT sessions were delivered by two certified therapists who are PhD students of guidance and counselling that are well-grounded in CBT. To ensure treatment integrity and adherence to the CBT techniques, all CBT sessions were closely supervised by two of the authors who are experts in CBT. The therapeutic activities were based on helping the participants to notice the relationship among thoughts, feelings, and behaviours, and how their thoughts and behaviour interact to produce negative emotions such as depression and anxiety (Cully & Teten, 2008). CBT intervention was aimed at 1) using ABCDE therapeutic model to "dispute" – challenge and question parents' dysfunctional beliefs about parenting children with autism, which lead to emotional distress, and to substitute them with functional beliefs that improve health outcomes (Cully & Teten, 2008; Ruiz-Robledillo & Moya-Albiol, 2015).

We used ABCDE to explain the links between situations (A) in parenting children living with ASD, unhelpful beliefs arising from the condition (B), and the accruing consequences (C) (DiGiuseppe, Doyle, Dryden, & Backx, 2014). Then, disputation (D) helped to abolish the self-limiting beliefs and cognitions (Cully & Teten, 2008; David, 2015; DiGiuseppe et al., 2014; Ruiz-Robledillo & Moya-Albiol, 2015) and developing more effective ideologies (E). The manualized treatment plan consisted of twelve sessions of group CBT activities in six modules. Specific strategies used were Assessments, goal-setting, progressive relaxation techniques, discussion, disputation, cognitive restructuring, homework assignment, problem-solving skills, desensitization, unconditional self-acceptance, Guided imagery, rationalizing, reframing, etc. The Intervention is prepared in 6 modules of 2 weeks each. Using the developed manual, intervention sessions were delivered by two well-trained doctoral students in counseling with one of the authors, who is a psychologist and a CBT expert. All interventions were also closely monitored by one of the researchers knowledgeable in CBT.

### 6.4. Module 1: introduction (Sessions 1–2)

The first session commenced with i) creating an agreement with the participants; ii) putting up privacy rules; iii) establishing a practical environment with the participants; iv) working together with the clients to set therapeutic goals; v) guiding the clients to generate a problem list regarding emotional distress related to parenting children with ASD, and presenting the purpose of the module-

understanding how our thoughts influence our mood and behavior.

The second session features i) Introducing CBT model ii) using dialogue to explain emotional distress- depression, stress, and anxiety: what they are, and how the participants experience each; iii) the somatic, behavioral, emotional, and cognitive symptoms of depression, anxiety and stress were discussed iv) Further identification of the factors stimulating emotional distress; v) Thoughts are defined in this session.

#### 6.5. Module 2: (Sessions 3–4): using CBT model in the relationships between thoughts, activities, and emotions

The third session deals with i) the CBT model of emotional distress and vicious circle; ii) the types of thinking faults that are linked to emotional distress-depression, anxiety, and stress with regards to parenting children with autism; iii) how the dysfunctional thought can be countered and modified to improve our emotional states. In-session exercises and oral questioning are used to identify dysfunctional thinking patterns; iv) approach each of the problems identified in session 2 with the ADCDE modality.

The design of the fourth session provides the participants with strategies for increasing positive thoughts and reducing unhealthy or dysfunctional negative thoughts (disputation), hence, reducing symptoms of depression, anxiety, and stress. This session covered: i) guiding participants to identify and refute self-defeating beliefs cultural orientations and worldviews about children with ASD and parenting them; ii) Listing the irrational beliefs that follow negative parenting and caring experiences and encouraging rational beliefs and thoughts through disputation.

#### 6.6. Module 3 (Sessions 5–6) strategies for increasing positive thoughts and decreasing unhealthy assumptions (disputation continued)

Guide clients to recognize and disprove negative worldviews and assumptions about their parenting and caring experiences with children with autism, which may constitute stress. Irrational beliefs about raising children with autism were listed and challenged by encouraging more rational thoughts and philosophies. The training is aimed at reducing depressive symptoms, anxiety, and stress associated with parenting children with autism.

#### 6.7. Module 4 (Sessions 7–8): further disputation of irrational belief associated with autism and parenting

The therapist encouraged the participants to share their experiences on what works and what does not work in this session; identify more dysfunctional orientations and behaviours, and replace them with balanced ones via ABCDE techniques. The session was centered on building coherent self-beliefs, rational thoughts, and parenting practices that are favourable to both children with ASD and their typically developing siblings, exploring problem-solving strategies that could limit stress and anxiety, and using relaxation techniques to reduce tension.

#### 6.8. Module 5 (Sessions 9–10) toward developing the habit of functional health practices and positive psychology

This session involved the further application of CBT modalities to develop self-monitoring skills in the participants, considering risk management approaches, as well as other health practices at home and outside, and discussing/practicing time management skills through home assignments. Homework assignments to record strategies used during the week such as self-talk, e.t.c.

Week 10 featured i) encouraging the participant to develop personal recourses through all they have benefited from the program for future experiences, ii) encouraging strategy use and discussing personal concerns and experiences associated with parenting children with autism, iii) evaluating participants' commitments during CBT program based on input to group deliberations and assignment completion. Participants were also encouraged to explain remarkable experiences and life situations through questions and inquiry. Share practical skills developed in the cause of the program. Practice hypnosis through guided imagery.

#### 6.9. Module 6 (Sessions 11–12) ending treatment and relapse prevention

Discuss what the participants have gained in the therapy sessions that could be used for similar stressors/symptoms in the future; Discuss when and how participants might seek help from mental health professionals for additional assistance in the case of other symptoms (e.g., suicidal ideation). Help improve participants' readiness to overcome inevitable difficulties by empowering situational problem-solving in future problematic situations.

Lead the participants to move beyond dependence on the therapists to the application of personal skills. Review and record all the CBT skills learned by the clients have learned. Utilize Socratic questioning to compile a list of skills. Encourage participants to keep all the handouts (e.g., thought records) used in treatment as a reminder of their skills.

#### 6.10. Participants and procedure

A total of 97 parents of children with autism, male (n = 31) and female (n = 66), who met the inclusion criteria participated in the study. Inclusion criteria were: i) Participants must have at least a child diagnosed with ASD; ii) display symptoms of psychological distress at baseline by crossing the cut-off (32) score in the DASS-21; iii) participant must have a Smartphone; ii) potential participant is willing to participate in the study; iv) Absence of chronic medical conditions or terminal illnesses. v) is not taking medication regarding the psychological symptoms at the beginning of the Intervention. Potential participants not meeting the criteria were excluded from

participating in the research.

At the initial stage of the sampling, we used the purposive sampling technique (snowballing) to select parents of children with ASD through school and hospital visits, text messages, and phone calls. We visited all the public and private Special Education and inclusive schools in Enugu and Ebonyi states of Nigeria to notify them of the intervention program. Sequel to our visits, we collected contacts (phone numbers and/or emails) of parents whose children have been fully diagnosed with ASD by medical personnel and confirmed by school psychologists to be exhibiting autistic symptoms. The contacts were used to invite the potential participants through SMS, and emails. A total of 128 parents responded to the invitation and indicated an interest in participating.

Out of 128 potential participants who were screened for eligibility, 31 were dropped while 97 participated. 20 potential participants were excluded on the basis of ineligibility, eight (8) volunteers declined, and three could not continue due to other reasons. The 97 participants were allotted to the CBT group (n = 48) and waitlist group (n = 49) (see Fig. 2) using randomization through sequence allocation software. The randomization exercise was conducted by a research assistant who was blinded to the participants until the final assignment of the intervention group. A WhatsApp chat group was created for the participants based on their groups (that is separate WhatsApp group for CBT and WL). The WhatsApp group was meant for good communication among group members. The WhatsApp group also enabled quality family connectedness and group discussions outside therapy sessions. The parents shared their experiences, concerns, and ideals through the WhatsApp platforms.

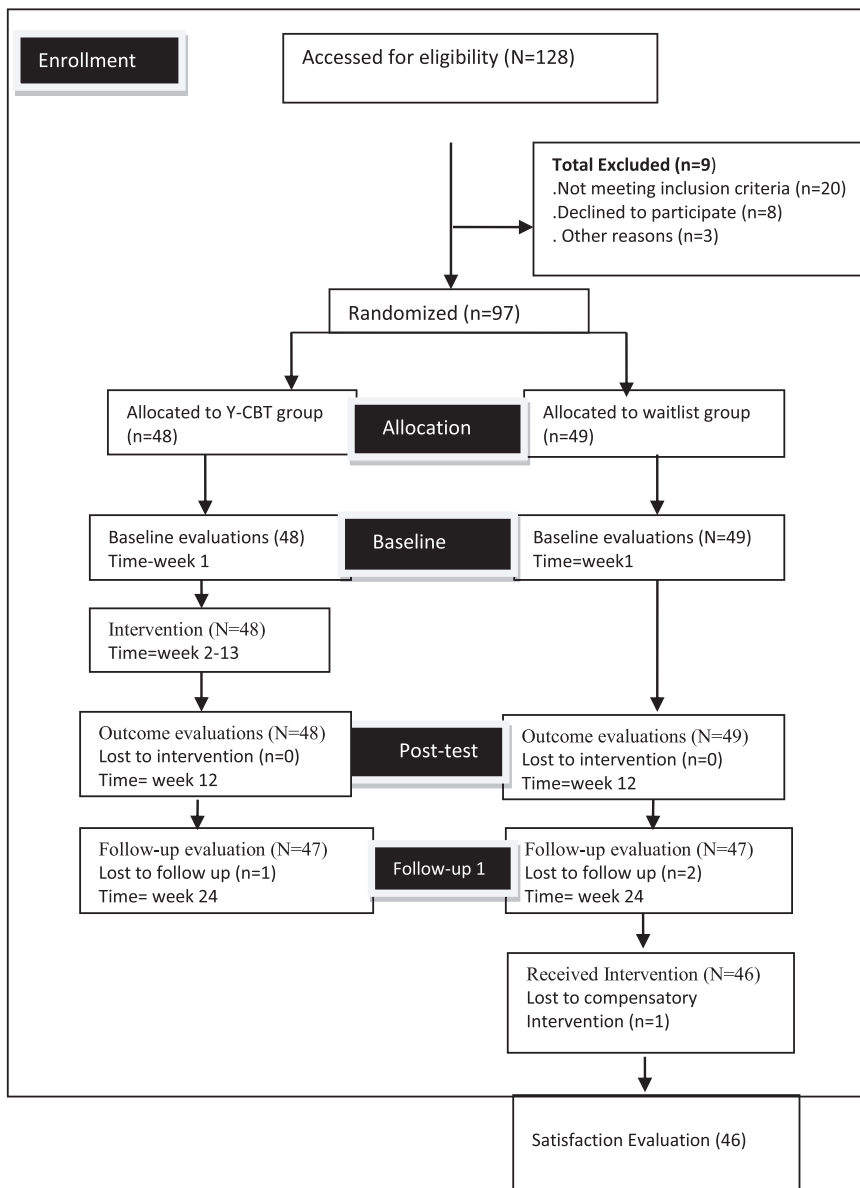


Fig. 2. Design/Participants' Flow chart.

Afterward, the baseline data were collected using DASS.

At the fourth stage, the CBT group participated in a 2- hour CBT involvement weekly for 12 weeks (See intervention sessions). All intervention sessions took place in a town hall, which was at the center of the study area and was accessible to all participants. At the fifth stage, post-test (time 2) data were collected two weeks after the completion of Intervention, using DASS-21. Additional data were collected from the CBT group using STTS–R. Further, a three months follow-up was held, and follow-up data (Time 3) were collected using the same instrument (DASS). Finally, CBT intervention program was delivered to the waitlisted group, following the same modalities for the CBT group. Following the 12 week CBT program for the waitlisted group, the STTS-R was administered to ascertain their satisfaction with the program experiences and outcomes. This was meant to ascertain whether the waitlisted group would be equally satisfied with the CBT intervention. Three participants (1 from the CBT group and two from WLCG) were lost to follow up. Consequently, their Times 1 and 2 data were discarded. Furthermore, 1 participant from the WLCG did not feature in the final satisfaction with therapy evaluation. Information about the sampling and procedures is in Fig. 2.

The demographic data of the participants in the CBT group and WLG are shown in Table 1.

## 7. Measures

### 7.1. Demographic questionnaire

This was meant to obtain information about the participants' demographic variables, including age, gender, and qualification. Also, information about the child's level of support need was collected in the demographics section. Participants were required to rate their children's level of support based on experience and school placements. In this respect, parents were asked to rate their children's executive functioning and on increasing order from 1 to 4–1 needs little support to function well to 4- needs high support to function we. The participants were instructed to tick the appropriate option as it may apply to them.

### 7.2. Depression, anxiety, and stress scale- 21 items (DASS-21)

The DASS-21 was used to collect information on the emotional distress of parents of children with ASD. DASS is meant to source information on three dimensions of emotional distress (depression, stress, and anxiety) in three subscales. Out of the 21 questions in DASS-21, seven questions address each one of stress, anxiety, and depression. Items of the depression sub-scale covered dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. The anxiety subscale measures autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale assesses the present level of arousal as orthogonal to relaxation, nervous arousal, and being easily upset/agitated, irritable / over-reactive, and impatient (Maughan & Weiss, 2017). Items of DASS-21 are measured on a four-point Likert scale of 0 (Did not apply to me at all), 1 (Applied to me to some degree, or some of the time), 2 (Applied to me to a considerable degree or a good part of Time), and 3 (Applied to me very much or most of the Time). The highest total score obtainable in DASS-21 is the sum of scores of all items ( $63 \times 2$ ) as total emotional distress, and  $21 \times 2$  respectively for depression, anxiety, and stress scores, while the lowest score is 0. DASS was used in this study because of its good psychometric quality, and is easy to use especially in intervention studies (Walters, Loades, & Russell, 2016). Further the, instrument reliability has been established in Nigeria to have excellent Cronbach's alpha values of 0.81, 0.89, and 0.78 for the three subscales (Coker, Coker, & Sanni, 2018). For the present study, Cronbach's  $\alpha$  was high for all subscales: 0.81, 0.82, and 0.74 respectively for the depression, anxiety, and stress subscales.

**Table 1**  
Participants' demographic information.

Characteristics	CBT Group N (48)	Waitlist N (49)	Total N (%)
Gender			
Male	14 (14%)	17 (18%)	31(32%)
Female	34 (35%)	32 (33%)	66 (68%)
Total	48 (49.49%)	49(50.51)	97(100.00%)
Mean Age	39.12	42.77	40.95
Educational Level			
Secondary Education	10(10.30%)	11(11.34%)	21 (21.64%)
Degree/Equivalent	20(20.61%)	22(22.6%8)	34 (35.05%)
Masters and above	18(18.55%)	16(16.49%)	42 (43.36%)
Total	48(49.49%)	49(50.51%)	97 (100.00%)
Child's Level of Support Need			
Low Support Needs	23(23.71%)	25(25.77%)	48(49.49%)
High support Needs	25(25.77%)	24(24.74%)	49(50.51%)
Total	48(49.49%)	49(50.51%)	97 (100.00%)

7.3. The satisfaction with therapy and therapist scale-revised (STTS-R)

The STTS-R for group psychotherapy developed by Oei and Shuttlewood (2008) was used to ascertain the participants' satisfaction with the CBT intervention for their psychological distress. The STTS-R is a Likert-type scale measured in a 5-point scale of 1 =Strongly Disagree, 2 =Disagree, 3 =Neutral, 4 =Agree, and 5 = Strongly Agree. The measure is made up of 13 items, covering the participants' satisfaction with the therapy, satisfaction with the therapist, and the measure of global improvement on participants' psychological condition. The STTS-R is of good psychometric properties (Oei & Shuttlewood, 2008). STTS-R also gave a good reliability index  $\alpha = 0.77$  in 47 parents sample in the Nigeria context.

In scoring the STTS-R in this study, three aggregate scores are obtainable (satisfaction with the therapy, satisfaction with the therapist, and global improvement scores). A total score ranging from 1 to 14.60 in either satisfaction with the therapy or satisfaction with the therapist was regarded as low satisfaction. A total score of 14.50 – 18.50 was regarded as moderate satisfaction, while a score ranging from 18.6 – 30 depicts high participants' satisfaction with CBT. The total score of the global improvement is 5. Hence, 1–2.4 shows low global improvement, 2.5 – 3.1 was regarded as moderate global improvement, and 3.20–5.00 indicates big global improvement.

7.4. Data analyses

We used descriptive statistics and Repeated Measures Multivariate Analysis of Variance (MANOVA) to compare scores at pre-test, post-test, and follow-up data (Hahs-Vaughn, 2016; Huang, 2020) for the major variables. T-test analysis was also utilized for analyzing the participants' satisfaction with the intervention. The effect size of the intervention on the dependent variable was determined using Partial Eta square and Omega square. Raincloud plots were used to demonstrate the key summary of the mean across three evaluations. Version 24.0 of SPSS was used to run the MANOVA analysis, while the JASP statistical program (Version 0.16.1) was used to analyze the between-subject and within-subject effects. The results are presented in tables and charts.

8. Results

WLG-Waitlist group  $\bar{X}$ - Mean, SD- Standard Deviation, df = Degree of Freedom, F = Analysis of variance test statistic, p = probability value, and  $\eta^2p$  = Partial Eta square (effect size).

Table 2 further shows the repeated measures ANOVA of the effect of the main effect of CBT on mean scores in DASS-21 subscales. Results of baseline data (Time 1) indicated that there was a non-significant main effect of CBT on the parents' DASS-depression subscales. The At baseline (Time 1), the DASS-depression mean scores of CBT, and WLG did not vary significantly (mean difference=0.12; p = .80;  $\eta^2p$  = .001). The DASS-anxiety score also showed a non-significant difference between the CBT and WLG (mean difference=0.19; p = .36;  $\eta^2p$  = .009). A non-significant difference was also recorded on DASS-Stress between the groups (mean difference=0.42; p = .36;  $\eta^2p$  = .009). These suggest that the CBT and the WLG were not significantly different in their level of distress before the intervention.

After the intervention (Time 2), the CBT group's depression, anxiety and stress reduced significantly, leading to significant differences in the mean scores of the two groups in all the DASS subscales. Table 2 indicates that DASS-depression subscale mean-scores of CBT and WLG had a significant variation at post-intervention (Time 2) (mean difference= -8.11; p = <0.001;  $\eta^2p$  = .58). There were also significant differences in the mean scores of CBT and WLG in DASS-anxiety (mean difference= -8.66; p = <0.001;  $\eta^2p$  = .61) and DASS-stress (mean difference= -8.32; p = <0.001;  $\eta^2p$  = .59).

Follow-up data also indicated significant differences in the mean scores of CBT and WLG groups in all three DASS subscales. Table 2 further shows a significant difference in the DASS-depression scores of CBT and WLG groups (mean difference= -8.16; p = <0.001;

Table 2  
Repeated Measure MANOVA on the Main Effect of CBT on the Dependent Variables at Pre, Post, and Follow-up Evaluations.

Group	Statistics	Pre-test (Time 1)			Post-test (Time 2)			Follow-Up (Time 3)		
		DASS-Dep 1	DASS-Anx 1	DASS-Stress 1	DASS-Dep 2	DASS-Anx 2	DASS-Stress 2	DASS-Dep 3	DASS-Anx 3	DASS-Stress 3
CBT	N	48	48	48	48	48	48	48	48	48
	$\bar{X}$	15.87	16.14	16.37	7.50	7.87	7.45	7.62	7.95	7.62
	SD	2.36	1.68	2.19	4.33	4.67	4.53	4.67	4.85	3.94
WLG	N	47	47	47	47	47	47	47	47	47
	$\bar{X}$	15.75	16.46	15.95	15.61	16.46	15.77	15.78	16.45	15.95
	SD	2.30	1.74	2.20	2.30	1.74	2.21	2.30	1.76	2.02
	Mean difference (CBT-WLG)	0.12	0.19	0.42	-8.11	-8.66	-8.32	-8.16	-8.50	-8.33
	Df	1, 95	1, 95	1, 95	1, 95	1, 95	1, 95	1, 95	1, 95	1, 95
	F	0.06	0.086	0.86	137.81	144.75	138.05	118.74	131.17	115.18
	P	.80	0.36	0.36	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	$\eta^2p$	.001	0.009	0.009	0.58	0.61	0.59	0.56	0.58	0.53



$\eta^2 p = .56$ ). Additionally, there were significant differences in the mean scores of CBT and WLG in DASS-stress (mean difference=  $-8.66$ ;  $p < 0.001$ ;  $\eta^2 p = .61$ ) and DASS-stress (mean difference=  $-8.33$ ;  $p < 0.001$ ;  $\eta^2 p = .53$ ). These imply that reduction in all dimensions of DASS-21 following CBT intervention were all significant and sustained through follow-up.

DF=degree of freedom, F=ANOVA score, p = significance,  $\omega^2$  effect size(Omega Score).

Data in **Table 3** further show the within-subject effects of Time and group on the participants' dimensions of distress. It shows a statistically significant effect of Time on DASS-depression scores of parents of children with autism [ $F(2, 190) = 137.03$ ,  $p < .001$ ,  $\omega^2 = 0.27$ ]. There is also a significant Time and Group interaction effect on the participants' DASS-depression scores [ $F(2, 190) = 137.03$ ,  $p < .001$ ,  $\omega^2 = 0.27$ ]. These suggest that the between groups significant differences recorded at Times 2 and 3 were due to the CBT intervention, and not merely due to time difference.

**Fig. 3** further shows the changes in group scores of participants on DASS-depression subscale. As shown in the figure, DASS-depression scores of the CBT group decreased significantly from Time1-Time 2 but did not change significantly from Time 2 – Time 3. On the other hand, the DASS-depression scores of the control group did not vary significantly across Time1–2 and Times 2–3 (see **Fig. 3A** and **B**). These outcomes suggest that intervention is accountable for the significant decrease in the CBT group's depression across time of evaluations.

Data in **Table 3** further show statistically significant effects of Time on DASS-anxiety scores of parents of children with autism [ $F(2, 190) = 123.59$ ,  $p < .001$ ,  $\omega^2 = 0.28$ ]. There is also a significant group and time interaction effect of Group X Time on the participants' DASS-anxiety scores [ $F(2, 190) = 123.59$ ,  $p < .001$ ,  $\omega^2 = 0.28$ ]. The raincloud plots shown in **Fig. 4** (A and B) further show that DASS-anxiety scores of the CBT group decreased significantly from Time1-Time 2, but did not change significantly from Time 2 – Time 3. On the other hand, the DASS-anxiety scores of the control group did not vary significantly across Time1–2 and Times 2–3 (see **Fig. 4** A and B). These suggest that CBT intervention was responsible for variation in the anxiety scores of CBT group and not just time.

On DASS Stress, **Table 4** further shows a statistically significant effect of Time on DASS-stress scores of parents of children with autism [ $F(2, 190) = 630.83$ ,  $p < .001$ ,  $\omega^2 = 0.29$ ], and a significant Group X Time interaction effect on the participants' DASS-anxiety scores [ $F(2, 190) = 630.83$ ,  $p < .001$ ,  $\omega^2 = 0.29$ ]. The raincloud plots shown in **Fig. 5** (A and B) further show that DASS-stress scores of participants in the CBT group decreased significantly from Time1-Time 2, but did not change significantly from Time 2 – Time 3, while the DASS-stress scores of the WLG did not vary significantly across Time1–2, and Times 2–3 (see **Fig. 5** A and B). These outcomes suggest that the significant changes in the CBT group's stress scores were as a result of CBT intervention and not merely due to time differences.

CBT=cognitive behavioural therapy, WLC=waitlist control, DF=degree of freedom, F=ANOVA score, t-test, p = significance, CL= confidence interval.

CBT and WLC groups had a non-significant-high rating of their satisfaction with the group therapy ( $p \geq .001$ ), with the therapists ( $p \geq .001$ ), and with a high rating of their global improvement ( $p \geq .001$ ). The overall rating of the STTS-R score was high in both the CBT group ( $56.83 \pm 2.99$ ), and the WLC group ( $52.60 \pm 12.26$ ), with non-significantly different between the two groups ( $p \geq .001$ ). These further reveal that parents of autistic children who participate in CBT group therapy feel satisfied with the therapy. These tend to show that CBT can minimize psychological distress in parents of children with autism.

### 9. Discussion

Psychological distress in parents of children with ASD negatively affects both parenting and children's outcomes (Yirmiya and Shaked, 2015). This study sought to investigate the effect of CBT psychological distress related to parenting children with autism. The results of the study indicated that distress (anxiety, depression, and stress) among parents of children with ASD were reduced significantly following CBT intervention in Nigeria. The reduced distress was maintained through a 3-month follow-up. Results also showed that participants who received the CBT program were satisfied with the Intervention.

These outcomes concur with prior studies that found CBT programs as efficacious in minimizing depression (Beltman, Oude Voshaar, & Speckens, 2010; Jones, Totsika, Hastings, & Petalas, 2013; Onuigbo et al., 2020; Watkins, Hunter, Hepner, Paddock, de la Cruz, Zhou & Gilmore, 2011), anxiety (Carpenter et al., 2018; Hamzeh Pour, 2014; Hofmann, Wu, & Boettcher, 2014; Witcraft, et al., 2018) and stress (Alamdarloo et al. (2019); Redeker et al. (2020); Sinclair, Lappalainen, Muotka, & Hiltunen, 2018; Redeker et al. (2020); Shariatkhah, et al., 2017; Shaw, Sweester, St. John, Lilo, Corcoran, Jo., & Horwitz, 2013). However, the present study outcomes are strengthened by some unique aspects of the study that make it different from the cited studies. Firstly, the majority of the outcome

**Table 3**  
Within Subject Effects of CBT on the Dependent Variables.

Measure	Cases	Sum of Squares	Df	Mean Square	F	P	$\omega^2$
DASS-Depression	Time	1117.15	2	558.57	137.03	< 0.001	0.27
	Time * Group	1117.15	2	558.57	137.03	< 0.001	0.27
	Residuals	774.50	190	4.08			
DASS-Anxiety	Time	1094.76	2	547.38	123.59	< 0.001	0.28
	Time * Group	1094.76	2	547.38	123.59	< 0.001	0.28
	Residuals	841.49	190	4.43			
DASS-Stress	Time	1261.65	2	630.83	630.83	< 0.001	0.29
	Time * Group	1261.65	2	630.83	170.95	< 0.001	0.29
	Residuals	701.11	190	3.69			

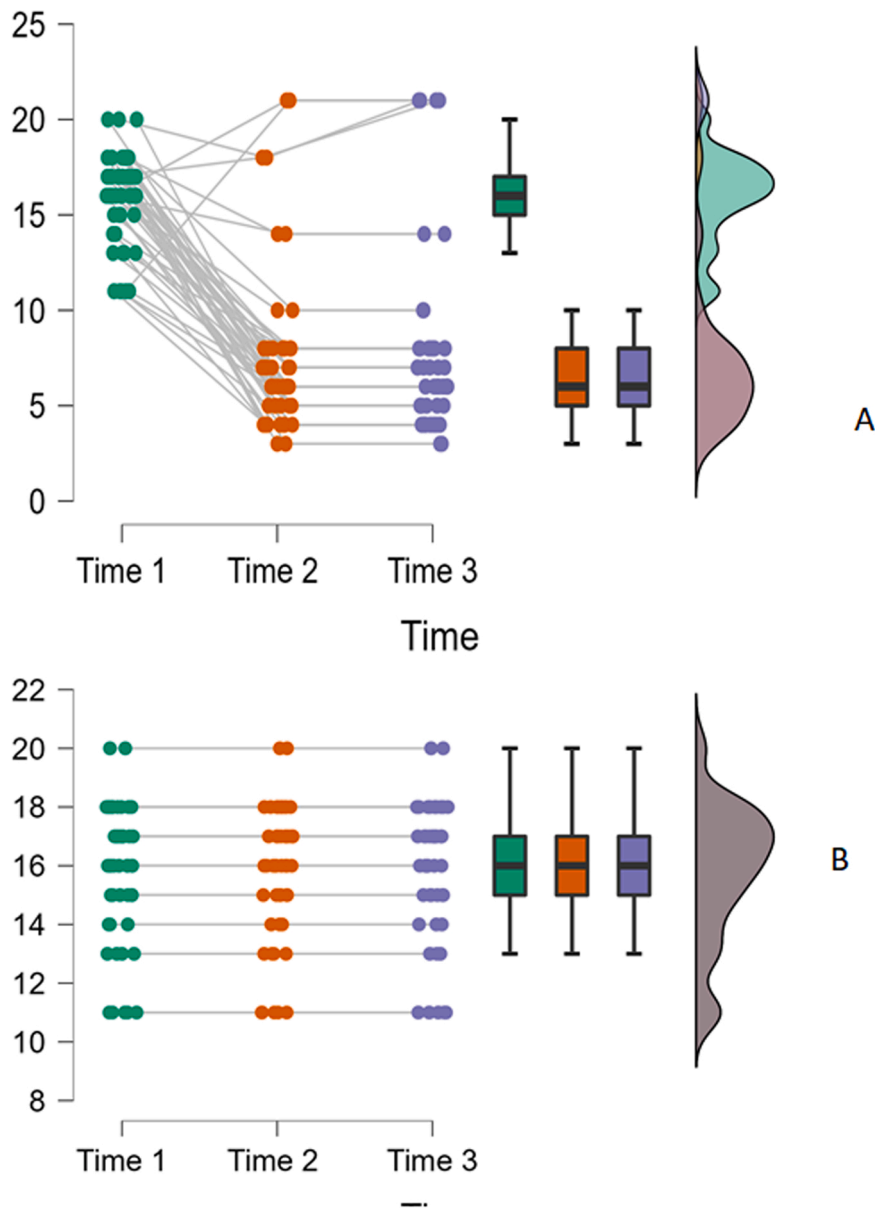


Fig. 3. (A and B): Jasp Column Raincloud Plot showing participants' improvement due to Intervention: dependent Variable: DASS Depression; Groups: A= CBT group; B= Waitlist.

studies were conducted in the western part of the world, and the fact that the study was done in Nigeria gives it a contextual perspective on the effectiveness of group CBT for Nigerian parents of children with ASD in a community setting. Additionally, the use of WhatsApp to connect parents to each other created a hybrid experience, which helped enhance parents' social connectedness and learning from others.

Although the current study has some of this uniqueness, the positive outcomes of the intervention can significantly be attributed to CBT and its characteristic way of changing mindsets to bring about improved emotion by reducing subjective distress outlook. A study on Iranian males with addiction reported CBT to be effective in reducing depression, anxiety, and stress (Alamdarloo et al., 2019). The work of Alamdarloo et al. (2019) is most similar to the present as it addressed psychological distress such as depression, anxiety, and stress together. Related research results indicated that CBT is highly effective in treating psychological distress in parents of children living with disabilities and chronic illnesses (Anclair & Hiltunen, 2014; Anclair, Lappalainen, Muotka, & Hiltunen, 2018). Supporting the findings of the present study, Hassan (2011) found group CBT efficacious on depression among Muslim parents of autistic children in Jordan.

CBT works by changing parents' attitudes and beliefs about autism, increasing positive orientation towards themselves and their children with ASD, as well as improving logical thinking (Khusaifan & Keshky, 2022; Momeni et al., 2010). CBT helped to identify and

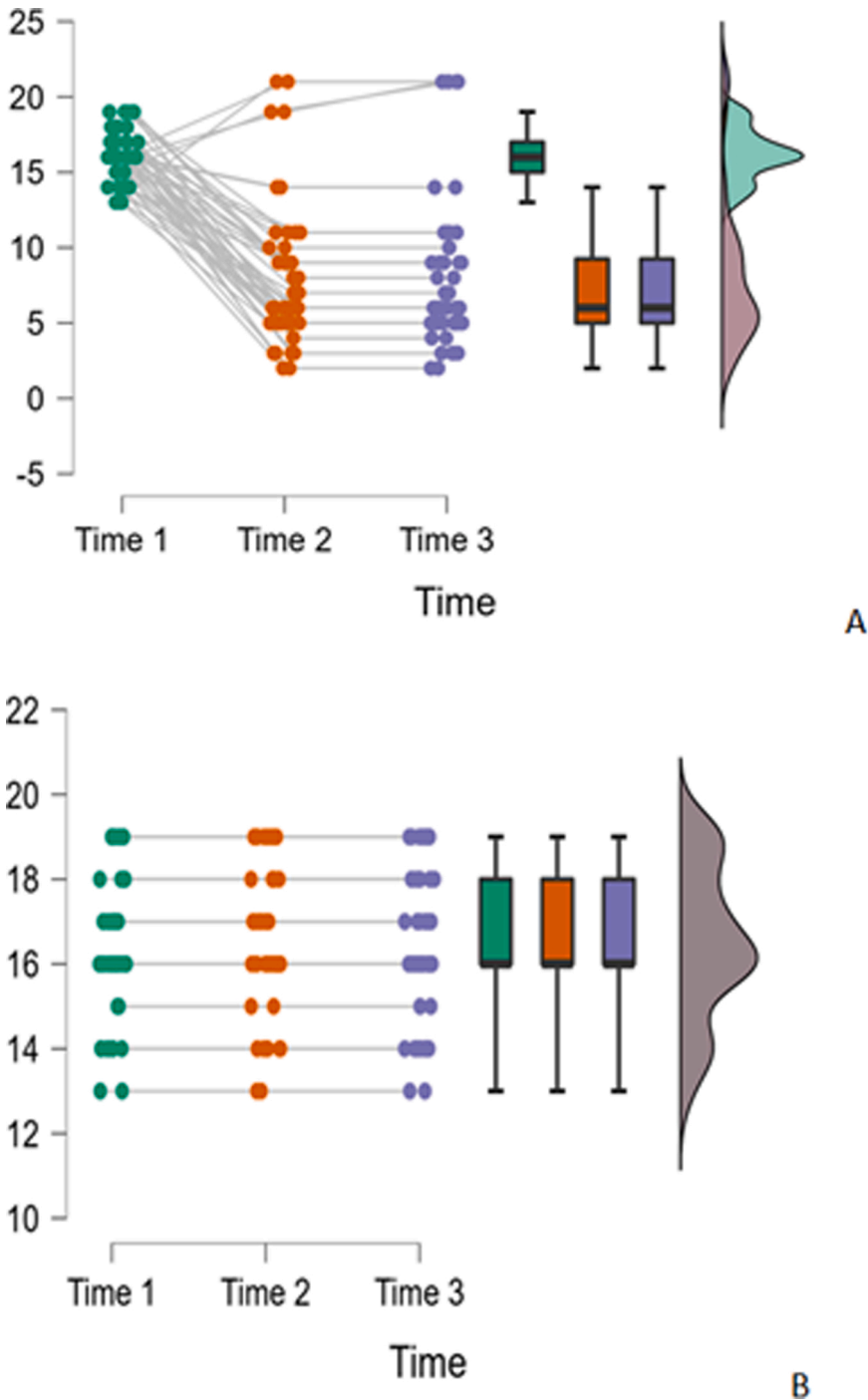


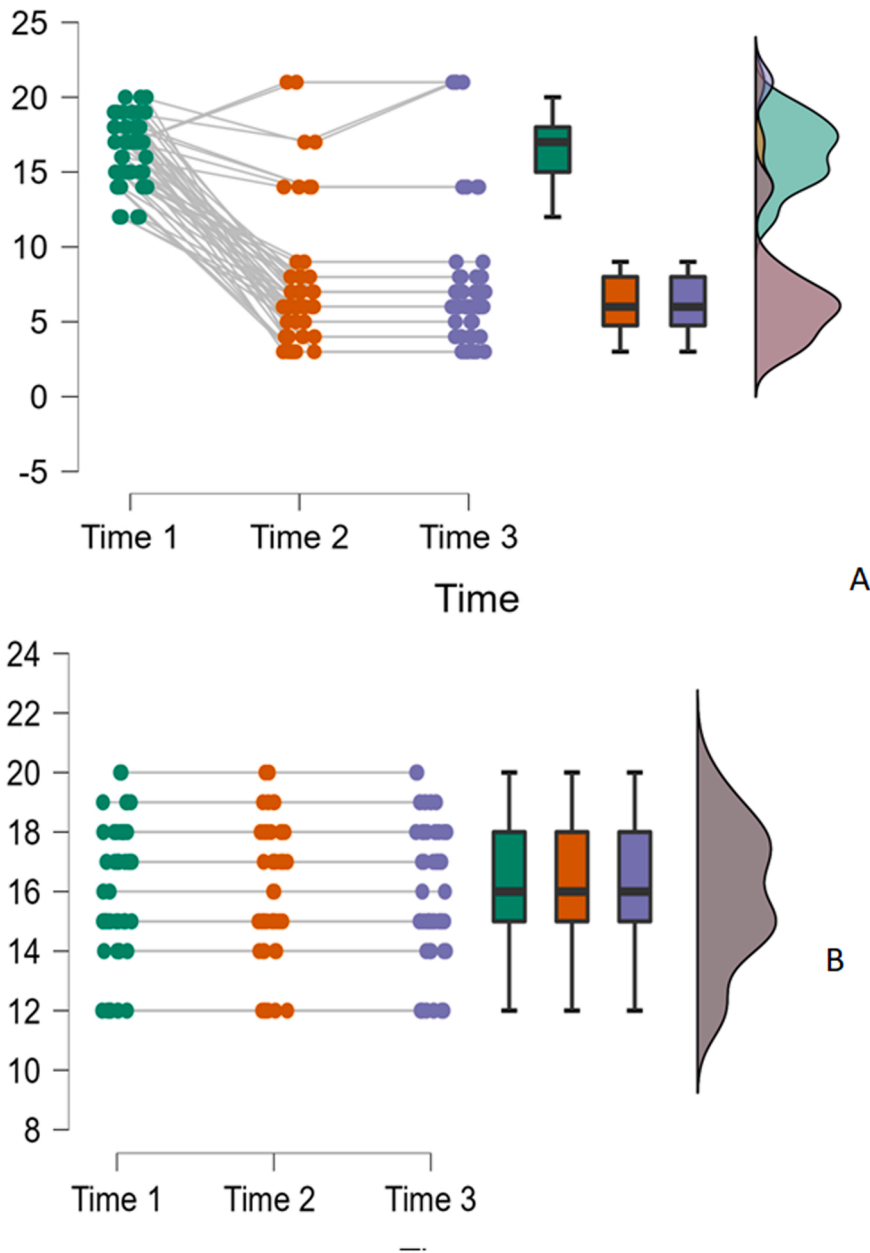
Fig. 4. (A and B): Jasp Column Raincloud Plot showing participants' improvement due to Intervention: dependent Variable: DASS Anxiety; Groups: A= CBT group; B= Waitlist.

counter negative orientations associated with ASD, replacing them with rational verifiable approaches to parenting children with ASD. Through CBT techniques, parents can be trained to change their unhelpful beliefs and internalize positive parenting attitudes, emotional planning, community skills, and assertiveness skill necessary for support and advocacy for their children with ASD. These can be valuable in helping the parents to overcome subjective distress that limits their parenting outcomes (Jayasvasti et al., 2011).

Supporting the outcome of this study, CBT has been invaluable for treating depressive symptoms in parents of children with autism (Hassan, 2011). CBT makes use of enviable techniques, including relaxation, practice exercise, cognitive restructuring, and hypnosis, which are invaluable in reducing physiological symptoms of depression, such as headache, and musculoskeletal pains (Alamdarloo,

**Table 4**  
Independent sample t-test showing Participants Satisfaction with Therapy.

Measure	CBT	WLC	Df	Mean Difference	F	T	P	95% CI	
								Lower	Upper
Satisfaction Therapy	26.00 ± 1.65	24.13 ± 5.66	91	1.86	10.37	2.18	0.031	0.17	3.56
Satisfaction Therapist	26.00 ± 1.65	24.37 ± 5.76	91	1.95	15.06	2.28	0.025	0.25	3.65
Global Improvement	26.00 ± 1.65	4.08 ± 1.23	91	0.41	8.95	1.93	0.056	-0.01	0.83
Total STTS-R Score	56.83 ± 2.99	52.60 ± 12.26	91	4.23	12.69	2.32	0.023	0.60	7.85



**Fig. 5.** (A and B): Jasp Column Raincloud Plot showing participants' improvement due to Intervention: dependent Variable: DASS Stress; Groups: A= CBT group; B= Waitlist.

2019). Further, the disputation and unconditional self-and-others' acceptance are techniques that could assist parents to grow to a reasonable maturity in thinking about ASD, thereby reducing mood difficulties. Additionally, encouraging leisure can support blood circulation and mind functioning, thereby reducing depression and anxiety (Shaw et al., 2013).

Many previous studies have also suggested that CBT can be enormously useful in reducing stress associated with parenting (Izadi-Mazidi, 2015; Yen et al., 2014) and improving parents' health (Ruiz-Robledillo, 2015) in other countries. Our study stands to confirm the efficacy of CBT in managing the three dimensions of distress (anxiety, depression, and stress) in low-income communities in Nigeria. This has presented a more robust perspective on distress control through CBT intervention. Hence, CBT used in our study not only helped parents of children with ASD to learn strategies for managing stress but also led to a reduction in depressive and anxiety symptoms. This was possible through building on problem-solving toward overcoming daily challenges (Ede et al., 2020; Ruiz-Robledillo, 2015). Moreover, CBT diminishes stress levels in parents of children living with autism by sustaining them and leading them to realize that they are not abandoned with their problems, hence building help-seeking attitudes necessary for enhanced outcomes in their children.

The results of the present study are of a coveted edge over prior studies of its kind due to its interest in the participants' subjective appreciation of the CBT intervention for their psychological distress. We found that parents of children with autism who participated in CBT intervention were highly satisfied with the therapy, the therapists, and their subjective global improvement in symptoms. This concurs with Hiltunen, Kocys, and Perrin-Wallqvist (2013), who showed that clients exposed to CBT were very pleased with the therapy received. Rivard, Terroux, Parent-Boursier, and Mercier (2014) found that most participants were satisfied with the CBT program, felt supported, and appreciated the positive gains, which were perceived to be of lasting effects. Other similar studies have also indicated that clients who received CBT are satisfied with the therapy they received (Chan et al., 2019; Furchtlehner, Schuster, & Laireiter, 2019; Hiltunen et al., 2013). This evidence strengthens the positive outcomes of CBT intervention and suggests that the clients readily accept being assisted with the therapy.

### 9.1. Practical implications of the study

The study showcases how special educators, counselors, and school psychologists can structure and provide parent counseling and training to parents of children with ASD. The results of the study highlight the importance of facilitating emotional stability in parents to foster change by integrating CBT approaches to help parents understand the connection between their maladaptive thoughts and behaviors. A secondary implication emphasizes the need for accessible and affordable mental health treatment for parents of children in vulnerable populations. In future research, the impact of positive mental health outcomes for parents on their children's behavior and adaptive skill functioning can also be assessed.

### 9.2. Strengths of the study

The present study addressed a touchy area of a present need of Nigerian society, given that ASD is still confusing and novel to the entire society. The Intervention is also well-timed, in the light of a heightened negative parental reaction towards having children with ASD in the study area. The study can also boast of clients' enjoyment, acceptability, and satisfaction with the therapy. The study utilized a waitlist control group, which allowed the participants in the control group to benefit from the same intervention. The robust statistical analyses allowed the study to boast of the strength of the study outcomes.

### 9.3. Limitations of the study and suggestions for future study

The current study utilized a relatively small sample, necessitating further studies with a larger sample to ascertain the effectiveness of CBT in depression, anxiety, and stress in parents of children with autism. The present study did not look into the moderating effects of demographic variables on the study variables. Hence, it is not clear from this study, which kinds of parents benefitted the most from the CBT intervention. Future studies could investigate the moderator demographic variables such as gender, family size, family socio-economic status, and satisfaction with therapy. Furthermore, Though the intervention sessions were supervised and guided closely by experts, the present study did not report intervention integrity data. Further study could expand results in this area by collecting data on therapists' competencies and their adherence to the specified techniques.

The assignment of participants to a waiting list control group may raise a second ethical issue. By telling people to wait for treatment, they become stuck at the stage of change associated with readiness and are unable to move forward to action on their own. Hence, those in the control group may worsen within the waiting period, especially as they were not to use any pharmacotherapy during the waiting. Further study may use treatment as usual for the control group. However, a waitlist control design was preferred for this study as it enabled the researchers to find out the effect of the intervention.

Additionally, the waitlist control trial design may be capable of resolving some ethical issues control design relating to the principle of justice because it offered the control group to participate in the same intervention. This study's waitlist control trial design may be flawed by overstating intervention effects. Thus it is not clear whether the condition of the control group improved equally after the compensatory intervention. So further studies could evaluate and compare the waitlist with the intervention group after the compensatory intervention in order to ascertain the effect of intervention after waiting. The use of a single self-report measure of mental health outcomes (DASS-21) leaves another gap. Further study may use more other tools such as interview and observation to gather data about the effect of intervention. In addition to CBT, future work may investigate the impacts of group interaction and/or WhatsApp connection on parental distress.

## 10. Conclusion

A 12-week CBT intervention resulted in significant reductions in depression, anxiety, and stress in the CBT group over those who were waitlisted. We, therefore, conclude that CBT can be effective in reducing depression, anxiety, and stress among parents of children with autism. However, the finding may be subject to validation in an active control group intervention, given that the waitlist control group may have affected the outcomes of the present study.

## CRedit authorship contribution statement

**Charity N. Onyishi:** Conceptualization, Methodology, Software, Writing – original draft, Investigation. **Maximus Sefotho:** Data curation, Supervision, Visualization, Validation. **Vera Victor-Aigbodion:** Visualization, Investigation, Software, Validation; Writing – review & editing.

## Conflict of Interest

The authors hereby declare no existing or potential conflict of interest in the publication of this article.

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